



VISTEK V1605 1RU & V1602 2RU OPERATIONAL CONTROL PANEL USER GUIDE

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VISTEK V1605 1RU & V1602 2RU operational control panel

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1 INTRODUCTION

The **V1605** is a 1RU Control Panel for remote control and monitoring of V1600 series racks and modules via DARTnet and, for certain modules with more complex control requirements, via a multi-drop RS485 network.

The **V1602** is a 2RU Control Panel used for the same purpose as the V1605 but with larger LCD displays and some improved functionality mainly associated with a Control Select mode for the Recall Buttons. In this manual the name "V1605" is intended to include the "V1602" unless stated otherwise.

Multiple panels can be coupled to a single DARTnet. Each panel can access up to 4 DARTnets and a single RS485 network. As a factory option, one of the four DARTnet channels on a **V1602** may be replaced by a high-speed RS232 interface for connecting to a remote computer using the Vistek XML protocol. This interface is not normally available on a **V1605**.

In addition to its primary role, the RS485 port may be connected to a Router for automatic switching of Virtual Modules and the RS232 port may be connected to a BBC GLITS reader in order to provide a display for adjusting lip sync.

The **V1605** is intended for use in operational and engineering areas such as outside broadcast vehicles where rack space is at a premium. When space is less of an issue, the **V1602** with its larger displays and text on recall buttons provides an alternative with the emphasis on ease of use.

Front panel controls are separated into four sections. One section provides display, access and selection of racks and modules on the network(s). The second provides rapid recall buttons that enable predefined modules or controls to be accessed with a single press. The third provides display and control of status indicators and adjustments on the selected module. The fourth section provides an indication of alarms and muting of the internal alarm sounder.

Three modes of operation are possible:

Physical Mode: in which the representation of networks, nodes and modules follows their physical location within the control system. In *Physical Mode* there are 4 DARTnet Ports (1 – 4) and 1 RS485 Port (5). The DARTnet Ports may each have up to 62 Racks connected, numbered 1-62 and each Rack may contain up to 14 Modules (plus the rack controller). The RS485 Port may have up to 64 Modules connected, numbered 0 – 63.

Virtual Mode: in which module controls may be grouped according to user requirements. This enables module controls to be organised according to function. In *Virtual Mode* the user may define up to 1000 *Virtual Modules*. For ease of navigation, these may be divided between up to 10 *Virtual Nets* each containing up to 100 *Virtual Racks* each containing up to 16 *Virtual Modules*. Although the theoretical maximum number of virtual modules is obviously 16000, the limit of 1000 is imposed due to the physical resources of the controller. Each *Virtual Module* may have up to 36 controls assigned from any module in the physical network.

Note that virtual module definitions are created on a PC and downloaded to the V1605 panel.

Mixed Mode: In *Mixed Mode* the user may view the system through both the Physical and the Virtual Networks.

Three user login authority levels are provided:

Engineer Level is the highest authority login level and provides access to all modules (within restrictions imposed by other filter options) and to all the V1605 setup functions.

Supervisor Level provides restricted access to setup functions and access to modules that have been set to Supervisor and Operator access level.

Operator Level provides access to modules that have been set to Operator level access only. Engineer and Supervisor level access may be passcode protected.

The range of modules displayed may be further refined by the use of filters:

Unit Status Filtering enables the user to choose to view all accessible modules, to hide absent modules or to view only modules that are currently online.

Local Filtering enables the user to set individual networks, nodes and modules to be displayed or not.

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Data may be transferred between the Control Panel and a PC:

A Serial Port on the rear of the unit and an alternative port accessible either behind the drop-down front panel (V1605) or through a connector on the front panel (V1602) enables data to be transferred between the panel and a PC. This facility enables the operating software to be upgraded in the field, loading of virtual module definitions and the transfer of module and panel configuration data.

Data may also be stored in a Flash File:

Flash Files may be stored in the panel's internal Flash memory or in a removable PCMCIA Flash memory card. Panel, Alarm and Network configuration, Local, System and Virtual Names, Virtual Module definitions, Module presets and Rack data may all be stored in a Flash File.

Note: Removable PCMCIA flash cards are not shipped with the panel. Either a standard PCMCIA Flash card or a Compact Flash card with a PCMCIA adapter may be used – both types are as used in digital cameras.

Note: On V1605s with the Version 1 Bootloader PROM, flash files in internal Flash memory are no longer available. Files in internal flash memory should be copied to a PCMCIA memory card or a PC before upgrading to Version 10 of the software. To continue using on-board flash files, but with a reduced capacity, the panel must be returned to Pro-Bel to have a new bootloader PROM fitted.



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2 INSTALLATION

Safety Notice: To avoid electric shock, power cord protective ground must be connected to earth ground.

| | V1605 | V1602 |
|----------------|-------------|-------------|
| Power | | |
| Line Voltage | 90 – 265Vac | 90 – 265Vac |
| Line Frequency | 45 – 66Hz | 45 – 66Hz |
| Input Power | 20W max. | 20W max. |
| Connector Type | IEC | IEC |
| Fuse Type | T2A 250V | T2A 250V |

| | V1605 | V1602 |
|----------------------------|--------|--------|
| Mechanical | | |
| Height | 43.6mm | 88.1mm |
| Overall Depth | 171mm | 171mm |
| Depth behind mounting face | 150mm | 150mm |
| Width | 449mm | 449mm |

Ventilation

Natural convection. Ventilation apertures at side of unit must not be obstructed.

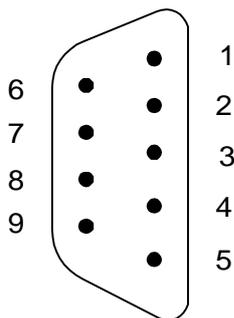
Rear Panel Connections

| | | |
|--|---------------|---------------|
| Power | IEC Connector | IEC Connector |
| DARTnet ports (up to 4, dependent on configuration ordered) (Ports 1 to 4) | RJ45 | RJ45 |
| Optional High Speed RS232 (Port 2B or 4B) | 25 way | Not available |
| RS485 (Port 5) | 9 way D type | 9 way D type |
| RS232 Programming (Port 6) | 9 way D type | 9 way D type |
| Alarms | 9 way D type | 9 way D type |

Front Panel Connectors

| | | |
|------------------------|--|-------------------------------------|
| RS232 Programming Port | 9 way D type – behind drop down front panel – same pin-out as Port 6 | 4 pin RJ45 connector on front panel |
|------------------------|--|-------------------------------------|

Alarms Connector Details

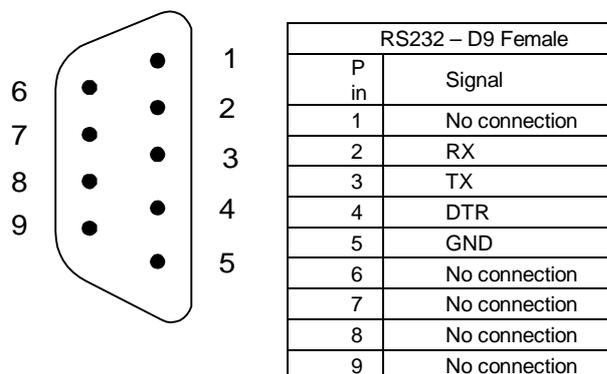


| RS232 – D9 Female | |
|-------------------|------------------------------|
| P in | Signal |
| 1 | Changeover 1 normally closed |
| 2 | Changeover 1 normally open |
| 3 | Changeover 2 normally closed |
| 4 | Changeover 2 normally open |
| 5 | Ground |
| 6 | Changeover 1 common |
| 7 | No connection |
| 8 | Changeover 2 common |
| 9 | Ground |

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Port 6 – RS232 Interface – Connector Details



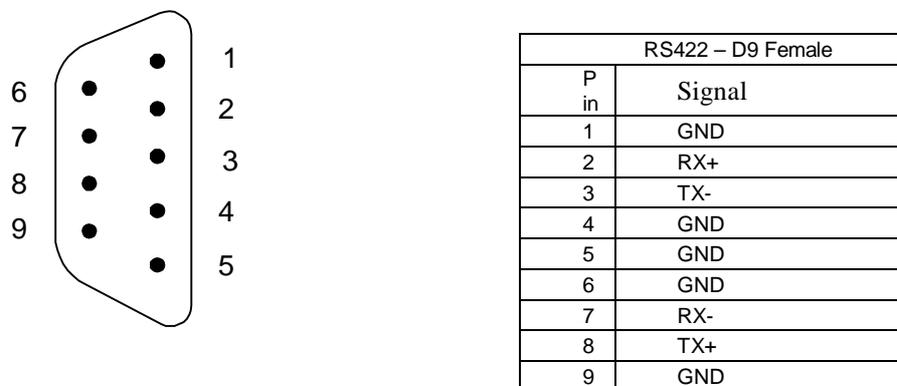
Data Connector (V1602 only)

| RS232 - RJ45 | |
|--------------|--------|
| P in | Signal |
| 1 | GND |
| 2 | RX |
| 3 | TX |
| 4 | DTR |

To connect to a PC, a null modem is required.

| PC | | V1602/05 | |
|-----|---------------|---------------|-----|
| Pin | Signal | Signal | Pin |
| 1 | No connection | No connection | 1 |
| 2 | TX | RX | 3 |
| 3 | RX | TX | 2 |
| 4 | DTR | No connection | 6 |
| 5 | GND | GND | 5 |
| 6 | DSR | DTR | 4 |
| 7 | RTS | No connection | 8 |
| 8 | CTS | No connection | 7 |
| 9 | No connection | No connection | 9 |

Port 5 – RS485/RS422 Interface Connector Details



To connect to a Vistek module rear panel a one-to-one cable is used. To connect to a router RS422 port, an RS422 null modem *may* be needed. The table below shows how to connect to an RS232 port such as on a PC.

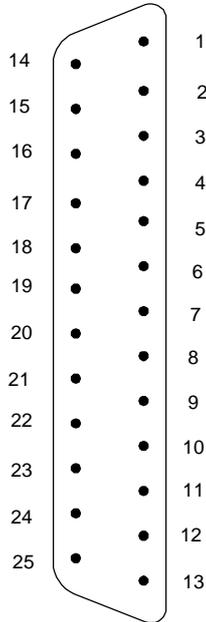
| PC (RS232) | | RS232-422 Converter | | RS422 Null modem | | (RS422) V1602/05 | |
|------------|--------|---------------------|--------|------------------|--------|------------------|-----|
| Pin | Signal | Signal | Signal | Pin | Signal | Signal | Pin |
| 1 | DCD | N/C | GND | 1 | GND | GND | 1 |
| 2 | RX | RX | TX+ | 8 | TX+ | RX+ | 2 |
| 3 | TX | TX | RX- | 7 | RX- | TX- | 3 |
| 4 | DTR | DTR | GND | 4 | GND | GND | 4 |
| 5 | GND | GND | GND | 5 | N/C | GND | 5 |
| 6 | DSR | DSR | GND | 6 | GND | GND | 6 |
| 7 | RTS | RTS | TX- | 3 | TX- | RX- | 7 |
| 8 | CTS | CTS | RX+ | 2 | RX+ | TX+ | 8 |
| 9 | RI | +9V | GND | 9 | GND | GND | 9 |



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Port 2B or 4B – High Speed RS232 (XML) Interface Connector Details

If connecting to a computer, for



instance a PC, a null modem will not usually be required.

| High Speed RS232 – D25 Female | | |
|-------------------------------|---------------|---------------------|
| | Signal | External connection |
| 1 | GND | GND |
| 2 | RX | RX |
| 3 | TX | TX |
| 4 | CTS | No connection |
| 5 | RTS | No connection |
| 6 | DTR | No connection |
| 7 | GND | GND |
| 8 | DTR | No connection |
| 9 | No connection | No connection |
| 10 | No connection | No connection |
| 11 | No connection | No connection |
| 12 | No connection | No connection |
| 13 | No connection | No connection |
| 14 | No connection | No connection |
| 15 | No connection | No connection |
| 16 | No connection | No connection |
| 17 | No connection | No connection |
| 18 | No connection | No connection |
| 19 | No connection | No connection |
| 20 | No connection | No connection |
| 21 | No connection | No connection |
| 22 | No connection | No connection |
| 23 | No connection | No connection |
| 24 | No connection | No connection |
| 25 | No connection | No connection |

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3 NETWORK CONFIGURATION

3.1 DARTnet Configuration

3.1.1 DARTnet Interconnections

NOTE: The CAT5 cables and RJ45 connectors used in DARTnet installations must be screened (shielded) with the screens securely connected to the metal shell of the connector.

The RJ45 interconnection between the V1605 controller(s) and V1600 series racks may be “daisy-chained” in any order. Termination switches (see below) should be set to “on” at each end of the network, with terminations on intermediate nodes set to “off”.

3.1.2 DART Addressing

There are two separate forms of DART addresses: **Rack Addresses**

Controller Addresses

Rack Address

V1608

Set on the rear panel on an 8 way DIL switch along with speed and termination:

| | | | | | | | |
|------|--------------|---|---|---|---|--------------|------------|
| OFF | 1 | 1 | 1 | 1 | 1 | 1 | 125 kbit/s |
| TERM | Bit 5 MSB | 4 | 3 | 2 | 1 | Bit 0 LSB | Speed |
| ON | 0 | 0 | 0 | 0 | 0 | 0 | 250 kbit/s |

The TERM switch enables termination of the CANBUS.

The SPEED switch selects the data rate on the CANBUS. All racks and nodes must be set to the same speed. In practice, 125kbits/s should never be used.

Bits 5..0 set the rack address. Normally the rack addresses on a network are set from zero upwards.

Duplicate rack addresses will give spurious results on the whole network. Duplication with any of the control node addresses in use (as shown below) must also be avoided.

V606

Set on the front edge on an 8 way DIL switch along with speed:

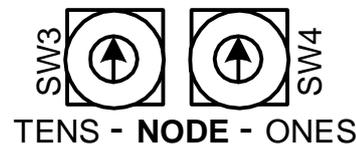
| | | | | | | | |
|----------|--------------|---|---|---|---|--------------|------------|
| | 1 | 1 | 1 | 1 | 1 | 1 | 125 kbit/s |
| Not used | Bit 5 MSB | 4 | 3 | 2 | 1 | Bit 0 LSB | Speed |
| | 0 | 0 | 0 | 0 | 0 | 0 | 250 kbit/s |

The LH switch is not used; termination is set on or off by a switch on the rear panel of the rack.

V6081

Set on two switches on the PCB.

The termination is set on or off by a switch on the rear panel of the rack.



NB The address is only read at power-up or after a reset. After changing an address press the reset button on the Rack Controller.



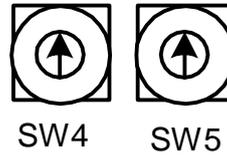
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Controller Addresses

The controller address is set differently depending on whether the CANbus interface is implemented by using a DIN341 or its replacement, the V6041.

V6041

This is distinguished by the one or two RG45 sockets on the rear panel each with built-in yellow and green LEDs. Just one slider switch for termination is visible. Two rotary switches on the PCB determine how the address is set but, because these are not accessible through the rear of the V1605, the switches will either be preset to 64 or not fitted. The address is actually set up through the V1605 menus as shown below (Setting The Controller Address 18). Addresses for controllers using the V6041 should be set simply from 62 downwards, the baud rate being 115.2kb/s regardless of address.



DIN341

These are set on an 8 way DIL switch, similar to that on some rack controllers, that is on one end of the DIN341K CANbus interface and visible through the rear panel.

| | | | | | | | |
|------|-----------|---|---|---|---|-----------|------------|
| OFF | 1 | 1 | 1 | 1 | 1 | 1 | 125 kbit/s |
| TERM | Bit 5 MSB | 4 | 3 | 2 | 1 | Bit 0 LSB | Speed |
| ON | 0 | 0 | 0 | 0 | 0 | 0 | 250 kbit/s |

The TERM and SPEED switches work in exactly the same way as on a rack (see above).

The address switches select so-called node groups. The node group determines the address filtering which occurs in the DIN341, that is, which addresses the node responds to. Messages to destination node addresses not included are not passed on by the DIN341 to the V1605. The V1605 can use any of the node groups that include node 63, the broadcast address, because the controller must be able to receive broadcast messages. The node group also determines the baud rate of the RS232 connection to the DIN341. The valid node groups for the V1605 are shown in the table below together with the addresses included in the filter for each node group.

| Node group | Switches 234567 | Controller addresses | Baud rate kbaud | Notes |
|------------|-----------------|----------------------|-----------------|-------|
| 13 | dduudu | 31 | 9.6 | 1 |
| 14 | dduud | 47 | | |
| 15 | dduuuu | 55 | | |
| 16 | duddd | 59 | | |
| 17 | dudddu | 61 | | |
| 18 | duddud | 62 | 19.2 | |
| 19 | dudduu | 31 | 38.4 | |
| 20 | dududd | 47 | 57.6 | |
| 21 | dududu | 55 | 115.2 | 2 |
| 22 | duduud | 59 | | |
| 23 | duduuu | 61 | | |
| 24 | duuddd | 62 | | |
| 34 | udddud | 60-62 | | |
| 36 | uddudd | 7,15,23,31,39,47,55 | 9.6 | 3 |
| 44 | uduudd | 56-62 | | |
| 48 | uudddd | 48-62 | | |
| 50 | uuddud | 32-62 | | |
| 63 | uuuuuu | 0-62 | | |

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NOTES:

1. There is no valid reason for using these node groups since those marked (ii) offer the same controller addresses at a higher baud rate.
2. These are the node groups to use if there are no more than 6 controllers on a single DARTnet. The controller address will be set automatically for these node groups.
3. These node groups are normally used only if more than 6 controllers are required on a single DARTnet. Start with the lowest node group, i.e. the one with the fewest controller addresses, as the more addresses are passed by the DIN341, the more processing is required by the controller which has to discard messages which are not intended for it.

The table below should be used in conjunction with the one above when allocating addresses to controllers in a network. The response of a controller to events on the DARTnet is determined partly by its controller address so that traffic is spread out instead of being concentrated into short duration peaks on an otherwise lightly utilised network. In general, high addresses should be used first, although, as a result of the node group address filtering designed into the DIN341, there are some anomalies, as shown in the table. Usually the node group selected will be the one offering the highest baud rate and the maximum address filtering so that, for instance, for address 62, node group 24 would be used. However, in systems with several controllers, it might be more convenient to set every controller to, say, node group 44, and then to set the controller addresses as required to any number between 56 and 62. Although this node group operates at a lower baud rate than node group 24 and more addresses are passed, the effect on performance is unlikely to be noticed.

| No. | Controller address |
|-----|--------------------|
| 1 | 62 |
| 2 | 61 |
| 3 | 59 |
| 4 | 55 |
| 5 | 47 |
| 6 | 31 |
| 7 | 60 |
| 8 | 58 |
| 9 | 57 |
| 10 | 56 |
| 11 | 54 |
| 12 | 53 |
| 13 | 52 |
| 14 | 51 |
| 15 | 50 |
| 16 | 49 |
| 17 | 48 |
| 18 | 39 |

| No. | Controller address |
|---------|----------------------------------|
| 19 | 46 |
| 20 | 45 |
| 21 | 44 |
| 22 | 43 |
| 23 | 42 |
| 24 | 41 |
| 25 | 40 |
| 26 | 38 |
| 27 | 37 |
| 28 | 36 |
| 29 | 35 |
| 30 | 34 |
| 31 | 33 |
| 32 | 32 |
| 33 | 23 |
| 34 | 15 |
| 35 | 7 |
| 36 - 63 | Remaining addresses 30 down to 0 |



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3.1.2.1 Setting The Controller Address

The setting of the controller address is different depending on whether the CANbus interface is a V6041 or a DIN341.

V6041

- from the Main Menu select **Control Panel Setup**
- select Ports, then Controller Addresses
- from the **Controller Addresses** menu, select the desired port and adjust the address.

The addresses for DARTnet controllers should be selected from 62 downwards. The higher the address, the sooner the controller requests module information when the rack's first heartbeat is seen. This is to spread out traffic in networks with multiple controllers.

DIN341

Unless the node group selected is 13 to 24, in which case the controller address is set automatically to the single address available, the controller address defaults to the lowest available for the node group and the user will probably want to change it. This is done as follows:

- from the Main Menu select **Control Panel Setup**
- select Ports, then Controller Addresses
- from the **Controller Addresses** menu, select the desired port and adjust the address.

V6041/DIN341

The address selected is also visible in the Port status display on the right hand display. If it is not shown the controller is not yet communicating with the V6041 or DIN341. In the case of the DIN341, this may be because the port's baud rate has not been set correctly.

The Controller Addresses menu works as follows:

- If the baud-rate of the selected port is not set up, the address is not visible and cannot be selected and changed. Note that Port 1 defaults to 115.2 kb/s but Ports 2-4 default to "not set".
- If the port has not yet established contact with the V6041 or DIN341, the address is visible and may be changed to anything from 0-62. This allows addresses to be set up before the system is operating.
- If the port has established contact with a DIN341 but the node group selected through the configuration switches is not valid for the controller (see above), the address is not visible. Furthermore, a warning message will have flashed up advising that the node group is invalid.
- If the node group read from the DIN341 is valid, the address is visible and may be selected and changed but only to a value allowed for that node group (see below). If the address originally set was not valid for that node group, a warning flashes up telling the user that the address is defaulting. The default address is the lowest valid address for that node group. If the new node group selected is a single address group (plus broadcasts) there is no warning.

Further information is available in the **DART Network Configuration** manual.

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3.2 Vistek RS485 Network Configuration

The V1645 Noise Reducer is equipped with an RS485 control port for its main control functions. The V1605 communicates with this module via Port 5, which is dedicated to RS485 operation, in addition to normal DARTnet communication. The latter provides the basic status monitoring functions and the control and status information carried by both networks is integrated on the right hand module control screen. The V1642 Processing Amplifier and the V1647 Aspect Ratio Converter have both DART and RS485 control for all functions. Use of DART control is recommended.

NOTES:

1. RS485 settings may only be accessed when logged in at Engineering Authority level.
2. The RS485 port may also be used for Router Polling – see Section 6.10

3.2.1 RS485 Network Interconnections

Port 5 can communicate with a maximum of 64 RS485-equipped modules by means of a “daisy chained” network of pin to pin wired D9 connections. Since this is a single master system, only one V1605 RS485 port can be included in any RS485 network.

3.2.2 RS485 Addressing

RS485 equipped modules have address control switches which can be set in the range 00 to 63. Modules on the same network must all be set to different addresses and these must be less than the “Top Address” set on the V1605 (See Section 3.2.4). In order to minimise the poll cycle time it is normal to set RS485 addresses in sequence starting from 00 and to set the Top Address to the highest value used.

3.2.3 RS485 Address Linking

In order that the V1605 can integrate DARTnet and RS485 control and status information for modules with RS485 control *and* DARTbus status, it is necessary to link the RS485 address to the module’s DARTnet address. This linking is achieved in Physical and Mixed modes by the following sequence of actions:

- select **Module Selection** from the main menu
- select the DARTnet port, node and module required
- scroll down and select **RS485**
- select **RS485 Address** and use the scroll knob to set the RS485 address to be the same as that set on the module address switches.
- select **Set RS485 Link** to make the link

3.2.4 RS485 Network Settings

RS485 network settings can be changed as follows:

- from the Main Menu select **Auxiliary Functions**
- select Vistek RS485 Network
- select and adjust the desired function

Note: Other than **Top Address**, it should not normally be necessary to change RS485 network settings from their default values.

Top Address - sets the highest address polled by the control panel.

Poll Rate - sets the polling interval. Default value is 200mS.



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Status Interval - set the time delay for display of status changes. Default value is 10,000 ms.

Offline Delay - sets the time delay for display of a module being offline. Default value is 5,000mS.

Polling Enabled - Selects polling enabled (indicated by \ddot{u}) or disabled. Default is polling enabled.

3.3 Vistek High Speed RS232 XML Port Configuration

The **V1602** may, optionally, have one of its DARTnet ports replaced by a high speed RS232 port that is used for connecting to a third party computer. Depending on how many DARTnet ports are fitted, Port 2 or Port 4 may be assigned to this connection and will appear on the rear panel as Port 2B or Port 4B.

The high speed serial port is used with the **Vistek XML Protocol** to connect to a system which is monitoring and controlling modules from third party companies. The interface to the **V1602** allows these modules to be monitored and controlled by the **V1602** as if they were modules in DARTnet racks.

The port is referred to as "high speed" to distinguish it from Port 6 which is used for connecting the **V1602** to a PC for transferring files and has a fixed baud rate of 38.4kbaud.

The settings for the port are accessible only when the user is logged in at **Engineering** authority level. The baud rate is set through the **Control Panel Setup | Ports | Baud Rates** menu and may be set from 9.6kbaud up to 115.2kbaud. The other settings are accessed through the **Auxiliary Functions | XML Options** menu.

- **Port** – determines which external port is used for the XML interface and may be set to **None**, **Port 2** or **Port 4**. When set to **None** the XML interface function is disabled. Otherwise, this determines which DARTnet port is used for connecting to the third party computer. See section 2, INSTALLATION, for details of the connections required. The default name for this port is changed from **DARTnet 2** or **DARTnet 4** to **XML I/F**. All accesses to this port will be via the XML protocol instead of via DART.
- **Base V Rack** and **Top V Rack** are used, firstly, to define how the racks on the XML Interface will fit into the Virtual Network on Virtual Net 1 and, secondly, to define the number of racks that exist on the XML Interface. They can be set from 0 to 99 as long as the top rack is not less than the base rack and as long as there are no more than 63 racks in total.
- **Polling Rate** determines how often the **V1602** polls the XML Interface to determine what racks and modules are present. It defaults to 1 second but may be changed to suit different system requirements.
- **Off-line count** determines after how many consecutive missed responses to poll messages the external system is deemed to be no longer available, that is, off line. It defaults to 10 but may be changed to suit different systems.
- **Status Update** determines how often the **V1602** requests a new screen when an XML module screen is currently being displayed. This enables the **V1602** to keep up to date with any control changes not initiated by itself.

As indicated above, the modules on the XML Interface are available via the **Physical Network** whenever Port 2 or Port 4 (depending on the XML Port setting) is accessed. To match the DARTnet configuration, they are arranged in up to 63 racks of up to 16 modules.

The same modules are also available via the **Virtual Network** whenever a Virtual Module on **Virtual Net 1** is accessed with a Virtual Rack address between **Base V Rack** and **Top V Rack**. This enables these module screens to be selected using Router Switching (see 6.10). These virtual modules are not loaded in

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a configuration file as with the rest of the Virtual Network, but are present simply by virtue of the connection to the third party system.

When the third party system responds to a polling message, it provides a name for the network, rack or module, depending what is being polled. These are all saved in the **V1602** as **System Names**, overwriting any such names that are already assigned. The rack and module names are also saved as **Virtual Names**. The network name is not saved as a Virtual Name because the XML Interface occupies only part of Virtual Network 1. The module name is also the name used in the heading line of the module control screen.

If the polling response does not contain a name, that network, rack or module is deemed to be unavailable, that is, off line or absent. If a name has previously been received, that name is not cleared. The module slot becomes off line and shows what was previously present in that slot.

Contact Pro-Bel for the **RS232-XML I/F SPECIFICATION**, which includes details of the XML message protocol.

3.3.1 Overview of XML Interface

- The XML Interface allows the control of third-party modules via a computer system connected to the **V1602** through an RS232 serial port. Many of the features for controlling DARTnet or RS485 modules are available for modules on the XML Interface. Up to 63 racks of 16 modules each with up to 36 controls
- Modules selectable via menu
- Modules and/or controls selectable via Recall Buttons
- Alarms available for Port, Rack or Module Off-line
- Filtering and Access Levels work with the XML modules when viewed in the Physical Network
- All XML modules are visible when viewed in the Virtual Network

There are, however, some differences.

- XML modules are accessible via both the Physical and Virtual module networks
- XML module controls are not available for incorporating in other virtual modules
- XML module controls may not be ganged
- XML module controls always inherit their access level from that set in the physical network and this cannot be overridden.

The physical connection and virtual view are configurable.

- Baud rate 9.6kbaud to 115.2kbaud adjustable via Control Panel Setup menu
- Port selectable via Auxiliary Functions | XML Options menu
- Polling Rate adjustable from 200ms to 10 seconds (default 1 second) via XML Options menu
- Off-line count adjustable from 1 missed response to 150 missed responses (default 30) via XML Options menu
- Status update interval adjustable from 5 to 10 seconds via XML Options menu.
- Base and top virtual racks are set in the XML Options menu. These determine where the XML racks fit into Virtual Network 1 and also how many racks are included in the polling sequence.
- The connections required and the pin out of the RS232 connector are shown in section 2.

The Engineering menu includes options for assisting in the commissioning of an interface to a 3rd party system.



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- And the regular update of the module control screen currently showing may be inhibited by setting the DART Polling Off item in the Engineering | Diagnostics | DART menu.
- Polling may be inhibited by setting XML Polling Off item in the Engineering | Diagnostics | XML menu.
- Once elements on the XML interface have been polled and set to on-line, the off-line detection may be inhibited by setting the XML Inhibit Offline option in the Engineering | Diagnostics | XML menu.
- The messages sent and received on the XML interface can be logged to a PC by setting the Log to PC option in the Engineering | Diagnostics | XML menu. This does, however, require the 3rd party system to respond to XON/XOFF even if software handshaking is not required in normal operation.

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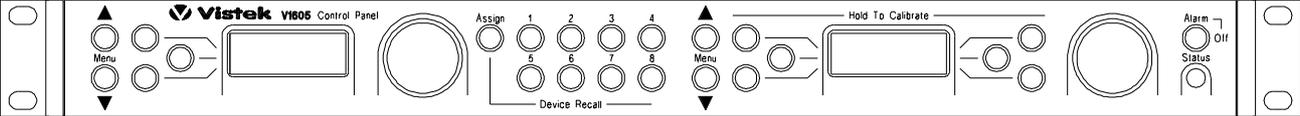


4 FRONT PANEL CONTROLS AND DISPLAYS

The control and display functions of the V1605 and V1602 can be broadly categorised as follows:

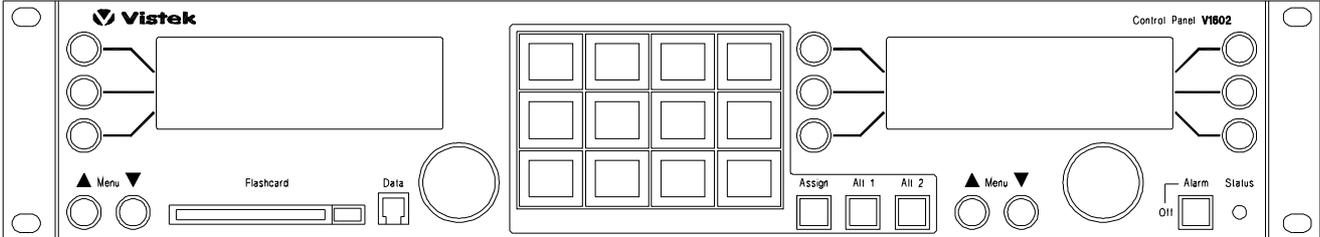
V1605

MAIN MENU SECTION **RECALL BUTTON SECTION** **MODULE CONTROL SECTION** **ALARMS SECTION**



V1602

MAIN MENU SECTION **RECALL BUTTON SECTION** **MODULE CONTROL SECTION**



ALARMS SECTION



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4.1 Main Menu Section

The main menu section comprises the left-hand display with its associated scroll knob, three select buttons and menu 5 6 buttons.

The scroll knob is used to scroll or page through the menu displayed (dependent on panel set-up - see Section 6.17.11). Once the menu item required is displayed, it may be selected by pressing the adjacent select button. Depending on the function selected, the result may be:

- the display of a further menu level in which the required item may be selected by repeating the scroll and select process. For example, selection of "Alarm Log" from the top level menu displays a further menu.
- a display which gives the opportunity for control or system setup functions to be changed. Once the required item has been selected, the setting may be changed with the scroll knob. The selected parameter is indicated by being reverse highlighted. For example, choice of "Module Selection" from the top level menu results in a display where the port, node and module may be changed by selecting the required menu line and using the scroll knob to change the setting as required.
- a list which may be viewed by scrolling but where no other actions are possible. For example, if **List Alarms** is selected from the **Alarm Log** menu, a list showing the alarm history is displayed.

Each press of the Menu 5 button steps the menu up one level. In the top-level menu the Menu 5 button scrolls the menu back to the first item. Pressing and holding the Menu 5 button returns to the first item in the top-level menu. The Menu 6 button currently has no function.

4.2 Recall Button Section

The recall button section works differently depending on which **Recall Button Mode** is selected, **Module Select** or **Control Select** or **Control Sel (Ganged)** or **Combined Select** or **Combi'd Sel (Ganged)**. The four control or combined select modes are available only on the **V1602**; the **V1605** is always in **Module Select** mode.

4.2.1 V1605

- The recall button mode is fixed at **Module Select** mode, in which the recall buttons allow up to 8 modules to be accessed by a single button press. The type of modules assigned to the buttons, Physical or Virtual, depend on the Operating Mode selected by the user. In Physical mode the buttons provide access to up to 8 modules in the Physical Network. In Virtual mode the buttons provide access to up to 8 virtual modules in the currently selected virtual rack. In Mixed mode, a mixture of physical and virtual modules may be assigned to the buttons. See Sections **6.7.4 Physical Module Selection using the Recall Buttons** and **6.8.4 Virtual Mode Selection using Device Recall Buttons** for more information.

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4.2.2 V1602

- The recall buttons on the V1602 have built-in LCD screens and a selection of backlighting colours so that the function and availability of each button is immediately obvious to the operator.
- The button number, 1-12, normally appears in the top LH corner of each button. Two extra buttons labelled **Alt 1** and **Alt 2** provide access to the full 36 buttons; pressing Alt 1 labels the buttons 13-24 and pressing Alt 2 labels them 25-36. A second press on each button changes the labels back to 1-12.
- In **Module Select** mode, the recall buttons allow up to 36 modules to be accessed by a single button press. In this mode, the name of the module assigned is displayed on each button. The type of modules assigned to the buttons, Physical or Virtual, depend on the Operating Mode selected by the user. In Physical mode the buttons provide access to up to 36 modules in the Physical Network. In Virtual mode the buttons provide access to up to 16 virtual modules in the currently selected virtual rack. In Mixed mode, a mixture of 36 physical and virtual modules may be assigned to the buttons. See Sections **6.7.4 Physical Module Selection using the Recall Buttons** and **6.8.4** for more information.
- In **Control Select** mode, each button selects a control in the currently selected module, physical or virtual, button 1 selecting the control on line 1, button 2 selecting the control on line 2, etc. up to 36, the maximum number of controls in a virtual module. In this mode, the name of the control is displayed on each button. If the current module is Physical and there are two controls on a line, the left hand one is selected, however, most module screens for the V1602 will be modified so that there is only one control on each line.
- In **Control Sel (Ganged)** mode, operation is the same as in Control Select mode except that, by pressing more than one recall button together, similar controls may be selected at the same time allowing them to be altered together (ganged).
- **Combined Select** mode allows the user to combine the benefits of **Module Select** and **Control Select** modes by intelligently switching between the modes. With no module selected, the recall buttons show the modules that have been assigned to them. When a module is selected, the buttons automatically switch to show the controls on each line. The buttons then operate exactly as in **Control Select** mode until the right-hand Menu 5 button is pressed. If the main module control screen is not already showing the top line, it scrolls until it is. If the main module screen is already showing the top line, the recall button mode switches automatically to **Module Select** mode.
- **Combi'd Sel (Ganged)** mode operates the same as **Combined Select** mode with the added feature of being able to gang similar controls as in **Control Sel (Ganged)** mode.

4.3 Module Control Section

The module control section comprises the right hand display with its associated scroll knob, six select buttons, and menu 5 6 buttons.

Some actions taken within the main menu section and device recall selections cause information to be displayed in the right hand display. This information mainly takes one of three forms:

- Display of status information where no further actions are available. For example, selection of a port from **Module Selection** in the main menu results in a port status display.
- Display of a module status and control screen, containing both status and control information. Controllable functions may be changed by using the select button adjacent to the desired function and then using the scroll knob. The function selected is reverse highlighted on the display. Note that some of the module displays contain two control functions on each line of display and for these it is



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necessary to use the left or right hand select button as appropriate. Modules with more complex control functions have two menu levels within the module control and status screen. For these, it is necessary first to select a control category in order to display the controllable functions in that category (See Section 6.7). If a status only item is selected the display gives a READ ONLY alert. Module status and control display is obtained by selecting a module menu or from a **Recall Button**.

When in Virtual mode, selection of a pre-programmed virtual module from **Virtual Module Selection** in the Main Menu or by use of a **Recall Button** results in display of the virtual module controls in the right hand display.

When in Mixed mode, both physical *and* virtual modules may be selected from **Module Selection** in the main menu or by use of the pre-programmed **Recall Buttons**.

- Display of the text editor

In response to the selection of **Edit Names** from the **Edit User Names** section of the main menu in Physical mode and **Edit Virtual Names** in Virtual mode. This facility enables both Local and System names to be given to ports, nodes, modules and gateways and Virtual names to be added or edited in Virtual mode. Local, System and Virtual names may be added and edited in Mixed mode.

For entering a file name when creating a **Flash File**.

For editing a text control in a module status and control screen, either physical or virtual.

The Menu 5 button returns any scrolling display to the top unless a second level module control and status screen is being displayed, in which case it returns the display to the first level. If the display is showing a Virtual Module Presets screen, the button operates the same as the Menu 6 button and returns to the virtual module status and control screen.

- On a **V1602**, if the display is already at the top of the first level and the recall button mode is one of the **Combined** modes, the panel switches from displaying controls on the recall buttons to displaying the assigned modules.

The Menu 6 button has a different function depending on what is being displayed on the R.H screen.

- If the screen is showing a physical module status and control screen and the user is logged in as an Engineer, it causes the display to change to a module information screen showing items such as identifier and functional revision state read from its reference data. Pressing the button again causes the display to return to the physical module status and control screen.
- If the screen is showing a virtual module status and control screen, it switches to a virtual module presets screen which allows the user to program and recall up to 4 presets that are held in the panel's Flash File system. Pressing the button again causes the display to return to the virtual module status and control screen.

Once information has appeared in the right hand display in response to a selection within the main menu structure, it remains in this display until a main menu selection or recall button selection has been made that requires different information to be displayed.

If the module text control editing screen is present, the Menu 5 or 6 button is used to Exit from the editing screen. A new screen appears giving the user the choice of Aborting the edit, Continuing the edit or Saving the edited text to the module.

