

VISTEK DART NETWORK CONFIGURATION HANDBOOK



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1. INTRODUCTION

The remote control and monitoring system for the Vistek V1600 Modular Interface range consists of three distinct parts:

- **The DARTnet controllers:**
 - V1605* Vistek 1U Control Panel. Can control up to four **DARTnets**.
 - V1602* Vistek 2U Control Panel. Can control up to four **DARTnets**.
 - Viewnet* Vistek's web-browser based control system that connects through a Linux server to the **DART** network.
 - Viewfind* Vistek's proprietary Control software for running on any suitable PC running Windows 98/NT/2000 or XP, can drive as many networks as the PC has serial ports and can be networked (Ethernet) to any number of other computers.
 - V1607* Touchscreen PC running Viewfind.
 - Third Party* Third Party vendors can write software to control any **DART** system using the **DART** protocol, which is available under licence.
- **The physical control network:**
The CAN based **DARTnet** system employing standard CAT5 cabling and RJ45 connectors
- **The racks:**
For **DART** operation V1601 and V1603 racks are fitted with an internal V1608 rack controller to interface between the DARTnet and the internal control bus. V1606 racks are fitted with an internal V606 rack controller or its replacement the V6081.

This document is intended to assist users with the cable interconnections and configuration settings necessary to establish a working **DARTnet**.

1.1 The Part Numbers and How to Identify Them

| | | |
|----------------|--|--------------------|
| V1608 | Rack controller – 3U module - plugs in leftmost slot of a V1603 3U rack | RACK CONTROLLERS |
| V606 | Rack controller – small module – plugs in above PSUs in a V1606 3U rack – Address switches on front edge of PCB. | |
| V6081 | Rack controller – replacement for V606 – 3 digit display on front edge. | |
| DIN341K | DARTnet interface – connects between CAN and RS232 in a DARTnet controller. Known colloquially as a “dongle”. | DARTnet INTERFACES |
| V6041 | DARTnet interface – replacement for DIN341K | |
| V1601 | 1U rack | RACKS |
| V1603 | 3U rack – 13 or 11 module slots + V1608 + 1 or 2 PSUs at LH end | |
| V1606 | 3U rack – 14 module slots + V606/V6081 + 1 or 2 PSUs at RH end | |

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2. PHYSICAL NETWORK CONNECTIONS

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 **DARTnet** controllers and V1600 series racks may be “daisy-chained” in any order. Connection and terminations options for the units connected to the network are illustrated in the following diagrams. The use of RJ45 “T pieces” is recommended where it is desired that racks can be removed without breaking the control network.

Terminations must be provided at each end of the network, either by inserting an RJ45 terminating connector or by setting the termination switch on the appropriate unit to “on”. Termination switches (where fitted) on intermediate nodes should be set to “off”.

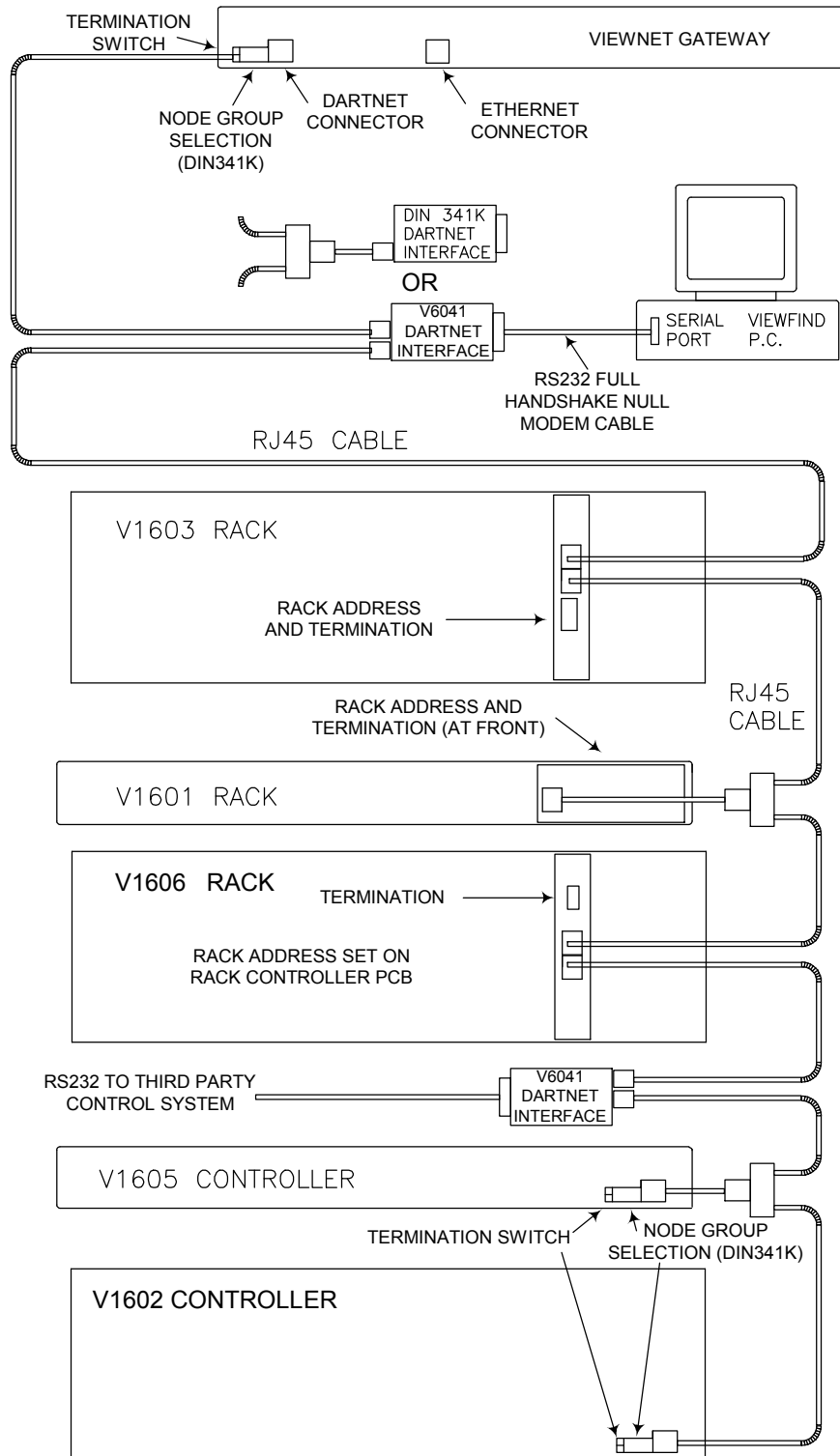
PC-based **DARTnet** controllers such as Viewfind are connected to the DARTnet through a DIN341K or V6041 CAN adapter, which must be connected to the PC serial port using an RS232 null modem cable.

