



# IQCBRG Network Bridge

## Module Description

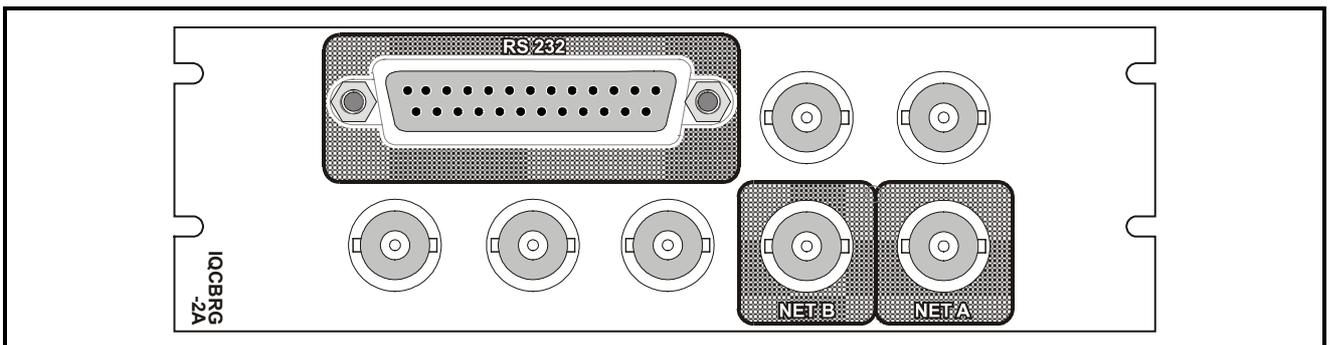
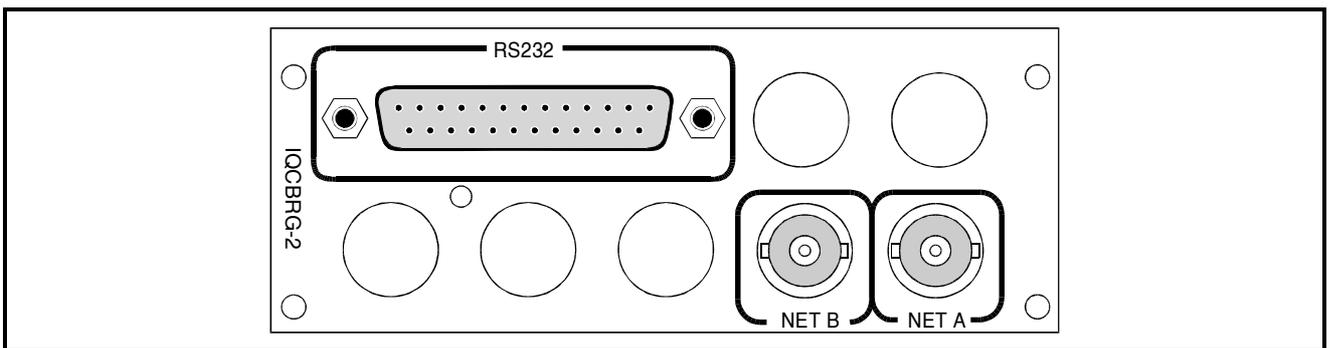
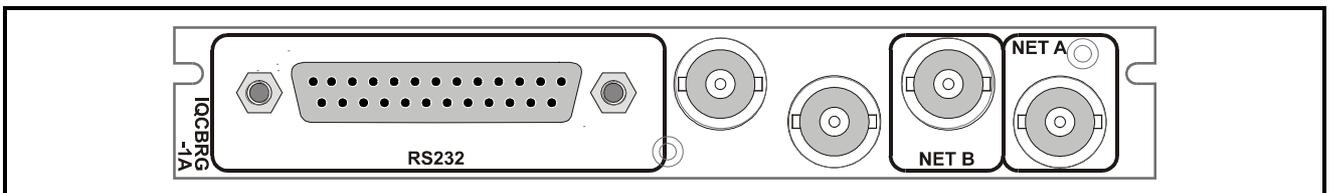
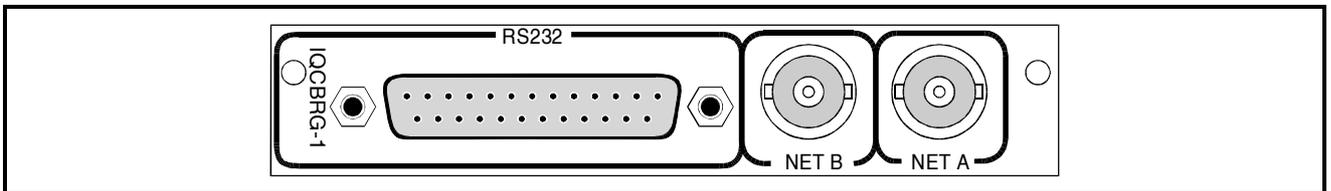
The IQCBRG provides a means of expanding or extending RollNet (RollCall™) networks. Additionally, an RS232 serial port enables RollNet sections to be joined using a modem over a standard telephone link