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4.4 Alarms Section

The alarm button is used to disable the audible alarm sounder and remains illuminated to indicate that the audible alarm is disabled.

The Alarm Status led illuminates red to indicate an alarm and, provided no alarms are also active, orange to indicate a warning, otherwise it illuminates green.

4.5 Access to PCMCIA Card Slot and Data Connector

4.5.1 V1605

Access to the PCMCIA memory card slot is gained by lowering the front panel. It is located below the main PCB, behind the right hand LCD display. Either a complete PCMCIA card or a Compact Flash card with a PCMCIA adapter may be used.

Lowering the front panel also gives access to a 9-way D type connector. This is an alternative to the RS232 connector on the rear of the unit, which is sometimes difficult to get to in a typical installation.

4.5.2 V1602

The front panel on the V1602 is fixed and does not hinge forward like the V1605. Access to the PCMCIA memory card is via the slot in the front panel below the LH LCD display, labelled "Flashcard", Next to this is a 4-way RJ45 connector which is labelled "Data". This is an alternative to the rear panel's RS232 port, which may be difficult to get to in some installations.



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5 MENU STRUCTURE

Note: ** after a menu item indicates that the adjacent scroll knob is used to select a numeric value or one of a list of options.

√ after a menu item indicates that the adjacent scroll knob selects either an active (√) or inactive condition.

Menu items in RED are shown at Engineering login only. Menu items in GREEN are shown at Engineering and Supervisor login only.

Menu items in BLUE are always shown, but their effect is modified by the user's login level.

If "1605" included in any text in the V1605 menus, it is changed to "1602" in the V1602 menus.

| MAIN MENU (Physical Mode) | MAIN MENU (Virtual Mode) | MAIN MENU (Mixed Mode) |
|---|--|---|
| V1605 Control Panel Module Selection Recall Buttons Alarm Log User Log-in Configure Alarms Configure Access Calibrate Modules Edit User Names PC Transfer Flash File Transfer Auxiliary Functions Control Panel Setup Engineering Revision Details | V1605 Control Panel Virtual Module Selection Recall Buttons Alarm Log User Log-in Calibrate Virtual Modules Edit Virtual Names Clear Virtual Controls PC Transfer Flash File Transfer Auxiliary Functions Control Panel Setup Engineering Revision Details | V1605 Control Panel Module Selection Recall Buttons Alarm Log User Log-in Configure Alarms Configure Access Calibrate Modules Edit User Names Clear Virtual Controls PC Transfer Flash File Transfer Auxiliary Functions Control Panel Setup Engineering Revision Details |

The panel can be configured so that the means of changing the module selection is restricted to an operator. This can be done if the panel is configured as a slave for virtual module switching using router control (see 6.10) if it is set to Select by Router Only. In addition, if modules are assigned to recall buttons (see 6.7.4 or 6.8.4), the panel may be configured to Select by Button Only. In Operator login level, the main menus are reduced to the following. The Module Selection menus are read-only to provide status of which module is selected.

| MAIN MENU (Physical & Mixed Modes) | MAIN MENU (Virtual Mode) |
|--|--|
| Select by Button Only | Select by Router Only OR Select by Button Only |
| V1605 Control Panel Module Status User Log-in | V1605 Control Panel Virtual Module Status User Log-in |

If the panel is configured as a Preset Master or Preset Sub-Master, the user is restricted in a similar way to Router Only or Button Only modes in Operator level (see above). In this case, the menu is restricted in all access levels, the Control Panel Setup menu being included in Engineering level to allow easy access to changing the preset mode.

| MAIN MENU (Physical Mode) | MAIN MENU (Virtual Mode) | MAIN MENU (Mixed Mode) |
|---|---|---|
| Preset Master Module Status User Log-in Control Panel Setup Flash File Transfer Engineering | Preset Master Virtual Module Status User Log-in Control Panel Setup Flash File Transfer Engineering | Preset Master Module Status User Log-in Control Panel Setup Flash File Transfer Engineering |

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| MAIN MENU (Physical Mode) | MAIN MENU (Virtual Mode) | MAIN MENU (Mixed Mode) |
|---|---|---|
| Preset Sub-Master Module Status User Log-in Control Panel Setup Flash File Transfer Engineering | Preset Sub-Master Virtual Module Status User Log-in Control Panel Setup Flash File Transfer Engineering | Preset Sub-Master Module Status User Log-in Control Panel Setup Flash File Transfer Engineering |

| MODULE SELECTION MENU (Physical Mode) | MODULE SELECTION MENU (Virtual Mode) | MODULE SELECTION MENU (Mixed Mode) |
|--|--|--|
| Module Selection Module Select PORT ** NODE** MOD** <i>For Ports 1-4</i> RS485 ** RS485 Link Status RS485 Address** Set RS485 Link Clear RS485 Link <i>For Port 5</i> DART Link Status | Virtual Module Selection Virtual Module Select vNET** vRCK** vMOD** | Module Selection Module Select PORT ** NODE** MOD** <i>For Ports 1-4</i> RS485 ** RS485 Link Status RS485 Address** Set RS485 Link Clear RS485 Link <i>For Port 5</i> DART Link Status vNET** vRCK** vMOD** |

| RECALL BUTTONS MENU (Physical Mode) | RECALL BUTTONS MENU (Virtual Mode) |
|--|---|
| Recall Button Mode set to Module, Combined or Combi' Ganged Recall Buttons Recall Buttons Mode Module Select Select by Button Only ✓ Button Number ** 'Assigned Module' Clear Button Assignment Clear All Buttons | Recall Button Mode set to Module, Combined or Combi' Ganged Recall Buttons Recall Buttons Mode Module Select Combined Priority Module/Control Select by Button Only ✓ Virtual Rack nn:rr Button Number ** 'Assigned Module' Clear Button Assignment Clear vRCK nn:rr Buttons Clear All Buttons |



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| | |
|--|---|
| RECALL BUTTONS MENU (Mixed Mode) | RECALL BUTTON MENU (Physical, Virtual & Mixed Modes) |
| Recall Button Mode set to Module, Combined or Combi' Ganged | Recall Button Mode set to Control or Control Sel (Ganged) |
| Recall Buttons Recall Buttons Mode Module Select Select by Button Only ✓ Button Number ** 'Assigned Module' Clear Button Assignment Clear All Buttons | Recall Buttons Recall Buttons Mode Control Select |

Access to the items marked in BLUE above depends on the current log-in authority and the setting of Assignment Access in the Configure Access | Set Access Levels menu.

| | |
|---|--|
| ALARM LOG MENU (All Modes) | USER LOGIN MENU (All Modes) |
| Alarm Log Alarm Log List Alarms Alarm List 'list of alarms' ... Alarm - <address> <i>On selecting an alarm</i> Alarm description Alarm status On and off times Clear Alarm Clear Selected Alarm 'list of alarms' Clear All Alarms Log to PC ✓ | User Log-in User Log-in Current User Eng/Spvr/Opr Operator Supervisor Enter Pass code User ** Passcode _____ Engineering Enter Pass code User ** Passcode _____ <i>(Log-in options depend on current log-in authority)</i> |

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| CONFIGURE ALARMS MENU (Physical & Mixed Modes) | | Change Alarm Limits & Change Warning Limits sub-menus | |
|--|--|---|---|
| | | 1608 rack controller | 606 or 6081 rack controller |
| <p>Configure Alarms</p> <p>Configure Alarms Alarms Enabled ✓</p> <p>Rack Alarms</p> <p>Rack Alarms</p> <p>Rack Off-line **</p> <p>Rack DARTbus Failed **</p> <p>Rack Controller Reset **</p> <p>⁶⁰⁸¹ Rack Fan Failed **</p> <p>⁶⁰⁸¹ Rack NVRAM Error **</p> <p>⁶⁰⁸¹ Rack DART Receive **</p> <p>⁶⁰⁸¹ Rack DART Tr'nsmitt **</p> <p>⁶⁰⁸¹ Rack DART Overflow **</p> <p>Voltage Out of Range **</p> <p>Temperature High **</p> <p>-----Select Rack-----</p> <p>PORT **</p> <p>NODE **</p> <p>Change Alarm Limits</p> <p>Alarms- Rack n (NOTE 1)</p> <p>...</p> <p>Rack Warnings</p> <p>Rack Warnings</p> <p>⁶⁰⁸¹ Rack Fan Fast **</p> <p>Voltage Out of Range **</p> <p>Temperature High **</p> <p>---Select Rack----</p> <p>PORT **</p> <p>NODE **</p> <p>Change Warning Limits</p> <p>Warnings- Rack n NOTE 1</p> <p>...</p> <p><i>NOTE 1: Hold select button IN to set to default. See appropriate sub-menu for changing alarm or warning limits.</i></p> | <p>Module Alarms</p> <p>Module Alarms</p> <p>Module Removed **</p> <p>Module Initialise Failed **</p> <p>Module DARTbus Failure **</p> <p>⁶⁰⁸¹ Module Read Failure **</p> <p>⁶⁰⁸¹ Module NVRAM Ch'sum **</p> <p>-----Select Module-----</p> <p>PORT **</p> <p>NODE **</p> <p>MOD **</p> <p>Configure Module Alarms</p> <p>Module Alarms</p> <p><alarm type> **</p> <p><alarm type> **</p> <p><alarm type> **</p> <p>...</p> <p>Upgrade Module Warnings</p> <p>Module Warnings</p> <p>Upgrade Warnings ✓</p> <p>After ** Minutes</p> <p>Network Alarms</p> <p>Network Alarms</p> <p>Port Disconnected **</p> <p>⁶⁰⁴¹ Port DARTnet **</p> <p>⁶⁰⁴¹ Duplicate Node **</p> <p>Controller Off-Line **</p> <p>Miscellaneous Alarms</p> <p>Miscellaneous Alarms</p> <p>Remote Router I/F</p> <p>Local Router I/F</p> <p><i>6081 or 6041: Items marked ⁶⁰⁸¹ or ⁶⁰⁴¹, although always present in the menu, will have no effect unless rack controller is V6081 or DARTnet interface is V6041 respectively.</i></p> | <p>Change Alarm Limits</p> <p>Alarms- Rack n</p> <p>No. of Supplies **</p> <p>Temp High **</p> <p>+V(bus) low **</p> <p>+V(bus) high **</p> <p>+V(lowest) low **</p> <p>+V(lowest) high **</p> <p>Change Warning Limits</p> <p>Warnings- Rack n</p> <p>No. of Supplies **</p> <p>Temp High **</p> <p>+V(bus) low **</p> <p>+V(bus) high **</p> <p>+V(lowest) low **</p> <p>+V(lowest) high **</p> | <p>Change Alarm Limits</p> <p>Alarms- Rack n</p> <p>Power Supplies **</p> <p>Temp High **</p> <p>PSU1 low **</p> <p>PSU1 high **</p> <p>PSU2 low **</p> <p>PSU2 high **</p> <p>Change Warning Limits</p> <p>Warnings- Rack n</p> <p>Power Supplies **</p> <p>Temp High **</p> <p>PSU1 low **</p> <p>PSU1 high **</p> <p>PSU2 low **</p> <p>PSU2 high **</p> |



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| CONFIGURE ACCESS MENU (Physical & Mixed Modes) | | |
|---|---|--|
| Configure Access Set Filtering Set Filtering Units All/Hide Absent/Online only Local Filter On/Off Set Local Filter Set Local Filter Filter Ports Select Ports PORT1 <name> ✓ PORT2 <name> ✓ PORT3 <name> ✓ ... Filter Nodes Filter Nodes PORT ** Select Nodes Select Nodes NODE 00 <name> ✓ NODE 01 <name> ✓ NODE 02 <name> ✓ ... Filter Modules Filter Modules PORT ** NODE ** Select Modules Select Modules MOD 00 <name> ✓ MOD 01 <name> ✓ MOD 02 <name> ✓ ... | Set Access Levels Set Access Levels Set Port Access Select Ports PORT 1 <name> U/E/S/O PORT 2 <name> U/E/S/O PORT 3 <name> U/E/S/O ... Set Node Access Node Access PORT ** Select Nodes Select Nodes – Port * Node 00 <name> U/E/S/O Node 01 <name> U/E/S/O Node 02 <name> U/E/S/O ... Set Module Access Module Access PORT** NODE** Select Modules Select Modules MOD 00 <name> U/E/S/O MOD 01 <name> U/E/S/O MOD 02 <name> U/E/S/O ... Set Assignment Access E/S/O ¹ | Passcode Protection Passcode Protection SupervisorEnabled/Disabled Engineering Enabled/Disabled Change Eng'rng/Sup'vor Passcode <i>If no passcode exists for this user</i> Change Passcode User ** Change Passcode Enter New Passcode User ** Passcode____ Confirm Passcode User ** Passcode____ <i>If a passcode already exists for this user</i> Enter Passcode User ** Passcode____ Enter New Passcode User** Passcode____ Confirm Password User ** Passcode____ |

Note that the contents of the lists of ports, nodes and modules in the Set Local Filter and Set Access Levels menus will depend on the current user login level and the filtering currently selected.

¹ Assignment Access level determines who is allowed to assign modules to the Recall Buttons and who is allowed to change any aspect of their operation through the Recall Buttons menu.

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| EDIT USER NAMES MENU (Physical Mode) | EDIT USER NAMES MENU (Mixed Mode) | |
|---|---|--|
| <p>Edit User Names Edit User Names Local Names Local Names Edit Names Edit Local Names PORT** NODE** MOD** GATE** Clear Names Clear Local Names Port Names √ Node Names √ Module Names √ Gateway Names √ ----Select Units---- PORT **/All NODE **/All MOD **/All GATE **/All Execute Clear Names Clear Local Names Are you sure? (Y/N)</p> <p>System Names System Names (Menu structure as for Local names)</p> <p>Control State Aliases Control State Aliases Clear Clear State Aliases PORT **/All NODE **/All MOD **/All Execute Clear Aliases Clear State Aliases Are you sure? (Y/N) Use in None/Phys/Virt/Phys+Virt</p> | <p>Edit User Names Edit User Names Local Names Local Names Edit Names Edit Local Names PORT** NODE** MOD** GATE** Clear Names Clear Local Names Port Names √ Node Names √ Module Names √ Gateway Names √ ----Select Units---- PORT **/All NODE **/All MOD **/All GATE **/All Execute Clear Names Clear Local Names Are you sure? (Y/N)</p> <p>System Names System Names (Menu structure as for Local Names)</p> | <p>Virtual Names Virtual Names Edit Names Edit Virtual Names vNET** vRCK** vMOD** Clear Names Clear Virtual Names Virtual Net Names √ Virtual Rack Names √ Virtual Module Names √ ---- Select Units ---- vNET **/all vRCK **/all vMOD **/all Execute Clear Names Clear Virtual Names Are you sure? (Y/N) Control State Aliases Control State Aliases Clear Clear State Aliases PORT **/All NODE **/All MOD **/All Execute Clear Aliases Clear State Aliases Are you sure? (Y/N) Use in None/Phys/Virt/Phys+Virt</p> |



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| EDIT VIRTUAL NAMES MENU (Virtual Mode) | CLEAR VIRTUAL CONTROLS MENU (Virtual & Mixed Modes) |
|--|---|
| Edit Virtual Names Virtual Names Edit Names Edit Virtual Names vNET** vRCK** vMOD** Clear Names Clear Virtual Names Virtual Net Names ✓ Virtual Rack Names ✓ Virtual Module Names ✓ ----- Select Units ----- vNET **/all vRCK **/all vMOD **/all Execute Clear Names Clear Virtual Names Are you sure? (Y/N) | Clear Virtual Controls Clear Virtual Controls vNET **/All vRCK **/All vMOD **/All Execute Clear Virtual Controls? Clear Virtual Controls Are you sure? (Y/N) |

| CALIBRATE MODULES MENU (Physical and Mixed Modes) | CALIBRATE VIRTUAL MODULES MENU (Virtual Mode) |
|--|---|
| Calibrate Modules Calibrate Modules PORT ** NODE ** MOD **/All Execute Calibrate Calibrating Modules Are you sure? (Y/N) Execute Default Defaulting Modules Are you sure? (Y/N) | Calibrate Virtual Modules Calibrate Virtual Modules vNET ** vRCK ** vMOD **/All Execute Calibrate Calibrating Modules Are you sure? (Y/N) Execute Default Defaulting Modules Are you sure? (Y/N) |

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| AUXILIARY FUNCTIONS MENU (All Modes) | | | | | | | | | | | | | | |
|---|--|-------------------|-------|-------------------|---------|---|-----|-------|---|-----|-----|--|--|---|
| <p>Vistek RS485 Network Vistek RS485 Network Top Address** Poll Rate** Status Interval** Offline Delay** Polling Enabled ✓ Logging Enabled ✓</p> | <p>Router Options Router Options Slave V1605 Options Slave V1605 Options Change Panel Select Nos Change Panel Select Nos Panel Select No. 0 ** ... Panel Select No. 15 ** Clear All Panel Select Nos Select by Router Only ✓ Master V1605 Options Master V1605 Options Router Pollin OFF/Quartz/BTS/Philips/GV7000 Polling Rate *** Port 5-RS485 ** Destination Mapping <table style="border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">Destn</th> <th style="text-align: left;">Level</th> <th style="text-align: left;">> Panel Select No</th> </tr> </thead> <tbody> <tr> <td>400 All</td> <td>></td> <td>241</td> </tr> <tr> <td>401 1</td> <td>></td> <td>023</td> </tr> <tr> <td colspan="3">...</td> </tr> </tbody> </table> Add destination Change Mapping (On making a selection) Destination *** (Remove mapping by changing to a dash) Level ** Panel Select No *** Enter Source Mapping Source Virtual Module 200 1:00:03 201 1:00:04 ... Add source Change Mapping (On making a selection) Source *** (Remove mapping by changing to a dash) Virtual Rack ** Virtual Module ** Enter Router Status Protocol Destn Lvl < Srce Pro-Bel 001 - 241 Pro-Bel 002 - 876</p> | Destn | Level | > Panel Select No | 400 All | > | 241 | 401 1 | > | 023 | ... | | | <p>XML Options XML Options Port None/Port 2/Port 4 Base V Rack ** Top V Rack ** Polling Rat **** Off-line count ** Status Update **** GLITS Reader GLITS Reader __Audio L__ __Audio R__ +12dbU -11dbU SDI > Audio +123ms</p> |
| Destn | Level | > Panel Select No | | | | | | | | | | | | |
| 400 All | > | 241 | | | | | | | | | | | | |
| 401 1 | > | 023 | | | | | | | | | | | | |
| ... | | | | | | | | | | | | | | |



VISTEK V1605 1RU & V1602 2RU operational control panel

| CONTROL PANEL SETUP MENU (All Modes) | | PC TRANSFER MENU (All Modes) |
|---|--|--|
| <p>Control Panel Setup Control Panel Setup Mode ** Preset Operation Preset Operation Preset Mode Normal/Slave/ Master/Sub-Master Master on PORT * Display Names ** LCD Settings LCD Settings Contrast Left ** (1605) Display Contrast ** (1602) Contrast Right ** (1605) Button Contrast ** (1602) Display Mode ** (1602 only) Alarm Volume** Ports Ports Setup Baud Rates Port Baud Rates Port1-DART** Port2-DART** Port3-DART** Port4-DART* Port5-RS485 38.4kbaud Port6-PC 38.4 kbaud Controller Addresses Controller Addresses Port1 Node Address** Port2 Node Address** Port3 Node Address** Port4 Node Address** Errors & Alerts** Errors & Alerts Alarm Alerts ✓ Status Alerts ✓ Errors ✓</p> | <p>Delays, Timeouts, etc. Delays, Timeouts, etc. Idle Timeout ** Enable Idle Timeout ✓ Alert Delay ** Class 7 Update B'cast/Request DART Update ** DART Node Check ** Disable Router Delay ✓ Vistek RS485 Network RS485 Network Delays Poll Rate** Status Interval** Offline Delay** Control Options Control Options Video Gains ** Numeric Update ** Display Control **</p> | <p>PC Transfer PC Transfer Receive From PC Receive Items Panel Configuration ✓ Alarm Configuration ✓ Network Configuration ✓ Router Configuration ✓ Local Names ✓ System Names ✓ Virtual Names ✓ Virtual Modules ✓ Start Receiving Send to PC Send Items Panel Configuration ✓ Alarm Configuration ✓ Network Configuration ✓ Router Configuration ✓ Alarm Log ✓ Local Names ✓ System Names ✓ Virtual Names ✓ Virtual Modules ✓ Product List ✓ Product Database ✓ Network Status ✓ Start Sending Send Product Details to PC Select Module Types V1617 FRS1 V1608 FRS1 V1611 FRS1 Start Sending Are you sure? (Y/N) Upgrade V1605 Program Start Programming Are you sure? (Y/N) Count send records ✓</p> |

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| FLASH FILE TRANSFER MENU (Physical and Mixed Modes) | | |
|---|--|--|
| <p>Flash File Transfer</p> <p>Flash File Transfer</p> <p>Flash Directory</p> <p>Flash Directory</p> <p>filename T L B A</p> <p>...</p> <p>Location: On-board/PCMCIA</p> <p>Configuration Files</p> <p>Configuration Files</p> <p>Write Flash File</p> <p>Flash Write Items</p> <p>Panel Configuration ✓</p> <p>Alarm Configuration ✓</p> <p>Network Configuration ✓</p> <p>Router Configuration ✓</p> <p>Local Names ✓</p> <p>System Names ✓</p> <p>Virtual Names ✓</p> <p>Virtual Modules ✓</p> <p>New Flash File</p> <p>New Flash File</p> <p>File: <i>(Opens name edit window)</i></p> <p>Access Level: Eng/Sup/Op</p> <p>Start Writing</p> <p>Select Flash File</p> <p>Select Flash File</p> <p>filename T L B A</p> <p>.....</p> <p>Selected Flash File</p> <p>File Name <i>(Opens name edit window)</i></p> <p>Access Level Eng/Sup/Op</p> <p>Start Writing</p> | <p>Read Flash File</p> <p>Flash Read Items</p> <p>Panel Configuration ✓</p> <p>Alarm Configuration ✓</p> <p>Network Configuration ✓</p> <p>Router Configuration ✓</p> <p>Local Names ✓</p> <p>System Names ✓</p> <p>Virtual Names ✓</p> <p>Virtual Modules ✓</p> <p>Select File</p> <p>Read Selected File</p> <p>filename T L B A</p> <p>.....</p> <p>Module Files</p> <p>Module Files</p> <p>Module Presets</p> <p>Module Presets</p> <p>PORT**</p> <p>NODE**</p> <p>MOD**</p> <p>Load Module Presets</p> <p>Load Module Preset</p> <p>preset name</p> <p>.....</p> <p>Store Module Presets</p> <p>Store Module Presets</p> <p>Name: <i>(Opens name edit window)</i></p> <p>Store to File</p> <p>Delete Module Presets</p> <p>Delete Module Preset</p> <p>preset name</p> <p>.....</p> <p>Compress Presets File</p> | <p>Load Rack Data</p> <p>Load Rack Data</p> <p>PORT**</p> <p>NODE**</p> <p>MOD**</p> <p>Select Flash File</p> <p>Read Selected File</p> <p>filename T L B A</p> <p>.....</p> <p>Load Rack Data Check</p> <p>Rack/File Differences**</p> <p>Check Differences</p> <p># <u> </u> <u> </u> <u> </u> <u> </u> <u> </u> <u> </u></p> <p>1 <ident>,<frs> <stat> <ident>,<frs></p> <p>2 <ident>,<frs> <stat> <ident>,<frs></p> <p>...</p> <p>15<ident>,<frs> <stat> <ident>,<frs></p> <p>Start Loading</p> <p>Abort Loading</p> <p>Store Rack Data</p> <p>Store Rack Data</p> <p>PORT**</p> <p>NODE**</p> <p>MOD**</p> <p>New Flash File</p> <p>New Flash File</p> <p>File: <i>(Opens name edit window)</i></p> <p>Access Level Eng/Sup/Op</p> <p>Start Writing</p> <p>Select Flash File</p> <p>Select Flash File</p> <p>filename T L B A</p> <p>.....</p> <p>Selected Flash File</p> <p>File: <i>(Opens name edit window)</i></p> <p>Access Level Eng/Sup/Op</p> <p>Start Writing</p> <p>Continued.....</p> |

Key to File Identifiers: T = Type (Config, Presets, Module, Rack, Network); L = Location (On-board, PCMCIA);
B = Blocks (0 - ??); **A = Access** (Engineering, Supervisor, Operator). Files listed in BLUE depend on current user login level and access level of files.



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| FLASH FILE TRANSFER MENU (Continued) (Physical and Mixed Modes) | |
|---|--|
| <p>Virtual Module Presets MIXED MODE ONLY – Not if Preset Master/Sub-Master</p> <p>Virtual Module Presets vNET** vRCK** vMOD** Delete Virtual Preset Compress Presets File</p> <p>Flash Free Blocks Flash Free Blocks Free On-board Blocks ** Free PCMCIA Blocks **</p> <p>Erase Flash File Erase Selected File filename T L B A </p> <p>Copy File Copy File PC to flash Copy File from PC New Flash File New Flash File File: (Opens name edit window) Access Level: Eng/Sup/Op Start Writing Select Flash File Select Flash File filename T L B A Selected Flash File File: (Opens name edit window) Access Level Eng/Sup/Op Start Writing Flash to PC Copy File to PC filename T L B A </p> | <p>Flash to Flash Copy Flash to Flash Copy On-board to PCMCIA Select On-board File filename T L B A Select PCMCIA File (after selecting on-board file) New File New Flash File File: (Opens name edit window) Access Level: Eng/Sup/Op Start Writing Select File Select Flash File filename T L B A Selected Flash File File: (Opens name edit window) Access Level Eng/Sup/Op Start Writing</p> <p>Copy PCMCIA to On-board Select PCMCIA File filename T L B A Select On-board File (after selecting PCMCIA file) New File New Flash File File: (Opens name edit window) Access Level Eng/Sup/Op Start Writing Select File Select Flash File filename T L B A Selected Flash File File: (Opens name edit window) Access Level Eng/Sup/Op Start Writing</p> |

Key to File Identifiers: T = Type (Config, Presets, Module, Rack, Network); L = Location (On-board, PCMCIA); B = Blocks (0 - ??); A = Access (Engineering, Supervisor, Operator). Files listed in BLUE depend on current user login level and access level of files.

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| FLASH FILE TRANSFER MENU (Virtual Mode) | | |
|---|--|---|
| <p>Flash File Transfer</p> <p>Flash File Transfer</p> <p>Flash Directory</p> <p>Flash Directory</p> <p>filename T L B A</p> <p>filename T L B A</p> <p>.....</p> <p>Location On-board-PCMCIA</p> <p>Configuration Files</p> <p>Configuration Files</p> <p>Write Flash File</p> <p>Flash Write Items</p> <p>Panel Configuration ✓</p> <p>Alarm Configuration ✓</p> <p>Network Configuration ✓</p> <p>Router Configuration ✓</p> <p>Local Names ✓</p> <p>System Names ✓</p> <p>Virtual Names ✓</p> <p>Virtual Modules ✓</p> <p>New Flash File</p> <p>New Flash File</p> <p>File: <i>(Opens name edit window)</i></p> <p>Access Level: Eng/Sup/Op</p> <p>Start Writing</p> <p>Select Flash File</p> <p>Select Flash File</p> <p>filename T L B A</p> <p>.....</p> <p>Selected Flash File</p> <p>File Name <i>(Opens name edit window)</i></p> <p>Access Level Eng/Sup/Op</p> <p>Start Writing</p> <p>Read Flash File</p> <p>Flash Read Items</p> <p>Panel Configuration ✓</p> <p>Alarm Configuration ✓</p> <p>Network Configuration ✓</p> <p>Router Configuration ✓</p> <p>Local Names ✓</p> <p>System Names ✓</p> <p>Virtual Names ✓</p> <p>Virtual Modules ✓</p> | <p>Select File</p> <p>Read Selected File</p> <p>filename T L B A</p> <p>.....</p> <p>Virtual Module Presets – Not if Preset Master or Sub-Master</p> <p>Virtual Module Presets</p> <p>vNET**</p> <p>vRCK**</p> <p>vMOD**</p> <p>Delete Virtual Preset</p> <p>Compress Presets File</p> <p>Flash Free Blocks</p> <p>Flash Free Blocks</p> <p>Free On-board Blocks **</p> <p>Free PCMCIA Blocks **</p> <p>Erase Flash File</p> <p>Erase Selected File</p> <p>filename T L B A</p> <p>.....</p> <p>Copy File</p> <p>Copy File</p> <p>PC to flash</p> <p>Copy File from PC</p> <p>New Flash File</p> <p>New Flash File</p> <p>File: <i>(Opens name edit window)</i></p> <p>Access Level: Eng/Sup/Op</p> <p>Start Writing</p> <p>Select Flash File</p> <p>Select Flash File</p> <p>filename T L B A</p> <p>.....</p> <p>Selected Flash File</p> <p>File: <i>(Opens name edit window)</i></p> <p>Access Level Eng/Sup/Op</p> <p>Start Writing</p> <p>Flash to PC</p> <p>Copy File to PC</p> <p>filename T L B A</p> <p>.....</p> | <p>Flash to Flash</p> <p>Copy Flash to Flash</p> <p>Copy On-board to PCMCIA</p> <p>Select On-board File</p> <p>filename T L B A</p> <p>filename T L B A</p> <p>.....</p> <p>Select PCMCIA File (after selecting on-board file)</p> <p>New File</p> <p>New Flash File</p> <p>File: <i>(Opens name edit window)</i></p> <p>Access Level: Eng/Sup/Op</p> <p>Start Writing</p> <p>Select File</p> <p>Select Flash File</p> <p>filename T L B A</p> <p>.....</p> <p>Selected Flash File</p> <p>File: <i>(Opens name edit window)</i></p> <p>Access Level Eng/Sup/Op</p> <p>Start Writing</p> <p>Copy PCMCIA to On-board</p> <p>Select PCMCIA File</p> <p>filename T L B A</p> <p>filename T L B A</p> <p>.....</p> <p>Select On-board File (after selecting PCMCIA file)</p> <p>New File</p> <p>New Flash File</p> <p>File: <i>(Opens name edit window)</i></p> <p>Access Level Eng/Sup/Op</p> <p>Start Writing</p> <p>Select File</p> <p>Select Flash File</p> <p>filename T L B A</p> <p>.....</p> <p>Selected Flash File</p> <p>File: <i>(Opens name edit window)</i></p> <p>Access Level Eng/Sup/Op</p> <p>Start Writing</p> |

Key to File Identifiers: T = Type (Config, Presets, Module, Rack, Network); L = Location (On-board, PCMCIA);
 B = Blocks (0 - ??); A = Access (Engineering, Supervisor, Operator). Files listed depend on current user login level and access level of files.



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| ENGINEERING MENU (All Modes) | | REVISION DETAILS MENU (All Modes) |
|--|--|--|
| Engineering Engineering Reset Reset Rack Controller Reset Rack Controller PORT** NODE** MOD** Auto reset if off-line ✓ Execute Reset Battery Backed Memory Reset B/B Memory Setup Parameters ✓ User and Virtual Names ✓ Virtual Module Controls ✓ Execute Reset B/B Memory Reset B/B Memory Are you sure? (Y/N) V1605 Controller V1605 Controller Execute Reset Erase Flash Files Erase Flash Files On-board Flash Files Erase Flash Files Are you sure? (Y/N) PCMCIA Flash Files Erase Flash Files Are you sure? (Y/N) | Clear Status Clear Status Port Status ✓ Node Status ✓ Module Status ✓ Gateway Status ✓ -----Select Units----- PORT**/all NODE**/all MOD**/all Execute Clear Status Clear Status Are you sure? (Y/N) Module Reference Data Module Ref Data PORT** NODE** MOD** Module NVR(v2.3) Module NVR PORT** NODE** MOD** Module NVR(v3.0) Module NVR PORT** NODE** MOD** Diagnostics | Revision Details Revision Details Copyright Version Date Time Release Bootloader Bootloader Version Date Time |

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6 OPERATION

6.1 Selection of Operating Mode

Three modes of operation are possible:

Physical Mode: in which the representation of networks, nodes and modules follows their physical location within the control system. In *Physical Mode* there are 4 DARTnet Ports (1 – 4) and 1 RS485 Port (5). The DARTnet Ports may each have up to 62 Racks connected, and each Rack may contain up to 14 Modules (plus a rack controller). The RS485 may have up to 64 Modules connected, numbered 0 – 63.

Virtual Mode: in which module controls may be grouped according to user requirements. This enables module controls to be organised according to function. In *Virtual Mode* the user may define up to 1000 *Virtual Modules*. For ease of navigation, these may be divided between up to 10 *Virtual Nets* (1-10) each containing up to 100 *Virtual Racks* (0-99) each containing up to 16 *Virtual Modules* (0-15). Although the theoretical maximum number of virtual modules is obviously 16000, the limit of 1000 is imposed due to the physical resources of the controller.

Each *Virtual Module* may have up to 36 controls assigned from any module in the physical network.

Mixed Mode: In *Mixed Mode* the user may view the system through both the Physical and the Virtual Networks.

To change the **Operating Mode** the user must be logged in at Engineering authority level (**User Login** menu). The **Mode** option can then be selected from the **Control Panel Setup** menu and adjusted using the LH encoder knob as required.

One of the following symbols in the top left-hand corner of the left-hand display identifies the current operating mode and the current login authority level.

| | | | | |
|-------------|----|----|----|----------|
| Engineering | | | | |
| Supervisor | | | | |
| Operator | | | | |
| | PE | PS | PO | Physical |
| | VE | VS | VO | Virtual |
| | ME | MS | MO | Mixed |

When the mode setting is changed, the menu display returns to the Main Menu. Changing the selected mode changes the contents of the Main Menu and a number of sub-menus. See Section 5 – Menu Structure – for details.



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6.2 Selecting the Recall Button Mode

If the panel is a **V1605** the user is restricted to **Module Select** for the recall button mode. That is, the Device Recall buttons are always used to select the modules assigned to them by the user.

If the panel is a **V1602**, however, the user has a choice of recall button modes which allow the buttons to be used for selecting modules, as on a V1605, or for selecting the controls from within the currently selected module, or a combination of the two.

Which users are permitted to change the Recall Button Mode depends on the setting of the **Assignment Access** option in the **Configure Access | Set Access Levels** menu.

It can be set to **Module Select**, **Control Select**, **Control Select (Ganged)**, **Combined Select** or **Combined Select (Ganged)**.

In addition to determining whether the recall buttons are used to select Modules or Controls, the Ganged modes allow compatible controls to be selected simultaneously and controlled together and the Combined modes include automatic switching between Module and Control select modes.

6.2.1 Switching between Module and Control in Combined Modes

In the **Combined** modes, selecting a module switches to Control selection on the recall buttons. Thereafter, use of the right hand Menu 5 button switches back to Module selection once the main module control display has scrolled up to the top line.

In **Physical** operating mode, selecting a Port or Rack in the Module Select menu also switches back to Module selection.

Operation in **Virtual** and **Mixed** operating modes depends on the **Combined Priority** control in the **Recall Buttons** menu.

When Combined Priority is set to **Module** (default), selecting Virtual Rack or Virtual Net in the Virtual Module Select menu switches the button operation back to Module select. When Combined Priority is set to **Control**, the button operation stays in Control select (unless the RH Menu 5 button is pressed).

The main use of the **Combined Priority** control is when operating in **Virtual** operating mode and switching Virtual Modules using a **Router**.

1. With it set to **Module**, if the Virtual Rack for a destination changes, the button operation switches back to Module select to allow the operator to select a Virtual Module from those assigned to the Recall buttons. If the Virtual Rack doesn't change, the button operation stays in Control select.
2. Having it set to **Control** is useful when the user has a large number of identical Virtual Racks and often wishes to change the same control in the same module slot in several Virtual Racks. When the Virtual Rack address is changed, the buttons continue to show the controls in the Virtual Module at the same slot in the new rack.

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6.3 Selecting the Preset Mode

The **Preset Mode** currently applies only to **Virtual Module Presets**.

In normal operation, when an operator selects the Presets screen for a Virtual Module and then goes through the process of programming or recalling one of the 4 presets, that preset is stored in or fetched from the flash memory in that same control panel.

In a DART network with several control panels, it may be preferable for all of the presets to be stored in and fetched from the same place so that a particular preset is the same regardless of which panel it is selected from.

The **Preset Mode** is set by selecting **Preset Operation** in the **Control Panel Setup** menu. The options for Preset Mode are as follows:

1. **Normal** – presets stored and recalled locally (default setting).
2. **Slave** – presets stored and recalled remotely via DARTnet messages.
3. **Master** – panel configured as Preset Master. This panel is dedicated to storing and recalling virtual module presets in response to DARTnet messages received.
4. **Sub-Master** – panel configured as Preset Sub-Master. This panel is dedicated to storing but not recalling virtual module presets in response to DARTnet messages received. It therefore retains a copy of all presets stored and acts as a backup should the Preset Master fail. Note that the Preset Sub-Master must be switched to Preset Master if the original master has failed; it is not done automatically.

If a panel is configured as a **Preset Master** or **Preset Sub-Master**, it cannot be used in its normal function of selecting and adjusting module controls.

If a panel is configured as a **Preset Slave**, it needs to know which DARTnet port to send the preset messages on. The **Master on** option defaults to **PORT 1** but can be set to any of the other 3 DART ports if the Preset Master is on a different DARTnet. Note that the Preset Sub-Master must be on the same DARTnet as the Preset Master.

See 6.12.3 Virtual Module Presets for more information.



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6.4 User Login

The user can log in at Operator, Supervisor or Engineering authority levels. Operator authority level never requires a passcode, but Supervisor and Engineering authority levels may optionally require passcode. Once logged in at Supervisor authority level, the passcode protection for entering Supervisor authority level may be enabled or disabled and the Supervisor passcode itself may be changed. Once logged in at Engineering authority level, the passcode protection for entering Engineering authority level may be enabled or disabled and the Engineering passcode itself may be changed. If passcode protection for entering Engineering authority level is disabled, that for entering Supervisor authority level is also disabled. In addition to restricting access to certain modules, authority level restricts access to certain menu options and can also be used to restrict access to specific controls in virtual modules.

6.4.1 User Login Menu

User login is performed by selecting **User Login** from the Main Menu.

| | | |
|--|---|--|
| <p>User Log-in Current User Operator Supervisor Enter Pass code User ** Passcode ----- Engineering Enter Pass code User ** Passcode -----</p> | <p>User Log-in Current User Supervisor Operator Engineering Enter Pass code User ** Passcode -----</p> | <p>User Log-in Current User Engineering Operator Supervisor</p> |
|--|---|--|

If **Operator** is selected, the menu returns to the operator level Home Menu Page.