Other **DARTnet** controllers such as the *Viewnet* server or V1605 hardware control panel have a DIN341K or V6041 interface fitted internally for each equipped **DARTnet** port.

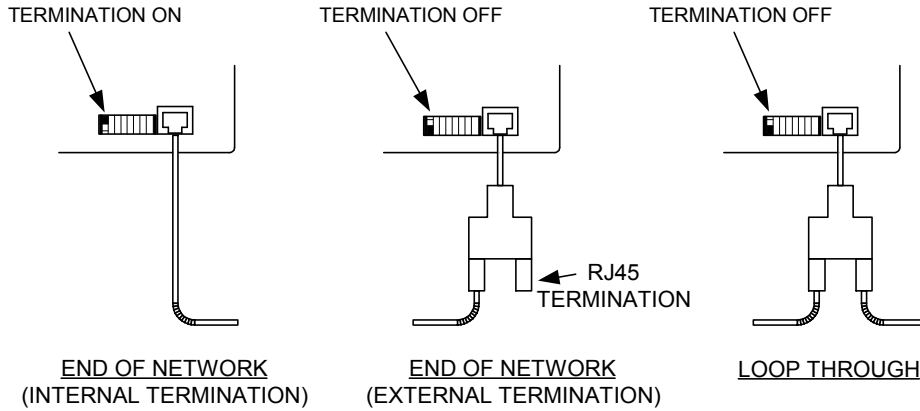
This table shows the signal connections on the RJ45 connector:

| RJ45 Pin : | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|------------------|-------|-------|-------|-------|-------|-------|-------|-------|
| Function : | CAN-H | CAN-L | 0V | 0V | 0V | +V | +V | +V |
| EIA 568B cable : | Wh/Or | Or/Wh | Wh/Gn | Bl/Wh | Wh/Bl | Gn/Wh | Wh/Bn | Bn/Wh |