The IQCBRG provides a link between RollNet segments and a means of extending RollNet sections. Up to 240 units can be used on a network section and up to 15 bridges can be connected to any single RollNet network. With multiple bridged networks a practically unlimited

number of units can be connected. Card edge control sets the node address for each network. Indicators show network activity. Each of the RollNet connectors is fully isolated.

Networks can also be joined over a Wide Area Network (WAN) using a standard telephone link via the RS232 port using a modem. An IQCBRG is used to connect to the RollNet network at each end of the modem link

## REAR PANEL VIEWS



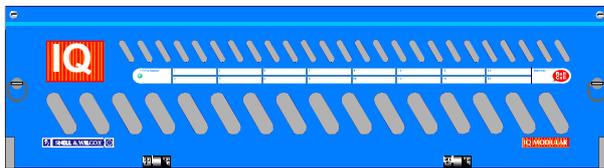
Versions of the module cards available are:

IQCBRG-1	Single width module
IQCBRG-1A	Single width module
IQCBRG-2	Double width module
IQCBRG-2A	Double width module

**Note that there are two styles of rear panels available. They are not interchangeable between the two styles of enclosures. However, the cards may be fitted into any style of enclosure.**

#### 'A' Style Enclosure

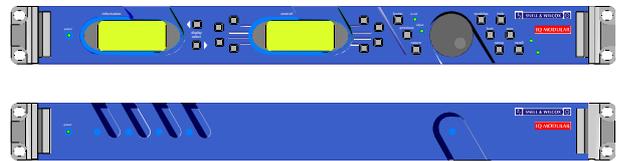
Rear panels **with** the suffix A may only be fitted into the 'A' style enclosure shown below.



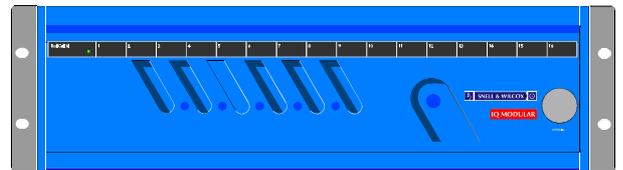
(Enclosure order codes IQH3A-E-O, IQH3A-E-P, IQH3A-N-O, IQH3A-N-P)

#### 'O' Style Enclosures

Rear panels **without** the suffix A may only be fitted into the 'O' style enclosures shown below.