If an **Operator** selects **Supervisor** and Supervisor pass codes are enabled (see 6.4.2 - Changing and Enabling Passcodes), the user must now select their **User** number (**1-31**) using the LH encoder knob and enter a 4 digit pass code using the Recall Buttons. Only the first 8 Recall Buttons are used on a V1602 for entering pass code. As each digit is entered, an asterisk (*) appears in the display and when four have been received, the pass code is checked. If the pass code matches the one for the selected user number, the menu returns to the supervisor authority Home Menu Page. If not, the asterisks are replaced with dashes and the user must re-enter the pass code, if necessary changing the user number.

If an **Operator** or **Supervisor** selects **Engineering**, the same sequence takes place, **User** number **0** also being available. However, every pass code is tagged with the login authority in which it was entered so only one entered by an **Engineer** will allow logging in as an **Engineer**. An **Engineering** pass code will, however, allow an **Operator** to log in as a **Supervisor**.

If the user is already logged in as an **Engineer**, they may change to **Supervisor** without a pass code. However, to change back to **Engineering**, a valid pass code must be used if pass codes are enabled.

If pass codes are enabled, it is not possible to log in using a user number for which no pass code has been entered. Note that **User** number **0** is reserved for an **Engineering** pass code.

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6.4.2 Changing and Enabling Passcodes

This is done by selecting **Passcode Protection** in the **Configure Access** menu. The **Change** option is not available if logged in as an **Operator**.

Configure Access

Set Filtering

Set Access Levels

Passcode Protection

Passcode Protection

Supervisor Enabled/Disabled

Engineering Enabled/Disabled

Change Eng'nrg/Sup'vor Passcode

Enter Passcode OR

User **

Passcode -----

Enter New Passcode

User **

Passcode -----

Confirm Passcode

User **

Passcode -----

Change Passcode

User **

Change passcode

Enter New Passcode

User **

Passcode -----

Confirm Passcode

User **

Passcode -----

Supervisor pass codes may not be enabled unless **Engineering** pass codes are also enabled.

If no **Engineering** pass codes are defined, pass codes may not be enabled. However, **Supervisor** pass codes may be enabled if there is at least one **Engineering** pass code defined. An **Engineering** pass code may be used to gain access to **Supervisor** authority level but not vice-versa.

User 0 is reserved for **Engineering** authority. Otherwise, any user number may be defined as **Supervisor** or **Engineering** depending on the authority level in which the new pass code was entered. Reserving user 0 for **Engineering** ensures that a situation cannot arise whereby all pass codes are redefined by a **Supervisor** thereby preventing entry to **Engineering** authority level.

Engineering pass codes cannot be enabled or disabled unless logged in as an **Engineer**. If logged in as an **Operator** neither pass code may be disabled or enabled, although their status (enabled or disabled) is available.

The **Change** option will read **Change Eng'nrg Passcode** or **Change Sup'vsr Passcode** depending on the current login authority level. The option is absent if logged in as **Operator**. When the **Change** option is selected, the user will be prompted to enter their current pass code unless there is no pass code defined for that user, in which case the user is invited to select the **Change passcode** option. If there is a pass code defined for the user, it must be entered regardless of whether pass codes are enabled or disabled.

Having either entered the current pass code or selected **Change passcode**, the user is then invited to **Enter New Passcode** and then to **Confirm Passcode**. The 4 digit pass code must be entered using the Recall Buttons. As each digit is entered, an asterisk (*) appears in the display. When confirming the pass code, when four digits have been received, the pass code is checked. If the pass code matches the one for the selected user number, the menu returns to the supervisor authority Home Menu Page. If not, the asterisks are replaced with dashes and the user must re-enter the pass code.

Note that pass codes cannot be cleared other than by resetting the battery-backed **Setup Parameters** through the **Engineering | Reset** menu or by holding in LH Menu 5 and Menu 6 when powering up the control panel. To do this, first of all transfer the **Panel Configuration** to a PC file via the **PC Transfer** Menu, using Conf1605.exe on the PC, then reset the memory, then reload the previously saved file. However, the file includes the pass codes (in encrypted form) so that they can be stored along with all of the



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other set-up parameters, so these items must be deleted from the file before it is subsequently transferred back to the control panel.

6.5 Access Levels

Access levels define which units (ports, racks or modules) are visible to the user in the three login authority levels. If logged in as an **Engineer**, all units are visible to the user. If logged on as a **Supervisor**, only those units with access levels set to **Supervisor** or **Operator** are visible. If logged on as an **Operator**, only those units with access level set to **Operator** are visible.

This release does not include the access levels of individual controls within a module when selected via the Physical network. These currently follow the access level of the module. However, controls in Virtual modules may have their access level set to override that of their parent physical module.

There is, in addition to the three access levels **E**, **S** and **O** corresponding to the three login authorities, a fourth access level, **U**, or **Unused**, which is the default for all units which have never reported status to the controller. That is, the status is neither 'online' (present and active) nor 'offline' (previously but not currently present and active). Such units may be set to **E**, **S** or **O** access level if they are expected to become used in the future, however, since **Unused** units are visible only at **Engineering** login authority level, this is only possible if logged in as an **Engineer**. Similarly, units which are no longer 'online' may be set to 'unused'.

A unit set to **Unused** that subsequently becomes "online" will automatically change to **Operator** access level.

6.5.1 Setting Access Levels

Access levels of units are set by selecting the **Configure Access** main menu option and then **Set Access Levels**.

Configure Access is not available in **Virtual** operating mode, this is because controls in Virtual Modules inherit their access level from the physical module from which they are taken. Selecting a virtual control with an access level higher than the current login authority level will cause an alert message

NOT AVAILABLE
TO OPERATOR

or

NOT AVAILABLE
TO SUPERVISOR

to appear, unless the override facility has been used in the definition of the virtual control – See Section 9.8 Overriding Module Control Access Levels.

Configure Access

Set Filtering

Set Access Levels

Set Access Levels

Set Port Access

Select Ports

PORT 1 <name> U/E/S/O

PORT 2 <name> U/E/S/O

PORT 3 <name> U/E/S/O

...

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```
Set Node Access
  Node Access
  PORT **
  Select Nodes
    Select Nodes – Port *
    NODE 00 <name>      U/E/S/O
    NODE 01 <name>      U/E/S/O
    NODE 02 <name>      U/E/S/O
    ...
  Set Module Access
  Module Access
  PORT **
  NODE **
  Select Modules
    Select Modules - *:**
    MOD 00 <name> U/E/S/O
    MOD 01 <name> U/E/S/O
    MOD 02 <name> U/E/S/O
    ...
Set Assignment Access E/S/O
```

How many ports are listed in the **Select Ports** menu, how many nodes in the **Select Nodes** menu and how many modules in the **Select Modules** menu will depend on the current login authority. Units of higher access level than the current login authority are omitted from the list and, if the **Local Filter** is **On**, so are units excluded by the Local Filter.

The last item in the menu, **Set Assignment Access**, determines whether users with **Operator** or **Supervisor** login authority level are able to assign recall buttons to modules (see Sections 6.7.4 and 6.8.4). It also determines who is allowed to change the **Recall Button Mode** on a V1602 or to change the **Recall by Button Only** option in the **Recall Buttons** menu. Its default setting is **Supervisor**.

All menus with items of unit (port, rack or module) selection are subject to access level filtering.



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6.6 View Filtering

In addition to limiting which modules are visible through their Access Level, two extra filtering options are available to the user to restrict visibility to what is of interest at the time.

There are three levels of view filtering, the first simply based on the **Network Status** of the unit, the second based on the **Access Level** of the unit (as described above) and the third based on a **Local Filter**.

Filter options are accessed by selecting **Configure Access** from the main menu followed by **Set Filtering**. Filtering is not necessary for Virtual units because only defined Virtual Modules and Virtual Nets and Racks containing at least one defined Virtual Module or Virtual Name are ever visible anyway.

6.6.1 Units Filtering

The first option in **Set Filtering** is used to select which modules are visible on the basis of the unit status.

Configure Access

Set Filtering

Set Filtering

Units All/Hide unused/Online only

...

All is available only if logged on as **Engineering** so this is the only login authority level in which units with **Unused** access level are visible.

The other two options simply determine whether Offline units are visible or not, that is, those units which used to be at a particular network address but are no longer there, such as modules which have been removed from a rack. **Online only** hides these units; **Hide unused** makes them visible unless the user has set their access level to Unused.

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6.6.2 Local Filter

The local filter is used to further filter the network units visible to a user once the access level and units filtering has been included. Selecting **Local Filter** allows the filter to be switched on or off. Selecting **Set Local Filter** opens a menu with options for filtering Ports, Nodes and Modules.

Configure Access

Set Filtering

Set Filtering

Unit Status All/Hide absent /Online only

Local Filter On/Off

Set Local Filter

Set Local Filter

Filter Ports

Select Ports

PORT 1 <name> ✓

PORT 2 <name> ✓

PORT 3 <name> ✓

...

Filter Nodes

Filter Nodes

PORT **

Select Nodes

Select Nodes

NODE 00 <name> ✓

NODE 01 <name> ✓

NODE 02 <name> ✓

...

Filter Modules

Filter Modules

PORT **

NODE **

Select Modules

Select Modules

MOD 00 <name> ✓

MOD 01 <name> ✓

MOD 02 <name> ✓

...

To filter on the basis of network Ports, select **Filter Ports**, which brings up a list, under the heading **Select Ports**, of the ports currently visible with the filter off. Those marked with a tick (✓) will be visible when the local filter is switched on, those without will be hidden. Selecting a port from the list allows this to be changed.

To filter on the basis of Nodes or Racks, select **Filter Nodes**, which brings up the Filter Nodes menu. This menu allows the user to select a Port and then, by selecting **Select Nodes** to bring up a list of the nodes currently visible with the filter off. Those marked with a tick (✓) will be visible when the local filter is switched on, those without will be hidden. Selecting a node from the list allows this to be changed.

To filter on the basis of Modules, select **Filter Modules**, which brings up the Filter Modules menu. This menu allows the user to select a Port and Node and then, by selecting **Select Modules** to bring up a list of the nodes currently visible with the filter off. Those marked with a tick (✓) will be visible when the local filter is switched on, those without will be hidden. Selecting a module from the list allows this to be changed.



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6.7 Physical Module Selection & Control

NOTE: The extent to which ports, nodes and modules are displayed will depend on the user's login authority level, the access level settings for the units and the settings of the units and local filters.

When in either Physical or Mixed operating mode, a physical module is selected for control and status indication either through the Module Selection menu or by using the Recall Buttons.

6.7.1 Physical Module Selection using the Menu

Selecting **Module Selection** from the main menu brings up a menu similar to the one below.

Module Select

PORT 1 ✓ DARTnet 1
NODE 04 ✓ Rack 4
MOD 02 ✓ V1641A

The **Port**, **Node** and **Module** required are selected using the select buttons and the scroll knob. A ✓ symbol displayed against the selected module indicates that the module is present and operating. An x symbol usually indicates that the module was once present but has either been removed and is therefore "off-line". It can also indicate that the rack controller is unable to communicate with the module and has signalled the module as faulty. A ? symbol indicates that a heartbeat has been missed and the port or node may be offline (an intermediate state between ✓ and x). A blank indicates that there has not been a module in the slot since the status was last cleared.

Scrolling the menu down reveals access to RS485 link details (see RS485 Address Linking)

Module Select

NODE 04 ✓ Rack 4
MOD 02 ✓ V1641A
RS485 No connection

When a **Port** or **Node** is selected in the left-hand display, the Port or Node status details are shown in the right hand display.

When a **Module** is selected (by menu or recall button), the module status and control information appears in the right hand display. An example is shown below.

"r" indicates module switched to remote control. "L" indicates local (front panel) control.

✓ indicates module present and operating

"U" indicates more text below. "t" indicates more text above.

```

U V1662 Video Coder
DPstd PALN or NTSCJ
Ugain+1.23 Cgain-2.09
Setup+23 O/P Colour
  
```

The top line of the display identifies the module type and indicates local/remote status and module status. This remains visible at the top of the display as the remainder of the display is scrolled.

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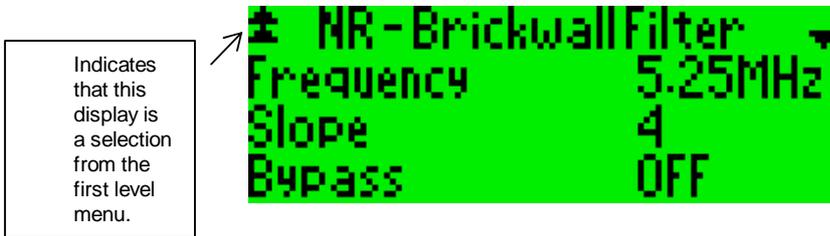
The remainder of the display carries the status and control information appropriate to the module type selected. Controllable parameter values may be changed by scrolling the display, selecting the required parameter using the adjacent select button and then making the adjustment with the encoder knob. A selection is indicated by being reverse highlighted on the display. Access to a controllable parameter is deselected by a further press of the illuminated select button. If, after selection, no adjustment is made for the time set under **Idle Timeout** (see Section 6.17.9 Delays & Timeouts), de-selection occurs automatically. A parameter may be returned to its nominal **Calibrate** value by selecting and holding in the adjacent select button until the select button is no longer illuminated.

If an uncontrollable (status only) parameter is selected, a READ ONLY status alert is displayed briefly. Similarly, selecting any parameter when the module is set to local control will result in a LOCAL CONTROL ONLY status alert, and selecting a parameter on a module which is not currently on-line will produce a MODULE OFF-LINE status alert. Some controls may be available only for a particular option fit or a particular status (e.g. 525 or 625) in which case a CONTROL NOT AVAILABLE status alert may appear when that control is selected. (All provided status alerts are enabled - See Section 6.17.8).

Modules with more complex control capability have their controls presented in two levels. The first level enables the control category to be selected. Once this has been done the controls within that category are shown in the normal way. An example is shown below:



After selection of **Brickwall Filter**, the Brickwall Filter control screen is displayed:



Pressing the right-hand **Menu 5** button returns to the first level menu, from which other control categories may be selected.



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6.7.1.1 Editing Text Controls

Because transferring text across DARTnet requires a lot of data to be passed, text controls are available only in those modules designed as Class 7. These controls allow a text string of up to 59 characters to be entered and therefore require 60 bytes (including null terminator) to transfer them on DARTnet.

When an editable text control is selected, the module control screen is replaced by the text editor in the right hand display.

The top select button on either side of the display will be illuminated, indicating that the scroll knob can be used to select a character from the source character string.

Characters are entered as follows:

- Select the first character required using the scroll knob and the button adjacent to **Case** to select upper or lower case.
- Press the button adjacent to **Insert**.
- Repeat these two steps to enter further characters.

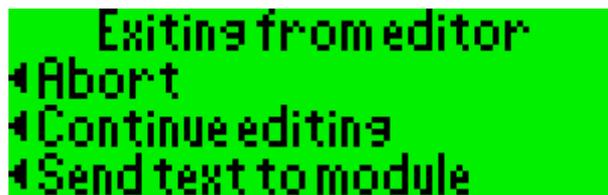


To edit text that has already been entered or to correct entry errors:

- Press the button adjacent to **Edit Point** so that the scroll knob may be used to move the cursor in the text being edited.
- Position the cursor in the line of text using the scroll knob.
- Use the button adjacent to **Case** to change the case of a character in the edit text.
- Use the button adjacent to **Delete** to remove an unwanted character
- Use either of the buttons adjacent to the character selection line to select the source string and continue entering characters.
- When the cursor is at the end of the text being edited, the button adjacent to **Case** will change the case of the source character string.
- Also, when the cursor is at the end of the text, if you press the button adjacent to **Edit Point** and rotate the scroll knob, spaces will be added to the end of the text. When the cursor is at the end of all the entered text it is shown as a wide block, if the cursor is actually on a space at the end of the entered characters, it shows up as a narrow block. Individual spaces can be inserted by selecting the space character between Z (z) and 0 (zero).
- **NOTE:** Because the text string may be up to 59 characters in length, when **Edit point** is selected, the scroll knob is used to determine which portion of the string is shown in the edit window.

To exit from the editor:

- Pressing either of the two right-hand **Menu 5** or **6** buttons brings up the following screen.
- Pressing the button adjacent to **Abort** returns the display to the module control screen with no changes made.
- Pressing the button adjacent to **Continue editing** returns the display to the editing screen.



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- Pressing the button adjacent to **Send text to module** sends the changes to the DARTnet and causes the text in the module to be updated. The display returns to the module control screen.

If any button other than the 6 right-hand select buttons or the 2 right-hand menu buttons is pressed during the editing process, the following warning appears in the left-hand display screen.

EDITING MODULE CONTROL
Menu 5 or 6 to exit à

6.7.2 Control Selection in a Physical Module using Recall Buttons (V1602)

This applies only to the **V1602**. In the **V1605**, the recall buttons are only ever used for selecting modules. Instead of using the method described above to select and change a control, by setting the **Recall Button Mode** to **Control Select**, **Control Sel (Ganged)**, **Combined Select** or **Combi'd Sel (Ganged)**, the recall buttons may be used to select the controls in a physical module screen.

Recall Buttons

Mode Control Select

Pressing the appropriate button scrolls the display until the control is visible and selects the control ready for the encoder to be used to adjust it. If the control screen has two controls on a line, it is the left-hand control that is selected. If an uncontrollable (status only) parameter is selected, the READ ONLY status alert is suppressed in this mode so that the user may use the button to scroll to the parameter for reading without an unwanted status message occurring. For the same reason, the LOCAL CONTROL ONLY status alert is suppressed if the module is set to local control. If the parameter is not controllable for some other reason the display scrolls to the parameter but it is not selected and the relevant status alert message occurs to tell the operator why the parameter may not be changed.

In the **V1602** the recall buttons display text and are illuminated differently to indicate whether a control is assigned to the button and, if so, its name, its status and whether it is selected. A recall button can be **OFF** to indicate there is no valid control on that line, **GREEN** to indicate there is a valid control on that line or **ORANGE** to indicate that the control has been selected and is controllable.

6.7.3 Ganging controls in a physical module (V1602)

If **Recall Button Mode** is set to **Control Sel (Ganged)** or **Combi'd Sel (Ganged)** (see above), compatible controls in a physical module may be ganged. This means two or more controls may be selected together and adjusted at the same time.

Recall Buttons

Mode Control Sel (Ganged)

To select ganged controls, select the first control using a recall button and, with the first button still pressed, select the other compatible control(s) using the other recall buttons. Note that if a line has more than one control, it is the LH one that is selected. If a subsequent control is incompatible with the first one selected, a status alert occurs.

CONTROLS INCOMPATIBLE
AND CANNOT BE GANGED

This feature is more useful when used with virtual modules as it allows compatible controls from different physical modules to be grouped conveniently for ganged control.



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Controls in the first, second or third group of 12 lines may be ganged because lines 1-12, 13-24 or 25-36 are accessible at any one time through the 12 recall buttons. The buttons corresponding to controls that are successfully ganged are all illuminated **ORANGE** to indicate that all of these controls will change when the RH encoder knob is adjusted. Note that the Select buttons for all ganged controls that appear on the screen are illuminated and their data fields are all reverse highlighted on the display.

To be compatible all significant details of the control must be identical. For instance, gain controls must have the same resolution and range and use the same input function so that they respond to encoder changes identically. Most numeric controls will maintain offsets between them when ganged even when one of them hits maximum or minimum. Non-numeric controls (buttons or list selections) will all use the data from the first selected control.

6.7.4 Physical Module Selection using the Recall Buttons

In the **V1605** and in the **V1602** with the **Recall Button Mode** set to **Module Select**, the recall buttons are used to select modules. Also, in the **V1602**, when the Recall Button Mode is set to either of the **Combined** modes, the buttons are used to select modules some of the time.

The **Assignment Access** level, which is set in the **Configure Access | Set Access Levels** menu determines who is allowed to assign modules, clear assignments, change mode or set the button only option.

When in **Physical** mode, a physical module may be assigned to one of the recall buttons by selecting the required physical module in the main menu section, pressing the **Assign** button then pressing and holding the desired recall button until it illuminates. A recall button may be reassigned by selecting a different module through the main menu and repeating this process.

In **Mixed** mode, a mixture of physical and virtual modules may be assigned.

In the **V1602** the recall buttons display text and are illuminated differently to indicate whether a module is assigned to the button and, if so, its name, its status and whether it is selected. A recall button can be **OFF** to indicate there is no module assigned, **GREEN** to indicate there is a module assigned or **ORANGE** to indicate that the module has been selected. Pressing the **Assign** button when in a **Combined** mode, forces the buttons to display their assigned modules in preparation for a new assignment. Pressing the **Alt 1** button reveals the second bank of Recall Buttons numbers **13-24**; pressing it again returns them to numbers **1-12**. Similarly, **Alt 2** is used to reveal Recall Buttons **25-36**.

Recall buttons may be cleared, collectively or individually, by selecting the appropriate option in the **Recall Buttons** menu. By default, only users logged in as **Supervisor** or **Engineer** may assign or clear recall button assignments. This may be changed through the **Set Assignment Access** option in the **Set Access Levels** menu. When a module, which has been assigned to a recall button, is selected through the main menu, the appropriate recall button is illuminated **ORANGE** to indicate that the module has been selected. In the **V1602** this happens only if the appropriate bank of 12 buttons has been selected by the operator using **Alt 1** and **Alt 2**.

Recall Buttons

Mode Module Select
Select by Button Only ✓
Button Number 03
01:04:04 V1681
Clear Button Assignment
Clear All Buttons

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By selecting **Recall Buttons** from the main menu, and selecting a **Button Number** the module assigned to the each recall button is shown in the left-hand display.

Note that all recall button assignments are erased if set-up parameters within the battery-backed memory are reset. See Section 6.20.2.

6.7.5 Select Module by Button Only

The second option in the **Recall Buttons** menu is **Select by Button Only**. When this is ticked and the user is logged in at **Operator** authority level, the user may only use the Recall Buttons to select a module, not the menu.

6.7.6 Changing between Module and Control selection in Combined modes

When the Recall Button Mode is set to **Combined Select** or **Combi'd Sel (Ganged)**, the recall buttons switch automatically between showing assigned modules and controls within modules. When a module is selected, either by recall button or by the menu, the buttons change to showing controls. The buttons change back to showing modules whenever the NODE or PORT is selected in the menu. Also, use of the RH Menu 5 button does the same once the RH display has returned to the top of the main control screen.

6.8 Virtual Module Selection and Control

NOTE: Virtual modules are created on a PC and downloaded to the V1602 or V1605 panel (See Section 9). The virtual module definition file has the facility to define the access level for each control in a virtual module. This overrides the access level setting that has been set for the physical module from which the control is derived. If the access level for a virtual module control is not included in the definition file, then its access level will be inherited from the physical module.

When in either **Virtual** or **Mixed** operating mode, a virtual module is selected for control and status indication through the **Module Selection** menu or by using the **Recall Buttons** or by **Router Control** (see 6.10 Virtual Module Switching Using Router Control).

6.8.1 Virtual Module Selection using the Menu

Selecting **Virtual Module Selection** from the main menu in Virtual Mode or **Module Selection** in Mixed Mode (and scrolling down in Mixed Mode) brings up a menu similar to the one below.

(Virtual) Module Select

| | | | |
|------|----|---|---------------|
| vNET | 01 | v | Channel 1 |
| vRCK | 02 | v | FS 2 |
| vMOD | 05 | v | Audio Gains 3 |

The **Virtual Network** (vNet), **Virtual Rack** (vRCK) and **Virtual Module** (vMOD) required are selected using the select buttons and the encoder knob.

When a **Virtual Module** is selected (by menu, recall button or router), the status and control information programmed for the selected virtual module appears in the right hand display. As with physical modules, a control is adjusted by scrolling the display using the RH encoder knob, selecting the control using either the LH or RH select buttons and using the RH encoder to change the value.

Text controls are edited in exactly the same way as those in a physical module screen. See 6.7.1.1.

6.8.2 Control Selection in a Virtual Module using Recall Buttons (V1602)

This applies only to the **V1602**. In the **V1605**, the recall buttons are only ever used for selecting modules.

Instead of using the method described above to select and change a control, by setting the **Recall Button Mode** to **Control Select**, **Control Sel (Ganged)**, **Combined Select** or **Combi'd Sel (Ganged)**, the recall buttons may be used to select the controls in a virtual module screen.



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Recall Buttons

Mode Control Select

Pressing the appropriate button scrolls the display until the control is visible and selects the control ready for the encoder to be used to adjust it. If an uncontrollable (status only) parameter is selected, the READ ONLY status alert is suppressed in this mode so that the user may use the button to scroll to the parameter for reading without an unwanted status message occurring. If the parameter is not controllable for some other reason the display scrolls to the parameter but it is not selected and the relevant status alert message occurs to tell the operator why the parameter may not be changed.

In the **V1602** the recall buttons display text and are illuminated differently to indicate whether a control is assigned to the button and, if so, its name, its status and whether it is selected. A recall button can be **OFF** to indicate there is no valid control on that line, **GREEN** to indicate there is a valid control on that line or **ORANGE** to indicate that the control has been selected and is controllable.

6.8.3 Ganging controls in a virtual module (V1602)

If **Recall Button Mode** is set to **Control Sel (Ganged)** or **Combi'd Sel (Ganged)** (see above), compatible controls in a virtual module may be ganged. This means two or more controls may be selected together and adjusted at the same time.

Recall Buttons

Mode Control Sel (Ganged)

To select ganged controls, select the first control using a recall button and, with the first button still pressed, select the other compatible control(s) using the other recall buttons. The first control selected determines what is shown on the screen. If a subsequent control is incompatible with the first one selected, a status alert occurs.

CONTROLS INCOMPATIBLE
AND CANNOT BE GANGED

Controls in the first, second or third group of 12 lines may be ganged because lines 1-12, 13-24 or 25-36 are accessible at any one time through the 12 Device Recall buttons. The buttons corresponding to controls that are successfully ganged are all illuminated **ORANGE** to indicate that all of these controls will change when the RH encoder knob is adjusted. Note that the Select buttons for all ganged controls that appear on the screen are illuminated and their data fields are all reverse highlighted on the display.

To be compatible all significant details of the control must be identical. For instance, gain controls must have the same resolution and range and use the same input function so that they respond to encoder changes identically. Most numeric controls will maintain offsets between them when ganged even when one of them hits maximum or minimum. Non-numeric controls (buttons or list selections) will all use the data from the first selected control.

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6.8.4 Virtual Module Selection using Device Recall Buttons

In the **V1605** and in the **V1602** with the **Recall Button Mode** set to **Module Select**, the recall buttons are used to select virtual modules. Also, in the V1602, when the Recall Button Mode is set to either of the **Combined** modes, the buttons are used to select virtual modules some of the time.

The **Assignment Access** level, which is set in the **Configure Access | Set Access Levels** menu determines who is allowed to assign modules, clear assignments, change mode or set the combined priority or button only options.

When In **Virtual** mode, a **Virtual Module** in the currently selected **Virtual Rack** may be assigned to a Recall Button. This means that, when the user selects a different virtual net/rack combination through the **Select Virtual Module** menu or under **Router Control**, the assignments on the recall buttons change. In fact there are 1000 different sets of assignments which can be made, one for each of the 100 virtual racks on each of the 10 virtual nets.

In **Virtual** mode, a virtual module may be assigned to one of the recall buttons by selecting the required virtual module in the main menu section, pressing the **Assign** button then pressing and holding the desired recall button until it illuminates. A recall button may be reassigned by selecting a different module through the main menu and repeating this process.

IN the **V1605** 8 virtual modules in each rack may be assigned to buttons because there are only 8 Recall Buttons. In the **V1602** the first 16 buttons (1-12 plus 13-16 in the second bank) are available for assigning to virtual modules in a rack thereby allowing all virtual modules to be assigned to a button. The **Alt 1** button is used to switch between the first (1-16) and second (13-24) banks of Recall Buttons.

Recall Buttons

```
Mode  Module Select
Combined Priority  Module
Select by Button Only  ✓
Virtual Rack        1:00
Button Number      03
01:04:04  Audio Gains
Clear Button Assignment
Clear vRCK 1:00 Buttons
Clear All Buttons
```

By selecting **Recall Buttons** from the main menu the **Virtual Modules** assigned to each button in the currently selected **Virtual Rack** may be seen.

Virtual recall button assignments may be cleared individually, on a virtual rack basis, or altogether by selecting the appropriate option in the Recall Buttons menu.

As with Physical module assignment, the level of user allowed to make or clear virtual module assignments may be changed through the **Set Assignment Access** option in the **Set Access Levels** menu.

6.8.5 Combined Priority option

The second option in the **Recall Buttons** menu determines when the button operation switches back to selecting modules when operating in a combined button mode. If **Combined Priority** is set to **Module**, which is the default setting, operation switches back to module selection whenever the Virtual Net or Virtual Rack is selected or changed. Otherwise it stays in control selection apart from when the RH Menu 5 button is used. The Combined Priority option also affects whether the buttons switch back top module selection when a router selects a different virtual rack.



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6.8.6 Select Virtual Module by Button Only

The third option in the **Recall Buttons** menu is **Select by Button Only**. When this is ticked and the user is logged in at **Operator** authority level and the Operating Mode is **Virtual**, the user may only use the Recall Buttons to select a virtual module, not the menu. If the **Select by Router Only** option is also ticked in the **Router Options | Slave V1605 Options** menu, the virtual module may be selected by router or button but not by menu option. If the **Assignment Access** level is set to **Operator**, the **Select by Button Only** takes effect only after logging out of Operator authority level and back in.

6.8.7 Changing between Virtual Module and Control selection in Combined modes

When the Recall Button Mode is set to **Combined Select** or **Combi'd Sel (Ganged)**, the recall buttons switch automatically between showing assigned virtual modules and controls within virtual modules. When a virtual module is selected, either by recall button or by the menu, the buttons change to showing controls. If the **Combined Priority** option is set to Module (see above), the buttons change back to showing virtual modules whenever the vRACK or vPORT is selected in the menu. Use of the RH Menu 5 button does the same, regardless of the Combined Priority option, once the RH display has returned to the top of the main control screen.

6.8.8 Module Pre-Selection in Mixed Operating Mode

In **Mixed** operating mode, with Recall Button Mode set to select modules, the recall buttons may be used for a mixture **Physical** or **Virtual** modules. On a **V1605** a total of 8 modules may be assigned and on a **V1605** a total of 36 modules may be assigned, the same as in **Physical** mode. The **Recall Buttons** menu identifies virtual modules by the character "v" following the module address.

As with Virtual operating mode, if the **Combined Priority** option in the **Recall Buttons** menu is set to Module, the buttons change back to showing modules whenever the vRACK or vPORT is selected in the menu. The **Combined Priority** option has no effect when selecting modules in the Physical network. The buttons always change back to showing modules whenever the NODE or PORT is selected in the menu.

6.9 Recall Button Labelling on V1602

The recall buttons on the V1602 are labelled with three rows of text. The top row shows the button number and a status indication. The second and, if necessary, the third row, show the name of the module or control, split over two lines if too long for one. In most cases, pressing the button initiates an alert message on the RH display screen that expands on the nature of the status.

The following status indications are used:

6.9.1 Recall Buttons assigned to Modules

| | |
|------|---|
| | No status with a Green backlight means the button is assigned to a Physical module on the DART or RS485 interface. |
| LOC | Indicates that the module assigned to that button is set to Local control. |
| ERR | Indicates that there is an error associated with the module assigned to that button, such as absence of any module, on-line or off-line, in that module slot. |
| OFF | Indicates that the module assigned to that button is off-line (removed from the rack). |
| N/A | Indicates that the module is not available due to, for instance, the filter settings or the user's access level. Also indicates in Physical mode if a button is assigned to a Virtual module. |
| VIRT | Indicates in Virtual or Mixed mode that a button is assigned to a Virtual module. |
| XML | Indicates that the Module is on the XML external interface |

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6.9.2 Recall Buttons assigned to Controls

| | |
|------|---|
| | No status with a Green backlight means the control is a control available for selection. It may be a control in a module on the DART, RS485 or XML interface. |
| HOLD | Indicates that the control is a Calibrate control or some other control that has to be held in for one or two seconds to operate. Having selected the control using the recall button, the user should deselect the control and then operate it in the normal way by holding in the Select button. |
| R/O | Indicates that the control is a status indication, that is a read-only control. Pressing the button scrolls the display to the correct line but does not attempt to select the control. The alert message, that would normally occur when selecting a read-only control using a Select button, is suppressed. |
| LOC | Indicates that the module to which the control belongs is set to Local control. |
| ERR | Indicates that an error is associated with the control, usually a virtual control, such as Module Absent, Module Identifier Mismatch, Unknown Control Identifier, etc. |
| OFF | Indicates that the module to which the control belongs is off-line (module removed). |
| N/A | Indicates the control is not available due to the user's access level or for some other reason associated with the module such as the control being meaningful only for 525. |
| MENU | Indicates that the control is a Menu screen control. Pressing the button opens a second level hierarchical screen and the recall buttons are automatically reassigned to the controls in the new screen. Pressing the RH Menu 5 button returns the user to the main screen and reassigns the buttons back to the controls in the main screen. |

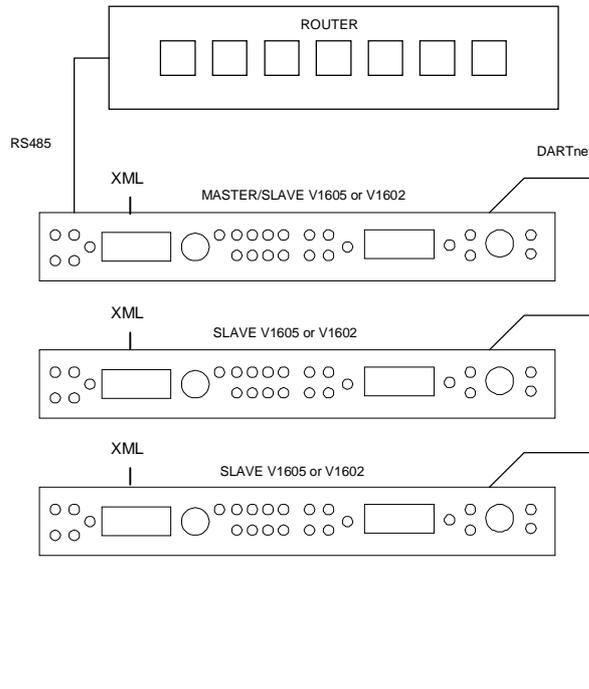
6.10 Virtual Module Switching Using Router Control

The V1605 or V1602 control panel can be used in conjunction with a Video/Audio router in order to switch to different control panels as route changes occur.

The controls for different sources are programmed into different Virtual Modules and the panel can switch which Virtual Module is currently being displayed in response to a message indicating a change of route.

Different panels in the system may be programmed to react to route changes for different destinations so that an operator in control of a particular destination is presented with the correct controls when the route switches to a different source.

Furthermore, a particular control panel may be programmed to react to route changes for just a particular level on that destination. This means that, for instance, one operator may be in control of the video and another operator at a different control panel can be in charge of the audio from the new source.



Modules on the XML high speed RS232 external interface are included in the Virtual Modules that may be switched on route changes. This interface enables legacy or third party modules to be included in the system.



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6.10.1 Router protocols

Several protocols are supported – Pro-Bel 02, Grass Valley Series 7000, Quartz, Philips and BTS. The two additional protocols Quartz+ and Philips+ have been added for use in heavily loaded systems where RS485 or DART messages can get lost, so route polling is added as with the Grass Valley and BTS protocols.

6.10.1.1 Pro-Bel 02 Protocol

| | | |
|-----------------------------|--------------------------------|---------------|
| Poll | FF 01 <mult><dest><chsum> | No level info |
| Poll Response | FF 03 <mult><dest><src><chsum> | |
| From router on route change | FF 04 <mult><dest><src><chsum> | |

6.10.1.2 Grass Valley Series 7000 Native Protocol

| | | |
|--|--|--|
| Poll | <soh>N0QI<ht><dest><ht> <level><ht><chsum><eot> | level = 0..31 <soh> = SOH (0x01) |
| Poll Response - initial response is ACK (0x06) or <soh><error>NAK (0x15) | <soh>N0IQ<ht><dest><ht> <level><ht>N/P<ht>N/C<ht> <source><ht><chsum><eot> | <ht> = HT (0x09) <eot> = EOT (0x04) |
| From router on route change | | None - polling only |

6.10.1.3 Quartz

| | | |
|-----------------------------|---------------------------|--------------------------|
| Poll | .#01<cr> | <cr> is CR character |
| Poll Response | .A<cr> | |
| From router on route change | .U<level><dest>,<src><cr> | level=V,A,B,C,D,E,F or G |

6.10.1.4 Quartz+

| | | |
|-----------------------------|---------------------------|--|
| Poll | .I<level><dest><cr> | |
| Poll Response | .A<level><dest>,<src><cr> | |
| From router on route change | .U<level><dest>,<src><cr> | |

6.10.1.5 Philips

| | | |
|-----------------------------|-------------------|-------------------|
| Poll | ZA<cr> | |
| Poll Response | ZA<cr> | |
| From router on route change | ZRdddssslll..<cr> | lll.. levels 1..7 |

6.10.1.6 Philips+

| | | |
|-----------------------------|-------------------|--|
| Poll | ZRddd<cr> | |
| Poll Response | ZRdddssslll..<cr> | |
| From router on route change | ZRdddssslll..<cr> | |

6.10.1.7 BTS

| | | |
|-----------------------------|-------------------|---------------------|
| Poll | ZWddd<cr> | |
| Poll Response | ZRdddssslll..<cr> | |
| From router on route change | | None - polling only |

6.10.2 Configuring the system

If there are several panels on a network, one of them is made the master and is connected to the router via its RS485 port, communicating route changes to the other (slave) panels via DARTnet messages.

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Alternatively a third party router controller may perform the master function. The master panel may also be a slave and respond to route changes itself; in a single controller network this is always the case.

The configuration of the system for router control may seem complicated the first time it is done because it was designed to fulfil as many requirements as possible.

In general, each route **Destination** corresponds to a panel (V1602 or V1605) and each route **Source** corresponds to a virtual module on that destination's panel. When a route changes, the virtual module on that destination's panel changes to a new one determined by the new source

This is further complicated by the possible requirement for different **Levels** on the same **Destination** to be dealt with by different panels. For instance, audio on one panel and video on another.

Therefore there is a need, in the master panel, to relate **Destination** and **Level** to a panel identifier, and this panel identifier is called a **Panel Select Number** or **PSN**.

In each slave panel there is a corresponding requirement to program in a **Panel Select Number** so that each panel knows to which route change messages to react.

We already have an addressing system for **Virtual Modules** of the form NN:RR:MM, however, when using router switching, the virtual network (NN) is always 0, leaving us with a choice of 16 virtual modules on each of 100 (00-99) virtual racks.

Obviously the master panel must have a means of relating **Source** to **Virtual Rack** and **Virtual Module**. Having received a route change message from the router, the master panel processes the **Destination** and **Level** to generate a **PSN** and processes the **Source** to generate a **Virtual Rack** and **Virtual Module**, these being incorporated into a DART broadcast message which is received by the slave panels.

A slave panel reacts to a message if:

- the panel is in Mixed or Virtual mode,
- the Panel Select Number is 255 (Broadcast) or matches one of those programmed into the unit and
- the Virtual Module Address has changed from last time a message was received for that panel select number.

The action is to switch the Virtual Module displayed to the one specified in the message.

Relating destinations and levels to PSNs and relating sources to virtual modules is done by setting up destination and source mapping in the master panel.

A panel configured as a master may have up to 255 destinations (0-999) mapped to panel select numbers (0-255) and up to 255 sources (0-999) mapped to virtual modules (all on virtual network 1). The PSN 255 (displayed as B in the Destination Mapping menu) means **Broadcast** and causes all panels to react regardless of their panel select numbers. Destinations are associated with a single router level or with all levels. If associated with a single level, a virtual module display switch occurs only if the route switch message is for that level. If associated with all levels, the switch occurs regardless of the level information (if any) in the router message.

A destination may appear more than once in the Destination Mapping menu but to be meaningful these entries each need to be associated with a different level and a different PSN. This allows different slave panels to handle route changes for the same destination but for different levels.

NOTE: Version 8 of the V1605 reacted to level 1 route changes only (or level V on a Quartz router) so to make a later version of the V1605 or V1602 operate in the same way, you should set the level in the Destination Mapping menu to '1' or 'V'.



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6.10.3 Setting up the Master V1605 or V1602

The master options are found by selecting **Master V1605 Options** in the **Router Options** menu.

Auxiliary Functions