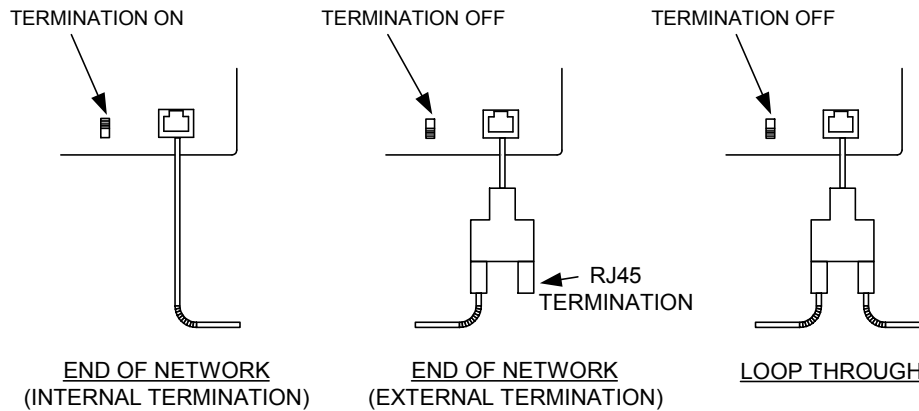
DARTNET INTERCONNECTIONS



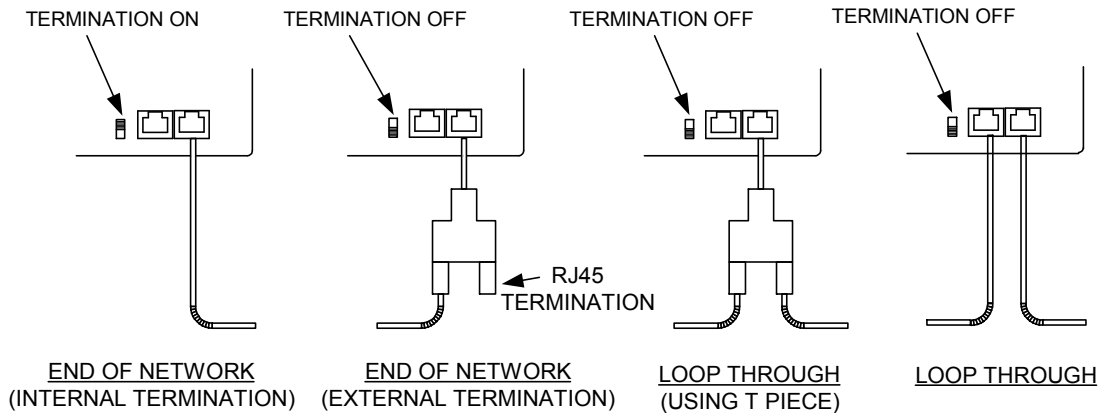
V1602 AND V1605 CONTROLLER & TERMINATION OPTIONS WITH DIN341K DARTNET INTERFACE FITTED



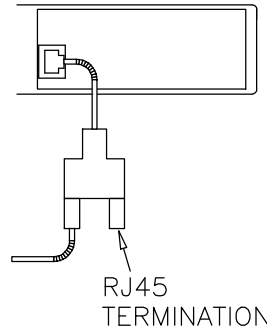
V1602 AND V1605 CONTROLLER & TERMINATION OPTIONS WITH V6041 DARTNET INTERFACE FITTED (ORIGINAL CUTOUT)



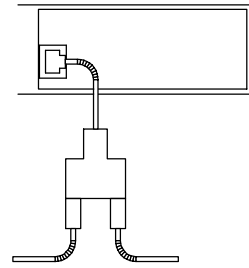
V1602 AND V1605 CONTROLLER & TERMINATION OPTIONS WITH V6041 DARTNET INTERFACE FITTED (LATER CUTOUT)



V1601 RACK CONNECTION & TERMINATION OPTIONS

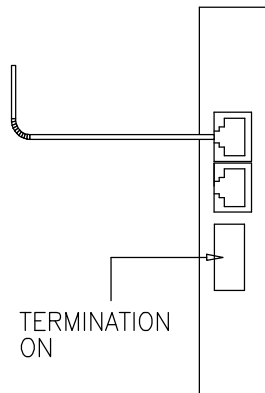


END OF NETWORK
(EXTERNAL TERMINATION)

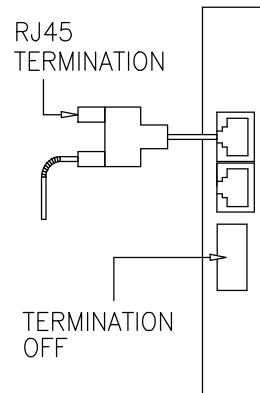


LOOP THROUGH

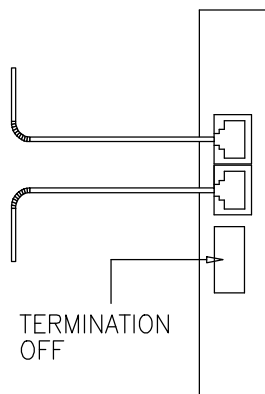
V1603 RACK CONNECTION & TERMINATION OPTIONS



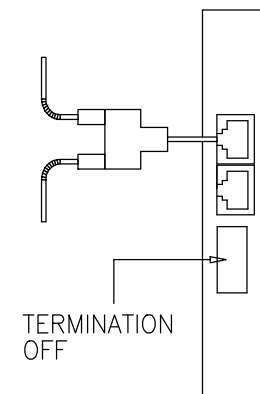
END OF NETWORK
(INTERNAL TERMINATION)



END OF NETWORK
(EXTERNAL TERMINATION)