(Enclosure order codes IQH1S-RC-O, IQH1S-RC-AP, IQH1U-RC-O, IQH1U-RC-AP, Kudos Plus Products)

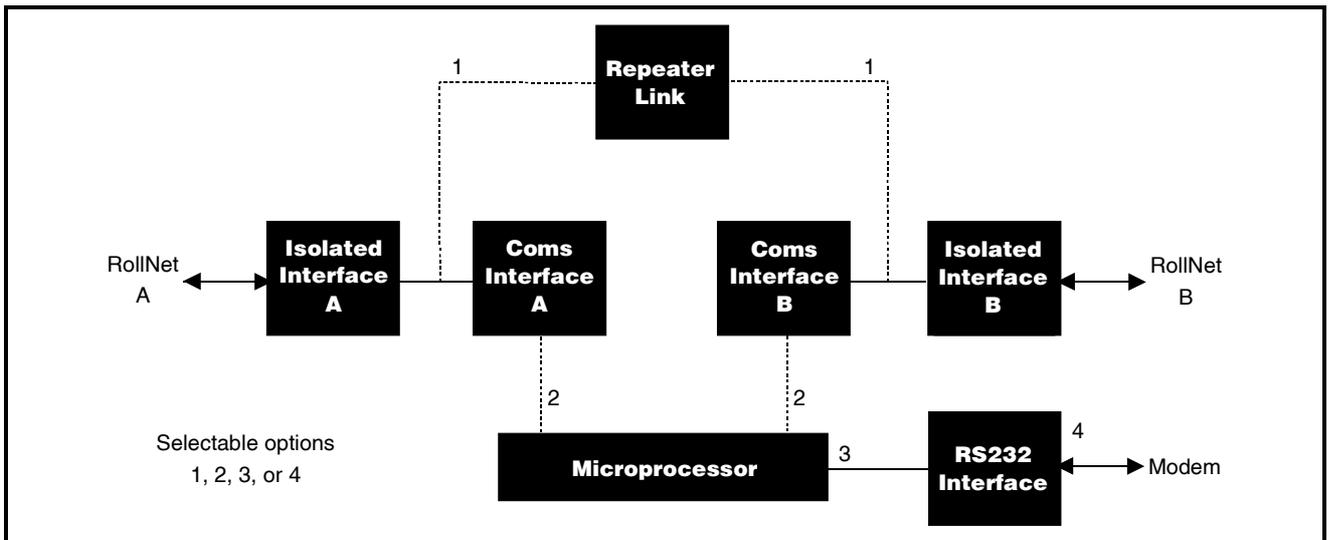


(Enclosure order codes IQH3N-O, IQH3N-P)



(Enclosure order codes IQH3U-RC-O, IQH3U-RC-P)