```

....
Router Options
  Router Options
  Slave V1605 Options
  Master V1605 Options
    Master V1605 Options
    Router Polling      OFF/Pro-Bel/Quartz/BTS/Philips
    Polling Rate      ***
    Port 5-RS485      **
    Destination Mapping
      Destn Level > Panel Select No
      400 1 > 241
      401 1 > 023
      401 2 > B
      ...
      Add destination
        Add Destination
        Destination ***
        Level **
        Panel Select No ***
        Enter
        Change Mapping
        Destination ***
        Level **
        Panel Select No ***
        Enter
    Source Mapping
      Source Virtual Module
      200 1:00:03
      201 1:00:04
      365 1:02:00
      ...
      Add source
        Add Source
        Change Mapping
        Source ***
        Virtual Rack **
        Virtual Module **
        Enter
        Change Mapping
        Change Mapping
        Source ***
        Virtual Rack **
        Virtual Module **
        Enter
    Router Status
      Protocol Destn Lvl < Srce
      Pro-Bel 001 - 241
      Pro-Bel 003 - 357
  
```

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There are 3 items to be considered here:

The link between the Router and the Control Panel must be established. This requires:

- Router Polling to be turned on by selecting a router protocol – this establishes the panel as a **Master**
- The Rate of router polling to be set
- The baud rate of the RS485 link to be selected

The route Destinations and Levels to be monitored must be mapped to Panel Select Numbers

- To operate in the same way as Version 8 of the Control Panel, set the level to '1' or 'V'.
- A destination may be entered more than once, each with a different level.
- Only when at least one destination has been entered will router polling start

The route Sources must be mapped to Virtual Module addresses in the Control Panel

- Sources may be mapped to different virtual racks or different virtual modules in the same virtual rack.
- All virtual modules must be on virtual network 1.
- The virtual module address refers to virtual modules loaded into the slave panel.

6.10.3.1 Establishing the link

Router Polling and **Vistek RS485 Network** polling are mutually exclusive since there is only one RS485 interface. To enable Router Polling, first select **Vistek RS485 Network** in the **Auxiliary Functions** menu and clear the against **Polling Enabled**. Then select **Router Options** in the same menu and then **Master V1605 Options**. **Router Polling** may now be changed from **OFF** to one of the protocols, for instance **Pro-Bel**, **Quartz**, **BTS** or **Philips**, to establish this panel as the master. If **Vistek RS485 Network** polling is not disabled before doing this, the following warning appears.

RS485 PORT
IS BEING USED FOR
VISTEK NETWORK POLLING

If **Router Polling** is set to **OFF**, polling on the Vistek RS485 Network may be enabled by changing **Polling Enabled** to in the **Vistek RS485 Network** menu. If **Router Polling** is not set to **OFF** before doing this the following warning appears.

RS485 PORT
IS BEING USED FOR
ROUTER POLLING

Note that, if **Status Alerts** are disabled in the **Errors & Alerts** sub-menu of the **Control Panel Setup** menu, these warning messages will not appear.

When Vistek RS485 Network polling is enabled, the port is automatically set to 38400 baud with 2 stop bits and this cannot be changed. If it is disabled, the baud rate may be changed between 9600 and 38400 (with 1 stop bit). Enabling Router Polling automatically changes the port to the settings last used for router polling.

Polling Rate defaults to 1 second but may be changed (200mS – 5sec) if the router supports a faster rate or requires a slower one.



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If **Pro-Bel**, **Quartz** or **Philips** protocols are selected, the master V1605 will react directly to route change commands from the router so that the polling interval may be increased. If **BTS** is selected, the response of the master panel to a route change will be related entirely to the poll rate.

In the case of **Quartz** or **Philips**, the polling is merely to determine that the link is still present and no route information is passed in the polling messages. When the link is first established, the master panel requests information from the router about the status of all defined routes in which it has an interest so that the master panel knows the current settings for each route. This also happens on reconnection after the link has been broken and, in addition, when the master panel detects that another DARTnet controller has just come on line, so that it will also be kept up to date with the router status. Thereafter, a route message is received by the panel only when a route is changed. In a busy system it is sometimes better to use the **Quartz+** or **Philips+** protocol. These have route polling, like **BTS**, in addition to the route change command that occurs on the route change so that, if a command is missed, the switch will occur when the polling gets round to that route.

In the case of **BTS**, the polling requests the status of each destination in turn, depending on which destinations are included in the destination mapping list. When a route changes, it is only when the polling gets round to requesting the status of that destination that a route change is detected. One advantage of this is that all DARTnet controllers in the system will eventually get updated with the router status without the need for a special full status request as with the other protocols.

In the case of **Pro-Bel**, routing is established by both polling (as **BTS**) and an immediate message received on a route change.

The **Engineering Menu** provides a logging function for the RS485 port under **Engineering | Diagnostics | RS485**. If RS485 Logging is turned on (*), the **RS485 Tx** and **RS485 Rx** menus show the last 40 messages sent and received respectively. Note that the double up arrow symbol represents a CR character.

6.10.3.2 Destination Mapping

As described above, destination mapping is required to relate **Destination** and **Level** to a particular slave panel defined by a **Panel Select Number**. In the case of **BTS**, the destination numbers and levels that are mapped are also the ones polled by the master control panel.

In the simplest cases, where all levels are dealt with by the same slave panel and the destination is less than 255, each destination could be mapped to its corresponding PSN, destination 1 to PSN 1, destination 2 to PSN 2, etc.

However, the panel handles destinations and sources up to 999 and can also direct route switches of different levels to different slave panels, so this means a more sophisticated mapping system is required.

Selecting the **Destination Mapping** option in the **Master V1605 Options** menu opens a menu that lists the destinations and levels that have been mapped to panel select numbers, the last item being the option to add a new destination. When an item is selected, the **Change Mapping** menu is opened, initially with the current settings of the item selected. If the **Add destination** option is selected, a similar menu with the heading **Add Destination** is opened. **Destination** may be changed to any number between **0** and **999**, **Level** to **1** to **7** or **V** to **G** (depending on router protocol) and **Panel Select No** to any number between **0** and **255**. The **Enter** option at the bottom must be selected in order for any changes to take effect.

255 means **Broadcast** and the display will show **B**. This causes all slave panels to react to a route change. Other values cause only those slave panels with that PSN programmed in via the **Source V1605 Options** menu to react to a route change.

A maximum of 255 destination mappings is allowed and when this number has been entered, the **Add destination** option no longer appears. After adding, editing or deleting a mapping, the list is sorted in order

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of destination and level. Note that, the same destination may be entered more than once but this is meaningful only if the levels are different.

6.10.3.3 Source Mapping

Source Mapping is the way of determining which **Virtual Module** control screen is displayed on a slave panel when a route's **Source** changes.

Selecting the **Source Mapping** option opens a menu that lists the sources that have been mapped to **Virtual Module** addresses, the last item being the option to add a new source. When an item is selected, the **Change Mapping** menu is opened, initially with the current settings of the item selected. If the **Add source** option is selected, a similar menu with the heading **Add Source** is opened. **Source** may be changed to any number between **0** and **999**, **Virtual Rack** to any number between **0** and **99** and **Virtual Module** to any number between **0** and **15**. The **Enter** option at the bottom must be selected in order for any changes to take effect.

If the source is decreased below 0, the menu shows a dash (-). This means the source is no longer mapped and will be removed from the menu.

A maximum of 255 source mappings is allowed and when this number has been entered, the **Add source** option no longer appears. After adding, editing or deleting a mapping, the list is sorted in order of source. Note that, although the same source may be entered more than once, only the first entry in the list is used.

It should be remembered that the virtual module address mapped to a source is the address of a virtual module that has been loaded into a particular slave panel.

6.10.3.4 Router Status Screen

The Router Status menu screen shows what routes the panel believes have been established as a result of messages received. It is only valid on the master panel and only shows those routes in the destination list set up through the Destination Mapping menu.

| Protocol | Destn | Lvl | < | Src |
|----------|-------|-----|---|-----|
| Quartz | 001 | V | | 241 |
| Quartz | 003 | V | | 357 |

For instance, the above screen shows that the protocol selected is Quartz and two destinations have been set up, 001 and 003, both level V. The current sources are 241 and 357 respectively.

6.10.4 Setting up the Slave V1605 or V1602s

The slave panels are the ones that react to a route change by switching the displayed virtual module. A master can also act like a slave. To react to changes to a particular destination, each slave panel must have at least one **Panel Select Number** programmed in to it.

To set a **Panel Select Number** select **Slave V1605 Options** in the **Router Options** menu.

Auxiliary Functions

....

Router Options

Router Options

Slave V1605 Options

Slave V1605 Options

Change Panel Select Nos

Change Panel Select Nos

Panel Select No. 0

**

...



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Panel Select No. 15 **
Clear All Panel Select Nos
Select by Router Only ✓

Selecting **Change Panel Select Nos** allows the user to enter up to 16 numbers from **0** to **254**. A '-' in the menu indicates that particular PSN is not programmed. If the panel is to react to just a single destination/level combination's route changes, you need to set up just the one PSN that is mapped to that destination and level. This would normally be entered against **Panel Select No. 0**. If you want the panel to monitor several destinations and/or levels, you must set several **Panel Select Nos**.

Panel Select Nos may be cleared individually by changing down to a '-' from 0 or collectively by selecting the **Clear All Panel Select Nos** option.

Although the Virtual Module addresses that correspond to the different route sources are programmed into the master panel, the **Virtual Modules** themselves must be loaded into the slave.

6.10.4.1 Virtual Rack or Virtual Module switching

In general, a route switch results in a change of **Virtual Module** being displayed. If a large number of different controls is required to be accessible to the operator on a route change, it may be more convenient to organise them into **Virtual Racks**.

To do this, the **Recall Buttons** need to be set to a mode in which they select modules and they should be programmed to the individual virtual modules within each virtual rack. In the master panel, the sources in the **Source Mapping** menu should be set to different virtual racks, the virtual module part of the address being the one that will appear first when the route changes. Having switched to a new virtual rack, a new set of recall buttons allows for rapid access to the different virtual modules within the new virtual rack.

If the **Recall Button Mode** is one of the Combined modes, the way the button mode changes on a virtual rack switch when in **Virtual Operating Mode** can be determined by setting it to **Combined Priority** in the **Recall Buttons** menu. Setting it to **Module** ensures that, whenever a route change causes the Virtual Rack to change, the buttons will switch to displaying virtual module names, so this is the setting to use for Virtual Rack switching. Setting it to **Control** ensures that the buttons continue to display virtual control names, so this is the best setting for Virtual Module switching.

In **Mixed Operating Mode** the setting of the **Combined Priority** control in the **Recall Buttons** menu has the same effect as in Virtual Mode.

6.10.4.2 Select by Router Only with or without Recall Buttons

Normally, an operator is allowed select a **Virtual Module** by means of the **Virtual Module Selection** menu or the **Recall Buttons** in addition to route changes causing selections. However, the final item in the **Slave V1605 Options** menu is **Router Only Selection**. When this is checked (✓) and the user is logged in at **Operator** level and the operating mode is **Virtual**, the Virtual Module selection can be made only by the router switch message received from the master panel. The Virtual Module Select menu becomes a status-only menu so that the location of the current virtual module may be observed and the only other option in the main menu is **User Login**. This means that the operator is not allowed to select a virtual module through the menu but has to accept the selection made by the latest route change.

If **Select by Button Only** is also ticked in the **Recall Buttons** menu, the user may also select a virtual module using a **Recall Button**, otherwise these are also inhibited. This is necessary if the router switching is set up to switch **Virtual Racks** (see above) by allowing **Virtual Modules** within the virtual rack selected by the router to be selected by the recall buttons.

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If **Select by Button Only** is not also ticked, the **Combined Priority** must be set to **Control** so that the controls are available on the recall buttons. Otherwise, the controls can only be selected by scrolling the RH display and using the select buttons.

6.10.4.3 Saving and Loading Router Configurations

Router configurations may be included in transfers to and from **Flash** and a **PC** by selecting the **Router Configuration** in the **Flash File Transfer** and **PC Transfer** menus.

6.11 Calibrating Controls and Modules

All module controls have a “default” value (except those that are status display only). These controls may be set to their default state by selecting the control on the right hand display then pressing the adjacent button for two seconds (until the button is no longer illuminated).

Some module control screens have a separate **Calibrate** control which sets the module’s principal controls (mainly gain controls) to their default settings when the adjacent button is pressed for two seconds.

In addition, a module’s principal controls may be calibrated by selecting the **Calibrate Modules** option from the Main Menu, selecting the **Port** and **Node** as required, selecting the **Module** or **ALL...**, as required, and selecting **Execute Calibrate** followed by **Yes** in response to the **Are you sure?** message.

If instead **Execute Default** is selected, all controls are defaulted, not just those which are flagged as **calibratable** in the module’s database entry. Note that the **Execute Default** option is only available when logged in as an **Engineer**.

In the case of **Virtual Modules**, a **Virtual Module Calibrate** control may be included in the virtual module and used to calibrate all controls in the selected virtual module that are flagged as **calibratable** in the relevant module’s database entry. **Calibrate** controls from one or more physical modules may also be included in a virtual module.

The same procedure as above is used for calibrating or defaulting virtual modules when in **Virtual** mode, after selecting **Calibrate Virtual Modules** from the Main Menu.

Only those **Virtual Controls** available to the user by virtue of their access level, whether inherited from the control’s physical module or specified in their virtual module definition, will be affected by calibration. This applies to both methods of calibration, Calibrate control or Menu.

NOTE: If the Module is set to **ALL...**, only those modules visible to the user by virtue of their access level and filter settings will be affected.

On the **V1602**, if the Recall Buttons are set to select controls, **Calibrate** controls will show the status **HOLD** indicating that the button must be held in complete the calibrate action. In addition, by holding in any Recall Button for about 2 seconds, the control associated with that button is set to its default.

6.12 Storage and Loading of Module Data

In addition to the Calibrate/Default facility described above, the V1602/05 also provides a means of loading modules with predefined data from a Flash File. Module controls may be set up as required for a particular system configuration and then stored in a Flash File for subsequently loading back into either a single physical module or a whole rack full of modules. This facility is available in Physical and Mixed modes and is for modules on the DART Network, not modules on the Vistek RS485 Network. Virtual module control values may also be stored in a Flash File and subsequently loaded back into the virtual module, however, the user interface for **Virtual Module Presets** is different from the one for **Physical Module Presets**.



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Virtual module presets may include controls from modules on the Vistek RS485 Network as well as the DART Network. For details of other aspects of the **Flash File** system, see 6.19 Flash File Transfer.

Data for a rack of modules is stored in a file per rack with a name provided by the user.

6.12.1 Physical Module Presets

Data for single modules is stored in a single file that is automatically given the name **Module Presets**. The user may select the file in on-board flash or in the PCMCIA flash card by setting the **Location** in the **Flash File Transfer** menu. Note that physical module presets work with modules on the DART network, not those on the RS485 network.

The **Module Presets** facility enables one or more sets of control data for a given module type to be saved and loaded. The operation of the preset facility is dependent on the Functional Revision Status (FRS) of a module as well as its Vxxxx product number. In other words, if presets are stored for a V1665 FRS1, those presets will not be available for loading to a V1665 FRS10. It is therefore necessary to set up separate presets for modules of the same product type that have a different FRS number.

6.12.1.1 Storing Physical Module Presets

The settings for any **Physical Module** that is on-line on the DART network may be stored by selecting **Flash File Transfer** from the Main Menu followed by **Module Files** and then **Module Presets**. The required module is selected from the resulting menu. After scrolling down and selecting **Store Module Preset**, the user is invited to enter a name for the preset using the text editor in the right hand display and then to select **Store to File**. This results in the new module preset being appended to the file.

6.12.1.2 Recalling Module Presets

To recall a previously stored preset, the user should select the module as above and then select **Load Module Preset** from the **Module Presets** menu. If any of the presets in the file apply to the selected module (including its FRS), they are listed and selecting one of them loads it into the module.

6.12.1.3 Deleting Module Presets

To delete a previously stored preset, a user logged in as an Engineer should select the module as above and then select **Load Module Preset** from the **Module Presets** menu. If any of the presets in the file apply to the selected module (including its FRS), they are listed and selecting one of them deletes it.

6.12.1.4 Compressing Module Presets

Presets that are deleted are not actually removed from the file but are marked as deleted. If the space occupied by deleted presets needs to be recovered, use the **Compress Presets File** facility which is located after **Delete Module Preset** in the **Module Presets** menu. (Engineers only).

6.12.2 Physical Module Rack Data

The **Flash File Transfer** menu options **Load Rack Data** and **Store Rack Data** are used when a whole DART rack of modules needs to be set to a pre-stored set of control values. The user may use files in on-board flash or in the PCMCIA flash card by setting the **Location** in the **Flash File Transfer** menu.

6.12.2.1 Storing Rack Data

When rack data is stored, only data from those modules visible to the current user is stored in the file. The Access Level of the file defaults to the current login authority and is used to protect files from being overwritten or deleted by lower authority users. Warnings will be given if any of the modules is off line or set to local control. The user may correct the situation by clearing module status, inserting a module, switching to remote, etc., before repeating the store. If nothing is done, those modules that were off line or set to local will be left out of the rack data file.

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To store Rack data select **Flash File Transfer | Module Files | Store Rack Data** from the Main Menu and select the rack. The Module display may be used to examine the contents of the rack and to adjust module settings as required. After scrolling down the menu, select **New Flash File** to create a new file or **Select Flash File** to overwrite an existing file.

If **New Flash File** was selected, select **File** and enter the filename using the text editor in the right hand display. Set the **Access Level** as required to define the Login authority needed to erase or overwrite the file. Finally, scroll down and select **Start Writing**.

If **Select Flash File** was selected, select the file to be overwritten from the list, then proceed as in **New Flash File** above.

6.12.2.2 Loading Rack Data

To load Rack data select **Load Rack Data** from the **Flash File Transfer | Module Files** menu, select the target rack required then scroll down and select **Select Rack Data File**. This opens a menu listing all rack data files. When a file is selected, the rack is first scanned to check the contents and status of each slot. This is compared with the contents of the file to produce a differences list. The **Load Rack Data Check** menu appears with the **Rack/File differences** option, showing how many differences there are. These can be checked by selecting **Check differences**.

| # | Rack | File | Status |
|----|-----------|------------|--------|
| 11 | 1635 .10 | 1635 .10 | ✓ |
| 12 | 1647 .100 | @1647 .100 | |
| 13 | 3332 .1 | @3332 .2 | |

- ← Modules match
- ← Module set to LOCAL
- ← Module not available

The resulting list shows for each slot, what module is fitted and what module is expected by the rack data file. The middle column shows a status character if the module is not on-line (x) or not set to remote control (L) or if it is not available to the user because of access level or filtering (-). If the modules match and status is OK, the slot is ticked. If anything is wrong, there is no tick. If all that is wrong is that the FRS of the module is different, the user may set a tick on that slot, telling the controller to go ahead and load the module data to the module anyway. The user may also clear a tick on a valid slot. Having selected which modules to load, the user returns to the previous menu and can decide whether to **Start loading** or **Abort loading**.

6.12.3 Virtual Module Presets

Data for the controls that make up a virtual module may be stored as a Virtual Module Preset. Virtual Module Presets are stored in a single file that is automatically given the name **Virtual Presets**. The user may select the file in on-board flash or in the PCMCIA flash card by setting the **Location** in the **Flash File Transfer** menu. Note that, unlike Physical Module Presets, the physical modules associated with Virtual Module Presets may be on the RS485 Network, not only on the DART Network.

6.12.3.1 Preset Mode

As described above, Virtual Module Presets are stored in a Flash File in on-board Flash or in the PCMCIA flash card, in which case the Preset Mode is set to **Normal**. However, in DARTnet networks with more than one control panel, it may be necessary to store all module presets in a single control panel so that, for a particular virtual module, all presets are the same regardless of which panel was used to recall it or program it. In this method of operation one control panel is dedicated to the task of **Preset Master** and the other panels must be configured as **Preset Slaves**. Optionally, another panel may be configured as the **Preset Sub-Master** to act as a backup for the Preset Master.

When configured as a Preset Slave, the operation of Programming and Recalling presets is still the same as when the presets are stored locally. The difference is that DART messages are sent to the Preset Master to perform the programming and recalling to and from Flash instead of using the local Flash memory.

To change the **Preset Mode** select **Preset Operation** in the **Control Panel Setup** menu. For more information see 6.3 Selecting the Preset Mode.

6.12.3.2 Programming and Recalling Virtual Module Presets

When a virtual module control screen is visible on the RH display, pressing the Menu **G** button brings up the virtual module presets screen. Pressing it again returns the display to the control screen.

Four presets are available; a tick (✓) next to a preset indicates that there is preset data stored against that preset number. Programming and recalling presets uses the 6 select buttons adjacent to the six captions on the screen. Note that the tick (✓) will always be present against all 4 presets if operating as a Preset Slave.



To **Recall** a virtual module preset, press and hold the **Recall** button, then press and release the desired **Preset** button. If the **Recall** button is released before the **Preset** button is released, nothing happens.

To **Program** a virtual module preset, after setting up the virtual module controls as required and pressing Menu **G**, press and hold the **Program** button, then press and release the desired **Preset** button. If the **Program** button is released before the **Preset** button is released, nothing happens.

If the buttons are pressed in the correct sequence, they illuminate and the captions are highlighted. When the operation is complete, the buttons are no longer illuminated and the captions are no longer highlighted. If the buttons are operated correctly, the captions remain highlighted and the buttons remain illuminated for about a second after the preset button is released.

When programming a preset that previously had no data stored, a tick (✓) also appears when the operation is complete. When programming a preset that already existed, the original preset is marked in the file as deleted and the new preset is appended to the file.

6.12.3.3 Effect of Log-in Authority on Virtual Module Presets

When working in **Normal** preset mode, the user will be able to change, by recalling a preset, only those controls to which access is available through the virtual module control screen. That is, if the user is logged in as an operator and a particular control is accessible only to a supervisor or engineer, recalling a preset will not change that control.

However, when working in **Slave** preset mode, the operation is slightly different. The recall will always affect all controls in the virtual module, regardless of the log-in authority of the user, even though the user may not be allowed to adjust some controls manually. This means the user may be constrained to setting certain controls only to values contained in presets.

A typical scenario is when the four presets have been set up to cover different program sources. Timing controls have been set up by an engineer to the values required for each program source and are not adjustable by the operator. However, when the operator recalls a preset because the program source has changed, the timing controls must be set to the values in the preset. The onus is on the operator to ensure that, if other controls are changed, the changes are programmed back to the same preset. If certain controls must not change when recalling a preset, they should not be included in the virtual module.

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6.12.3.4 Maintaining the Virtual Module Presets File

The **Virtual Module Presets** menu option in the **Flash File Transfer** menu is available for performing housekeeping on the Virtual Presets file. Access to this menu option is denied if the panel is configured as a **Preset Slave**. Selecting the option opens a menu with options for deleting individual presets and for compressing the Virtual Presets file.

6.12.3.5 Deleting Virtual Module Presets

After selecting the required **Location** (On-board or PCMCIA) in the **Flash File Transfer** menu, select **Virtual Module Presets**, select the required virtual module and select **Delete Virtual Preset**. In the list of 4 virtual module presets that now appears, those marked by a tick (✓) exist in the file. Selecting a preset deletes it and removes its tick. (Scroll down for Preset 4).

6.12.3.6 Compressing a Virtual Module Presets File

Because deleting a preset simply marks it as deleted but leaves it in the file, a Virtual Presets file can get very long if presets are constantly getting deleted and replaced. Therefore this option is available to remove all of the deleted presets. After selecting the required **Location** (On-board or PCMCIA) in the **Flash File Transfer** menu, select **Compress Presets File**. The file is copied to a new file in flash, leaving behind the sections marked as deleted. The original file is then deleted.

6.13 Alarms and Warnings

The V1605 can be set to identify a range of network, rack and module conditions as alarms or (in most cases) warnings.

All alarms can be defined as momentary or latched. If the alarm is latched, the alarm condition is flagged until the user clears the alarm. If the alarm is momentary, the alarm condition is flagged until the alarm condition disappears. Momentary alarms, once the alarm condition has gone, remain in the Alarm Log but no longer affect the Alarm Signalling (LED, buzzer and contacts). Many of the conditions that cause alarms can also cause Warnings. A Warning sets the Status LED orange (if there are no alarms also active) and does not activate the buzzer or the alarm relay. All Off-line statuses cause Alarms, never Warnings, however they may be latched or momentary.

For any alarm to occur, the **Alarms Enabled** option in the **Configure Alarms** menu must be ticked. Alarms may also be logged directly to a PC via the RS232 port.

NOTE: Alarms are not generated by units that are not visible to the user by virtue of their login authority or the Local Filter setting. However, such alarms already in the alarm log are not cleared when the user's access level is changed.

6.13.1 Alarm Log

The **List Alarms** option in the **Alarm Log** menu lists up to 200 alarms and warnings saved in the V1605 and identifies whether they are active or not. A 'bell' symbol is used to signify an alarm and a 'LED' symbol is used to signify a warning. A partly erased version of the symbol indicates that it has become 'inactive'. An inactive alarm or warning is a momentary alarm or warning for which the alarm condition has cleared. It remains in the log but has no effect on the alarm or warning indicators.

| | |
|-------------------------|--------------------|
| Fm AlarmList | |
| NODE0:00 off-line | Warning – active |
| MOD 0:00:00 removed | Alarm – active |
| MOD 0:00:00 module fail | Warning – inactive |
| MOD 0:00:00 signal fail | Alarm - inactive |

Alarms may be cleared individually using the **Clear Alarms** option in the **Alarm Log** menu and selecting the required alarm indication from the list. Selecting **Clear All Alarms** removes all log entries.

When the user clears an alarm or warning from the log, if it was active, the flag associated with the alarm is cleared. This means that the alarm will occur again if the condition occurs again. If the alarm log should get full, new alarm records are inserted and the oldest records at the beginning of the log are lost. Just as when the user clears an alarm, items removed in this way, if active, cause the associated alarm flag to be cleared.

The alarm log may be uploaded to a PC file (see 7.3.1, Sending data to the PC).

By selecting an alarm in the **Alarm List** menu, more details about the alarm can be seen.

| | |
|---------------------|----------------------------|
| Alarm - MOD 1:04:00 | Source and network address |
| Output Video Failed | Description |
| ALARM UPGRADED OFF | Status |
| -13:13:02 -10:12:05 | On and off relative times |

The heading shows whether the alarm comes from a module, a rack, a gateway, etc., and what its address is. The top line describes the alarm and includes the symbol from the alarm log that says whether it is an alarm or warning and whether it is still active. The second line gives the current status of the alarm including whether it has been upgraded from a warning and whether it is now off (inactive). The bottom line shows how long ago the alarm or warning occurred and, if it is now inactive, how long ago it turned off.

Note that the times shown are relative to the current time because the panel does not contain a real-time clock. If the panel has been turned off since the alarm, the time shown will not include the time while off.

The user may also choose to log alarms to a PC via the RS232 port. The connection is made at 38.4kbaud. When the **Log to PC** option in the **Alarm Log** menu is ticked, a timer is reset and this provides the elapsed time for each log entry. By running the Pro-Bel program CONF1605.EXE on the PC, the logged data may be directed to a file and/or to a viewing window on the PC.

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6.13.2 Rack Alarms & Warnings

The V1605 control panel can identify certain rack conditions as alarms. All options may be set to Disabled, Enabled Latched or Enabled Momentary by selecting **Rack Alarms** from the **Configure Alarms** menu. These are denoted by the symbols shown below.

| | |
|-----------------------|-----------------|
| FE RackAlarms <LOC> | |
| Rack Off-line | Enabled Latched |
| Rack DARTbus Failed | Disabled |
| Rack Controller Reset | Enabled |

Rack alarms are available for the following conditions:

- A **Rack Off-line** alarm occurs if a rack stops sending heartbeat messages. When this occurs, a “Rack Controller Reset” message may optionally be sent to that rack controller if the **Auto reset if off-line** option in the **Engineering | Reset | Reset Rack Controller** menu is ticked (✓). This option defaults to ticked.
- A **Rack Controller Reset** alarm occurs when a “booting” broadcast message is received from a rack controller over DARTnet. If the alarm is configured as “momentary”, it is reset by the first rack heartbeat received from that node.
- A **Rack DARTbus Failed** alarm occurs when a “DARTbus failure” broadcast message is received from a rack controller over DARTnet. If the alarm is configured as “momentary”, it is reset by a rack controller reset.
- A **Rack Fan Failed** alarm occurs when a “Fan Status (Failed)” broadcast message is received from a rack controller over DARTnet indicating that all rack fans have stopped working. If the alarm is configured as “momentary”, it is reset when a “Fan Status (OK)” broadcast message is received. Only available from a V6081 rack controller.
- A **Rack NVRAM Error** alarm occurs when a “NVRAM Initialised” broadcast message is received from a rack controller over DARTnet indicating that there was a checksum or other error detected in the NVRAM at power on. If the alarm is configured as “momentary”, it is reset on a subsequent heartbeat from the rack controller. Only available from a V6081 rack controller.
- A **Rack DART Transmit** alarm occurs when a “DARTnet transmit error” broadcast message is received from a rack controller over DARTnet indicating that the rack controller has just recovered after an excessively large number of CAN Transmit errors. This can mean that the rack was disconnected from the network or there is an unconnected cable spur in the network. If the alarm is configured as “momentary”, it is reset by the next heartbeat from the rack controller. Only available from a V6081 rack controller.
- A **Rack DART Receive** alarm occurs when a “DARTnet receive error” broadcast message is received from a rack controller over DARTnet indicating that the rack controller has just recovered after an excessively large number of CAN Receive errors. This usually means the network is insufficiently terminated. If the alarm is configured as “momentary”, it is reset by the next heartbeat from the rack controller. Only available from a V6081 rack controller.
- A **Rack DART Overflow** alarm occurs when a “DARTnet overflow” broadcast message is received from a rack controller over DARTnet indicating that messages sent to the rack controller have been lost due to excessively high network activity. If the alarm is configured as “momentary”, it is reset by the next heartbeat from the rack controller. Only available from a V6081 rack controller.
- A **Voltage Out of Range** or a **Temperature High** alarm depends on the Alarm parameter thresholds. These may be set up by scrolling down the **Rack Alarms** menu, selecting a **Rack** and selecting the **Change Alarm Limits** option. Note that it is necessary to enter the number of power supplies fitted so that the redundant power supply status can be monitored on dual power supply systems.

The menu option **Rack Warnings** opens the Rack Warnings menu. Warnings are available for the following conditions:

- A **Rack Fan Fast** warning occurs when a “Fan Status (Fast)” broadcast message is received from a rack controller over DARTnet indicating that, either the rack temperature has reached an excessively high level, or, in a dual PSU rack, one of the two fans has failed. If the alarm is configured as “momentary”, it is reset when a “Fan Status (OK)” broadcast message is received. Only available from a V6081 rack controller.
- A **Voltage Out of Range** or a **Temperature High** warning depends on the Warning parameter thresholds. These are set in the same way as alarm parameters, normally being set to thresholds that occur sooner than the alarm thresholds.

An alarm or warning parameter threshold may be set to its default by holding its select button in for a few seconds.

6.13.3 Module Alarms and Warnings

There are two types of module alarms, those that can be set for all modules (global) and those which are specific to a particular module.

6.13.3.1 Global module alarms

Global module alarms may be set to momentary or latched but do not generate warnings. They are available for the following conditions:



- **Module Removed** – if momentary, this is cleared when the module is re-inserted. The module’s status is set to off-line.
- **Module Initialisation Failed** – this occurs if the rack controller has detected large numbers of errors on the DARTbus during the initialisation of the module. The module’s status is set to off-line. If the alarm is set to momentary, this alarm is cleared when a **new module** condition is detected which occurs if the module is removed and replaced or after resetting the rack controller in the appropriate rack.
- **Module DARTbus Failure** – this occurs if the rack controller has detected large numbers of errors on the DARTbus during the normal operation of the module. The module’s status is set to off-line and the alarm is cleared under the same conditions as the initialisation failed alarm.
- **Module Read Failure** – this occurs if a read request fails after several retries. On racks with 1608 or 606 rack controllers fitted, failure is detected by absence of any response message. This normally means the request or response has been lost somewhere in the network. However, on racks with 6081 rack controllers fitted, a failure on the DARTbus results in an empty message being returned and this also initiates a sequence of retries which, when exhausted, results in an alarm. If the alarm is set to momentary, this alarm is cleared under the same conditions as those above.
- **Module NVRAM Checksum** – this occurs when a “Slot NVRAM checksum error” broadcast message is received from a rack controller over DARTnet indicating that there was a checksum error detected in the slot’s NVRAM at power on. If the alarm is configured as “momentary”, it is reset on a subsequent heartbeat from the rack controller. Only available from a V6081 rack controller.

6.13.3.2 Module specific alarms and warnings

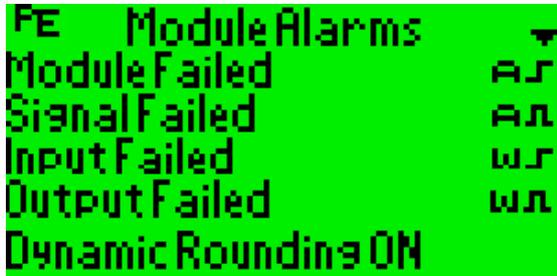
All module types may also have up to 16 combinations of DART status bits defined as alarms. These are fixed in the product database for each module type and FRS. Selecting a module in the **Module**

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Alarms menu and then selecting **Configure Module Alarms** brings up a menu of alarm options for that module type.

Each alarm type may be set to Disabled, Alarm Enabled or Warning Enabled and these may be either Latched or Momentary. The settings are indicated by the symbols shown below:

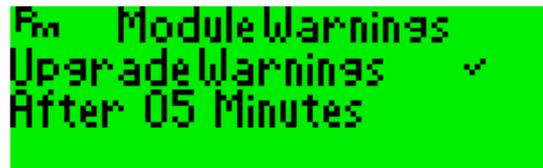


- AL Alarm Enabled Latched
- AM Alarm Enabled Momentary
- WL Warning Enabled Latched
- WM Warning Enabled Momentary
- Disabled

The control panel checks all network messages for alarm conditions and sets or clears Alarms or Warnings depending on the Module Alarms configuration. Momentary alarms and warnings are cleared when the alarm condition clears although they remain in the log. Latched alarms and warnings remain until they are cleared from the log by the user or, in the event of the log becoming full, are cleared from the beginning of the log.

6.13.3.3 Upgrading module warnings to alarms

Warnings from a particular module may be set to upgrade to an Alarm if they remain for longer than a predefined time. By selecting **Upgrade Module Warnings** in the **Module Alarms** menu, the user may select the **Upgrade Warnings** option to be on. When this option is on, the user is able to set the number of minutes (0 – 99) after which a warning will become an alarm.



The logged warning changes to a logged alarm when this happens. This alarm will have the same latched or momentary setting as the original warning.

6.13.4 Network Alarms

The V1605 control panel can identify the several Network conditions as alarms. These are configured by selecting **Network Alarms** from the **Configure Alarms** menu and may be set to Disabled, Enabled Latched or Enabled Momentary. These conditions cannot be set to generate warnings.

- A **Port Disconnected** alarm occurs if the DARTnet is disconnected from the V1605 or all racks connected to the DARTnet are powered off. At the same time as this happens a **Gateway Off-line** alarm for the DIN341 on the DARTnet port also occurs.
- A **Port DARTnet** alarm occurs if the DARTnet interface's CAN peripheral enters error-passive or bus-off state. It is cleared as soon as it re-enters error-active or normal state. CAN errors are usually due to disconnection of the CAN bus or poor termination. It is initiated and cleared by messages from the DARTnet interface and is not available if this is a DIN341.
- A **Duplicate Node** alarm occurs if the DARTnet interface detects an irregular heartbeat pattern from a node address or if it sees a heartbeat coming from a node with the same address as itself. It is initiated and cleared by messages from the DARTnet interface and is not available if this is a DIN341. These alarms can sometimes occur during the first few minutes after a large network is powered on. Any remaining after a few minutes should be investigated.
- A **Controller Off-line** alarm occurs if any DARTnet controller, such as another V1605, on the network stops sending heartbeats.



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6.13.5 Miscellaneous Alarms

The V1605 can also identify several Miscellaneous Alarms. These are configured by selecting **Miscellaneous Alarms** from the **Configure Alarms** menu and may be set to Disabled, Enabled Latched or Enabled Momentary.

- A **Remote Router I/F** alarm occurs if an error message is received on the DART interface from either a third party Router Interface box or another V1605 configured for router polling.
- A **Local Router I/F** alarm occurs if the V1605 is itself a master polling a router and two or more consecutive replies are missed on the RS485 interface.

6.13.6 Alarm Actions

When the selected alarm conditions occur, a number of actions take place:

- Two independent relay changeover contact closures take place on the **Alarms Connector** on the rear panel.
- The alarm warning buzzer sounds. This may be disabled by the front panel **Alarm** button, which remains illuminated as an indication that the audible alarm is disabled. The volume of the audible alarm may be adjusted by selecting **Alarm Volume** from **Control Panel Setup** in the main menu.
- Details of alarm type and location appear in the left-hand display. This may be cancelled by pressing the button adjacent to the Exit caption on the display. This form of alarm alert may be enabled or disabled by selecting **Control Panel Setup** from the main menu, selecting **Errors & Alerts** and then selecting **Alarm Alerts**. It is off by default.
- Details of the alarm type and location are added to the alarm log. This retains the most recent 200 alarm occurrences and it may be viewed by selecting **Alarm Log** from the main menu, then **List Alarms**. Through the **Alarm Log** menu it is also possible to clear a selected alarm occurrence from the list or to clear the alarm list completely. The alarm log may also be transferred to a PC file by selecting **Send to PC** in the **PC Transfer** menu and setting **Alarm Log** to ticked. (See Sending Data to the PC)
- If **Log to PC** is selected in the **Alarm Log** menu, the alarm log entry is also logged directly to a PC via the RS232 port.

6.13.6.1 Logging Alarms to PC

In the viewing window of the CONF1605.EXE program the alarm log messages appear as below...