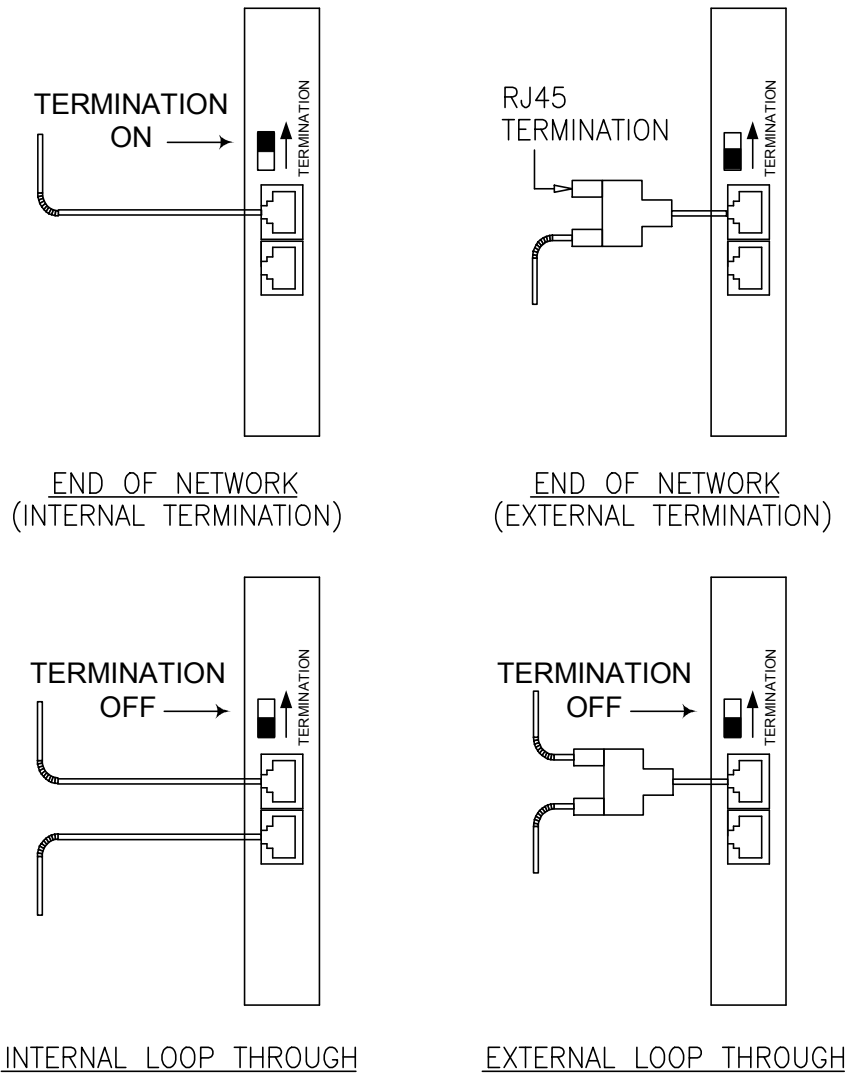


INTERNAL LOOP THROUGH

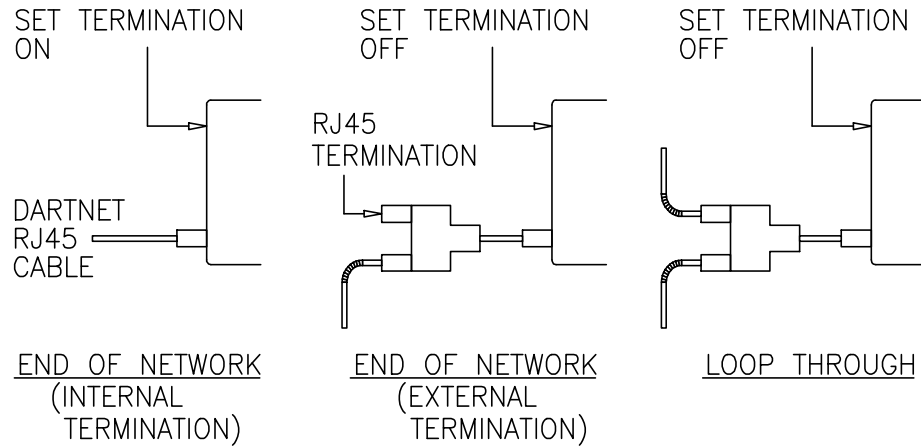


EXTERNAL LOOP THROUGH

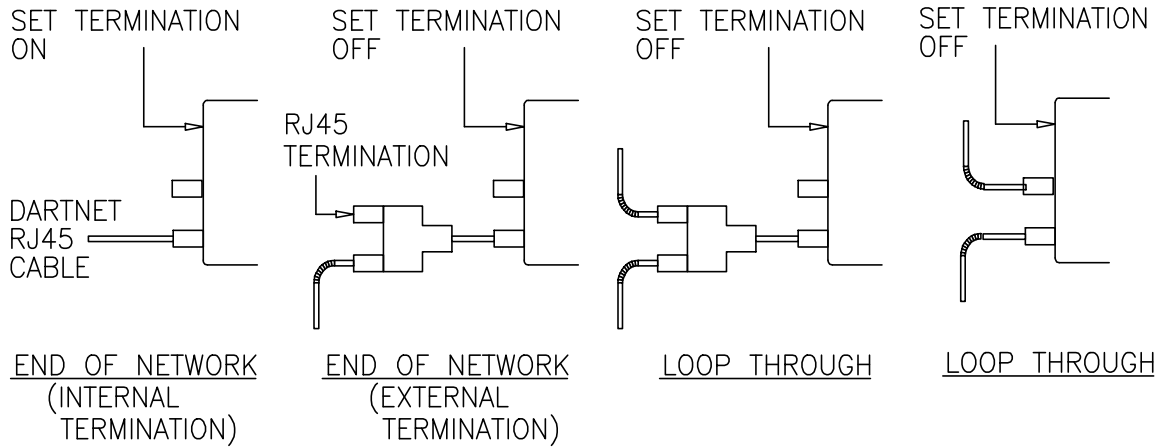
V1606 RACK CONNECTION & TERMINATION OPTIONS



DIN341K DARTNET INTERFACE CONNECTION & TERMINATION OPTIONS



V6041 DARTNET INTERFACE CONNECTION & TERMINATION OPTIONS





3. DARTNET NETWORK SPEED AND ADDRESS SETTINGS

3.1 Introduction

Once the physical connections and termination settings have been made in accordance with the diagrams in Section 2, to complete the DARTnet setup, it is necessary to ensure that:

- the network speed switches on the racks and the DARTnet interfaces are correctly set – see Section 3.5.
- the node address switches on the racks are correctly set – see Section 3.6
- the controller (V1602, V1605, Viewfind PC, Viewnet Gateway, etc.) node address is correctly set – see Section 3.7 for the V1602 & V1605, Section 3.8 for Viewfind or Section 3.9 for Viewnet.
- **either**
 - the DIN341K Node Group is correctly set – see Section 3.10. **It is most important that it is recognised that these switches set the Node Group and not the controller node address.**
- **or**
 - the V6041 Address is correctly set – see Section 3.4.