BLOCK DIAGRAM

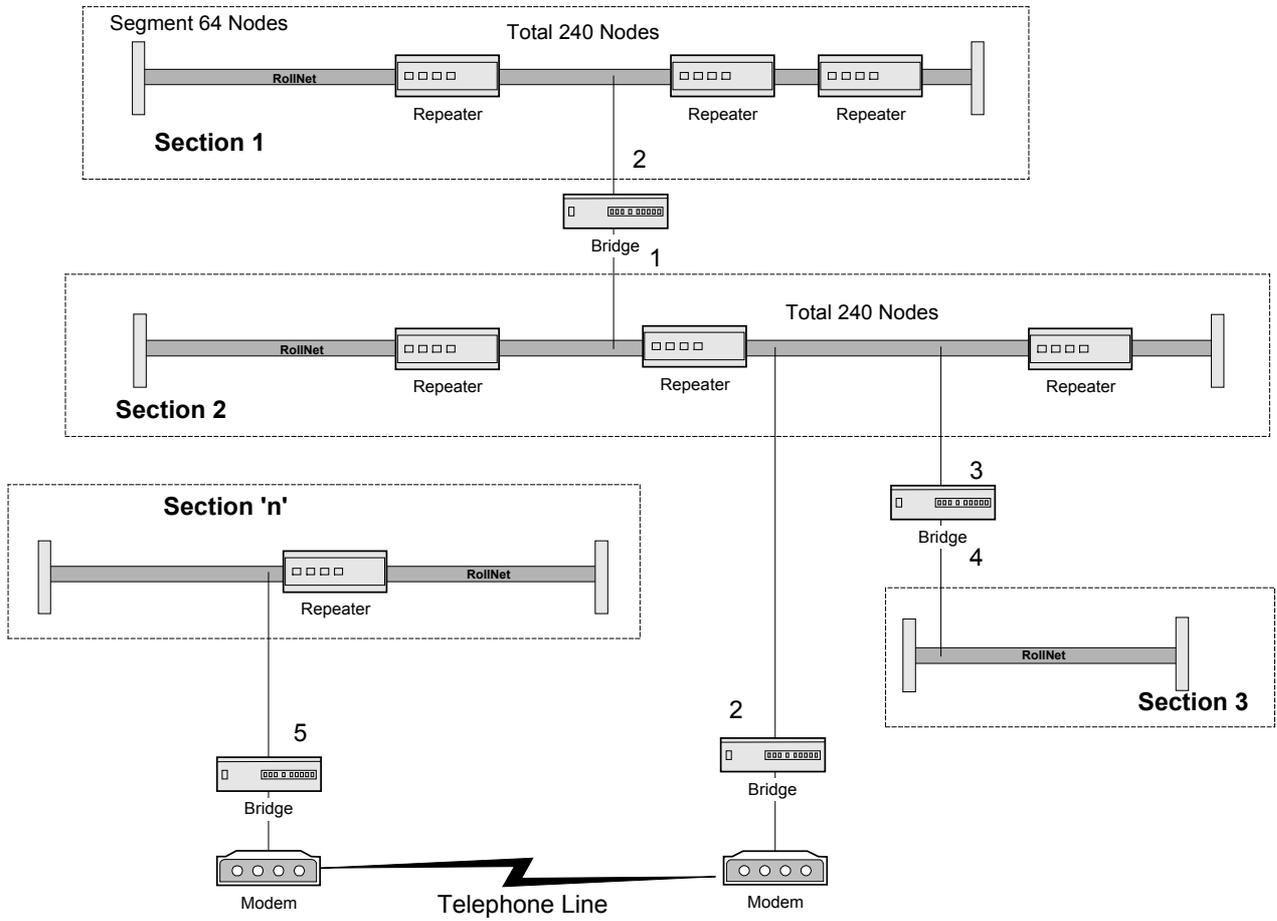


## Features

Extends the number of units on a RollCall Network

- Enables connection to a modem for telephone line networking
- Links network sections - Bridge
- Links network segments - Repeater
- Provides full electrical isolation

ROLLNET NETWORK



All addresses shown are the real physical addresses as used in the source ID of the RollNet device.

TECHNICAL PROFILE

**Features**

**Inputs/Outputs**

RollNet..... Net A, Net B via BNC connectors  
or RS232 port

**Controls**

Network Address ..... Hex switches, 0 to F for each  
network. 0 selects repeater mode

**Indicators**

Network Activity ..... Card edge LED  
RS232 Activity ..... Card edge LED

**Specifications**

I/O Cable Length..... (RollNet) 400 m  
I/O Cable Length (25 way RS232)  
10 m  
RS232 Speed ..... 1200 - 38400 kb/s, Full Duplex  
Programmable Hayes Compatible Modem Commands

**Power Consumption**

Module Power Consumption  
5W max

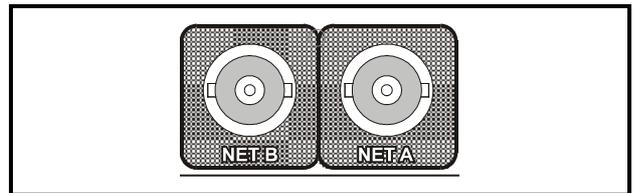
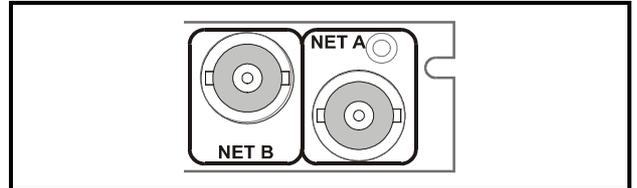
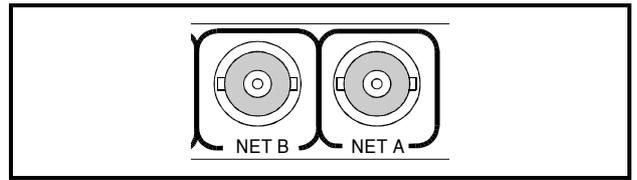
**EMC Performance Information**

Environment ..... Commercial and light industrial E2  
Peak Mains Inrush Current following a 5 second mains  
interruption  
No mains input  
Performance Information.... No performance degradations or  
cable length limitations

CONNECTIONS

NET A, NET B

These BNC connectors are used to connect to the 2 separate networks.