```
@I[Alarm]ON=(0:17:17),WARNING,-,Local Mode,1:04:08  
@I[Alarm]ON=(0:17:55),ALARM,-,V(b) high,1:04:00  
@I[Alarm]ON=(0:17:17),ALARM,UPGRADED,Local Mode,1:04:08  
@I[Alarm]OFF=(0:18:29),ALARM,UPGRADED,Local Mode,1:04:08
```

These messages when logged to a file appear as below...

```
[Alarm]  
ON=(0:17:17),WARNING,-,Local Mode,1:04:08  
ON=(0:17:55),ALARM,-,V(b) high,1:04:00  
ON=(0:17:17),ALARM,UPGRADED,Local Mode,1:04:08  
OFF=(0:18:29),ALARM,UPGRADED,Local Mode,1:04:08
```

The time shown is the elapsed time since the **Log to PC** option in the **Alarm Log** menu was ticked. An option in CONF1605.EXE also provides for the messages in the viewing window to be time stamped as below...

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14:10:49 @[Alarm]ON=(0:23:16),WARNING,-,Local Mode,1:04:08
14:11:13 @[Alarm]ON=(0:23:41),ALARM,-,V(b) high,1:04:00
14:11:53 @[Alarm]ON=(0:23:16),ALARM,UPGRADED,Local Mode,1:04:08
14:12:04 @[Alarm]OFF=(0:24:31),ALARM,UPGRADED,Local Mode,1:04:08

6.14 Alerts and Errors

Alerts and errors are displays that provide the user with information about particular conditions which can occur on the V1605.

6.14.1 Alarm Alerts

Alarm alerts are briefly displayed text indication that appear when an alarm or warning occurs (see above). They may be enabled or disabled through the **Errors & Alerts** option in the **Control Panel Setup** menu. The default is off.

6.14.2 Status Alerts

Status alerts are text indications that the action requested is not possible. For example, selecting a status only item in a module display results in the brief appearance of a "READ-ONLY" alert. These alerts may be enabled or disabled by selecting **Control Panel Setup** from the main menu, selecting **Errors & Alerts** and then selecting **Status Alerts**. The default is on (√).

6.14.3 Errors

Errors are text indications of a possible system malfunction. These error indications may be enabled or disabled by selecting **Control Panel Setup** from the main menu, selecting **Errors & Warnings** and then selecting **Errors**. The default is off.

6.15 User Names

User defined names may be entered

- for Physical Network nodes,
- for Virtual Network nodes and
- for module control state captions (**Control State Aliases**)

6.15.1 Physical Network Nodes

BY default, the V1605 identifies physical ports, nodes, modules and gateways by their "network address" ...

PORT 01,NODE 05, MOD03
and their logical "Default" names
DARTnet1, Rack5, V1617, etc.

Physical ports, nodes, modules and gateways may be given two types of user name, known as Local Name and System Name, which replace the "Default" name.

- **Default names** are fixed and may not be edited.
- **Local names** may be edited and cleared at any login authority level.
- **System Names** may be edited and cleared only when logged in at Engineering authority level.
- Naming facilities for physical ports, nodes and modules are available in physical and mixed modes.
- Alternatively, Local and System Names for Physical modules may be downloaded from a PC or read from a Flash file.

6.15.1.1 Selecting Name to be Displayed

The V1605 can be set up to display Default, Local or System Names. If no Local or System names have been entered, the default name is displayed regardless of the selection. If System Names but not Local Names have been entered, the System Name is displayed as a Local Name. The type of name selected to be in use is identified by <DEF>, <LOC> or <SYS> at the top of the Module Select menu in the left-hand display.

The type of name to be displayed is set by the **Display Names** option in the **Control Panel Setup** menu.

6.15.1.2 Entering and Editing User Names for Physical Modules

When in Physical or Mixed modes, user names may be entered or edited by the following sequence of actions.

- After selecting Edit Names from the Edit User Names | Local Names or System Names menu, select the Port, Node, Module or Gateway required.

The text editor is now displayed in the right hand display.

The top select button on either side of the display will be illuminated, indicating that the scroll knob can be used to select a character from the source character string.



Characters are entered as follows:

- Select the first character required using the scroll knob and the button adjacent to Case to select upper or lower case.
- Press the button adjacent to Insert.
- Repeat these two steps to enter further characters.

To edit text that has already been entered or to correct entry errors:

- Press the button adjacent to Edit Point so that the scroll knob may be used to move the cursor in the text being edited.
- Position the cursor in the line of text using the scroll knob.
- Use the button adjacent to Case to change the case of a character in the edit text.
- Use the button adjacent to Delete to remove an unwanted character
- Use either of the buttons adjacent to the character selection line to select the source string and continue entering characters.
- When the cursor is at the end of the text being edited, the button adjacent to Case will change the case of the source character string.
- Also, when the cursor is at the end of the text, if you press the button adjacent to Edit Point and rotate the scroll knob, spaces will be added to the end of the text. When the cursor is at the end of all the entered text it is shown as a wide block, if the cursor is actually on a space at the end of the entered characters, it shows up as a narrow block. Individual spaces can be inserted by selecting the space character between Z (z) and 0 (zero).

6.15.1.3 Deleting User Names for Physical Modules

User Names may be deleted through the **Edit User Names** menu by selecting the **Local Names** or **System Names** option, selecting **Clear Names**, ticking (✓) **Port Names**, **Node Names**, **Module Names** or **Gateway Names** as required and selecting the Port, Node, Module or Gateway, each of which may be set to **ALL** if clearing multiple names. To initiate the clear, select **Execute Clear Names** then **Yes** when asked to confirm.

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Note 1: If **ALL PORTS** is selected for port names, and clearing of nodes, modules or gateway names is enabled (i.e. the display shows a ✓ against the item) then these will also be automatically set to **ALL ...** and all the node, module and gateway names will be cleared. Similarly, if **ALL NODES** is selected for node names and clearing of module names is enabled, modules will be set to **ALL MODULES** and all module and node names on the selected port will be cleared.

Note 2: If Port, Node, Module, or Gateway are set to **ALL ...**, only those units currently visible to the user by virtue of their access level and filter settings will be affected.

6.15.2 Virtual Network Nodes

There is just a single type of name available for virtual network nodes, unlike the Local and System names available for physical network nodes.

- **Virtual Names** may be edited and cleared at any login authority level.
- Virtual nets, racks and modules may be each allocated a virtual name.
- If no virtual names have been entered, those places where the name would be displayed are blank.
- Naming facilities for virtual nets, racks and modules are available in virtual and mixed modes.
- Alternatively, Virtual names may be downloaded from a PC or read from a Flash file.

A virtual network node is visible to the user in the **Virtual Module Select** menu if

- it has been given a **Virtual Name** or
- it contains a defined **Virtual Module**

6.15.2.1 Entering and Editing Virtual Names

Names for **Virtual Networks**, **Virtual Racks** and **Virtual Modules** may be entered or edited through the **Edit Virtual Names** menu in Virtual mode or the **Edit User Names | Virtual Names** menu in Mixed mode. Select **Edit Names**, then the required virtual network, rack and module and use the text editor display to enter or edit the name.

6.15.2.2 Clearing Virtual Names

Names for **Virtual Networks**, **Virtual Racks** and **Virtual Modules** may be cleared through the **Edit Virtual Names** menu in Virtual mode or the **Edit User Names | Virtual Names** menu in Mixed mode. Select **Clear Names**, then the required virtual network, rack and module then initiate the clear by selecting **Execute Clear Names** then **Yes** when asked to confirm.

6.15.3 Control State Aliases

The captions that appear against some types of control in physical and virtual module control screens are defined by the database entry for a particular module. However, it is possible to replace some of these with user defined names. These are called Control State Aliases. For instance, a button control which normally shows "On" or "Off" may be changed to show the captions "Active" and "Inactive".

- Control State Aliases may not be edited on the V1605 but may be downloaded from a PC or read from a Flash file. See 8.7.1 for file format.
- To load control state aliases from a PC or Flash file, the **Local Names** menu option must be ticked in the **Receive Items** or **Flash Read Items** menu.
- Control state aliases apply to individual module addresses in a DART or RS485 network which means that the same module type may have different control state aliases depending on where in the network it is located.



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- Control state aliases apply to **Button**, **LED** and **Spin List** controls only, plus **Numeric** controls that use a 'mapped string' output display function. This latter type of control is used instead of a spin list when the control has more than 16 possible states, up to a maximum of 256 states, 0 – 255.
- Control state aliases may be specified for a **single control** or a **range of controls**. For this reason, similar controls in a module that share control captions are defined with *consecutive control identifiers*.
- Control state aliases may be cleared through the **Control State Aliases** option in the **Edit User Names** menu.
- Control state aliases may be enabled for use in Physical or Virtual module screens or both via the **Control State Aliases** option in the **Edit User Names** menu.

The information required for producing a Control State Alias file is in the Database file that can be uploaded from the panel. This file lists details of every control in every module including the type of control and its ID. Control state aliases may be defined for statuses (read only controls) as well as changeable controls. The types of control that may use aliases are L (LED), S (spin list), N (numeric) for status display and LB (LED button), SDE (spin list display/entry), NDE (numeric display/entry) for controls. N and NDE may use aliases only when used in the same way as S and SDE.

For instance:

`Control1118=20,Input 1 Select,SDE,60,CAL` specifies a spin list control, ID 20 with the name "Input 1Select". Its data appears at column 60 in the display and it will be set to its default by Module Calibrate.

`Control194=80,#1 \x00F Output 1,NDE,60,CAL` specifies a numeric control, ID 80 with the name "#1 → Output 1" (\x00F is a special display character). Its data appears at column 60 in the display and it also is a CAL control.

6.16 Clearing Virtual Controls

Although virtual controls may only be defined by transferring the definitions from a PC, virtual controls may be cleared by using the **Clear Virtual Controls** option which is available in the Main Menu when in Virtual or Mixed operating modes. Loading a new virtual module definition to the same virtual module address will overwrite any previous definition.

Note: "Clear Virtual Controls" is only available when logged in at Engineering and Supervisor authority levels.

- To clear virtual controls:
- Select **Clear Virtual Controls** from the Main Menu.
- Select the required **vNET**. If **ALL VIRT.NETS** is selected, **vRCK** and **vMOD** selections will also be set to **ALL**
- Select the required **vRCK**. If **ALL VIRT.RACKS** is selected, the **vMOD** selection will also be set to **ALL**
- Scroll down and select **Execute Cl'r Virt Controls** and respond to the **Are you sure?** message.

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6.17 Control Panel Set-up

NOTE: All Control Panel Setup menu items are available when logged in at Engineering authority level. At Supervisor and Operator login level access is restricted to Display Names, LCD Contrast and Alarm Volume only.

6.17.1 Mode

Selects the operating mode of the panel. See Section 6.1 Selection of Operating Mode.

6.17.2 Display Names

Selects the type of name displayed for Port, Node, Module and Gateway. See Section 6.15.1.1. Selecting Name to be Displayed.

6.17.3 LCD Settings

This option is different for the **V1602** and **V1605**.

On the **V1602**, there are options for setting the contrast for the two **LCD displays** and the **LCD Recall Buttons** and for setting the **LCD Display Mode**. A single control affects the contrast of both displays, however, it should be noted that the displays take a few minutes from power up to get to their final contrast setting, so they should not be adjusted immediately after turning the panel on. The LCD Display Mode allows the user to choose light text on a dark background instead of dark on light.

On the **V1605** there are individual contrast settings for the two LCD displays. This allows the optimum settings for the prevailing viewing conditions.

6.17.4 Alarm Volume

Adjusts the volume of the audible alarm. Selecting **Alarm Volume** causes the alarm to sound regardless of whether it has been muted via the Alarm button. It can then be adjusted using the scroll knob.

6.17.5 Port Baud Rates

To select and adjust Port Baud Rates, select **Ports**, then **Baud Rates** from the **Control Panel Setup** menu.

Port 1 DART – (see Section 3.1 - DARTnet configuration)

Port 2 DART – (see Section 3.1 - DARTnet configuration)

Port 3 DART – (see Section 3.1 - DARTnet configuration)

Port 4 DART – (see Section 3.1 - DARTnet configuration)

Port 5 RS485 – preset to 38.4 kbaud – cannot be changed

Port 6 PC - preset to 38.4 kbaud - cannot be changed.

6.17.6 Controller Addresses

This facility enables the controller address to be set for each port. (See Section 3.1.2 DART Addressing).

6.17.7 Setting RS485 Network Parameters

See Section 3.2.4 - RS485 Network Settings.



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6.17.8 Errors & Alerts

Determines whether or not alarm alerts, status alerts and error information is displayed. See Section 6.13 Alarms and Warnings and Section 6.14 Alerts and Errors.

6.17.9 Delays, Timeouts, etc.

Enables various delay, timeout and other functions to be adjusted to the user's preferred values.

Idle Timeout - adjusts the time, following a selection of a control, when de-selection automatically occurs if no adjustment has been made. Default is 15 seconds, minimum is 5 seconds, maximum is 60 seconds.

Enable Idle Timeout – allows the idle timeout to be disabled so that a control remains selected until deselected by the user.

Alert Delay - adjusts the time for which alert messages are displayed.

Class7Update – determines the method for getting data from Class 7 modules. The default method, by initiating broadcasts (**B'cast**), is preferred over requesting the data (**Request**) because it reduces the DARTnet loading in a busy network.

DART Update - adjusts the time interval between DART requests for module status updates.

DART Node Check – adjusts the time interval between the checking of node heartbeats and associated rack scans. It should not be necessary to change this from its default value.

Disable Router Delay – disables the delay that normally occurs between a panel receiving a DART router switching message and switching to the new virtual module. This delay is related to the panel's DARTnet address and is present to prevent message peaks when several panels want to request the same data. If only one panel reacts to route changes for a particular destination, the delay is not necessary and can be switched off using this control. Switching this delay off on systems that really require it may result in lost data on the DARTnet.

Vistek RS485 Network - This is an alternative route to some of the RS485 network settings described in Section 3.2.4 - RS485 Network Settings.

6.17.10 Control Options

These options allow certain attributes of certain types of controls to be modified.

Video Gains - allows the user to display Video, Chroma and R/G/B gains in Percent or Decibels. The default is Decibels. Note that this control has no effect on audio gains and levels.

Numeric Update - allows the user to control the manner in which numeric control changes (gain values, etc) are sent in response to movement of the right hand control knob. In INSTANT mode a change is sent whenever a change is seen in the right hand control knob position. In DELAYED mode the change is sent only when there has been no movement of the control knob for 600ms.

6.17.11 Display Control

Determines whether the information displayed scrolls or pages as the scroll knob is rotated.

6.18 PC Transfer

The PC transfer facilities enable information to be transferred between the V1605 and a PC via Port 6. The transfer facilities available are dependent on the user's login authority level – for more information see Section 7.

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Information that can be transferred from the PC to the V1605 includes the panel operating program and module database in Flash, panel configuration, local, system and virtual names, alarm configuration, router configuration, virtual module data and network configuration (containing access level and filter information). The same information may also be transferred from the V1605 panel to the PC with, additionally, the product list, product database, product details, alarm log and network status.

In addition, the PC port may be used for logging directly to a PC items such as Alarms.

It should be noted that two items, Controller Address and Panel Select No., are not transferred with the rest of the panel configuration data. This is so that several panels may be loaded with identical configuration files without affecting their pre-set Controller Address or Panel Select No. However, Panel Select Numbers are included in the Router Configuration group along with the other router options.

The transfer process is controlled by selecting **PC Transfer** from the main menu, selecting **Receive from PC**, **Send to PC** or **Send Product Details to PC** and then selecting the information categories to be included in the transfer.

For more information, see: Section 7, Transferring data between a PC and the V1605 and Section 8, Configuration file format

6.19 Flash File Transfer

The **Flash File Transfer** menu allows a range of panel information to be written to and read from Flash memory. The flash memory used may be either the on-board memory within the panel or a removable PCMCIA card.

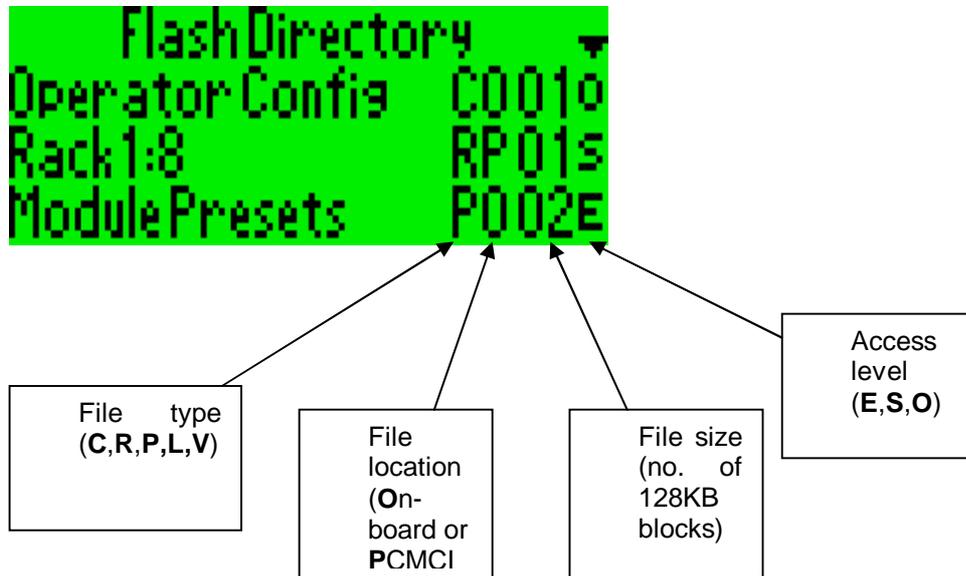
Note that on-board flash is not available in a V1605 with a Version 1 bootloader. When upgrading a V1605 to version 10 software from version 9 or lower, any files in on-board flash should first be copied to either a PCMCIA flash card or a PC. To retain the use of on-board flash but with reduced capacity, the V1605 must be returned to Pro-Bel to have a new bootloader PROM fitted.

There are five types of file:

- **Configuration Files.** These store panel configuration data as described in this section.
- **Presets Files.** These store physical module preset data and are used as described in Section 6.12.1.
- **Rack Data Files.** These store the settings of modules in a complete DART rack and are used as described in Section 6.12.2.
- **Log Files.** These may be copied from a PC but are not generated directly by logging options in the panel.
- **Virtual Presets Files.** These store virtual module preset data and are used as described in Section 6.12.3

6.19.1 Flash File Directory

Any **Flash File Transfer** menu option that requires a list of files to be shown displays files as follows:



The **File Type** is determined by the operation that is taking place. The **File Location** is determined when necessary by the **File Location** option in the main **Flash File Transfer** menu. This is used when creating a new file or when working with Presets. When selecting a file from a directory, as above, the location is that of the file selected. When a file is created, except when it is a **Presets** or **Virtual Presets** file, in which case the name is generated automatically, the user enters the name using the edit screen on the RH LCD display. The **Access Level** of the file defaults to the authority of the user creating the file but this can be overridden to a lower level. This access level determines who is allowed to erase or overwrite the file and, in the case of Configuration files, who is allowed to read from them. The **Size** of the file is determined by the amount of data that has been written.

6.19.2 Writing a Configuration Flash File

Any or all of the following data categories may be selected to be written or read:

- Panel Configuration
- Alarm Configuration
- Network Configuration
- Router Configuration
- Local Names (including Control State Aliases)
- System Names
- Virtual Names
- Virtual Modules

To write configuration data to a Flash file,

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Having ticked (✓) the required items in the **Flash Write Items** menu, the user then has the choice of selecting **New Flash File** or an existing file by choosing **Select Flash File**. If **New Flash File** is selected, the user can enter a **Name**, using the name editor in the right hand LCD display,

If **Select Flash File** is selected, the user can choose to overwrite an existing file from the **Select Flash File** menu. Once a file is selected, the user can, optionally, change the **Name** using the name editor in the right hand LCD display and select an **Access Level** before initiating the write by selecting **Start Writing**. The Location (On-board or PCMCIA) is whatever was selected when the file was first created. Note that it is only possible to select a file at or below the current login authority level.

All configuration items are available to be written to a Flash File whatever the current login authority level, however, it may not be possible to read all of them at the same level.

6.19.3 Reading a Configuration Flash File

To read configuration data from a Flash File, select **Configuration Files** from the **Flash File Transfer** menu then select **Read Flash File**.

Tick (✓) the items to be read in the **Flash Read Items** menu and then select **Select File**. (Panel Configuration, Network Configuration and System Names are available at Engineering level login only). When a file has been selected from the Read Selected File menu, the following message appears:

COUNTING LINES
IN FLASH FILE

This is followed by:

Reading from Flash File
xx%

The percentage figure indicates how much of the file has been read. As when loading a file from a PC, if the **Panel Configuration** item was ticked in the Flash Read Items menu, the panel is initialised after the file has been loaded and the following message appears:

INITIALISING
CONTROL PANEL
TO NEW SETTINGS

Note that it is only possible to select a file at or below the current login authority level to prevent configuration items normally accessible only by a higher authority being changed.

6.19.4 Initialising the Flash File System

Sometimes it may be necessary to erase all Flash Files in either on-board Flash or PCMCIA Flash. This is done through the **Engineering** menu by selecting **Reset, Erase Flash Files**, then **On-board Flash Files** or **PCMCIA Flash Files** as required.

Depending on which selection is made, one of the following messages appears briefly:

ERASING ALL
ON-BOARD
FLASH FILES
or
ERASING ALL
PCMCIA
FLASH FILES

If the panel detects on power-up that the on-board flash file memory has not been initialised, it erases it automatically. However, the user must ensure that, when using a PCMCIA card for the first time, it is first erased as above.



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6.19.5 PCMCIA Card

In the **V1602**, the PCMCIA card is accessed through the **Flashcard** slot below the LH display.

In the **V1605**, access to the PCMCIA card is gained by opening the front panel. The PCMCIA socket is located under the main printed circuit board, behind the right hand LCD display.

Either a complete PCMCIA card or a Compact Flash card with a PCMCIA adapter may be used.

When the card is inserted (or if it is already in place, when the control panel is powered up), the following message appears briefly on the LH LCD display:

PCMCIA FLASH
CARD DETECTED

The control panel identifies the capacity of the card, reads how many blocks are used and how many are spare and enters the names of existing files in the Flash Directory.

When it is removed the following message appears on the LH LCD display:

PCMCIA FLASH
CARD REMOVED

6.19.6 Copying Flash Files

Using the **Copy File** facility from the **Flash File Transfer** menu, it is possible to copy flash files to and from a PC and to copy files between On-board Flash and PCMCIA Flash.

Note: The facility to copy Flash files to and from the PC should not be confused with the facilities for saving and loading data via the PC Transfer menu. Items loaded into the V1605 under the PC transfer facility have an immediate effect on the operation of the panel, whereas files loaded into Flash under the Copy File facility are available for subsequent recall within the panel using Flash File Transfer.

The INI file format is used because it is portable and these options allow files to be generated on a PC and copied to a Flash File in the V1605 or to be generated in the V1605 and copied to a PC for editing. Files copied from Flash to the PC always include the file type section. Those copied from the PC which do not have a file type section are assumed to be configuration files and will be saved in Flash as this type with a file type section as shown below.