Examples of recommended node address and node group settings are given in Section 4.

3.2 Rack Controller Network Speed & Node Address Switch Locations

The implementation of speed and address setting depends on the rack type and its associated rack controller.

V1608

A V1608 rack controller module may be fitted to a V1601 or V1603 rack. Speed and address are set on an 8 way DIL switch. In a V1601 rack, this is on the front of the module. In a V1603 rack, the DIL switch on the rear of the rack is used, the one on the module having no function. The functions of the DIL switch are shown below:

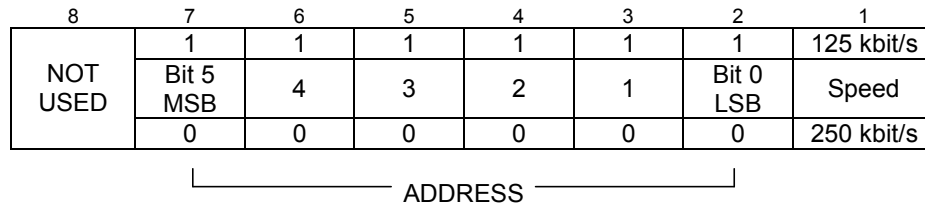
| ON | TERM | OFF | V1603 only |
|-----------|---------------------|-----------|------------|
| 0 | Address Bit 5 (MSB) | 1 | |
| 0 | Address Bit 4 | 1 | |
| 0 | Address Bit 3 | 1 | |
| 0 | Address Bit 2 | 1 | |
| 0 | Address Bit 1 | 1 | |
| 0 | Address Bit 0 (LSB) | 1 | |
| 250kbit/s | Speed | 125kbit/s | |

The positions of the address switches represent the node address setting in binary form.

These switches are accessible from the rear of the V1603 3U rack and from the front of the V1601 1U rack, after lowering the front panel.

V606

A V606 rack controller module may be fitted in a V1606 rack. The speed and address are set on an 8 way DIL switch on the front of the module.



The positions of the address switches represent the node address setting in binary form.

These switches are accessible from the front of the V1606 3U rack, after lowering the front panel.

V6081

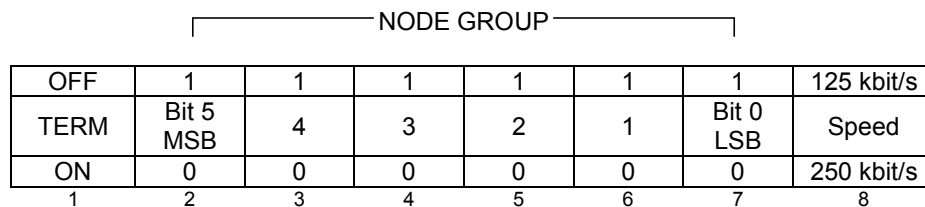
A V6081 rack controller module may be fitted in a V1606 rack. The address is set on two rotary switches and is visible on a 7-segment display. The speed is set by a jumper on the module.



The switches and jumper are accessible only with the rack controller removed from the rack. The display is visible from the front of the V1606 3U rack, after lowering the front panel.

3.3 DIN341K DARTnet Interface Network Speed & Node Group Switch Locations

An 8 way DIL switch is fitted to the DIN341K interface, and the centre six switches set the **Node Group** for the interface (**not the controller node address** – see 3.10 below) and the switch positions represent the **Node Group** value in binary form. The switch is visible at one end of the unit next to the CAN connector.



3.4 V6041 DARTnet Interface Network Speed & Address Setting

The address, 0 – 63, is set on two switches accessible through two holes in the V6041 enclosure. These switches are the same as those on the V6081 rack controller (see above). It is the address and not the node group that is set on these switches. For DIN341K compatible operation, refer to the V6041 Operators Manual. There is no adjustment for speed, which is set permanently to 250 kbit/s.

3.5 Network Speed

The Speed switch selects the data rate on the DARTnet. **Speed should be always be set to 250kb/s** as 125kb/s is not supported by all components. Very long networks (>150m) may be supported by using an Ethernet link – contact Vistek for details.

3.6 Setting Rack Node Addresses

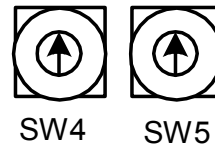
Normally, addresses for controlled equipment (rack node addresses) should number in an ascending sequence starting from 0 with a maximum of 61. (There must be at least one DARTnet controller in the network and this would be node address 62). Care must be taken to ensure that all rack node addresses are different and that node addresses that have been allocated to the DARTnet controller(s) present on the network are not duplicated.