RS232

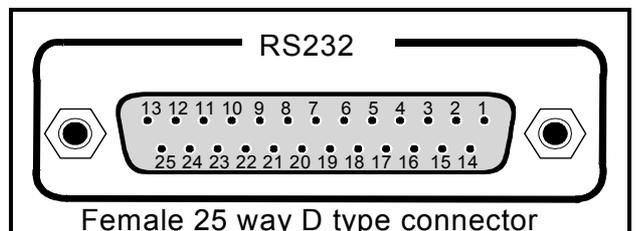
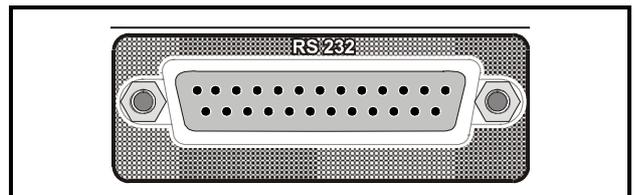
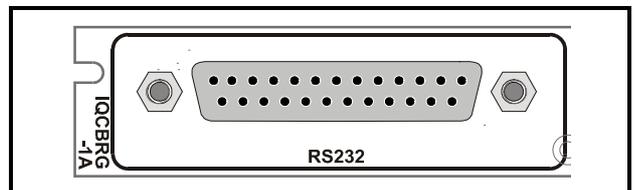
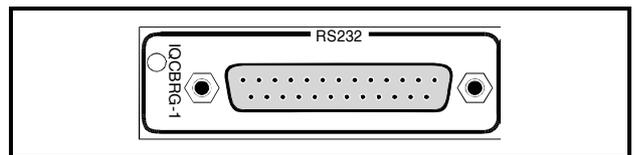
This is the RS232 serial port that may be used to join 2 networks via standard RS232 (null modem cable) or to join 2 networks using Hayes compatible modem.

*Note that when this function is in use the NET B BNC connector is inactive.*

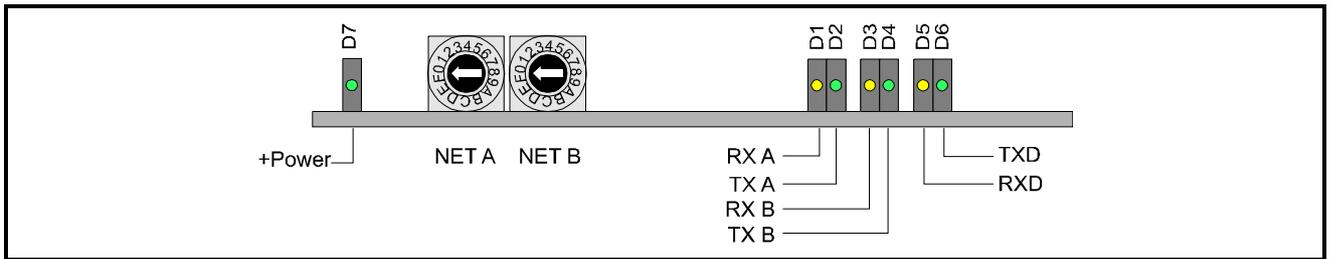
Connection Details

PIN	PIN	NAME	DESCRIPTION
1		EARTH	Earth
2		TX	Transmit
3		RX	Receive
4		RTS	Request to Send
5		CTS	Clear to Send
6		DSR	Data Set Ready
7		GND	Ground
	20	DTR	Data Terminal Ready
8		DCD	Data Carrier Detect

All other Pins are unconnected.