```
[File]  
Type=Config
```

If the user copies a file from a PC to overwrite an existing Flash file, the Flash file will not be overwritten until the V1605 has checked that the two files are of the same type.

Note that a **Module Presets** file or **Virtual Presets** file may be copied to a new flash file and given a new name, thereby creating a presets or virtual file with a name different from the default. However, if another presets or virtual file already exists, it will be the one that appears first in the directory (for the location selected) that gets used. Therefore it is important not to have more than one Module Presets or Virtual Presets file present in the same location (on-board or PCMCIA).

The **Flash to Flash** option is used when the user wishes to copy a file from on-board flash to the PCMCIA card or from the PCMCIA card to on-board flash. It cannot be used to copy an on-board file to on-board flash or a PCMCIA file to PCMCIA flash.

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6.19.6.1 Copying Files from Flash to PC

Flash files may be copied to a PC using the Conf1605 utility as follows:

- run the Conf1605 program on the PC and select the **Receive Configuration, Module Presets or Rack Data File from V1605** toolbar button or **File** menu option.
- select a new or existing file on the PC
- when **Start sending from V1605** is displayed, on the V1605 select **Flash to PC** from the **Copy File** sub-menu, then select the file to be transferred from the list
- the Conf1605 window will display a progress bar, followed by **Transfer Complete**

6.19.6.2 Copying Files from PC to Flash

Flash files may be copied from a PC using the Conf1605 utility as follows:

- run the Conf1605 program on the PC and select the **Send Configuration, Module Presets or Rack Data File to V1605** toolbar button or **File** menu option.
- select the file to be transferred, followed by **Open**
- when the information box appears, follow the instructions, i.e. :
- on the V1605 select Flash File Transfer, Copy File, PC to Flash,
- select **New Flash File** or **Select Flash File** to overwrite an existing file.
- If **New Flash File** was selected, select **File** and enter the filename using the text editor in the right hand display. Select **Access Level** and if required and then scroll down and select **Start Writing**. The new file will be created in On-board or PCMCIA flash according to the **Location** setting in the main **Flash File Transfer** menu.
- If **Select Flash File** was selected, select the file to be overwritten from the list, then proceed as in **New Flash File** above.
- When **Ready to Receive Data** is displayed on the V1605, select **OK** on the V1605 information box. The V1605 window will display a progress bar, followed by **Transfer Complete**.

6.19.6.3 Copying Files from Flash to Flash

To copy a file from **On-board to PCMCIA**, proceed as follows:

- From the Flash File Transfer menu select Copy File, Flash to Flash,
- select Copy On-board to PCMCIA
- select a file from the list of On-board files
- select New Flash File or Select Flash File to overwrite an existing file on the PCMCIA card.
- If New Flash File was selected, select File and enter the filename using the text editor in the right hand display. Select Access Level and change it if required and then scroll down and select Start Writing. The file will be created on the PCMCIA card.
- If Select Flash File was selected, select the file to be overwritten from the list, then proceed as in New Flash File above.



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To copy a file from PCMCIA to On-board, proceed as follows:

- From the Flash File Transfer menu, select Copy File, Flash to Flash,
- select Copy PCMCIA to On-board
- select a file from the list of PCMCIA files
- select New Flash File or Select Flash File to overwrite an existing file in On-board flash..
- If New Flash File was selected, select File and enter the filename using the text editor in the right hand display. Select Access Level and change it if required and then scroll down and select Start Writing. The file will be created in the On-board flash.
- If Select Flash File was selected, select the file to be overwritten from the list, then proceed as in New Flash File above.

6.20 Engineering

NOTE: The Engineering sub-menu is only available when logged in at Engineering authority level.

6.20.1 Reset Rack Controller

To reset a rack controller:

- select Engineering | Reset | Rack Controller
- on the Reset Rack Controller menu, select the Port, Node and Module required. Note that the V1608 Rack Controller module will be in module position 15. If an Avitel rack is being controlled, rack controller(s) may be in positions 00 and/or 15.
- Once selections are complete, scroll down to Execute Reset and select it.

The option **Auto reset if off-line** also appears in this menu and is **ON** by default. This causes a **Controller Reset** message to be sent to a Rack Controller when it is detected going off-line.

6.20.2 Resetting Battery Backed Memory

The setup parameters, user and virtual names and virtual module control elements of the battery backed memory may be reset collectively or individually as follows:

- select Engineering | Reset | Battery Backed Memory
- select elements to be cleared (√ indicates elements selected)
- select Execute Reset B/B Memory followed by Yes

6.20.3 Resetting the V1602 or V1605 Control Panel

The V1602/5 can be soft reset as follows:

- select Engineering | Reset | V1605 (or V1602) Controller
- select Execute Reset

The V1605 reacts in the same way as it would if its internal reset push button were pressed (see 6.22 Processor Reset). Battery backed memory remains intact and all interfaces are initialised.

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6.20.4 Clearing Port, Rack or Module Status

This function allows data stored by the panel regarding previously connected racks and modules to be cleared selectively. Clearing Port Status clears all data held concerning the racks and modules connected to the selected port. Clearing Rack Status clears all data held about the selected rack and its modules.

Clearing Module Status clears data held about the selected module and also issues a message to the rack controller to clear some of its memory as well, just its status byte if the module is on-line but most of the 48 bytes allocated to the module if not.

Clearing status will also reset the access level of a port, rack or module to "unused" (U) unless it is on-line, in which case it leaves the access level as it was.

Note: If **All** is selected for port status, then associated nodes and modules will also be automatically set to **All** and all the node and module status will be cleared. Similarly, if **All** is selected for node status, associated modules will be set to **All** and all module and node status on the selected port will be cleared.

To perform the clear operation:

- select Engineering | Clear Status
- tick (✓) Port Status, Rack Status or Module Status as required
- make the necessary selections of ports, nodes and modules
- scroll down and select Execute Clear Status, followed by Yes

What memory in the rack controller is reset depends on whether a module is on-line or not. If the module is not on-line, the majority of the 48 bytes allocated to the module is cleared. This is useful when reconfiguring a rack so that historical information about which modules used to be plugged in is removed. If it is on-line, just the status byte is cleared and then not if the module is a rack controller. This has the effect of making the rack controller think a module has just been re-plugged into the rack.

When multiple ports and/or racks are selected to have status cleared, the device recall buttons are illuminated to indicate the progress of the operation by showing the current port and rack address.

6.20.5 Reading Module Reference Data

A module's factory programmed information may be displayed as follows:

- From the **Engineering** menu, select **Module Reference Data** and select the port, node and module required.
- The module reference data will be read and will appear in the right hand display. If the module is Class 7, this will be read from the Module's program memory and will be formatted for Class 7. If the module is Class 4, it will be read from the module's EEPROM and formatted for Class 4.

6.20.6 Reading Module NVR

This information is normally required only by designers of DARTnet and DARTbus systems or modules,

There are three menu items in the **Engineering** menu for displaying the contents of a rack controller's non-volatile RAM for a particular module slot. **Module NVR (v2.3)** displays the 48 bytes specified by DART V2.3. **Module NVR (v3.0)** is not available unless the node is fitted with a V6081 rack controller of version (FRS) 2 or later. It displays the memory as specified by DART V3.0. If the module is Class 7, just the 32 byte common area is displayed, if the module is Class 4, the first 64 bytes are displayed and for the rack controller slot, 104 bytes are displayed.

- From the **Engineering** menu, select the required item and select the port, node and module required
- The module NVR data will be read and will appear in the right hand display.



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Module NVR (Class 7 Reg) is used to display a Class 7 read and write register and status byte from the rack controller's NVRAM. The module is the currently selected module and the register is selected on the menu screen. Registers not stored in NVRAM are not displayed although the status byte is still available. The menu is updated when data is received from the module or when the register is selected by pressing the select button.

Further information about the contents and layout of NVRAM is available from the Designer's Handbook for V3.0 DARTnet and DARTbus systems.

6.20.7 Diagnostics

These menu items are development/diagnostic tools and have no operational function.

6.21 Revision Details

To display details of the panel software version, select **Revision Details** from the main menu. Selecting **Bootloader** displays the details of the bootloader version.

Note that most of this information appears in the RH Display immediately after power up.

6.21.1 Displaying Module Revision Information

Details of the module fitted in any slot may be displayed as follows:

- In physical mode, select the required module using the left hand display. The control and status items will be shown in the right hand display
- Press the Menu **G** button to the left of the right hand display. The right hand display will change to module information. Pressing the Menu **G** button again returns the right hand display to its normal module control mode.

The module information display contains the following information:

- the module location (network:rack:slot) and online/offline indication (√ or X)
- description of the module function (e.g. SDI Proc Amp)
- the module identifier (the product number without the "V")
- the Functional Revision Status (FRS) of the module
- the year/week of manufacture
- the manufacturing batch number

Note that this information is a sub-set of the details displayed through the **Module Reference Data** option in the **Engineering** menu.

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6.22 Processor Reset

Although it should not be necessary to reset the panel's processor during normal operation, both soft and hard resets are possible to clear anomalous conditions. A **soft reset** has no effect on the information stored in battery-backed memory in the unit and does the same as removing and re-applying power. A **hard reset** will reset some or all of the information stored in battery-backed memory.

On the **V1605**, a **soft reset** may be performed while the unit is operating by pulling forward and lowering the front panel and operating the reset push button on the left hand edge of the main printed circuit board with a pencil or similar object.

On both the **V1602** and the **V1605** a similar effect is obtained through the **Engineering** menu by selecting **Reset** followed by **V1605 (or V1602) Controller** and then selecting **Execute Reset**.

A **hard reset** may be performed on power up by holding in both left hand Menu 5 6 buttons or both right hand Menu 5 6 buttons during the application of mains power to the unit until the appropriate message appears in the left-hand display to indicate what is happening.

If the left hand Menu 5 6 buttons are held in, the message * **Re-initialising** * appears indicating that all of the Panel, Router, Network and Alarm Configuration items held in battery-back memory will be set to their default values.

If the right hand Menu 5 6 buttons are held in, the message * **Initialising All B/B RAM** * appears indicating that all Battery-Backed RAM will be bulk cleared and then set to factory defaults. This includes Configuration, Names and Virtual modules, Network Status, etc.

During normal operation, selected items in battery-backed memory may be reset by using the **Battery Backed Memory** option in the **Engineering | Reset** menu.



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7 TRANSFERRING DATA BETWEEN A PC AND THE V1605 OR V1602

Information is transferred between the V1605 and a PC using a Pro-Bel program called CONF1605 running on the PC. This program is used, in conjunction with the PC Transfer menu on the V1605, to either send data from the V1605 to the PC or for the V1605 to receive data from the PC. When sending data to a PC, the user should normally turn off any “Log to PC” options that may be enabled. “Log to PC” options are available in the “Alarm Log” and “Engineering | Diagnostics | DART” menus. If logging to PC is not disabled, the resulting file will contain a mixture of the intended data and log data. Transfers that are possible are indicated in the following table, together with the login authority levels at which the transfers are permitted:

| CATEGORY | SEND TO PC | RECEIVE FROM PC |
|-----------------------|------------|-----------------|
| Panel Configuration | √ (E,S,O) | √ (E) |
| Alarm Configuration | √ E,S,O) | √ (E,S,O) |
| Network Configuration | √ (E,S,O) | √ (E) |
| Router Configuration | √ E,S,O) | √ (E) |
| Local Names | √ (E,S,O) | √ (E,S,O) |
| System Names | √ (E,S,O) | √ (E) |
| Virtual Names | √ (E,S,O) | √ (E,S) |
| Virtual Modules | √ (E,S,O) | √ (E,S) |
| Alarm Log | √ (E,S,O) | |
| Product List | √ (E) | |
| Product Database | √ (E) | |
| Product Details | √ (E) | |
| Network Status | √ (E,S,O) | |
| V1605 Program Upgrade | | √ (E) |

Note: The content of all configuration files is **case sensitive**.

Panel Configuration includes most of the items set up in the V1605 **Control Panel Setup** menu, together with the physical and virtual recall button assignments. It is expected that the panel configuration will be set up using the facilities provided on the panel. The PC transfer facility may then be used to transfer the same configuration to another panel if required.

Alarm Configuration includes the global, rack and module alarm and warning settings. As for Panel Configuration, it is expected that the user will configure the alarm setting using the facilities provided in the panel and that use of the transfer facility is primarily used for transferring these settings to another panel.

Network Configuration contains the access level and local filter setting of every unit except those with access level “U”.

Router Configuration contains the settings used for Virtual Module Switching using Router Control. These are found in the **Auxiliary Functions** menu under **Router Options**.

Local, System and Virtual Names may be entered on the panel using the **Edit User Names** menu but generating the required files and transferring the data to one or more V1605 panels is likely to be more convenient, particularly where the number of names is large. **Control State Aliases** cannot be entered through the V1605 menus but are included in the **Local Names** option for **PC Transfer**.

Virtual Modules contains the data that defines the virtual modules from the control and status data from the selected physical modules. The V1605 does not have facilities for defining virtual modules through its front panel controls so the configuration must therefore be created on a PC and transferred to the panel. For more information see Section 9.

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Alarm Log transfer facilities are provided to enable the alarm log to be archived or printed for analysis.

Product List, Product Database and Product Details transfers provide detailed control information on supported products as this is required for generating virtual module configurations.

Network Status transfer provides a snapshot of the current status of the physical module network.

V1605 Program Upgrade enables the main program and product database to be transferred from a PC into the Flash ROM on the V1605. For more information see Section 7.4 Upgrading the V1602/05 Program and Module Database.

7.1 PC Transfer Restrictions – Operator and Supervisor Login Levels

At **Engineering** login authority, all PC transfers are available. At **Supervisor** or **Operator** login authority levels, not every item is available for transfer. All items are available for sending to the PC except for Product List, Product Database and Product Details. Receiving from the PC is much more restrictive so that the configuration cannot be changed by a user not authorised to do so. Alarm Configuration may be received but is filtered so that only those units at the correct access levels may have their alarm configuration changed. An **Operator** may receive only Local Names but a **Supervisor** may receive Virtual Names and Virtual Modules as well. If an attempt is made to receive a name when it is not allowed, the message

CHANGING NAMES
NOT ALLOWED

appears momentarily.

When logged in at **Operator** or **Supervisor** login level, the **PC Transfer** menu is limited as shown below:

Supervisor

PC Transfer

Receive from PC

Receive Items

Alarm Configuration ✓
Local Names ✓
Virtual Name ✓
Virtual Modules ✓
Start Receiving

Operator

PC Transfer

Receive from PC

Receive Items

Alarm Configuration ✓
Local Names ✓
Start Receiving

In the case of Virtual Modules, it is possible to receive a file with a virtual control that references a module to which the user does not have access. In this case, selecting this control will generate a status alert with a suitable message in a similar way to when a read-only control is selected.

7.2 Installing CONF1605

Conf1605 is a program that runs on a PC and communicates with a V1602 or V1605 panel via its RS232 port. It is used for transferring information from PC to panel and from panel to PC.

The CONF 1605 program and the main program for loading into Flash is supplied on a 3.5 inch floppy disk or CD ROM or may be downloaded from the Support area on the Pro-Bel/Vistek web-site. To accommodate existing V1605 panels with the original Version 1 bootloader, a secondary bootloader is also included in the installation setup file.



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To carry out the installation:

- insert the disk into the floppy disk drive or the CD ROM into the CD drive
- click on the Windows Start menu and select "Run"
- in the Run dialog box, type d:\setup where 'd' is the appropriate disk drive letter
- follow the on-screen instructions.

Accepting all of the defaults will result in CONF1605 and its associated data files being located in a new directory under Program Files and shortcuts being generated under the Programs menu and on the Desktop. The previous version, if any, will be backed up and available if required on an Uninstall.

Two files, Database.vis and ProductList.vis, are also supplied. These are the result of sending **Product Database** and **Product List** to PC files using the **PC Transfer** menu in the V1605 and provide a ready reference to the current state of module support in the V1605. Database.vis is also required when generating virtual module files using Virtual Module Builder (see Section 10).

7.3 Using CONF1605



CONF1605 is a Windows program contained in a single .exe file. It is used in conjunction with the **Receive from PC** and **Send to PC** options of the V1605 **File Transfer** menu for transferring configuration or other data between a disk file and the V1605. It is also used when copying files between a PC and Flash Files in the V1605 in conjunction with the **Copy File** option in the **Flash File Transfer** menu. It's third use is in conjunction with the **Log to PC** options in the V1605, for example, in the **Alarm Log** menu. Finally, in conjunction with the **Module Reference Data** option in the **Engineering** menu, it can be used for programming the reference data in a Class 4 module.

Note: The V1605's PC port (Port 6) should be connected to a serial port on the PC using a "null modem" cable (i.e. one with Tx and Rx crossed over). No handshaking signals are used on this cable.

When the program is invoked, the right hand panel of the status bar shows the current communications port settings. The Comm Port can be changed by selecting **Setup Communications** in the **Options** menu, however the Baud Rate is fixed at 38400.

7.3.1 Sending Data to the PC



By selecting either the Toolbar button or File menu option for receiving data from the V1605, the user is prompted to select an existing file or type in the name of a new one. The default extension is **.vis** (Vistek Configuration File). Once a file is selected, a timestamp in the form of a comment is written to the file.

;18/02/00 09:12:59

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Later revisions of Conf1605 have an extra toolbar button that is used to add time-stamping to the entries in the saved file.

The transfer must be initiated from the V1605. This is done through the **PC Transfer** menu in which the items to be transferred are selected. The **PC Transfer** menu also has an option to **Count send records** which enables Conf1605 to display a progress bar during transfers to the PC.

PC Transfer
Receive from PC
Send to PC
Send Product Details to PC
Count send records ✓

Count send records may be switched on (✓) and off but is on by default. When switched on transferring data to the PC is preceded by a data record counting phase. The following appears in the LH LCD screen while counting:

Counting data records
3950
< Press to abort transfer

then the following once the data transfer actually starts:

Sending data
< Press to abort transfer

Before sending data, if counting is enabled, the control panel sends a special message to the PC to enable a progress bar to be displayed during the data transfer phase.

If counting is disabled, the receive indication on the PC program is a flashing green LED and there is no progress bar.

If **Count send records** is checked (✓) in the **PC Transfer** menu on the V1605, the data transfer is preceded by a data record counting phase during which the following is displayed on the Conf1605 status bar.



When the data transfer begins, the program uses the record count to initialise a progress bar so that the user is able to judge the progress of the data transfer.





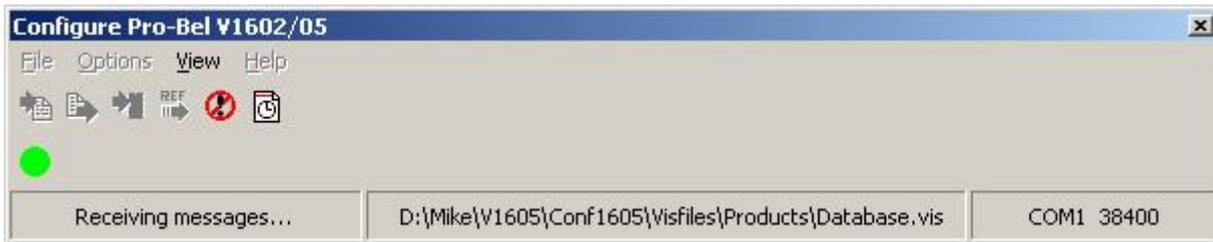
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Meanwhile, the icon on the task bar indicates how much of the transfer has been completed. This is useful when Conf1605 is hidden by another application.



Note that the sequence can be aborted at any time during the counting or transfer phase either by pressing the indicated button on the V1605 or by selecting the abort toolbar button in Conf1605.

If the counting option is not enabled in the V1605, a flashing green LED on Conf1605 indicates that data is being received, however, there is no indication of how long it will take for the transfer to complete.



If the CONF1605 status bar does not indicate that messages are being received, it probably means the communications port settings or the connection cable are wrong. Once all of the items have been transferred, the status bar indicates 'Transfer complete'. The user can abort the transfer at any time either by clicking on the Abort toolbar button or by pressing the button indicated on the V1605.

7.3.1.1 Sending Class 4 Reference Data to PC

The same File menu option or toolbar button is used to upload a Class 4 module's reference data from the V1605 to a PC. This is done through the V1605's **Engineering** menu by selecting the **Module Reference Data** option, selecting the required module and then **Send to PC** when prompted. The file should be saved with the extension **.vrf** (Vistek reference file) to distinguish it from the Avitel **.ref** file format.

7.3.2 Receiving Data from the PC



By selecting either the Toolbar button or File menu option for sending data to the V1605, the user is prompted to select an existing file. The default extension is **.vis** (Vistek Configuration File). Having selected a file the user is prompted to start the transfer at the V1605. This is done through the PC Transfer menu in which the items to be transferred are selected.

The CONF1605 status bar will indicate that messages are being transferred and the progress bar indicates how much of the file remains. As an added assurance that the V1605 is operating correctly, when it is receiving data the middle LH select LED flashes. Once all of the items have been transferred, the status bar indicates 'Transfer complete' and the V1605 recognises completion by returning to the previous menu. If the V1605 had **Panel Configuration** ticked under **Receive Items**, the message "INITIALISING CONTROL PANEL TO NEW SETTINGS" appears in the left-hand display. The user can abort the transfer at any time either by clicking on the Abort toolbar button or by pressing the button indicated on the V1605.

7.3.2.1 Programming a Class 4 Module with Reference Data



By selecting either the Toolbar button or File menu option for sending Class 4 Ref Data to the V1605, a user may program the selected module's Reference Data EEPROM. As a safeguard against accidentally selecting the wrong **.vrf** file, the user is prompted for the identifier and FRS of the module. The identifier and FRS in the selected file must match those entered at this validation stage for the process to continue. On the V1605, the user should select **Module Reference Data** in the **Engineering** menu, then select the module, and then select **Receive from PC**.

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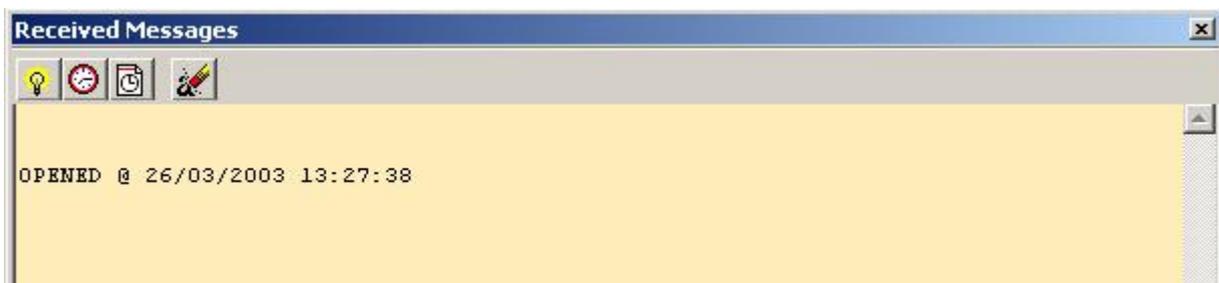
7.3.3 Logging to PC

When a **Log to PC** option is enabled in the V1605, data is transferred to the PC in the same general format as any other data sent to the PC from the V1605 and can therefore be saved in a file in the same .INI file style form. The user should open a file in exactly the same way as when sending data to the PC (see 7.3.1), preferably before enabling logging, although the file may be opened after logging has started. If messages are being received, the message "Receiving messages..." appears on the CONF1605 status bar and the green LED starts to toggle.

The file may be closed by clicking on the Abort button or by disabling logging in the V1605. If more than one logging source in the V1605 is enabled, the file will not be closed until all logging is turned off.

7.3.3.1 Showing received messages

The **View** menu in CONF1605 has a single option **Show Received Messages** that may be clicked to open or close the **Received Messages** window.



This window is may be used when logging is enabled in the V1605 to show logged messages as they occur. It can be opened whether or not the received messages are also being stored into a disk file.

The window has its own toolbar for controlling the window during logging and the main program's **Options** menu has a **Miscellaneous** option for configurations that are usually left unchanged.

7.3.3.2 Miscellaneous Options



The **Miscellaneous** dialog is opened when **Miscellaneous** is clicked in the **Options** menu.

Through this dialog, the user can decide how often the green LED flashes when records are received and how many records are saved in the window before the earlier messages are deleted. If the PC runs out of memory before this number of records is reached, the number is automatically reduced.

7.3.3.3 Received Messages Window Toolbar



The Received Messages window is opened or closed by clicking on **Show Received Messages** in the **View** menu. It can also be closed by clicking on the "X" icon in the top right-hand corner. When this happens, a time and date stamped message appears in the window.



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The user can also choose to **Pause** or **Resume** logging to the window by clicking on the first toolbar button. This stops logging to the window, although logging to a disk file is not interrupted. This is useful if the user wishes to copy the contents of the window to an editor by using the **Cut** or **Copy** options in the menu that appears when the RH mouse button is clicked. **Pause** and **Resume** also write a time and date stamped message to the window.

The second toolbar button is used to insert a time and date stamp into the window.

The third button switches time stamping on and off, that is, every received message is preceded by a time stamp in the window.

The last button clears all messages in the window and writes a time and date stamped message to the window.

7.4 Upgrading the V1602/05 Program and Module Database

The V1602/05 software is split into a Bootloader Flash PROM and the Program/Database. There is also a Secondary Bootloader file, which is loaded into V1605s with a version 1 Bootloader PROM. All V1602s are fitted with a version 2 Bootloader PROM and do not use the Secondary Bootloader. The Bootloaders are used for checking the validity of the program in flash PROM and for transferring a new Program/Database version from a PC into the fixed Flash via the RS232 interface using CONF1605.EXE. The same file, V1605.s2 is used for upgrading V1602s and V1605s.

Because the secondary bootloader occupies the devices that would otherwise hold on-board flash configuration files, on-board flash files are not available if a version 1 bootloader PROM is fitted.

7.4.1 Upgrading a V1605 with Version 1 Bootloader PROM

When a V1605 is upgraded for the first time from Version 9 or lower to Version 10 or higher, the CONF1605.EXE program detects that a version 1 Bootloader PROM is fitted and prompts the user to select the secondary bootloader file for downloading. This is loaded into on-board flash PROM and used in conjunction with the bootloader PROM to load the new program version into other areas of the on-board flash PROM.

7.4.2 Bootloader

On power-up, the message:

Checking Program in Flash

appears at the bottom of the left hand LCD display. If there is no program loaded or the program is corrupted for some reason or if the top left-hand select button is held in on power-up, or if **Upgrade V1605 (or V1602) Program** has been selected in the **PC Transfer** menu, the following message appears:

Load new flash program
< Press when ready
V2

The text in the bottom right-hand corner indicates which bootloader is running. If it is missing, it's the version 1 bootloader, if it says VS1, it's the secondary bootloader, otherwise it's the version of the bootloader PROM fitted.

After pressing the middle left hand select button, this is followed by:

Ready to
Receive data
< Press to abort transfer

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The CONF1605 program can now be run on the PC to transfer the program and product database. Initially the message:

Identifying Bootloader

appears unless the version 1 bootloader PROM is fitted, in which case the message

Erasing Flash

appears instead. The middle left-hand select button is illuminated. Once file has been selected the message

Erasing Flash

appears, shortly to be replaced by:

Programming Flash
< Press to abort transfer

with the middle left hand select button flashing to indicate that data is being received.

When the file has been transferred (it takes a few minutes), the controller calculates the checksum of the loaded program and programs it into the Flash PROM. While this is happening, the message:

Calculating Checksum

appears. The controller then re-boots and performs another program checksum check, showing the message:

Checking Program in Flash

If the check is correct, the bootloader transfers control to the loaded program in fixed Flash and the main menu appears. If not, there will be another prompt to load a new Flash program.

If there is no Flash memory fitted or it is operating incorrectly, an error will occur during the Erasing Flash phase of the transfer. In this case the sequence aborts with the 1605 showing 'Load new flash program' and Conf1605 showing 'Error Erasing Flash'.

7.4.3 Flash error when loading program with secondary bootloader

The area of Flash memory now used to hold the version 10 program was previously used for holding Configuration and other files in On-board flash memory in a V1605. However, this may not have been fully used since the panel was delivered and part of the Flash may for some reason have become faulty. When this happens, the main objective is to return to the previous version of the V1605 software until the matter can be resolved. This, however, is not straightforward because the secondary bootloader must be removed before the previous version of the software may be loaded.

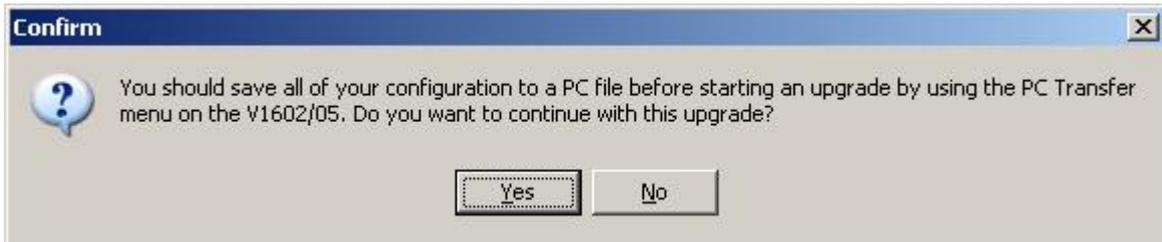
To do this, power up the V1605 with the middle left-hand select button held in. This brings up the bootloader PROM's Test Mode menu. The bottom select button should then be pressed in order to initiate a test of the top flash block, which is where the secondary bootloader is now loaded. Once erasing process has started, the power may be turned off.

When power is re-applied, the user is prompted to load a new flash program. Now, when the Conf1605 file transfer program prompts the user to select the secondary bootloader file, select the previous version V1605.s2 file instead and the file will load.

7.4.4 Using CONF1605 to Upgrade the V1602/05 Program & Module Database

The Conf1605 program includes options for programming the Flash PROM in the V1602 or V1605.

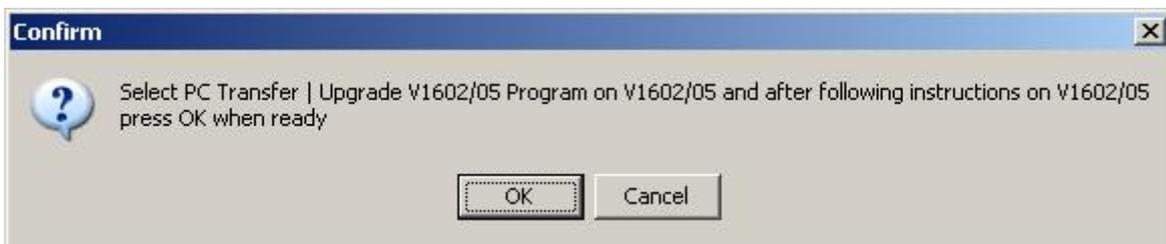
If the **Upgrade V1605 Program & Module Database** option in the **File** menu or the third toolbar button is selected, a message box appears to remind the user to save the current configuration before upgrading. If this hasn't already been done, the user should select No and proceed with saving configuration. When doing this, the user should tick all of the **Send Items** in the V1605's **Send to PC** menu that are associated with the user's configuration. These include Panel Configuration, Alarm Configuration, Network Configuration, Router Configuration, Local, System and Virtual Names and Virtual Modules.



If the user decides to continue with the upgrade and presses Yes, the following dialog appears with instructions on how to proceed.

If the user presses 'OK' and after the program has established the identity of the bootloader PROM, the user is then presented with a file selection dialog for selecting the file V1605.s2 which is the main program and product database file for the V1605 or V1602.

The V1605 should be prepared to receive a new Flash program (see above) and the OK button in this dialog pressed. The programming sequence described in the Bootloader section above then takes place.



Note that the sequence can be aborted at any time while program is being transferred either by pressing the indicated button on the V1605 or by selecting the abort toolbar button in Conf1605.

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Once the transfer is complete, the following dialog appears:



This is to remind the user to reset all battery backed memory and restore all configuration items from the previously saved file.



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8 CONFIGURATION FILE FORMAT

This section describes the format that is used in the configuration files which can be transferred between a PC and the V1605 using CONF1605 on the PC and the **PC Transfer** menu or **Log to PC** options in the V1605. The information is provided so that users may edit their own files for configuring the V1605 and may interpret files received from the V1605. When editing files to transfer to the V1605 the user should be aware that all items are case sensitive and that the V1605 does not tolerate extra spaces in the records. Any record which is deemed not to be valid by the V1605 will be ignored and the item intended to be configured by that record will be unchanged. Some items are for information only and are ignored when sent to the V1605.

The following paragraphs describe each item with examples split into various categories. In the examples, lines preceded by a semi-colon (;) are comments and are ignored when received by the V1605.

The V1605 uses codes normally reserved for non-printing characters for displaying special characters on its LCD screens. When these are encountered in a name or other display string, they are converted to a hexadecimal format '\xnnn' where 'nnn' are up to 3 hexadecimal characters. The '@' character, if found in the body of the record, is also converted (to \x040) because it is used as record header by the serial transmission protocol.

The information in this section is not necessarily completely up to date and is intended as a guide. Users should download their own configuration file and use the format found in that file.

8.1 All Files

Date and time file was copied to PC

;18/04/01 14:38:43

File type – Config is assumed if this section is missing. Rack files are for loading data to racks of modules, Presets file holds multiple preset parameter settings for different module types. Rack and Presets files must be copied to Flash in the V1605 in order to be used. Log files contain logging information from the V1605.

[File]

Type=Config

; Config, Rack, Presets or Log

8.2 Panel Configuration

Status information shows the revision of the V1605 program:

[General]

Revision=08.00.02,Mar 21 2001,14:10:54,B

; B=Beta, REL=Release

Operating mode, physical, virtual or mixed:

[Operation]

OperatingMode=0

; 0=Physical, 1=Virtual, 2=Mixed

Login authority, user number, etc. The user number is the current user, that is, the user number set in the passcode entry menu.

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```
[Login]
Authority=1
; 1=Eng, 2=Supervisor, 3=Operator
User=0
; Current user 0-31
EngPasscodeEnabled=0
SpvPasscodeEnabled=0
; Enabled = 1
```

Passcodes. Up to 32 passcodes may be entered, one for each of the 32 users, although the user must be in Engineering mode to enter a new user 0 passcode. New passcodes entered in Supervisor mode cannot be used for changing to Engineering mode. Passcodes are encrypted as follows in the configuration file:

$nnnnn = ((pppp + NN) * NN) + NN$ where pppp is the passcode and NN=23.

```
[Passcodes]
User1=1,28934
; List of up to 32 passwords (encrypted) each preceded by its
; login authority where 1=Eng, 2=Supervisor, 3=Operator
```

Units filter and local filter options

```
[Filtering]
UnitsFilter=1
; 0=All, 1=Hide unused, 2 = Online only
LocalFilter=0
; 1=Enabled
```

Receive items determine what is received/read when transferring a configuration file from PC or Flash.

```
[Receive Items]
Params=1
Alarm Settings=0
Network Config=0
Router Config=0
LocalNames=0
SystemNames=0
VirtualNames=0
VirtualModules=0
; 1=Checked in menu
```

Send Options enables record counting when sending files configuration files to a PC and should be left set to '1'.

```
[Send Options]
Count=1
; 0=Counting off, 1= Counting on
```

Send items determine what is sent/written when transferring a configuration file to PC or Flash.

```
[Send Items]
Params=1
Alarm Settings=1
Network Config=1
Router Config=1
```



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Alarm Log=1
LocalNames=1
SystemNames=1
VirtualNames=1
VirtualModules=1
ProductList=0
ProductDatabase=0
NetworkStatus=0
; 1=Checked in menu

DART Port baud-rates – normally set to 5 (115.2kbaud) or 0 (off)

[Port1]
Baudrate=5
; 0=Not set, 1=9.6k, 2=19.2k, 3=38.4k, 4=57.6k, 5=115.2k

[Port2]
Baudrate=0

[Port3]
Baudrate=0

[Port4]
Baudrate=0

Vistek RS485 Module Network options

[RS485]
TopAddress=7
; 0-63
PollRate=8
; 200ms - 975ms in steps of 25ms
StatusInterval=200
; 1000ms - 10000ms in steps of 25ms
OfflineDelay=200
; 0ms - 300000ms in steps of 25ms
PollingEnabled=1
; 1=Vistek RS485 Network polling ON
LoggingEnabled=0
; 1=Logging messages - viewed in Eng menu

LCD display options. Contrast can be changed from 0-255 to suit the ambient lighting and viewing angle. Names determines whether system, local or default names are used in Module Selection menus. Control is usually left at '0' for single line scrolling but if set to '1', the displays scroll 3 lines at a time. VideoGainsPercent allows the user to display gains in video modules in percent instead of decibels.

[Display]
Contrast0=180
Contrast1=180
; 0-255
Names=0
; 0=Local, 1=System, 2=Default
Control=0
; 0=Scroll, 1=Page
VideoGainsPercent=0

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; 0=Decibels, 1=Percent

Numeric Controls is usually left at '0' in which case multiple DART messages are sent as the encoder knob is rotated to change a numeric module control. If it is set to '1', no message is sent until the encoder knob has been stationary for about ½ sec, so that a single message is sent to set the whole change.

[Numeric Controls]
Update=0
; 0=Instant
; 1=Delayed

Error messages are usually turned off because they are really only useful to a Pro-Bel engineer when investigating a panel fault. Status alerts are the momentary messages that appear on certain operator actions, in particular when selecting controls in module control screens. The time an alert message stays on the screen can also be adjusted from the default 1½ seconds.

[Errors & Alerts]
EnableErrors=0
; 1=Error messages on RH LCD enabled
EnableStatusAlerts=1
; 1=Enable alert messages (e.g. MODULE OFF-LINE)
AlertDelay=60
; Time alert message stays on (x 25ms)

Delays and Timeouts have default settings which are usually adequate, however, they can be changed if required. They are in multiples of 25ms. Idle timeout is the time before a menu item deselects itself if there is no activity. Dart update is the time between 1605 initiated status updates of a module screen. Dart node status check is the interval between the regular checks for change of port or node status.

[Delays & Timeouts]
IdleTimeout=600
; 5000ms - 60000ms
DartUpdate=400
; 5000ms - 10000ms
DartNodeStatusCheck=80
; 1000ms - 5000ms - Time between node status checks (x 25ms)

Assigned Devices holds the device recall button assignments. Note that in Mixed mode both physical and virtual modules may be assigned to buttons which is why there is the P or V at the end of the assignment.

[Assigned Devices]
Recall1=1:3:12,P
Recall2=1:8:7,P
; Device Recall button 1-8 = module address, P=Physical, V=Virtual

The login authority level at which device assignments may be made is set to Supervisor (2) by default but can be changed to Operator (3) or Engineering (1).

[Device Assignment]
AssignLevel=2

Alarm options – these are the options from the Control Panel Setup menu, other options are in sections below. Options are available to control the audible alarm, alert messages on the occurrence of alarms and a global alarm enable.

[Alarms]



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Volume=160
; 0 - 255 - audible alarm level
Alert=0
; 1=Display alert message on alarm
Silent=0
; 1=Suppress audible alarm
GlobalEnable=0
; 0=Disable all alarms and warnings, 1=Enable

Assigned Virtual Devices holds the device recall button assignments for use in Virtual mode. A separate set of 16 assignments (8 for V1605) may be saved for every virtual module rack that has been defined.

[Assigned Virtual Devices]
Recall5_6_1=7
; Virtual net 5, virtual rack 6, device recall button 1 = virtual module 7

Aliases – these are options associated with Control State Aliases, currently just the one. It defines whether aliases are used in Physical or Virtual module control screens or both or neither. The aliases themselves are in the Local Names part of the file.

[Aliases]
Use=3
; 0=None, 1=Physical, 2=Virtual, 3=Both

8.3 Alarm Configuration

Every alarm and warning type except module alarms and warnings (which are controlled individually) has a global enable associated with it. Each one can be set to disabled, latched or momentary. The entries are as follows in order:

Not used, rack offline, controller offline, module offline, gateway offline, VB low, VB high, V1 low, V1 high, temperature high, RS485 module offline, remote router I/F fail, local router I/F fail, rack controller reset, port disconnected, rack DARTbus fail, module initialisation fail, module DARTbus fail.

Note that only the voltage and temperature alarms are available as warnings.

[Alarms]
GlobalSettings=0,0,0,0,0,0,0,0,0,0,0,1,2,1
WarningSettings=0,0,0,0,0,0,0,0,0,0,0,0,0,0
; 0=disabled, 1=latched, 2-momentary

Alarm Indices lists the available alarm types with their descriptions and cannot be changed:

[Alarm Indices]
; Descriptions of the available alarm types
Alarm0=1,Rack Off-line
Alarm1=2,Controller Off-line
Alarm2=3,Module Removed
Etc...

Rack alarms and warnings – note that for a CV606 rack controller, V1 and VB are equivalent to PSU2 and PSU1.

[Rack Alarm Limits]
Rack1:00=1,64,129,64,129,126

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; Rack Addr = 1 or 2 supplies, V1 low, V1 high, VB low, VB high, temp high
; Volts = data x 0.1394
; Temp (degC) = 30 + ((111 - data) x -0.404)

[Rack Warning Limits]
Rack1:00=1,86,118,86,118,111
; As above

Module alarms can be configured separately for each module, however, a particular module type will have just a subset of the available module alarms. Each alarm may be set to 0-4 (disabled, latched alarm, momentary alarm, latched warning or momentary warning). The second item is the alarm index (see Alarm Indices section above) which is the type of alarm.

Warnings on a particular module can be set to upgrade to alarms if they are still present after a preset number of minutes (1-99); this is in the section heading with the module address, type and FRS. The example below shows that the 1642 FRS12 at 1:8:5 is programmed to upgrade its warnings to alarms if they persist for 1 minute. If there were no warning upgrade, the section heading would show N,0.

[Module Alarms 1:08:05 1642,12 Y,1]
; Address, type, FRS, Y/N, 0-99
Alarm0=1,17
; Latched alarm, Input Failed
Alarm1=2,65
; Momentary alarm, Bypass ON
Alarm2=3,25
; Latched warning, Dynamic Rounding OFF
Alarm3=4,66
; Momentary warning, De-Hanover Bars ON
Alarm4=0,67;
; Off, Hard Limit ON
Alarm5=0,68
; Off, Faded to Black
Alarm6=0,37
; Off, Local Mode

8.4 Network Configuration

The access level and local filter settings for every port (net), node (rack) and module slot in the DART and RS485 Networks. Note that when sending network configuration to the PC or saving it to Flash, elements set to U (unused) access level are left out. This includes any elements included by other unused elements in the network such as modules in a rack set to unused. The first item is access level (O=Operator, S=Supervisor or E=Engineer) and the second is V or H, that is, whether the element is Visible or Hidden when the local filter is on.

[Network Configuration]
; O/S/E, V/H
Port1=O,V
Node1:00=O,V
Module1:00:00=O,V
Module1:00:01=O,H
Module1:00:02=S,V
Module1:00:03=S,H
Module1:00:04=E,V
Module1:00:05=E,H



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8.5 Router Configuration

These items are used when the V1605 is used in conjunction with a router to map source and destination changes to different virtual module control screens.

For a V1605 panel to respond to a router message, it must be in Virtual or Mixed mode and it must have a panel select number which corresponds to the destination in the message. This example shows a panel set to respond to two panel select numbers, 3 and 4.

```
[Router Configuration]
PanelSelectNos=-1,3,4,-1,-1,-1,-1,-1,-1,-1,-1,-1,-1,-1,-1
; 0-254 or -1 if not set
```

The V1605 can respond to DARTnet messages from a remote router, in which case the only item in the Router Options menu that needs to be set up is Panel Select Nos.

It can also accept messages from a local router on its RS485 port, broadcast the message onward via the DARTnet and, optionally, respond to one or more destinations depending on its own mode and panel select number settings. It can work with different local router protocols, currently Quartz or BTS. When set to Off, router polling is disabled and the RS485 port can be used for Vistek RS485 Network modules and the baud rate changes automatically to 38.4kbaud.

```
Protocol=0
; 0=Off, 1=Quartz, 2=BTS
```

When set to one of the available protocols, the baud rate can be changed from 9.6kbaud up to 38.4kbaud to suit the particular router.

```
Baudrate=3
; 0=Not set, 1=9.6k, 2=19.2k, 3=38.4k
```

The polling interval can be lengthened to reduce the amount of traffic on the DARTnet or shortened from its default one second to speed up response to route changes.

```
PollRate=40
; 200ms - 5000ms (x 25ms)
```

When used with a local router, each router destination to be handled by the V1605 is mapped to a panel select number. This determines which panels respond to which destinations. If the panel select number is set to 255, all V1605s on the network respond to the router message if they are in the correct operating mode. The mappings are sorted into destination order.

```
[Router Destinations]
Mapping0=46,3
Mapping1=47,255
Mapping2=55,4
; Mapping = destination (0-999), panel select no. (0-254, 255=broadcast)
```

Also when used with a local router, each router source to be handled is mapped to a virtual module address. This is the virtual module the responding panel switches to on a route change. The mappings are sorted into source order.

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[Router Sources]
Mapping0=8,1:02:01
Mapping1=9,1:01:06
; Mapping = router source, virtual module address

8.6 Alarm Log

Alarms may be logged in the V1605 and then transferred to a PC file. They may also be logged directly to the PC. The format is slightly different for the two cases.

8.6.1 V1605 Alarm Log

The Alarm Log records alarm and warning occurrences in chronological order. The fields in each alarm item are in the following order:

Elapsed time, Alarm/Warning, Active/Inactive, Elapsed time since condition cleared, Upgraded/-, Alarm description, Physical address of unit originating alarm or warning.

[Alarm Log]
Alarm0=(-0:04:43),ALARM,ACTIVE,(--),-,Test Tone A ON,1:00:00
Alarm1=(-0:04:24),ALARM,INACTIVE,(-0:04:19),-,Test Tone B ON,1:00:00
Alarm2=(-0:04:10),ALARM,ACTIVE,(--),UPGRADED,Channels A & B Swapped,1:00:00

The first field is the elapsed time (from when the log was transferred to the PC) since the alarm or warning occurred in hrs:min:sec. If the controller has been turned off, the time while turned off is not included.

'UPGRADED' means that alarm was a warning which has been upgraded to an alarm after a time specified for the module. The time of an upgraded alarm is the time the warning occurred, not when it was upgraded to an alarm. 'INACTIVE' means that the alarm or warning was defined as momentary and the alarm or warning condition cleared. This is followed by the elapsed time since the condition was cleared. Alarm 1 above shows that the Test Tone B alarm condition cleared 5 seconds after it occurred.

8.6.2 PC Alarm Log

As with the V1605 Alarm Log, the PC Alarm Log records alarm and warning occurrences in chronological order. The [File] Type record is missing if logging was already enabled when the file was opened. The fields in each alarm item are in the following order:

Elapsed time (from enabling Log to PC on the V1605), Alarm/Warning, whether Upgraded to alarm, Alarm description, Physical address of unit originating alarm or warning.

[File]
Type=Log

[Alarm]
ON=(0:00:30),ALARM,-,Rack Controller Reset,1:08:00
OFF=(0:01:00),ALARM,-,Rack Controller Reset,1:08:00
ON=(0:01:11),WARNING,-,Test Tone A ON,1:08:03
ON=(0:01:56),WARNING,-,Test Tone B ON,1:08:03
ON=(0:01:11),ALARM,UPGRADED,Test Tone A ON,1:08:03
OFF=(0:02:21),ALARM,UPGRADED,Test Tone A ON,1:08:03
ON=(0:02:29),WARNING,-,Test Tone A ON,1:08:03
OFF=(0:02:29),WARNING,-,Test Tone B ON,1:08:03
OFF=(0:02:32),WARNING,-,Test Tone A ON,1:08:03

Note that in the case of a warning upgraded to an alarm, the elapsed time is when the original warning occurred.



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8.7 Names

System names are entered as below. For local names the section is changed but the format is the same.

```
[System Names]
Port1=NAB2000
Node1:00=Remote 1 Proc
Module1:00:00=Audio DAC
Module1:00:01=Audio Delay
Module1:00:02=Audio Shuffler
Module1:00:04=8x1 SDI Router
```

```
[Local Names]
```

Virtual names are entered slightly differently. Note that virtual module names may also be included in virtual module definitions.

```
[Virtual Names]
VNet1=NAB 2000
VRack1:00=Rem 1 Station
VRack1:01=Rem 2 Station
VMod1:00:00=Source Select
VMod1:00:01=Analogue Vid IP
VMod1:00:02=Analogue Aud IP
```

8.7.1 Control State Aliases

Control State Aliases are held in separate sections for each module. They can be specified to cover a single control in a module or a range of controls in a module. The following format has been replaced by one that can specify a range of control identifiers. Although the following format which specifies a single control identifier is still accepted by the control panel, when uploading from the panel, the new format is always used.

```
[Aliases 1:4:5 V1642 12]
Alias0=4,No,Yes
Alias1=5,Channel 1, Channel 2, Channel 3, Channel 4
```

```
[Aliases 1:4:8 V1647 21]
Alias0=18,Off,On
Alias1=23,Up,Down,In,Out
```

New format:

```
[AliasesCommon 1:4:5 V1642 12]
Alias0=4,4,No,Yes
Alias1=5,8,Channel 1, Channel 2, Channel 3, Channel 4
```

In the above example, Alias0 applies just to control ID 4, Alias 1, however, applies to control ID 5, 6, 7, & 8.

Section headers contain the network address of the physical module (can be an RS485 address such as 5:23) plus the identifier and FRS of the module at that address. The latter two items are not used by the V1605 but are included in the definition for information.

Aliases for each module must be numbered consecutively, starting at 0, e.g. Alias0, Alias1, etc.

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The first item is the control identifier (as defined in the module database for that module type) and this is followed by up to 16 caption strings for each of up to 16 states which may be available for the control, starting at 0. A total of 170 characters is available for the caption strings in each definition. This imposes a limit if the control is a 4-bit "spin list" control using all 16 states of an average of about 10 characters per caption.

Note that if the control identifier does not refer to a button, LED or spin-list type control, the alias is ignored.

If a state is skipped by including two successive commas, that state uses the default caption from the database.

```
[AliasesCommon 1:4:5 V1642 12]
Alias0=4,4,,Yes
```

State 0 of control 4 will use the default caption but state 1 will use the caption "Yes".

If several sets of aliases are defined consecutively for the same control(s), they apply to values 0-15, 16-31, 32-47, etc up to 255 for that control. Although such controls cannot be defined using the spin list type (SDE), selection controls with more than 16 states may be defined using a numeric control (NDE) with an output display function using mapped strings. Aliases may now be used for this type of control.

8.8 Virtual Modules

The section header defines where the module appears in the virtual module network and can, optionally, also include the name of the virtual module, as below. The virtual module definition contains the following elements which must be in the correct order:

Control No = module type, module FRS, physical module address, control ID, data pixel column, control name, access level.

If the access level is left out, the access level of the virtual control is the same as the access level of the physical module. If the control name is left out, the name is the same as that used in the physical module's control screen. If the data pixel column is left out, that of the physical module's control is used.

Usually everything is included in the definition except for the access level. This is entered only when it is necessary to override the access level of the physical module.

Note that control number identifiers must be in ascending order starting at 0 – i.e. Control0, Control1, Control2, etc.

```
[Virtual Module 5:6:7 Zooms & Posn]
Control0=1642,12,1:08:5,0,60,Video Gain
Control1=1642,12,1:08:5,1,60,Chroma Gain
Control2=1642,12,1:08:5,8,60,Clip
Control3=1642,12,1:08:5,53,60,Preset 1,E
Control4=1642,12,1:08:5,57,60,Preset 3,0
```

For more information see Section 9.

8.9 Product List

This is a list of the products (modules) supported by the V1605. The module identifier, FRS and screen caption are included in each entry. The following is an extract from a product list transfer.



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[Product Module List]

ModuleType0=V1617,FRS1,Video DA
ModuleType1=V1608,FRS1,Rack Control
ModuleType2=V1611,FRS1,Par-\x3 Ser
ModuleType3=V1612,FRS1,Ser-\x3 Par
ModuleType4=V1615,FRS1,SDI Video DA
ModuleType5=V1616,FRS1,16 OP SDI DA
ModuleType6=V1621,FRS1,Video ADC
ModuleType7=V1624,FRS1,Video DAC
ModuleType8=V1627,FRS1,Mon DAC+Enc
ModuleType9=V1628,FRS1,Mon DAC+Enc

8.10 Product Database

The product database contains information concerning the controls available on each type of module. This information is necessary for the creation of Virtual Module definition files. For information on the content and use of the Product Database, see Section 9.3.