3.7 Setting the Controller Node Address on the V1602 2U and V1605 1U Control Panels

The controller address is set differently depending on whether the DARTnet 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 controller's menus:



- 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.

Addresses for controllers using the V6041 should be set simply from 62 downwards, the baud rate being 115.2kb/s regardless of address. 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

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

| | | | | | | | |
|------------|--------------|---|---|---|---|--------------|------------|
| NODE GROUP | | | | | | | |
| 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 |
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| | | | | | | | 8 |

The TERM and SPEED switches work in exactly the same way as on a V1608 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 controller. The controller 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. There are some node groups that include just one address in addition to 63, in which case the controller address is fixed and is determined the first time the controller detects the DIN341 after power up. Where there is a choice of addresses, the address defaults to the lowest of these and may be changed through the controller's menus as with the V6041.

The node address selected is also visible in the Port status display on the right hand display. If it is not shown it has not been set up and is therefore not available.

The Controller Addresses menu works as follows:

- If the baud-rate of the selected port is not set up, the node address is not visible and cannot be selected and changed. Note that Port 1's baud rate defaults to 115.2 kb/s if not already set but Ports 2-4 default to "not set".
- If the port has not yet established contact with the DARTnet interface, the node 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 the DIN341 but the node group selected through the configuration switches is not valid for the controller, the node address is not visible. Furthermore, a warning message will be displayed briefly advising that the node group is invalid. Invalid node group settings are those that do not allow address 63 to be passed (i.e. those not included in the table in Section 3.10) and those which require a controller baud rate which differs from that currently set.
- If the node group read from the DIN341 is valid, the node address is visible and may be selected and changed but only to a value allowed for that node group. If the node 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.

3.8 Setting the Controller Node Address in the Viewfind PC Software

Network details, including the controller node address, are set within the Viewfind software as follows:

- From the Menu bar select **Tools**
- Select **Network Manager**
- For an existing Network, select the parameter to change
- For a new Network, select **Add**
- Insert the network name, the PC communications port number to which the V6041 or DIN341K is attached, the baud rate, the node address and the computer name.
- Exit with **OK**

Note that, unlike the V1602 or V1605, the Viewfind software does not read the node group to which the DIN341K has been set or the address to which the V6041 has been set. Care must therefore be taken to ensure that the node address is valid for use with a controller and that the PC baud rate selected under Network Manager is correct for the node group (see table on page 9). For a V6041, the baud rate is always 115.2kb/s.

3.9 Setting the Controller Node Address in the Viewnet Gateway Software

The controller node address is set within the Viewnet Gateway software as follows:

- From the Viewnet entry page, select **administration**
- Enter your **User name** and **Password**
- Select **Viewnet Configuration**
- Select **DART Port Bindings**
- Set the **DART Node Address**. If a DIN341K is fitted, its node group must also set up through the rear panel of the Viewnet Gateway. If a V6041 is fitted, address setting depends on the software version. It will either have been fixed in the factory (early version) or will be set automatically to the selected address (later versions).
- Set the **Port** parameters depending on the physical connection used for your network (more details from the Viewnet documentation).

3.10 DARTnet Interface Address Settings

The DARTnet interface, either the DIN341K or its replacement the V6041, operates as a data filter, allowing the controller to which it is connected to receive data only for those node addresses determined by the interface's address setting mechanism.

3.10.1 V6041 Address Setting

Regardless of whether the address is set on the two switches or through the DARTnet controller's menu system, the address selected may be anything from 0 to 62, broadcast messages (address 63) always being included as well. As stated earlier, the baud rate is independent of the address setting and is fixed at 115.2kb/s. The only recommendation on address setting is that the higher addresses are used for DARTnet controllers and the lower addresses for racks. 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. If there is just one controller in the network, therefore, its address should be 62 and, as controllers are added, their addresses should be 61, 60, 59, etc.

3.10.2 DIN341K Node Group Settings

In contrast with the V6041, the switches on a DIN341K determine the **node group** and not the **address** of the DARTnet controller. Which addresses are included in a node group are predefined by the DIN341K. The node group selection also determines the baud rate at which the DIN341K interface communicates with the controller (see table below). The preferred node groups are those that permit communication at 115.2 kb/s.

The node group setting used on the DIN341K must be one that includes the node address to which the controller has been set and address 63. Address 63 is used for "broadcast messages" and it is essential that the DIN341K passes these messages to the controller. The node groups that permit this are shown in the table.

As can be seen from the table, some node groups pass only one node address (in addition to address 63) and others pass multiple addresses. Those with a single address are preferred, as these avoid the additional processing that is required when the controller discards messages that are not intended for it.

The preferred node groups for networks with up to six controllers are shown highlighted in the table below. If more than six controllers are required, please refer to note (iii) below the table.