CARD EDGE CONTROLS



Indicators

**D7**  
This green LED indicates that the positive power supply is present.

**D1**  
This indicates that data is being received via NET A

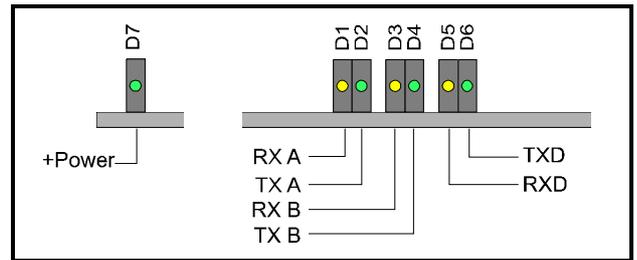
**D2**  
This indicates that data is being transmitted via NET A

**D3**  
This indicates that data is being received via NET B

**D4**  
This indicates that data is being transmitted via NET B

**D5**  
This indicates that data is being received on the RS232 port.

**D6**  
This indicates that data is transmitted on the RS232 port.



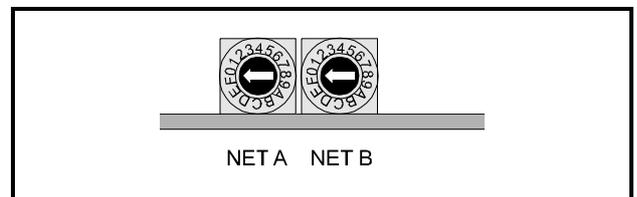
*Note that when the bridge is in RS232 Mode/Modem Mode the RXD and TXD LED's represent handshaking activity. When D3 and D4 are flashing rapidly this indicates that handshaking is occurring. When D3 and D4 remain illuminated continuously (>2 seconds) this indicates that the destination end is not responding. D5 and D6 normally flash rapidly.*

Hex Switches NET A and NET B

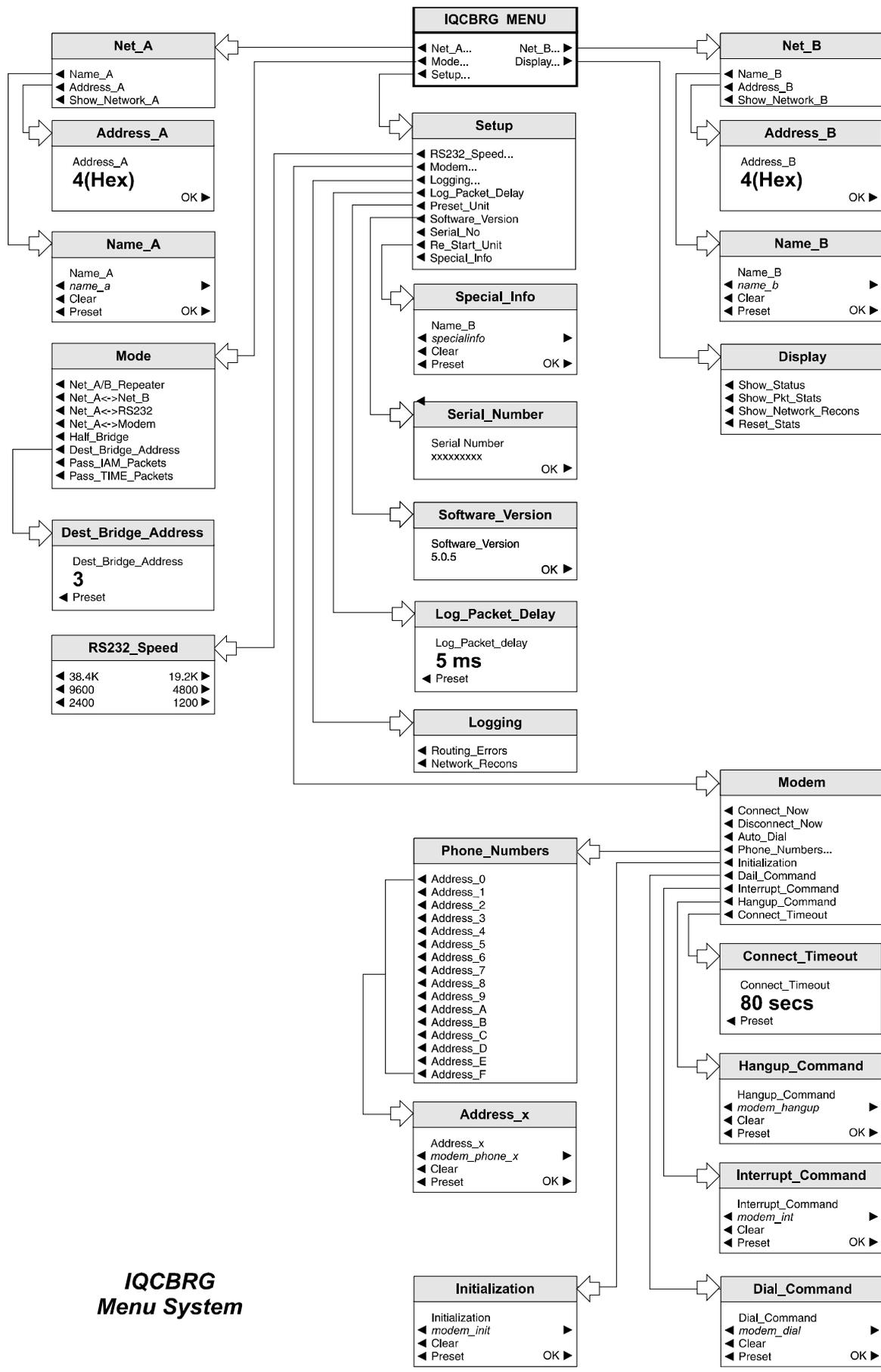
These Hex switches are used for setting network addresses.