8.11 Network Status

This is a snapshot of the current status of the physical module network. It shows where the modules are and whether they are online or not. Only nodes with status of online, offline or warning are included. Each section is for a rack except for the RS485 network for which there is a single section. Each rack is identified with its port and rack number plus its system and local names.

[Rack port:rack System Name/Local Name]

Each module entry starts with the slot number:

Module<slot>=

And this is followed by the module identification:

(N/W status,Access Level,Local Filter), Ident, FRS, Option, Module Screen Caption, RS485 link, System or Local or Default Name (depending on 'Display Names' setting)

Network status can be 1 (offline) or 3 (online).

Access level can be U (unused), E (engineer), S (supervisor) or O (operator).

Local filter can be H (hidden) or V (visible).

The RS485 link is present only if the module is available on both the DART and the RS485 network. For DART modules (Ports 1-4) it is an RS485 address; for RS485 modules (Port 5) its is a DART module address. In the example below, the 1645 at Port 1:Rack 00:Slot 1 is linked to the module at Port 5:Address 00.

The [Login & Filtering] information is included to show the access settings under which the Network Status snapshot is taken. In the example below it shows Engineering login authority, Hide Unused units filter and Local Filter off.

;18/02/00 14:07:39

[Login & Filtering]

Authority=1

UnitsFilter=1

LocalFilter=0

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[Port 1 (3,O,V) NAB2000 Rack 1:00 (1,O,V) Remote 1 Proc']
Module0=(1,O,V),1639,10,2,Aud Shuffler,,Aud DAC
Module1=(1,O,V),1645,1,0,Video NR,0,Cable1,Sports Feeds 2
Module2=(1,O,V),1647F,100,0,Video ARC,,Audio Shuffler
Module3=(1,O,V),1647,21,0,Video ARC,,Video ARC

[Port 1 (3,O,V) NAB2000 Rack 1:01 (1,O,V) Remote 2 Proc']
Module0=(0,O,H),1636,1,0,Audio DAC,,Audio DAC
Module1=(0,O,V),1635,1,0,Audio Delay,,Audio Delay
Module2=(1,O,V),1639,10,3,Audio Shuffler,,Audio Shuffler
Module3=(1,O,H),1637,1,0,Audio ADC,,Audio ADC
Module4=(1,O,H),1651,1,0,Video Router,,2x1 SDI Router
Module5=(1,O,V),1663,1,0,Video Decoder,,Video Decoder
Module6=(1,O,V),1642,10,0,Proc Amp,,Vid' Proc' Amp

...

The main use of the Network Status information is in the creation of Virtual Module definition files. For more information, see Section 9.



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9 DESIGNING VIRTUAL MODULES FOR THE V1602/05 CONTROL PANEL

9.1 Introduction

This section goes through the process of how to design a virtual module configuration file for a V1605 controlled DARTnet system.

The following steps are required:

- Establish hardware configuration by generating physical network status report.
- Obtain module control information by generating a module database summary.
- Edit virtual module configuration file.

Note: The content of all configuration files is case sensitive.

- Test the file.

Although this information is for Version 8 or later of the V1605 software, most of it applies equally well to earlier versions. The ability to work with different FRS modules, the overriding of access levels on controls and the text separator control are all available only from version 8. Some of the error indications may be different or missing in earlier versions.

From version 8.5 of the V1605 software, the **Virtual Module Builder** program, VMBuilder, (see 10) may be used to generate a Virtual Module file. However, it is still necessary to understand the workings of virtual modules in order to use this program.

9.2 Hardware Configuration

The configuration of the system hardware, that is, what module is where in the network, may be obtained by uploading a current network status report from the V1605 to the PC via the "PC Transfer" menu by selecting "Network Status" in the "Send Items" menu and setting it to "ticked" (☒).

```
[Port 1 (3,O,V) NAB2000 Rack 1:01 (3,O,V) Remote 2 Proc']  
Module0=(3,O,H),1636,1,0,Audio DAC,,Audio DAC  
Module1=(3,O,V),1635,1,0,Audio Delay,,Audio Delay  
Module2=(3,O,V),1639,10,2,Aud Shuffler,,Audio Shuffler  
Module3=(3,O,H),1637,1,0,Audio ADC,,\x7 637  
Module4=(3,O,H),1651,1,0,Video Router,,2x1 SDI Router  
Module5=(3,O,V),1663,1,0,Video Decoder,,Video Decoder  
Module6=(3,O,V),1642,10,0,Proc Amp,,Vid' Proc' Amp  
Module7=(3,E,H),1640A,10,0,Frame Sync,,Video Synchr  
Module8=(3,O,V),1662,1,0,Video Coder,,Video Encoder  
Module9=(3,O,V),1634A,10,0,Audio Demux,,AV Demux  
Module10=(3,O,V),1627,1,0,Mon DAC+Enc,,Mon' Encoder  
Module11=(3,O,V),1627,10,0,Mon DAC+Enc,,\x7 627  
Module12=(3,O,V),1672,1,0,Fibre Rx,,\x7 672  
Module13=(3,O,V),1671,1,0,Fibre Tx,,\x7 671  
Module14=(0,O,V),,0,,  
Module15=(3,O,V),1608,23,0,Rack Control,,Rack Control
```

The above report shows a single DART rack (Port 1 Rack 1) with 15 modules (slot 14 empty). The important information obtained from this report, as far as generating a virtual module configuration file is concerned, is which module type - identifier and functional revision state (FRS) – is in which slot. For instance,

Module6=(3,O,V),1642,10,0,Proc Amp,,Vid' Proc' Amp

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tells us that there is a 1642 FRS 10 (Proc Amp) in slot 6, that is at physical module address 1:1:6.

It also tells us that the factory option fit of the module is 0, however this is not included in the virtual module definition. If the wrong factory option is fitted, particular controls may not be available.

The other information is concerned with the status, access level, filtering, screen heading caption and user name of the module and none of these is required for defining a virtual module.

If the virtual module configuration file is being generated before the hardware is available, this report cannot be produced, however, it is still necessary to determine what the hardware configuration will be.

9.3 Module Control Information

A virtual module control references a particular control in a particular type of module at a particular physical network location. The module type (identifier and FRS) and network location have been covered in the previous paragraph. In order to determine which control is referenced, each control has an identifying number which is unique for that module identifier and FRS. This information is contained in the Product Database and a summary of this can be uploaded to a PC via the "PC Transfer" menu by selecting "Product Database" in the "Send Items" menu. The following is an extract which includes the two modules we shall be using in an example.

```
[Product V1640 FRS1 Frame Sync]
Control0=0,OP Select,SDE,70
Control1=1,Video Fail Mode,LB,70
Control2=2,Ref Fail Mode,B,70
Control3=3,Default Standard,B,70
Control4=4,Vertical Blanking,LB,70
Control5=5,Ancillary Blanking,B,70
Control6=6,Input Status,S,70
Control7=7,IP,S,18
Control8=8,,L,66
Control9=9,Reference,L,70
Control10=10,EDH,SDE,18
Control11=11,,ML,66
Control12=12,Control,L,54
```

```
[Product V1640 FRS10 Frame Sync]
Control0=0,OP Select,NDE,64
Control1=1,Video Fail Mode,LB,64
Control2=2,Ref Fail Mode,B,64
Control3=4,Vertical Blanking,LB,70
Control4=5,Ancillary Blanking,LB,70
Control5=25,Delay,LB,64
Control6=26,Horiz. Offset,NDE,64
Control7=27,Vert. Offset,NDE,64
Control8=7,Input,L,42
Control9=29,,L,64
Control10=9,Reference,L,42
Control11=31,,L,64
Control12=12,Control,L,64
```

Note that the entries for two versions of the 1640 are shown above, the FRS1 and the FRS10 versions. Those controls which are available in both modules have identical control identifiers.



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[Product V1663 FRS1 Video Decoder]

Control0=0,IP sel,SE,24
Control1=1,IP std,S,75
Control2=2,Vgain,NDE,22
Control3=3,Cgain,NDE,73
Control4=4,Blk lvl,NDE,22
Control5=5,Phase,NDE,75
Control6=6,Delay Line PAL,B,66
Control7=7,I/P Format,LB,51
Control8=8,Vertical Blanking,B,66
Control9=9,Input Status,L,66
Control10=10,Video Levels,L,50

Each control line includes the control identifier, the control caption text, the control type and the control data position. Those controls without any caption text are usually status indications appearing on the same screen line as another control with which they are associated. In virtual modules, however, only one control can be defined for a particular line.

Note that the control identifier is the first item after the '=' sign, not the number in the ControlN= name at the beginning of the line. These are sometimes the same, particularly with FRS 1 modules but, as can be seen in the examples, this is not necessarily the case.

The control type is indicated by an abbreviation as follows:

- Read-only controls:

L – LED, N – NUMERIC, NCR – NUMERIC CONTROL READ, S – SPIN LIST, ML – MULTI-BIT LED

- Write-only controls:

B – BUTTON, NE – NUMERIC ENTRY, SE – SPIN LIST ENTRY, MB – MULTI-BIT BUTTON

- Read-write controls:

LB – LED BUTTON, NDE – NUMERIC DISPLAY ENTRY, SDE – SPIN LIST DISPLAY ENTRY, MLB – MULTI-BIT LED BUTTON, MBT – MULTI-BIT TRIGGER, MBHT – MULTI-BIT HOLD TRIGGER

- Other:

G – GROUP, C – MODULE CALIBRATE, T – TEXT

All control types are allowed apart from G (GROUP) because hierarchical screens are not available to virtual modules.

The last item is the data position, that is the pixel number (0-99) on the module screen where the data starts.

If more details of the control are required, a detailed report of a single module's database entry may be uploaded to the PC via the **PC Transfer** menu by selecting **Send Product Details to PC**, however, this is not usually necessary.

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9.3.1 Ganged Controls

Modules that include audio gain controls for stereo pairs also have ganged gain controls defined that do not appear in the physical module control display but are available for inclusion in a virtual module. In software versions before 8.3.0, the control sent the same gain value to both channels and a single channel was displayed. From version 8.3.0 these controls now display both channels side by side and any difference between the gains of the two channels is maintained as the ganged control is adjusted. Virtual modules defined for the earlier version may need to be changed to give the control sufficient room to display both channels.

See also 6.8.3 Ganging controls in a virtual module (V1602).

9.4 Virtual Module Configuration File

The virtual module configuration file includes virtual names and virtual module definitions. Names for virtual nets and virtual racks are included in the [Virtual Names] section of the file.

See Section 10 for details of special characters that may be displayed on the V1605.

Note: The content of all configuration files is case sensitive. For example if Vmod1:00:00 is entered instead of VMod1:00:00, it will not be accepted.

```
[Virtual Names]
VNet1=NAB 2000
VRack1:00=Rem 1 Station
VRack1:01=Rem 2 Station
```

Names for virtual modules may be included in the [Virtual Names] section or they may be included in the virtual module definition sections.

```
[Virtual Names]
VNet1=NAB 2000
VRack1:00=Rem 1 Station
VRack1:01=Rem 2 Station
VMod1:00:00=Source Select
VMod1:00:01=Analogue Vid IP
VMod1:00:02=Analogue Aud IP
or
```

```
[Virtual Module 1:0:0 Source Select]
Control0=1654,1,1:50:8,0,60,Source Select
... .. etc.
```

In our example, our virtual modules use controls from the two modules whose database summary we obtained earlier.

```
[Virtual Module 1:0:1 Analogue Vid IP]
Control0=1663,1,1:01:05,0,66,Input Standard
Control1=1663,1,1:01:05,2,66,Video Gain
Control2=1663,1,1:01:05,3,66,Chroma Gain
Control3=1663,1,1:01:05,4,66,Black Level
Control4=1663,1,1:01:05,2,66,Phase
Control5=1663,1,1:01:05,8,66,Vertical Blanking
Control6=1640,10,1:01:07,26,66,Horiz. Timing
```



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```
[Virtual Module 1:0:3 Digital IP]
Control0=1640,10,1:01:07,25,66,Delay
Control1=1640,10,1:01:07,27,66,Vert. Timing
Control2=1640,10,1:01:07,26,66,Horiz. Timing
```

Although the examples show most of the controls in each virtual module being from the same physical module, there is, in fact, no restriction. A single virtual module could contain 36 controls (the maximum number) from 36 different physical modules.

Each virtual module is defined in a separate section of the file. The virtual module's address in the virtual network is defined in the section header along, optionally, with its name. The section header

```
[Virtual Module 1:0:3 Digital IP]
```

defines the virtual network address as Virtual Net 1, Virtual Rack 0, Virtual Module 3 and the virtual module's name as Digital IP. The network address is a notional address which is used in the "Virtual Module Select" menu to navigate around the system of virtual modules. It is analogous to the physical network of Ports, Nodes / Racks and Modules except that the user is free to place virtual modules anywhere within the virtual network depending on how they want to organise the system. Virtual nets are numbered 1-10, virtual racks 0-99 and virtual modules 0-15. The only constraint is a limit of 1000 defined virtual modules due to the physical limits of the controller's memory.

Virtual controls are identified with the tag ControlN= where N must be in contiguous ascending numerical order starting with 0. If a number is missed out, all subsequent control definitions will be missing from the virtual module control screen.

In our first virtual module

```
Control2=1663,1,1:01:05,3,66,Chroma Gain
```

defines a control from the 1663 FRS 1 module in Port 1 Rack 0 Module slot 5. The control identifier is 3 meaning that it is referencing the following control in the module database:

```
Control3=3,Cgain,NDE,73
```

Note again that it is the number 3 after the '=' that we are interested in, not the 3 of the Control tag at the beginning of the line. This specifies a read-write numeric control with text caption "Cgain" and a starting data position of pixel 73. Our virtual module control example above overrides the data position with 66 and the text caption with "Chroma Gain". This is the most usual way of defining a virtual module control and it is also usual to make the starting data position the same for all controls as in our example. However, there are some short cuts which allow the data position and/or text caption from the database to be used. For instance, if the virtual module control had been defined as

```
Control2=1663,1,1:01:05,3,66
```

it would have used the text caption from the database, "Cgain". If it had been defined as

```
Control2=1663,1,1:01:05,3
```

it would also use the starting data position from the database, 73. The definition

```
Control2=1663,1,1:01:05,3,0,Chroma Gain
```

takes the starting data position from the database (73) because a value of 0 is deemed to be invalid but the text caption is overridden by the caption "Chroma Gain".

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A second example of a virtual module control is from the second virtual module.

Control1=1640,10,1:01:07,27,66,Vert. Timing

This references control number 27 from the 1640 FRS 10 module at physical network location 1:1:7 (note that leading zeros may be included but are not required). Its data start position is again pixel 66 and its text caption is "Vert. Timing". The details of this control are contained in the database entry for the module:

Control7=27,Vert. Offset,NDE,64

9.5 Inserting a Calibrate Control into a Virtual Module

There is a special control identifier number 32767, which is reserved for Virtual Module Calibrate. This does not require a valid module identifier, FRS and address. Its function is similar to the Module Calibrate control which may be included in some physical module control screens and which sets those controls, usually gain controls, in the module with their 'calibrate' flag set in the database to their default values. The Virtual Module Calibrate control does the same to the controls in a virtual module.

Control4=0,0,0:0:0,32767,66,Calibrate

9.6 Inserting a Text Separator into a Virtual Module

A second special control identifier number 32765 is used to insert a Text Separator. The Text Separator control is used to insert a line of text in place of a normal control. It may be used to separate controls in different functional areas or those with different access levels. Note that text separators are limited to 24 characters; using more than this will result in the text being truncated.

Control5=0,0,0:0:0,32765,66, ----- Eng -----



9.7 Load-time Testing

The virtual module configuration file is loaded via the **PC Transfer** menu with **Virtual Modules** selected in the **Receive Items** menu. If **Virtual Names** is also selected, the names in the [Virtual Names] section of the file will also be loaded.

When a virtual module definition is loaded, it is the Control0 statement in the definition which allocates the memory for the virtual module and clears out any previous definition which may have been loaded for that virtual module address. Previously loaded virtual modules, which are not redefined by the new file, will not be affected. Therefore, to ensure no old information remains, all existing virtual modules should be cleared, using the **Clear Virtual Controls** menu, before loading the new file.



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After loading, our second virtual module

```
[Virtual Module 1:0:3 Digital IP]
Control0=1640,10,1:01:07,25,66,Delay
Control1=1640,10,1:01:07,27,66,Vert. Timing
Control2=1640,10,1:01:07,26,66,Horiz. Timing
```

should look like this when 1:0:3 is selected in the Virtual Module Select menu.

```

DigitalIP
Delay          Variable
Vert. Timing  +18
Horiz. Timing +2.82us
```

Of course, the data will probably be different.

If the module actually fitted in module slot 1:01:07 is a 1640 FRS1 instead of the FRS10 specified in the virtual module definition, the screen will look like this.

```

DigitalInput
Delay
Vert. Timing
Vert. Blanking Pass
```

This is because the first two controls are not available in the older module, although the third control is available and is shown normally. If either of the first two controls is selected, a warning appears.

CONTROL NOT AVAILABLE FOR
MODULE FITTED

If any of the definitions have errors, most are detected at this, the load and display stage. Further information may be contained in a warning message that may be displayed when the virtual control is selected.

The following are typical errors together with the resulting virtual module display screen.

```

Delay          Variable
Vert. Timing  +18
Vert. Blanking Pass
```

```
[Virtual Module 1:0:3]
Control0=1640,10,1:01:07,25,66,Delay
Control1=1640,10,1:01:07,27,66,Vert. Timing
Control2=1640,10,1:01:07,4,66,Vert. Blanking
```

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Virtual module name is missing from the definition and not included in the [Virtual Names] section (it must be in one or the other). Alternatively, the name may have been included in the [Virtual Names] section but **Virtual Names** was not selected in the **Receive Items** menu.

```
Digital Video In
Delay          Variable
Vert. Timing   +18
Vert. Blanking Pass
```

```
[Virtual Module 1:0:3 Digital Video Input]
Control0=1640,10,1:01:07,25,66,Delay
Control1=1640,11,1:01:07,27,66,Vert. Timing
Control2=1640,10,1:01:07,4,66,Vert. Blanking
```

The virtual module name Digital Video Input 1 has been truncated to a length which fits in the **Virtual Module Select** menu. If Virtual Names are uploaded from the panel to the PC via the **PC Transfer** menu, it will be the truncated names that are transferred. It is then possible to check which names need to be changed, edit the file and download the new names. About 12 to 15 characters may be used, depending on which characters are used.

Note in the second control definition that FRS 11 is specified. This FRS is not included in the 1640 module database, however, the details for the next lower FRS for the 1640 module are used, so no error occurs.

```
Digital IP
Unknown mod 1648.10
Vert. Timing   +18
Invalid control id 56
```

```
[Virtual Module 1:0:4 Digital IP 2]
Control0=1648,10,1:01:07,25,66,Delay
Control1=1640,11,1:01:07,27,66,Vert. Timing
Control2=1640,10,1:01:07,56,66,Horiz. Timing
```

The module identifier 1648 is not included in the module database.

The FRS number 11 for module identifier 1640 is not included in the module database. However, the details for the next lower FRS for the same module identifier are used, so no error occurs.

```
Digital Input
Unknown mod 1648.10
Vert. Timing
Control ID 57
```

```
[Virtual Module 1:0:4 Digital IP 2]
Control0=1648,10,1:01:07,25,66,Delay
Control1=1640,10,1:01:07,56,66,Vert. Timing
Control2=1640,10,1:01:07,57,66
```

The module identifier 1648 is not included in the module database. The database for module 1640 FRS 10 does not include controls with identifier 56 or 57. The name is included in the definition for ID 56 but is expected to be retrieved from the database for ID 57. The resulting displays show no data and when either is selected a warning appears.



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CONTROL
NOT AVAILABLE FOR
MODULE FITTED

```
DigitalInput  
Invalid mod addr 1:01:17  
Invalid control ident  
Invalid control ident
```

```
[Virtual Module 1:0:3 Digital IP 1]  
Control0=1648,10,1:01:17,25,66,Delay  
Control1=1640,10,1:01:07,256  
Control2=1640,10,1:01:07
```

The physical module address in the first control definition is invalid because module numbers can only go up to 15. The same error message would occur if the port number was greater than 5 or the rack number was greater than 62. A port number of 0 produces the error message "Undefined module address". The control identifier is invalid (> 255) in the second and missing in the third.

```
DigitalIP  
Undefined module address  
Undefined module address  
Undefined module address
```

```
[Virtual Module 1:0:3 Digital IP 1]  
Control0=1640,10,1:  
Control1=1640,10  
Control2=1640,
```

These all give the same error message because the physical module address is either incomplete or missing. Although the FRS number is also missing from Control2, it's the first error found which is reported.

9.8 Overriding Module Control Access Levels

In all of the examples shown above, the access level is not specified in the virtual control definition. The access level is therefore inherited from the physical module referenced by the virtual control. However, it is possible to override this access level by adding an access level to the virtual control definition. To do this, the control definition must be complete, that is, the data position and name must be specified in the control, not left out and therefore taken from the module database.

```
Control0=1640,10,1:01:07,25,66,Delay,O  
Control1=1640,10,1:01:07,56,66,Vert. Timing  
Control2=1640,10,1:01:07,4,66,Vert. Blanking,E
```

In the example above, suppose the 1640 module in slot 1:01:07 has been set to **Supervisor** access level. The first virtual control has been made available to **Operators**, the second follows the module access level which is **Supervisor** while the third is restricted to **Engineers**,. This means that, by changing login authority, different controls may be made available to the user in a virtual module.

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For clarity it is suggested that, for instance, those controls that are only available to an Engineer are grouped at the end of the module and separated by a suitable Text Separator control.

```
[Virtual Module 1:0:4 Digital IP 2]
Control0=1640,10,1:01:07,25,66,Delay,O
Control1=1640,10,1:01:07,56,66,Vert. Timing
Control2=0,0,0:0:0,253,66, ----- Eng -----
Control3=1640,10,1:01:07,4,66,Vert. Blanking,E
```



Without any special protection, it would be possible for the access level system to be circumvented. For instance, a supervisor could, by editing and then loading a virtual module configuration file, change the access level of a control in an engineering level module to supervisor, thereby making available a control to which they would normally have no right of access. This is prevented at the time the file is loaded by preventing the overriding of the access level of a control if the user has no access right to the module that it references. It is, however, possible for a higher authority user to load the file and then for a lower authority to use the resulting virtual module including the access level overrides.

It should be noted that the access level override feature replaces the old functionality whereby a control in a **Supervisor** level module would be available to an **Operator** through a virtual module control.

Note that overriding access level to a lower level will not work on a module calibrate control included in a virtual module. A virtual module calibrate control (see 9.5) should be used instead.

9.9 Changing Control Captions

As described above, the name of each virtual control may, optionally, be specified in the Virtual Module definition. The captions displayed for the different states of button, LED and spin-list controls will usually be those defined by the module database. However, by loading Control State Aliases (see 6.15.3), some of these may be changed as well. To ensure they are used by Virtual module screens, the **Used by** option in the **Edit User Names | Control State Aliases** menu should be set appropriately.

9.10 Run-time Testing

Finally, there are the errors that cannot be detected until the hardware is connected together and running.

Having loaded the virtual module configuration file and with all modules referenced by the virtual modules on-line, the virtual module controls should either be selectable using the right-hand select buttons or, if status only, produce the warning message

READ-ONLY

If, however, on selecting a virtual module control the warning message

PHYSICAL MODULE
IDENT MISMATCH

occurs, it means that the identifier of the module at the physical network address specified in the virtual module definition is not the same as the module specified in the virtual module definition. In this case the display has the data field missing, the same as when the control ID is not available.



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If the module slot referenced by the virtual control is empty, the virtual module display looks normal but the following warning appears when the control is selected.

MODULE
SLOT EMPTY

If the current user's login authority is supervisor and the access level of the control is engineering, the following warning appears when the control is selected.

NOT AVAILABLE
TO SUPERVISOR

If the current user's login authority is operator and the access level of the control is supervisor or engineering, the following warning appears when the control is selected.

NOT AVAILABLE
TO OPERATOR

9.11 User Presets in Virtual Modules

Several Vistek modules have a "User Preset" facility which means the user can save and subsequently recall up to 10 sets of parameter settings which are stored in EEPROM in the module. The latest versions of modules with this facility are able to use a 'Multi-bit LED-Button' control to recall (or store) a preset, which gives the user rapid access to every preset by providing a separate control for each one. By selecting the preset and turning the encoder knob a tick appears rapidly replaced by a pointer to confirm that preset has been recalled.

These controls are very easy to use in Virtual Modules. The following is an extract from the Product Database for a 1647 Aspect Ratio Converter.

```
Control9=35, Preset 1, MLB, 40  
Control10=37, Preset 2, MLB, 91  
Control11=39, Preset 3, MLB, 40  
Control12=41, Preset 4, MLB, 91  
Control13=43, Preset 5, MLB, 40  
Control14=45, Preset 6, MLB, 91  
Control15=47, Preset 7, MLB, 40  
Control16=49, Preset 8, MLB, 91  
Control17=51, Preset 9, MLB, 40  
Control18=53, Preset 10, MLB, 91  
Control19=55, User Presets, G, 51
```

This shows the 10 controls for recalling user presets together with their hierarchical group control. We cannot use the group in a virtual module and we cannot put more than one control on a line. The very simplest virtual module for recalling presets could look like this:

```
[Virtual Module 1:0:7 ARC Presets]  
Control0=1647,20,1:09:05,35,50,  
Control1=1647,20,1:09:05,37,50,  
Control2=1647,20,1:09:05,39,50,
```



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This uses the default names for the controls. But how much more useful it would be if the presets had meaningful names like the following:

```
[Virtual Module 1:0:8 ARC Presets]
Control0=1647,20,1:09:05,35,90,BBC Olympics Mobile 24
Control1=1647,20,1:09:05,37,90,Sky Eurosport 2 Cable
Control2=1647,20,1:09:05,39,90,CNN Pacific Zone News
```



This was achieved simply by moving the data columns and adding new text captions.

9.12 Updating existing Virtual Module Definition Files for Version 8 Software

In many cases no changes will be required to existing files. However, to provide the functionality of working with different FRS modules, it has been necessary to change the control identifiers in some modules. The modules affected are:

1627, 1628, 1630, 1633, 1634, 1640, 1642, 1647, 1647F

If you use controls from any of these modules in your virtual module definitions, you should compare the new Database.vis file with the old one to check which controls have changed ID numbers.

If you currently use the feature whereby an operator can access a control in a Supervisor level module, you must override the access level of that virtual control to Operator by appending ",O" to the definition.

See also Section 9.3.1 Ganged Controls

10 VIRTUAL MODULE BUILDER

The Virtual Module Builder program is a visual way of generating and checking out a virtual module definitions file for the V1602/05. It provides an alternative to the editing procedure described in the previous section. It allows the user to:

Load the V1605 module database

Specify up to 4 physical networks of modules by selecting modules from the module database

Select controls from the module database for insertion into a virtual module

Edit individual virtual controls

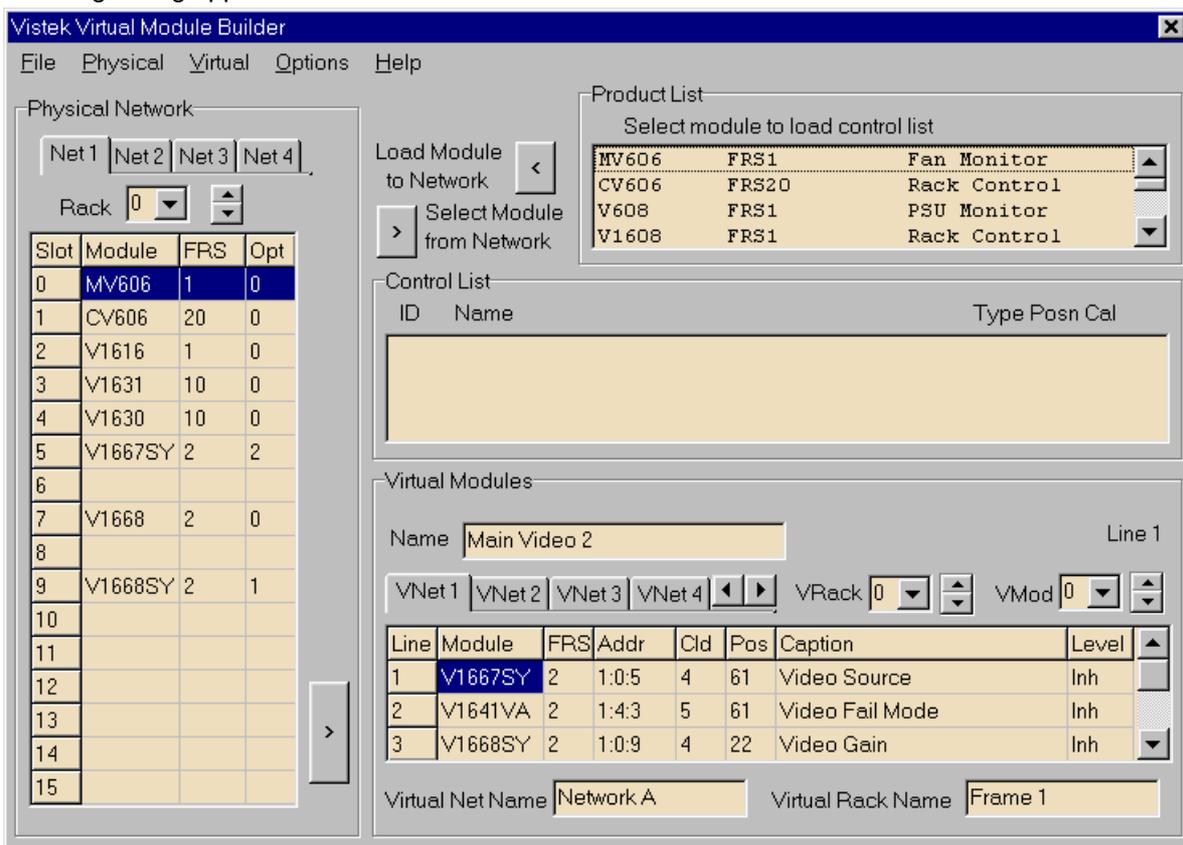
Edit names for virtual networks, racks and modules

Check out the virtual module network against the module database and physical networks

Save physical network status and virtual module definitions and names to files

10.1 Invoking the program - description of the dialog

The program is installed in the same directory as the file transfer program Conf1605. When it is invoked, the following dialog appears:



The dialog is shown with the module database, a physical network status file and a virtual module definitions file having been loaded. The **Autoload** options in the **Options** menu allow the files to be loaded automatically when the program is invoked. Similar **Autosave** options ensure the physical network and virtual module definitions files are automatically saved when the program is closed.

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Alternatively, the database, network and virtual definitions files may be loaded by selecting the appropriate load option in the **File** menu and the network and virtual definitions files may be saved by selecting the appropriate save option in the **File** menu.

The left-hand part of the dialog is a representation of a physical module network. One of 4 nets is selectable via the 4 tabs, the rack can be selected from 0 to 62 or clicked up or down one at a time. Clicking in a module slot selects that module.

The top right-hand part of the dialog has a list of the available modules. Below this is a list of the controls in the module selected from the list above.

At the bottom on the right-hand side is a representation of the virtual network being built. One of 10 virtual networks can be selected using the tabs. The virtual rack can be selected from 0 to 99 or clicked up or down one at a time. The virtual module can be selected from 0 to 15 or clicked up or down one at a time.

10.2 Product List

As mentioned earlier, the **Product List** is loaded from the module database file. Selecting **Load Module Database** in the **File** menu brings up a file selection dialog from which you should select the Database.vis file that was installed with this program. Once the location of the database file has been specified, you can check the **Autoload Database** option in the **Options | Load** menu to get the database to load automatically when the program is invoked.

After loading, selecting a module from the list loads that module's controls into the **Control List** below.

10.3 Physical Module Network

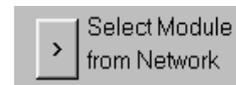
The module network may be loaded from a Network Status file obtained from the V1605 (version 8.5 or higher) using Conf1605 and the V1605's PC Transfer menu. Once the location of the network status file has been specified, an Autoload option is available for automatically loading this file when the program is invoked.

Alternatively, individual slots may be loaded from the **Product List** as follows:

- Select physical network address by selecting Net 1 to 4 and Rack 0 to 62 and clicking in the required module slot.
- Select the module by clicking in the **Product List**.
- Transfer the module details to the physical network by clicking on the **Load Module to Network** button.



Selecting a module slot and then double clicking on the slot or clicking on the **Select Module from Network** button, selects the module in the **Product List** and transfers its controls to the **Control List** below.



After loading the required modules, the physical network may be stored to a file by selecting **Network File | Save** in the **File** menu. This file may then be used to load the network the next time VMBuilder is invoked. There's also an **Autosave** option in the **Options** menu to save the physical network automatically when exiting from the program.

10.4 Virtual Module Network

If you already have a Virtual Module definitions file, it may be loaded into the Virtual Module Network by selecting **Virtual Module File | Load** in the File menu. Once the location of the file has been specified, it may be loaded automatically on next invoking VMBuilder by checking the appropriate **Autoload** option and saved on exiting from the program by checking the appropriate **Autosave** option.

This is useful for restoring a partly completed virtual module definition file.

Options also exist to prevent the existing virtual module definitions or virtual names being deleted when a new file is loaded. This can be useful when separate source files contain the names and control definitions or several virtual module definition files need to be loaded together. Note that all names and definitions are always saved in a single file by VMBuilder so, after the initial loading, the **Delete Old** options may be checked.

Controls can also be added to a virtual module individually. First the Virtual Module is selected by the VNet tabs and the VRack and VMod controls. Then the correct line within the virtual module is selected by clicking in it. A control is selected by selecting a module from the **Module List** and double clicking on a control from the **Control List**. Alternatively the **Copy Control** option in the **Virtual** menu may be used.

Note that the module can also be selected from the database by clicking on the required Physical Network slot and by double clicking on the slot or clicking on the **Select Module from Network** button. This selects the corresponding module in the Module List and loads its controls into the Control List below.

When a control is copied to a virtual module line, the control and module attributes are copied but the physical address is set to the default 1:0:0. This can either be edited by double clicking in the Addr column of the line or set by selecting the module in the physical network and clicking on the **Transfer Module Details** button or selecting **Copy Physical Module Attributes** in the **Virtual** menu. This copies the module identifier, FRS and address to the virtual control.



*Transfer
Module
Details*

10.5 Editing Virtual Modules and Names

The name of the Virtual Module is entered in the **Name** box. The names of the currently selected Virtual Network and Virtual Rack are entered in the boxes below the virtual control definitions. Any item in a virtual control may be edited by double clicking on the appropriate line and column of the virtual module. In most cases an edit box is opened and the user may change the entry as required. Usually it is just the **Caption** and **Position** that would need to be changed. To clear a virtual module line, the **Module** identifier should be cleared.

When editing in an edit box, double clicking the mouse opens a list of **special characters** which are used by the V1605. A character is selected by double clicking on the character or clicking on the **Select** button.

An edit is finished and the contents transferred to the virtual module line by pressing the **Enter** key or by clicking in the virtual module grid or by changing which virtual net, rack or module is currently visible.

When double clicking on the **Level** column, a menu pops up from which the user may select Inherited, Operator, Supervisor or Engineering. The default, which is set when a control is copied from the Control List, is Inherited, which means the control's access level is the same as that of its physical module. The other settings override the physical module's access level.

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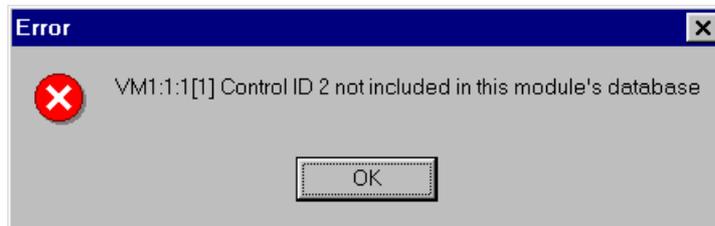
When a column in a Virtual Module is selected by clicking on it, subsequent right clicking of the mouse causes a pop-up menu to appear. Apart from when the Level column is selected, when the menu is the Levels menu, the menu that appears has three items, **Calibrate Control**, **Text Separator** and **Delete Control**. Selecting the first or second option puts the default details for a Module Calibrate or Text control in the currently selected line and selecting the third item deletes the control on the current line. Remember that text separators are limited to 24 characters; Virtual Module Builder will not check this.

10.6 Editing Physical Network

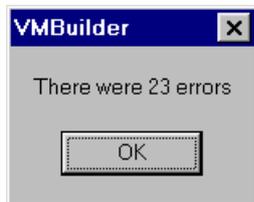
The physical network cannot be edited manually, but a Net, Rack or Module slot may be cleared by right clicking the mouse and selecting from a pop-up menu. Modules are loaded into the physical network from the Product List (see above).

10.7 Checking Virtual Controls

Individual controls may be checked for consistency with both the module database and the physical network by selecting the control and selecting Check | Control in the Virtual menu. If Include Warnings is checked, the program also checks that the FRS specified in the Virtual Control matches that of the Physical Module. A message appears if there is an error.



In addition, the entire Virtual Network may be checked by selecting Check | File in the File menu. The user is invited to specify an error file and, after the check is completed, a message indicates the outcome.



OR



If errors were present, the error file can be inspected to find out where they occurred.

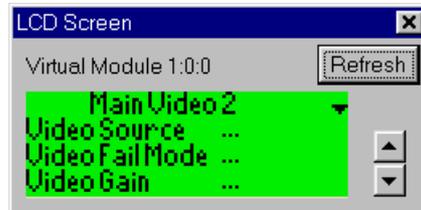
```
;VMBuilder error file
Error:VM1:0:0[1] No module at physical network address 1:50:8
Error:VM1:0:1[2] No module at physical network address 1:4:8
Error:VM1:0:1[3] No module at physical network address 1:4:8
Error:VM1:0:2[1] Control ID 3 not included in this module's database
Error:VM1:0:2[2] Control ID 8 not included in this module's database
Error:VM1:0:2[13] No module at physical network address 1:1:7
Error:VM1:0:3[1] No module at physical network address 1:1:7
```



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10.8 Previewing the Virtual Module

By selecting Display Virtual Module Screen in the Virtual menu the virtual module screen may be previewed. The data is replaced by dots in the position specified by the definition. This dialog may be moved to a convenient part of the screen and left there. However, it is not automatically refreshed so the user must refresh it by clicking on the 'Refresh' button or the Display Virtual Module Screen option in the Virtual menu.



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11 USE OF SPECIAL CHARACTERS

When creating text on a PC for downloading to the V1605 (System Names, Local Names, Virtual Racks, Virtual Modules etc.) the following special characters are available. These may be entered by typing \x followed by their hex representation. They are also available via a dialog in the Virtual Module Builder program (see 10.5).

| | |
|--|--|
| \x0, \x1, \x2, \x3, \x4 | Unknown control , virtual rack/module status , phi (phase), solid arrow right, solid arrow left |
| \x5, \x6, \x7 | Off-line, on-line, thin 1 |
| \x8, \x9, \xa, \xb, \xc, \xd, \xf, \x1f, | Slot empty (blank), gain symbol, rest of gain symbol, right down arrow, left down arrow, hierarchical screen back, arrow right, arrow left |
| \x10, \x11, \x12, \x13 | Degree, virtual prefix, horizontal menu divider, (spare) |
| \x14, \x15, \x16, \x17 | Scroll symbols |
| \x18, \x19, \x1a, \x1b | Local and remote control, copyright |
| \x1c, \x1d, \x7f, \x8e | Divider bar, decibels, full 8x5 block, not available symbol |
| \x1e\x1a, \x19\x1a, \xe\x1a | Double characters for physical, virtual and mixed operating modes together with the current login access level engineering, supervisor or operator |
| \x80, \x81, \x82, \x83 | Alarm settings: momentary, latched, warning, alarm |
| \x84, \x85, \x86, \x87 | Alarm log: warning, alarm, cleared warning, cleared alarm |

These characters are up to 6 pixels wide and most are not followed by a pixel space. The thin 1 (2 pixels wide) is used where space is at a premium and text is being displayed, such as 'V1662'. This can be written in string form...

"\x07 662". Because the thin 1 is not followed by a pixel space, a space is inserted to provide the correct gap between the 1 and following numbers and also to terminate the \x sequence.

The '1' used for displaying numerals automatically takes up 5 pixels to keep numerals in columns

For a backslash, use \.



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12 TROUBLESHOOTING

See also Section 13, FREQUENTLY ASKED QUESTIONS.

12.1 Network does not operate

If the network does not seem to be working check for the following:

- Duplicated node addresses – all node addresses used on a network must be different.
- Network speed settings – the setting on the DIN341 and all racks on the network must be the same.
- Correct controller node address and baud rate setting – these must correspond to the settings required by the selected DIN341 node group.
- Integrity and correct wiring of network cables, including terminations switched on correctly.

The LEDs on the DIN341 or V6041 can assist faultfinding.

V6041

Four LEDs are incorporated into the two CAN sockets of the V6041 DARTnet interface. The left-hand yellow LED flashes when messages are accepted from the CAN bus. The left-hand green LED flashes when messages are transmitted to the CAN bus. The right-hand yellow LED flashes when messages are received from the RS232 interface. All three LEDs should flash occasionally if the interface is operating correctly. The right-hand green LED is on if power is present.

DIN341

On both types of control panel the DIN341 interfaces are fitted internally. However, the LEDs can be seen by lowering the front panel on a **V1605** or by looking through the cooling slots in the left-hand side of a **V1602**.

Green light on permanently and amber light flashing occasionally – These LED indications are usually indicative of normal operation. If these LED indications are seen but the network is not operating it is likely that the controller is not collecting information from the DIN341 interface. Check that the controller node address and baud rate are both valid for the selected DIN341 node group.

Green light and amber light permanently lit – no RS232 communication between the DIN341 and the controller. Check that the baud rate setting is valid for the selected DIN341 node group.

Green light permanently off – no network activity being detected. Check that at least one rack on the network is powered and that all cables are correctly connected and intact. This could also indicate a fatal network error. Disconnect and reconnect the network cable. If the green LED illuminates for a short period then goes out, there is a fatal network error. This is normally caused by address conflicts between units or faulty wiring.

12.2 Expected Ports, Nodes or Modules are not displayed

If not all of the ports, nodes or modules expected are displayed, users should check whether they have been excluded from the display because of the settings in use on the V1605 control panel. Typical “problems” caused by control system settings are as follows:

- the port, node or module is set to an access level higher than the current login authority level. In this case the module can only be made visible by changing the unit’s access level or the current login authority level.

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- the unit is excluded by the setting of the Unit Status filter. Note that the "All" setting is only available when logged in at Engineering login authority level.
- the unit is excluded by the setting of the Local Filter. In this case the unit can be made visible by deselecting the local filter or by changing the local filter setting so that the unit in question is selected for display under the local filter.

12.3 Inconsistent Operation of Controls

If inconsistencies are observed in the operation of controls, such as a gain changing correctly but then jumping to a different value, the user should press the reset button on the rack controller in the rack containing the module in question or reset the rack controller by selecting **Rack Controller** under **Reset** in the **Engineering** menu, selecting the correct module and selecting **Execute Reset**. This ensures that refresh messages in the rack controller are reloaded from the module's reference data EEPROM thereby eliminating possible system inconsistencies. Such occurrences are rare but can happen after an upgrade to all or part of a system or when system components are swapped. Powering down the rack or removing and re-inserting the module will have the same effect but resetting the rack controller is less disruptive. On occasions, such as when a module has been replaced with one of a different revision (FRS), in particular an earlier revision, it may be necessary to clear the non-volatile RAM in the rack controller associated with that particular module slot. This can be done by removing the module, selecting **Clear Status** in the **Engineering** menu, setting **Module Status** to \surd , selecting the module slot and selecting **Execute Clear Status**. The module can then be replaced.

12.4 Actions required after changing a rack address setting

If the address of a rack is changed on a live network, it is necessary to reset the rack controller in order for the new address to be read by the controller.

12.5 Actions required after changing a DIN341 node group setting

If the node group setting of a DIN341K is changed on a live network, it is necessary for the RJ45 network connection to be disconnected and reconnected for the change to take effect. It may also be necessary to change the Controller Address if the node group includes more than one address (in addition to broadcast) and the same node group is used on another V1605 DARTnet port.

12.6 Actions required after using V1605 resets

If a Battery Backed Memory reset is performed on the V1605 control panel with **Setup Parameters** ticked (\surd), it is essential that baud rates are reset for all active ports and, if the panel is connected to a live network, all rack controllers on the network are reset.

12.7 Problems with transferring large files from the V1605 to a PC

When transferring very large amounts of data from the V1605 to the PC, ensure that no MSDOS applications are running and that no MSDOS windows are open on the PC. These may prevent correct operation of the software handshaking between the PC and the V1605, resulting in loss of data and therefore corruption of files. Some screensavers and virus checkers can cause similar problems.



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12.8 Cannot assign a module to a Device Recall button

To assign a module, the **Module Select** or **Virtual Module Select** menu must be visible on the LH display and a module or virtual module must be selected and its control panel visible on the RH display. The **Assign** button should then light up if pressed. If not, the message

NOT AVAILABLE TO OPERATOR or NOT AVAILABLE TO SUPERVISOR

appears indicating that the user's authority is too low. Either log in at a higher authority or change the **Set Assignment Access** option in the **Set Access Levels** menu to a lower authority.

If the panel is a **V1602**, the **Recall Button Mode** must also be set appropriately. If it is set to **Control Select** or **Control Sel (Ganged)**, the option of assigning modules to recall buttons is not available and pressing the assign buttons brings up the message

MODULE ASSIGNMENT
NOT AVAILABLE IN
THIS RECALL BUTTON MODE

If the mode is set to **Combined Select** or **Combi'd Sel (Ganged)**, pressing the **Assign** button forces the recall buttons to display assigned modules, so that the user can which buttons are already have modules assigned to them.

12.9 Router Interface doesn't work

If routes are being changed on the router but virtual module switching does not occur, there are several items to check, firstly on the master panel...

- Have you enabled the Local Router Interface alarm? If not, enable Alarms via the **Configure Alarms** menu (you'll need to be in Physical or Mixed operating mode to do this) and select **Miscellaneous Alarms**. Set **Local Router I/F** alarm to momentary.

If you get an alarm, the master panel is polling the router interface but it is not receiving messages from the router. This could be because the router is not configured correctly or because the physical interface is incorrectly connected.

If you don't get an alarm, disconnect the interface. If you get an alarm, the master panel was polling the router correctly so the problem is not in the router interface. If you don't get an alarm, the master panel is not configured correctly to poll the router.

- Is the RS485/422 interface correctly connected? Check in this V1602/05 manual (see Section 1,) and the router handbook in case a 422 null modem is required to swap the signals. The connection at the V1602/05 end should be to PORT 5 (RS485).
- Is the master V1605 correctly configured? Check the **Router Polling** control is set to the correct protocol and that the destination and source mappings are sensible. No router polling will occur unless there is at least one destination mapped to a panel select number.
- Check that messages are being **sent** on the RS485 port by ticking (✓) **RS485 Logging** in the **Engineering | Diagnostics | RS485** menu and then selecting **RS485 Tx**. The menu will display the last 50 messages transmitted and it should be updating if messages are currently being sent.
- Then check that messages are being **received** on the RS485 port by selecting **RS485 Rx** in the same menu. The last 50 messages received are shown in the display and this will be updating if messages are currently being received, with the latest message at number 50.

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Secondly on the slave panels...

- Are the slave panels in **Virtual** or **Mixed** operating mode? Router switching of virtual modules is disabled in Physical operating mode.
- Have you enabled the Remote Router Interface alarm in a slave panel? If not, enable Alarms via the **Configure Alarms** menu (you'll need to be in Physical or Mixed operating mode to do this) and select **Miscellaneous Alarms**. Set **Remote Router I/F** alarm to momentary.
- Remove the master panel's connection top the router. A Local Router I/F alarm will occur in the master panel (if it is enabled). This should be followed by a **Remote Router I/F** alarm in the slave.
- If the alarm occurs, it indicates that DARTnet router switching messages are being received by the slave panel. Any problem is therefore likely to be in the mapping. Reconnect the router to master panel connection and both alarms should clear.
- If the alarm does not occur, it indicates that, either DARTnet router switching messages are not being received by the slave panel, or the slave panel is in Physical operating mode.
- Does each panel have a Panel Select Number (PSN) defined? Check for this and set if necessary in **Auxiliary Functions | Router Options | Slave V1605 (or V1602) Options | Change Panel Select Nos.**
- Is each **PSN** mapped to a **Destination** in the master panel?
- Have **Virtual Module** been loaded into the slave panels and are their addresses correctly mapped to **Router Sources** in the master panel?



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13 FREQUENTLY ASKED QUESTIONS

13.1 Customising the V1602 and V1605

13.1.1 What options are available for customising the V1602/05?

Network nodes (ports, racks or modules) may be given user defined local and system names to replace their default names. Module controls from different modules may be re-arranged into user defined virtual module control screens with user defined names for each control and each virtual module. Control state captions in physical and virtual module screens may be replaced by control state aliases defined by the user. The Device Recall buttons may be programmed to enable rapid selection of both Physical and Virtual modules and, in the **V1602**, rapid selection of controls. Other options are available in the Control Panel Setup menu.

13.1.2 How do I get my user names into the V1602/05?

User names can be loaded from a PC or Flash file or entered through an editing screen on the V1605 to replace the default names for network nodes (ports, racks or modules). There are two sets of user names, Local and System, and which names are displayed can be set by an option in the Control Panel Setup menu.

13.1.3 There are local names and system names, what's the difference?

Local Names may be edited, loaded or cleared by any user. System Names may be changed only by an Engineer. Any user may decide which names are displayed in the Module Select menu by means of the Display Names option in the Control Panel Setup menu. If LOCAL is selected but no local name exists for a network node, the SYSTEM name is displayed instead. If SYSTEM is selected but no system name is available, the DEFAULT name is displayed instead.

13.1.4 How do I know which names are being displayed in the Module Select menu?

At the top right of the menu, <LOC>, <SYS> or <DEF> indicates the type of names.

13.1.5 What exactly is a control state alias and how is it loaded?

In the Module Control screens, control state captions may be changed for any button. LED or spin-list control. That is, any control which uses a caption string to define its current state. For instance, a control that has two states, usually labelled **Off** and **On**, can be changed so the control now reads **Inactive** and **Active**. A control state alias may contain strings for up to 16 states of a particular control. Control state aliases are not entered through an editing screen but have to be loaded from a configuration file either from a PC or a Flash file.

13.1.6 Can I change the names of controls in a module control screen?

Control names can be changed when the control is specified in a Virtual Module but they are fixed in Physical module control screens. However, their state captions can be changed in either type of module control screen.

13.1.7 Can I change which controls I get in a module control screen?

You can do this by defining a Virtual Module to contain just those controls you want from a physical module screen. However, Virtual Modules can do much more than this because they can include controls from several modules located anywhere in the system. This makes it possible to organise the control of your system functionally instead of being constrained by the physical boundaries of individual modules.

13.1.8 What are virtual modules for?

By defining Virtual Modules and switching to Mixed or Virtual Mode, controls from different physical modules may be assembled into control screens more appropriate to your own application.

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13.1.9 Am I limited to just 8 device recalls?

It depends whether your panel is a V1602 or a V1605 and the Operating Mode.

In a **V1605**, in Physical Mode and Mixed Mode, each of the 8 buttons may be programmed to any module in the whole physical network. In the case of Mixed Mode, buttons this is extended to also include any defined module in the virtual module network. However, in Virtual Mode, the 8 buttons are programmed to select any 8 virtual modules out of the current virtual rack, which is selected by the Virtual Module Select menu. With 1000 virtual racks available (10 nets x 100 racks), this means 8000 device recalls.

In a **V1602**, in Physical Mode and Mixed Mode, each of the 36 buttons (3 banks of 12) may be programmed to any module in the whole physical network. In the case of Mixed Mode, buttons this is extended to also include any defined module in the virtual module network. However, in Virtual Mode, the 16 buttons (12 in the first bank and 4 in the second) are programmed to select any of the 16 virtual modules in the current virtual rack, which is selected by the Virtual Module Select menu. With 1000 virtual racks available (10 nets x 100 racks), this means 16000 device recalls.

13.1.10 Can an operator decide what to see and what not to see?

Yes, by using filtering. First there's the **Units** option in the **Configure Access | Set Filtering** menu which can be set to **Online only** to filter out any module which isn't currently active. Then, through the same menu you can set the **Local Filter** and turn it on or off.

13.1.11 How can I save my customised configuration?

Your configuration, including user names, virtual modules, etc., can be uploaded to a PC file, saved to Flash memory built in to the V1605 or saved to a file on a PCMCIA Flash card.

13.1.12 My virtual module text separators stop halfway across the screen - why?

Text separators occupy the same memory area as user names and these are limited to 24 characters. Any more than this are discarded. Most characters occupy about 5 pixels which means 20 characters will normally fill a line. However, some characters are smaller and, in particular, spaces occupy just one pixel. The solution is to limit your text to 24 characters, try to avoid too many spaces and ensure your text looks correct when left justified on the screen.

13.2 Security on the V1602 and V1605

13.2.1 What security features are included in the V1602/05?

The V1602/05 uses a three level security system with optional passcodes. A user may log in as an **Engineer, Supervisor or Operator**. Passcodes may be enabled for changing up to Supervisor or Engineering security level. Fewer menu options are available at operator and supervisor levels than at engineering level. Module access may be restricted by defining the minimum security level for each port, rack or module.

13.2.2 How do I change my log-in level?

Select **User Log-in** in the main menu; this will indicate your current level and will provide options to change to the other two levels. When you select one of these you will be prompted if a passcode is needed. If so, the passcode is entered on the (first) eight device recall buttons.

13.2.3 How do I set up my passcodes?

Passcodes are entered and enabled through the Passcode Protection option in the Configure Access menu. The 4-digit passcode is entered on recall buttons 1 to 8. A different passcode can be entered for each of 32 user numbers. A passcode is valid only for the security level at which it is entered. Note that user 0 is not available for a Supervisor passcode.



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13.2.4 What do I do if I forget my passcode?

To disable Supervisor or Engineering passcodes you have to be at the appropriate security level, so if you forget your passcodes and you are at a lower level, you have a problem. Also, to change a passcode, you have to key in the old passcode first. One way round the problem is to clear the battery backed set-up parameter memory in the V1602/05, which will have the effect of clearing all passcodes and disabling them. This can be done by holding in the left-hand Menu 5 and 6 buttons while powering up the V1605. The message * **Re-initialising** * appears in the LH display. However, this will clear a lot of other set-up parameters as well, including access level and alarm configuration, so you should save your configuration to a PC file before doing this. Before reloading the configuration file from the PC, you should delete the [Login] and [Passcodes] sections to ensure the encrypted passcodes are not loaded back in and are not enabled.

13.2.5 If I want passcodes for Engineering level, must I also have them for Supervisor?

No, and you may disable Supervisor passcodes even though Engineering passcodes are enabled. Supervisor passcodes may not be enabled if Engineering passcodes are disabled.

13.2.6 I can understand E, S and O access levels, but what is U?

“U” means “unused”. When a V1605 starts up for the first time or after its battery-backed memory has been cleared, all network nodes are set to “U” access level. This may be overridden by the user setting something different via the **Configure Access | Access Levels** menu, however, when communication is first received from a node (port, rack or module), if the level is “U” it immediately changes to “O”. By setting the **Units** option in the **Configure Access | Set Filtering** menu to **Hide Unused**, network nodes which are never used will remain hidden in the Module Select Menu.

13.2.7 Can I prevent users reprogramming the recall buttons?

Yes, the default security level for programming device recalls is Supervisor so Operators would be unable to change device recalls. To change this, change the **Set Assignment Access** option in the **Configure Access | Set Access Levels** menu. This also determines who is allowed to change the Recall Button Mode on a V1602 and who can set the Select by Button Only option.

13.2.8 How do I know what the current security level is?

You can go to the **User Log-in** menu, but there is also a symbol at the top left of the LH menu screen that indicates the operating mode (P, V or M) and the security level (E, S or O).

13.2.9 Can an operator access a control in a supervisor level module?

Normally, no. However, defining a virtual module and overriding the access level of the control to Operator, this is possible. Similarly, a control may be made inaccessible to an operator or supervisor via a virtual module even though the physical module is accessible to either by overriding the access level of the control in the virtual module to Engineering.

13.2.10 How do I prevent an operator erasing files on my PCMCIA card?

You can choose the security level of a flash file when you start writing to it, although this cannot be higher than your current log-in level. Flash files which have a security level higher than your current log-in level do not appear in the menus for selecting files for overwriting or erasing.

13.2.11 Can I read a higher level flash file?

Yes, but only those items you are allowed to change can be changed.

13.2.12 When using router switching, how can I stop an operator selecting a different module?

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If you want an operator to be restricted to seeing those modules selected by a router, tick (✓) the **Select by Router Only** option in the **Auxiliary Functions | Router Options | Slave V1605 (or V1602) Options** menu. Note that this restriction applies only when logged in as an Operator.

13.2.13 Can I restrict an operator to just the modules assigned to recall buttons?

Yes, by ticking (✓) the option **Select by Button Only** in the **Recall Buttons** menu.

13.2.14 Can I restrict an operator to select modules just by recall button as well as using a router to select the modules?

Yes, by ticking (✓) both the **Select by Router Only** and the **Select by Button Only** options.

13.3 Alarms

13.3.1 What is the difference between an alarm and a warning?

An alarm causes the Status LED to go red, the buzzer to sound and the relay contacts to change over. A warning just causes the Status LED to go to orange. Rack Warning limits may be set independently from Rack Alarm limits and are used to detect a voltage or temperature on its way to an alarm level. Module alarms may all be set to cause an alarm or a warning indication.

13.3.2 What happens when an alarm or warning occurs?

In addition to setting an alarm or warning indication, the alarm is logged in the V1605. If the **Alarm Log | Log to PC** option is ticked, an alarm message is also sent out on the RS232 port.

13.3.3 What happens when an alarm or warning condition clears?

This depends on whether the alarm or warning is latched or momentary. If it is latched, nothing happens. If it is momentary, the status LED, audible and relay indications clear and the entry in the log is changed to show it has cleared. If logging to PC, a message is sent out on the RS232 port. To clear a latched alarm, the entry in the log must be cleared.

13.3.4 Can the Alarm Log fill up?

Yes, after 200 entries, the oldest alarm records are overwritten.

13.3.5 There isn't much information in the Alarm List menu, how can I see more detail?

Press the select button next to the entry of interest and more details are shown including how long ago (in hh:mm:ss) the alarm occurred and, if appropriate, how long ago it cleared.

13.3.6 What is the meaning of the time information in the Alarm details?

Because the panel doesn't contain a real time clock, the time information is relative to current time. If the panel has been turned off since the alarm, the time while off isn't included.

13.3.7 What clears a Rack Controller Reset alarm?

If the alarm is set to momentary, the next heartbeat from the rack clears the alarm.

13.3.8 What happens if a warning hangs around for a while?

If it is a module warning, you can program it to upgrade to an alarm after a number of minutes. This option is available through the **Configure Alarms | Module Alarms** menu. Rack warnings do not upgrade to alarms.



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13.3.9 How can I get more information when an alarm occurs?

If **Alarm Alerts** are ticked in the **Control Panel Setup | Errors & Alerts** menu, when an alarm or warning occurs, a message appears in the left hand LCD display. This stays until cleared by the user. Alternatively, select the alarm in the **Alarm Log | Alarm List** for more details.

13.3.10 Can I save alarms to a disk file?

Yes, either by sending the Alarm Log to a PC, through the **PC Transfer** menu or by ticking **Log to PC** in the **Alarm Log** menu. In both cases you need to run Conf1605 on the PC and set it to receive a file. The second method saves alarms to disk as they occur whereas the first saves the contents of the Alarm Log after the events.

13.3.11 Is there a way of setting rack alarm limits to defaults?

Yes, just select the item in the Alarms or Warnings menu and keep the button pressed for 2 seconds.

13.3.12 Why don't my DARTnet alarms work when I disconnect the network?

Some alarms are available only if a V6081 rack controller or a V6041 DARTnet interface is fitted in the system. For instance, the **Port DARTnet** alarm is initiated and cleared by gateway messages from the V6041 DARTnet interface and the **Rack DART Receive** and **Rack DART Transmit** alarms are initiated by broadcast messages from the V6081 rack controller. Also, those alarms initiated by the V6081 can only occur once the CAN bus is able to operate again and pass the required broadcast message. Therefore they tend to occur after terminations have been reinstated, after the network has been reconnected or in between intermittent errors. So, in a system with V6081 rack controllers and V6041 DARTnet interfaces, a DARTnet error will tend to cause a **Port DARTnet** alarm when the error is detected by the V6041 followed by a **Rack DART** alarm from the rack controller when DARTnet communication resumes.

13.4 Flash Files

13.4.1 Must I have a PCMCIA card to use flash files?

No, you can use the flash memory built in to the V1602/05. This is organised as files in exactly the same way as the PCMCIA card, the only difference being that it cannot be removed. However, if your V1605 has a version 1 bootloader PROM, this on-board flash is no longer available.

13.4.2 Can I use a bigger PCMCIA flash card than 8MB?

Yes, but the file system limits the useable capacity to 31,195,136 bytes so there is no point in using anything larger than 32MB.

13.4.3 How many files can I store in on-board flash memory?

8 files, each up to 128KB, can be stored in on-board flash memory, but none if your V1605 has a version 1 bootloader PROM.

13.4.4 How many files can I store in an 8MB PCMCIA card?

61 files, each up to 128KB, can be stored in an 8MB flash card.

13.4.5 Most of my files are smaller than 128KB, so why can't I store more, smaller files?

The flash file system uses a block size of 128KB because that is the smallest erasable block size in the on-board flash memory. Making the block size the same on the PCMCIA card makes the system easier to manage and to understand.

13.4.6 Can I access my flash card through a PCMCIA slot on my PC?

No, because the files system is not compatible. However, it is easy to use the **Copy File** options in the **Flash File Transfer** menu to copy flash files to and from a PC via the RS232 port.

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13.4.7 Why doesn't my new PCMCIA card work properly?

Before you start to use your new PCMCIA card, you need to insert it in the V1602/05 and then prepare the card by erasing all the files on it via the **Engineering | Reset** menu.

13.4.8 Why doesn't my on-board flash seem to be working properly after upgrading my software?

Version 10 of the V1602/05 software changed which parts of the flash memory were used for program and which were used for flash file storage. Although, the software tries to detect whether the flash needs to be erased, isn't always able to, so you need to do it manually via the **Engineering | Reset** menu.

13.4.9 I can understand configuration files but what are module files?

Module files are used for loading controls in physical modules with pre-defined parameter data, whereas configuration files hold set-up information, names, etc., for configuring the V1605. There are two sorts of module files, **Rack Data** and **Module Presets**. Rack data files are individual files for setting a whole rack of modules to pre-defined settings. Module Presets are held in a single file (although you can have one in on-board flash and one on the PCMCIA card) which is added to whenever a new module preset is stored.

13.4.10 Can I load a rack or get a module preset directly from a PC file?

No, but you can copy a file from your PC to a flash file by selecting **Copy File** in the **Flash File Transfer** menu and then load the rack or module from the flash file.

13.4.11 Can a flash file be longer than 128KB?

Yes, blocks are linked together to form larger files. The **Flash Directory** shows the number of 128KB blocks in each file.

13.4.12 I've got a flash card that I used to use with my lap-top, can I use it with the V1605?

If it's a PCMCIA card or a Compact Flash card with a PCMCIA adapter it should be OK to use it with the V1605, however, very old cards may not work the same way as current ones. Assuming it is OK, you will first need to erase its contents because the V1605 will not recognise its file structure. You can do this by plugging it in and selecting **Erase Flash Files** in the **Engineering | Reset** menu.

13.4.13 How do module presets and virtual module presets differ?

| (Physical) Module Presets | Virtual Module Presets |
|---|--|
| Used for setting physical modules to pre-defined parameter data. | Used for setting virtual modules to pre-defined parameter data. |
| Stored in a single flash file called Module Presets | Stored in a single flash file called Virtual Presets |
| Stored and loaded via the Flash File Transfer menu. | Stored and loaded via a Presets screen in the RH display |
| Each preset applies to a particular module type (identifier and FRS). | Each preset applies to a particular virtual module address. |
| Each module type can have up to 254 module presets. | Each virtual module address can have up to 4 virtual module presets. |
| Module presets have names entered by the user | Virtual module presets have fixed names, Preset1, Preset 2, Preset 3 and Preset 4. |

13.4.14 I'm sure my virtual module presets used to work, why don't they now?

It's probably because you've changed your virtual modules, including, possibly, adding extra controls in between the original ones. When a virtual module preset is loaded (recalled), the data is loaded in control order without any extra checking that the data is for a particular control. If you change a virtual module, you should delete its presets via the **Flash File Transfer | Virtual Module Presets** menu. Alternatively, you



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may have changed the **Preset Mode** so that the presets are now coming from a Preset Master. See also next FAQ.

13.4.15 My panel is configured as a Preset Slave but virtual module presets don't work. Why?

If your panel is a Preset Slave, there must also be a Preset Master on the network. If your panel has more than one DARTnet connection, you must ensure the **Master on** option in the **Preset Operation** sub-menu is set to the correct port for the Preset Master.

Why does my Preset Sub-Master say INSUFFICIENT SPACE IN FLASH when I program a preset on the Slave?

The message means what it says, however, the most likely reason is that the Flash File Transfer menu Location option is set to On-board and that is either full or non-existent (Version 1 bootloader – see above). Set the Location to PCMCIA. It is unlikely that your PCMCIA card is full but it may not be plugged in properly or, if it is new, it needs erasing via the Engineering | Reset menu.

13.5 Working with a Router

13.5.1 I don't appear to be communicating with my router. What could be wrong?

To poll the router the V1605 connected to the router must have its RS485 port set up correctly and it must have at least one route destination entered in the Destination Mapping menu. Start by checking the destination mapping. If this all looks OK, then it must be a problem with the physical link itself. The baud-rate could be wrong, or the cable connecting the two pieces of equipment could be faulty or require an RS422 null modem (i.e. Tx/Rx crossovers). See also 12.9 Router Interface doesn't work.

13.5.2 I'm getting replies from my router but why does nothing happen on a route change?

To accept route change messages, slave V1605 must be in **Virtual** or **Mixed** operating mode. For something to happen on a route change, the route's destination must be mapped to a Panel Select Number in the master V1605. In addition, that Panel Select Number must be programmed in to a slave V1605 and it will be on that V1605 that the virtual module switch will occur. Note also that the level in the router message must match that set in the destination mapping. You can see what the panel thinks the current routes are by looking at the **Router Status** menu screen.

13.5.3 Why does it take so long for my V1602/05 to react to a route change?

This is probably because your router protocol is BTS and you have a large number of destinations and/or a slow polling rate. The V1605 detects a route change in a BTS router purely as a result of polling so the reaction time to a route change depends how often a particular destination is polled. For instance, if you are polling 16 destinations and the polling rate is 500ms, it could take as long as 8 seconds to react to a route change. Try speeding up polling by reducing the time to 250ms.

13.5.4 Why does my V1602/05 sometimes not react to a route change?

In systems with a lot of traffic on the DART network, RS485 router messages can get lost or characters can get dropped. If you are using the Quartz or Philips protocol, this can mean that the single route change message that is sent when a route changes can get lost. Try changing to Quartz+ or Philips+ which have added route polling.

13.5.5 Can I have more than one master V1605 connected to the same router?

Not unless the router has two RS485 ports. You cannot connect more than one V1605 to the same RS485 port because polling messages would clash.

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13.5.6 I want to switch virtual racks, not modules. How do I do this?

There's really no difference - just specify a different virtual rack in the virtual module addresses you enter in the source mapping. Since you can only see one virtual module at a time, you also need to program the Recall Buttons for each virtual rack. (Remember, you get a new set of device recalls for every virtual rack). When the route switch occurs, the virtual module in the virtual rack that appears will be the one programmed in the source mapping. The device recall buttons can then be used to switch instantly between the virtual modules in that virtual rack.

However, if you are using one of the Combined recall button modes, what happens depends on what Operating Mode you are running in. If it's Virtual Mode, you must ensure that the **Combined Priority** control in the **Recall Buttons** menu is set to Module. Otherwise, when the route change occurs, the buttons will show the controls on the selected virtual module, not the modules in the selected virtual rack. If it's Mixed Mode, the buttons will always show modules if the virtual rack changes, controls if just the virtual module changes.

13.5.7 I want virtual modules to switch only on a route change, not by operator intervention. How do I do this?

You need to tick (√) **Select by Router Only** in the **Auxiliary Functions | Router Options | Slave Options** menu. Then set the operating mode to Virtual and log in as Operator.

13.5.8 Can I restrict the operator to using just the recall buttons as well as allowing router switching?

You need to tick (√) **Select by Button Only** in the **Recall Buttons** menu as well as ticking **Select by Router Only** in the **Auxiliary Functions | Router Options | Slave Options** menu. Then set the operating mode to Virtual and log in as Operator.

13.5.9 Why does it take so long to switch virtual module when a route change occurs?

There is a normally a delay between receiving a route change DART message and initiating the virtual module switch. This delay is different for different panel controller addresses and is present to prevent DARTnet message peaks when several panels wish to switch to the same virtual module. Such message peaks can occasionally cause loss of data on the DARTnet so this delay spreads the requests out over a short period and prevents the peak. This problem is most prevalent in systems where several panels are programmed to react to route changes on the same destination. It is unlikely to happen in systems where each panel is programmed to react to one or more different destinations. In such cases the delay is unnecessary and a control, Disable Router Delay, is provided in the Control Panel Setup | Delays & Timeouts menu to switch it off.

13.6 XML Interface

13.6.1 Where's the connector on my panel for the XML Interface?

If you have a V1605 there is no standard option for installing the high speed RS232 cable. If you have a V1602, it needs to be ordered with the high speed RS232 option. If fitted, the connector will be marked Port 2B or Port 4B, depending on whether the panel is fitted with 2 or 4 channels.

13.6.2 Can I have 4 DART channels AND an XML interface?

No, the high speed serial interface replaces one of the DART channels.

13.6.3 Do I need an XML interface for every V1602 on my network?

If you want information from the 3rd party control system to be available at every V1602 control panel, each panel must have its own connection to the 3rd party system.



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13.6.4 Why do I need to adjust XML polling rate and off-line count?

In general, a faster polling rate puts greater demands on the 3rd party control system but allows changes in module status to be detected more quickly. The more racks there are in the 3rd party system, the faster the polling rate required in order to react quickly to status changes such as modules being added or removed. The off-line count should be adjusted with the polling rate to give an off-line time of about 30 seconds, hence the defaults of 1 second polling and 30 missed responses for off-line detection.

13.7 Upgrading

13.7.1 When I select Upgrade V1605 Program I end up in a test mode. Why?

After selecting **Upgrade V1605 Program** you have to press **Yes** to confirm you want to start and you are probably holding the select button in too long. Press the button indicated to abort test mode and you will be prompted to **Load new flash program**; press when ready.

13.7.2 What happens if I abort the upgrade process?

Until the message **Erasing Flash** appears, you can abort and the current program will be intact. Once erasing or loading has begun, aborting will result in you being prompted to **Load new flash program**. You will have to complete the upgrade process before the V1605 can be used as intended.

13.7.3 Why do I need to load a secondary bootloader when I upgrade my V1605?

This is because you are upgrading to version 10 of the V1602/05 program and your panel is a V1605 with the original version 1 bootloader PROM. Version 10 changes the way the flash memory is allocated between program and data and the original bootloader cannot load the new program correctly. The secondary bootloader is put where the previous version of the program went and this is then used to load the new version 10 program. When a new, version 2, bootloader is fitted, the space where the secondary bootloader goes is used for flash

13.7.4 Why can't I have on-board flash files if my panel has a version 1 bootloader?

If a new, version 2, bootloader is fitted, there is room in the on-board flash memory for flash files, however, when an old, version 1, bootloader is used, this space is used for the secondary bootloader (see above).

13.7.5 What can I do if I get a Flash error while upgrading using the secondary bootloader?

The only thing you can do is to remove the secondary bootloader and reload the previous version (version 9) of the upgrade program. To do this, see 7.4.3 Flash error when loading program with secondary bootloader

13.8 Miscellaneous

13.8.1 Why does the message * RAM Upgrade required * appear?

Old units were delivered with less RAM than is required by the current revision of software. If you get this message on power up, you need to contact your supplier to get the RAM upgraded.

13.8.2 Can I have percent rather than decibels for video gains?

Yes, there's an option in the Control Panel Setup menu for doing this.

13.8.3 Can I see physical modules and virtual modules without changing mode?

Yes, by choosing Mixed mode.

13.8.4 How do I tell what operating mode I'm in?

The symbol in the top left-hand corner of the LH display indicates operating mode (P, V, M) and user log-in level (O, S, E).

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13.8.5 Overriding a virtual control access level didn't work. Why?

This is probably due to the user log-in level when you loaded the virtual module file being lower than the access level of the control's physical module. For instance, if you are logged in as an Operator it would make no sense to allow you to override to Operator a control in an Engineering or Supervisor access level module. You would have to be logged in as a Supervisor or an Engineer, depending on the access level of the physical module, at the time that you load the virtual module file.

Note also that, if your configuration file also sets the log-in level, this will take effect at the time it is loaded, so if it is set to operator before the virtual modules are loaded, you might have a problem. Solve that problem by editing the file and placing the Login section at the end.

13.8.6 Why can't I select past module 7 on the RS485 network?

This is because the **Top Address** defaults to 7. To change it, select **Vistek RS485 Network** in the **Auxiliary Functions** menu. However, polling the whole network will take longer the higher the top address.

13.8.7 How can I control virtual modules through a router interface?

Router Options can be found in the **Auxiliary Functions** menu. Look at section 6.10 for more information.

13.8.8 What is the # number which entries in the Database.vis file now have?

This is the option number for the module database entry. It is zero for those modules which have no factory or other configuration options. It is used when there is a choice of module control screens depending on status bits read from the module. It defaults to 255 until it is read from the module so that the default database entry is the one with the highest option number. This will be an entry that contains a full set of module controls, not just a subset, so that when testing virtual module definitions on an empty rack a full set of module controls is available. Virtual module definitions do not specify the option number of the physical module.

13.8.9 Why wont my calibrate control work in my virtual module?

If you have included a calibrate control from a particular module in your virtual module, it will work only if your current log-in level allows you to access that physical module. Overriding the access level of the calibrate control to a lower level in the virtual module will not work. You should use a virtual calibrate control instead (see 9.5).

13.8.10 Does the local filter affect virtual controls?

No, the local filter only affects the physical view of the system. A virtual control is still accessible to the user even if its physical module is filtered out by the local filter.

13.8.11 How do I reset all the access levels in my system?

Use **Clear Status** from the **Engineering** menu with all elements ticked and ALL PORTS selected. This will set the access level of all ports, racks and modules to "unused" (U) unless they are on-line, in which case they stay as previously set. To set every node to "unused", disconnect the DARTnet(s) from the V1605 first, reset the controller by selecting **V1605 Controller** in the **Engineering | Reset** menu and then use **Clear Status**.

13.8.12 Does virtual calibrate in the menus do the same as my virtual calibrate control?

Yes, although it used not to. Virtual calibrate through either the menu or the control now ignores filters and will take account of a virtual control's access level override if there is one. This means that access to a control for calibrating (normalising) is exactly the same as access for changing it using the encoder.



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13.8.13 Why am I having problems after replacing a module in my rack?

Assuming the module is the same type, it could be a different revision (FRS). Press the right hand Menu \hookleftarrow button to see what the new module's FRS number is. Sometimes, when changing to a different revision of the same module, in particular an earlier revision, it is necessary to clear the non-volatile RAM in the rack controller, associated with that particular module slot. This gets rid of refreshed write messages that are not required by that version of the module. This can be done by removing the module, selecting **Clear Status** in the **Engineering** menu, setting **Module Status** to \surd , selecting the module slot and selecting **Execute Clear Status**. The module can then be replaced.

13.8.14 Why, when selecting a module do I sometimes see a warning?

The warning message you see is probably
WAITING FOR
MODULE DATA

This occurs when the module control screen is being updated if the data requested is not received within a certain time and some of the data has been requested again. After a certain number of retries, the panel gives up, however, that would normally be because of a malfunction on the network. Retries are occasionally necessary even on a fully functioning network if it is very busy because messages can get lost.

13.8.15 Why does the panel take a long time to recognise a newly inserted module?

Although the panel is notified immediately that a module has been inserted, it then needs to request information about that module from the rack controller. In a network with a large number of V1602/05 panels, simultaneous requests could overload the rack controller, so requests from each panel are delayed by a different amount. The same mechanism occurs when a rack first comes on-line and panels have to request information about all slots in the rack.