Note that the baud rate refers to the RS232 connection between the DARTnet controller (Viewnet Gateway, Viewfind PC, V1602 or V1605 panel) and the DIN341K. The controller must be set to the baud rate that corresponds to the selected node group.

| Node group | Switches 234567 | No. of Addresses Passed | Valid controller addresses (decimal) | Baud rate kbaud | Notes |
|------------|-----------------|-------------------------|--------------------------------------|-----------------|-------|
| 13 | dduudu | 1(+1) | 31+63 | 9.6 | (i) |
| 14 | dduud | 1(+1) | 47+63 | 9.6 | (i) |
| 15 | dduuuu | 1(+1) | 55+63 | 9.6 | (i) |
| 16 | dudddd | 1(+1) | 59+63 | 19.2 | (i) |
| 17 | dudddu | 1(+1) | 61+63 | 38.4 | (i) |
| 18 | duddud | 1(+1) | 62+63 | 57.6 | (i) |
| 19 | dudduu | 1(+1) | 31+63 | 115.2 | (ii) |
| 20 | dududd | 1(+1) | 47+63 | 115.2 | (ii) |
| 21 | dududu | 1(+1) | 55+63 | 115.2 | (ii) |
| 22 | duduud | 1(+1) | 59+63 | 115.2 | (ii) |
| 23 | duuuuu | 1(+1) | 61+63 | 115.2 | (ii) |
| 24 | duuudd | 1(+1) | 62+63 | 115.2 | (ii) |
| 34 | udddud | 3(+1) | 60-62+63 | 9.6 | (iii) |
| 36 | uddudd | 7(+1) | 7,15,23,31,39,47,55+63 | 9.6 | (iii) |
| 44 | uduudd | 7(+1) | 56-62+63 | 9.6 | (iii) |
| 48 | uudddd | 15(+1) | 48-62+63 | 9.6 | (iii) |
| 50 | uuddud | 31(+1) | 32-62+63 | 9.6 | (iii) |
| 63 | uuuuuu | 63(+1) | 0-62+63 | 9.6 | (iii) |

NOTES:

(i) There is no valid reason for using these node groups since those marked (ii) offer the same controller addresses at a higher baud rate.

(ii) These are the node groups to use if there are no more than 6 controllers on a single DARTnet. On the V1605, controller address will be set automatically for these node groups.

(iii) These node groups should be 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 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.

4. SUGGESTED ADDRESS AND NODE GROUP SETTINGS

This section applies just to controllers using the DIN341K DARTnet interface. If a network includes controllers that all use V6041 DARTnet interfaces, their addresses are allocated simply from 62 downwards. If some controllers in a network use DIN341Ks and the others use V6041s, the suggestions detailed below should determine the node groups for the DIN341Ks and the addresses for the V6041s should fill in the gaps from 62 downwards.

It should be noted that, as stated in a previous paragraph, in the case of the V1602 2U and V1605 1U controllers, 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.

4.1 Networks with up to six controllers using DIN341Ks

Controller Address & Node Group Settings

| Controller | Controller Node Address | DIN341K Node Group | DIN341K Switch Settings | Baud Rate |
|------------|-------------------------|------------------------|-------------------------|-----------|
| First | 62 | 24 (=18 _n) | duuddd | 115.2 |
| Second | 61 | 23 (=17 _n) | duduuu | 115.2 |
| Third | 59 | 22 (=16 _n) | duduud | 115.2 |
| Fourth | 55 | 21 (=15 _n) | dududu | 115.2 |
| Fifth | 47 | 20 (=14 _n) | dududd | 115.2 |
| Sixth | 31 | 19 (=13 _n) | dudduu | 115.2 |

Rack Address Settings

| Rack | Rack Node Address | Rack Controller Switch Settings |
|---------|-------------------|---------------------------------|
| First | 00 | dddddd |
| Second | 01 | dddudu |
| Third | 02 | dddud |
| Fourth | 03 | dddud |
| Fifth | 04 | dddud |
| Sixth | 05 | dddud |
| etc.... | etc.... | etc.... |

Note: If there are more than 31 racks present on the network, care must be taken to avoid use of rack node addresses that duplicate controller node addresses.



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4.2 Networks with more than six controllers using DIN341Ks

Controller Node Address & Node Group Settings

| Controller | Controller Node Address | DIN341K Node Group | DIN341K Switch Settings | Baud Rate |
|-------------|-------------------------|------------------------|-------------------------|-----------|
| First | 62 | 24 (=18 _h) | duuudd | 115.2 |
| Second | 61 | 23 (=17 _h) | duduuu | 115.2 |
| Third | 59 | 22 (=16 _h) | duduud | 115.2 |
| Fourth | 55 | 21 (=15 _h) | dududu | 115.2 |
| Fifth | 47 | 20 (=14 _h) | duduud | 115.2 |
| Sixth | 31 | 19 (=13 _h) | dudduu | 115.2 |
| Seventh | 60 | 34 (=22 _h) | udddud | 9.6 |
| Eighth | 56 | 44 (=2c _h) | uduudd | 9.6 |
| Ninth | 57 | 44 (=2c _h) | uduudd | 9.6 |
| Tenth | 58 | 44 (=2c _h) | uduudd | 9.6 |
| Eleventh | 48 | 48 (=30 _h) | uudddd | 9.6 |
| Twelfth | 49 | 48 (=30 _h) | uudddd | 9.6 |
| Thirteenth | 50 | 48 (=30 _h) | uudddd | 9.6 |
| Fourteenth | 51 | 48 (=30 _h) | uudddd | 9.6 |
| Fifteenth | 52 | 48 (=30 _h) | uudddd | 9.6 |
| Sixteenth | 53 | 48 (=30 _h) | uudddd | 9.6 |
| Seventeenth | 54 | 48 (=30 _h) | uudddd | 9.6 |

Rack Address Settings

| Rack | Rack Node Address | Rack Controller Switch Settings |
|---------|-------------------|---------------------------------|
| First | 00 | dddddd |
| Second | 01 | dddudu |
| Third | 02 | dddud |
| Fourth | 03 | dddudu |
| Fifth | 04 | dddud |
| Sixth | 05 | dddudu |
| etc.... | etc.... | etc.... |

Note: If there are more than 31 racks present on the network, care must be taken to avoid the use of rack node addresses that duplicate the controller node addresses above.