Set these Hex switches to 0, 0 for passive repeater mode.

Settings other than Hex 0, 0 set network address A and network address B.



*Note that all addresses on a section have to be different but some addresses can be used on another section that is linked via a bridge. An example is shown in the diagram on page 3.*



***IQCBRG  
Menu System***

## OPERATION FROM AN ACTIVE CONTROL PANEL

The card may be operated with an active control panel via the RollCall™ network.

The menus available for this card are shown on page opposite and will appear in the Control display window.

Operational details for the remote control panel will be found in SECTION 1 of the Modular System Operator's Manual.

**MENU DETAILS**

(see IQ Menu System Opposite)

**MAIN MENU**

The main, or top level menu allows various sub-menus to be selected by pressing the button adjacent to the required text line.

Note that where a menu item is followed by three dots (...) this indicates that a further sub-menu may be selected.

Whenever a menu item is selected the parameters of that selection will be displayed in the Information window of the front panel. Where the selection is purely a mode selection and does not enable a sub-menu, the text will become reversed (white-on-black) indicating that the mode is active. If the mode is not available for selection the text will remain normal.

*N.B.*

*When some of the functions are changed via the front panel display, the changes will not be implemented until restart or a power-down/power-up operation. This applies to mode change, address/name changes, speeds etc.*

**◀ Net\_A...**

This function allows Network A to be given a name, and displays the address being selected by the hex switch.

**◀ Name\_A**

This allows the name for network A to be set up.

To compile/edit the text the ◀ *name\_a* function should be selected and the right ▶ and left ◀ buttons adjacent to the upper text line in the menu used to select the character position in the text and the spinwheel used to select the character.

The ◀ **Clear** function blanks out the selected character.

The ◀ **Preset** function loads the default text.

**O.K.** ▶ saves the caption text and returns to the main menu.

**◀ Address\_A**

This allows the numerical address for network A to be displayed. The address A changes via the hex card edge switches.

**◀ Show\_Network\_A**

Selecting this function will enable a broadcast on the network to indicate the presence of the node.

**Net\_B... ▶**

This function allows Network B to be given a name using the same procedure as for Net\_A above.