5. TROUBLESHOOTING

5.1 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 DIN341Ks and all racks on the network must be the same. All nodes should be set to 250kb/s.
- Correct controller node address and baud rate setting – these must correspond to the settings required by the selected DIN341K node group. If using a V6041, the controller's baud rate must be set to 115.2 kb/s. Viewnet will only connect at 115.2 kb/s so DIN341K node groups that use a lower baud rate are not valid with Viewnet.
- Integrity and correct wiring of network cables.

5.1.1 *Fault finding aids on DIN341K*

The LEDs on the DIN341K can assist faultfinding. On the V1602 and V1605 control panels the DIN341K interfaces are fitted internally but the LEDs can be seen through the ventilation slots in the side.

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 DIN341K interface. Check that the PC name is set correctly (Viewfind only) and that the controller node address and baud rate are both valid for the selected DIN341K node group.

Green light and amber light permanently lit – no RS232 communication between the DIN341K and the controller. Check that the PC comm port number is set correctly (Viewfind only). Check that the baud rate setting is valid for the selected DIN341K 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.

5.1.2 *Fault finding aids on V6041*

The V6041 has four LEDs integrated into the RJ45 CAN connectors that can help with faultfinding. When fitted in a V1602 or V1605 with original cutouts in the metalwork, only the right-hand connector is fitted.

Right-hand Green LED

When on indicates power is present. When off there is no power to the V6041. Power is provided by wires in the DARTnet cable; each rack in the system providing power to the DARTnet. Absence of power to a V6041 indicates either a connection problem or that all racks are unpowered.



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Right-hand Yellow LED

This LED flashes to indicate that messages are being received on the RS232 interface. If it is permanently off, it could indicate that the controller's baud rate is not set to 115.2kb/s. When an operator adjusts a module control, this LED should flash.

Left-hand Green LED

This LED flashes to indicate a CAN message is being transmitted to the DARTnet. When an operator adjusts a module control, this LED should flash.

Left-hand Yellow LED

This LED flashes to indicate a CAN message is being received from the DARTnet. This LED should flash regularly to indicate heartbeats being received from racks and other controllers and DARTnet interfaces in the system. It should also flash after adjusting a module control to indicate a data change broadcast message being received from the module.

The V6041 is able to detect certain types of DARTnet error and, when it does, it sends an error message out on its RS232 interface so that its controller can choose to set an alarm. These messages include...

- DARTnet CAN error detected
- DARTnet CAN error corrected
- Duplicate node detected
- Duplicate node corrected
- All duplicate nodes corrected.

Because CAN errors, which can be caused by bad connections or incorrect termination, can in some cases cause false duplicate node detection, these are all cleared once the CAN error is corrected. Duplicate node detection can take several minutes, depending on the frequency of the heartbeats from the node. Therefore, once a CAN error is cleared, there must be a wait of several minutes in order to be sure there are still no duplicate node addresses. For the same reason, when a duplicate node's address is changed, it may take several minutes for the alarm to clear. See the V6041 Operation Manual for more information.

5.2 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 Viewfind or the V1602 or V1605 control panel. For more detail on how to change the settings, please refer to the relevant operating instructions. 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.
- In Viewfind, the selected display may be at a lower authority level than the user's login level, excluding modules that would otherwise be visible.
- The unit is excluded by the setting of the Unit Status filter (known in Viewfind as the Network filter). Note that the "All" setting ("Unfiltered" in Viewfind) 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.

5.3 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. This ensures that refresh messages in the rack controller are reloaded from the module reference data 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.

In some cases, the problem will be due to refresh messages remaining in the rack controller memory from a previous, different module that occupied the slot. In this case, the memory in the rack controller associated with that slot must be flushed. To do this on a V1608 or V606 rack controller, the reset button is held in for at least 5 seconds. At this point the status LED comes on and remains on for about a second while the memory is cleared. This problem should not occur with a V6081 rack controller because it recognises when the module in a particular slot is changed to one with a different identifier or revision and flushes the memory for that slot. However, the memory can be flushed by holding the function switch button in for at least 5 seconds. The display then shows **rrr** to indicate the memory reset is taking place.

5.4 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.

5.5 Actions required after changing a DIN341K 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.

5.6 Actions required after changing the V6041 address switches

If the address switches on a V6401 are changed on a live network, it is necessary for reset button on the V6041 to be pressed for the change to take effect. The address in the associated controller may also have to be changed.

5.7 Actions required after using V1605 resets

If a Battery Backed Memory reset is performed on the V1602 or V1605 control panel with "Setup Parameters" enabled, it 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.