**◀ Mode...**

This item and associated sub-menus allows the operating mode or configuration of the unit to be set up.

**◀ Net\_A/B\_Repeater**

This configures the unit as a repeater between RollNet Segment to RollNet Segment to extend the length of a segment. This mode occurs when the address is set to 00 on the hex switches.

*Note that changes made to this item will not take effect until the unit is re-started.*

**◀ Net\_A<->Net\_B**

This configures the unit as a bridge between RollNet section to RollNet section to create a larger network.

*Note that changes made to this item will not take effect until the unit is re-started.*

**◀ Net\_A<->RS232**

This configures the unit as a bridge between two networks via standard RS232 and will default to half bridge mode.

*Note that changes made to this item will not take effect until the unit is re-started.*

**◀ Net\_A<->Modem**

This configures the unit as a bridge between two networks using Hayes compatible modems and will default to half bridge mode.

*Note that changes made to this item will not take effect until the unit is re-started.*

**◀ Half\_Bridge**

This changes the above modes from full bridge mode to half bridge mode. For this to be implemented the Destination Bridge address must be set.

Half bridge mode is a utility to make two bridges appear functionally as one. This means that unnecessary information to the user concerning routing of the network such as via modems/RS232 cable, is not visible.

*Note that changes made to this item will not take effect until the unit is re-started.*

**◀ Dest\_Bridge\_Address**

This item reveals a numerical display that allows the destination bridge address to be set for half bridge mode, or the phone number in the case of modem mode. The spinwheel adjusts the number.

*Note that changes made to this item will not take effect until the unit is re-started.*

**◀ Pass\_IAM\_Packets**

When this item is enabled identification information from units on each network side of the bridge is passed to the other side provided the ident packet is marked as "wide area"

**◀ Pass\_TIME\_Packets**

When this item is enabled time information from timeservers (e.g. PC's) is passed from each bridge network to the other side provided the time packet is marked as "wide area".

**Display... ▶**

This item will reveal a sub-menu that will allow the following items to be enabled:

**◀ Show\_Status**

This will show the current status of the bridge.

**◀ Show\_Pkt\_Stats**

This will show statistics of the number of transmitted packets and routing errors.

**◀ Show\_Network\_Recons**

This will show the number of network re-configurations on both nets.

**◀ Reset\_Stats**

This reset the statistical data in the information window to default values.

**Setup... ▶**

This selection reveals a sub-menu that allows various functions to be set.

**◀ RS232\_Speed...**

This item allows the modem speed to be selected from the following:

◀ 38.4K	19.2K ▶
◀ 9600	4800 ▶
◀ 2400	1200 ▶

Default is to 38.4 k

*Note that changes made to this item will not take effect until the unit is re-started.*

**◀ Modem...**

This item allows modem connections to be accessed and set up.

**◀ Connect\_Now**

Selecting this item will connect the modem, and attempt to dial the remote modem.

**◀ Disconnect\_Now**

Selecting this item will disconnect the modem and hang-up the telephone line.

**◀ Auto\_Dial**

This will enable an automatic dial-up on power-up and will attempt to connect to the destination bridge indefinitely.

**◀ Phone\_Numbers...**

This will reveal a sub-menu of 16 addresses (0 to 9 and A to F) that may be assigned a modem telephone number.

To compile/edit the text the **◀ *modem\_phone\_x*** (where *x* = the address code) function should be selected and the right **▶** and left **◀** buttons adjacent to the upper text line in the menu used to select the character position in the text and the spinwheel used to select the character.

The **◀ Clear** function blanks out the selected character.

The **◀ Preset** function loads the default text.

**O.K. ▶** saves the caption text and returns to the main menu.

The phone number to be dialled is selected by the destination bridge address.

When the bridge is in modem mode the "destination bridge address" field specifies which phone number entry to dial for the connection.

#### ◀ Initialization

This defines the initialization string sent to the modem. Default is ATZ^m where ^m represents the value 13 decimal (CR)

Each ^m sequence causes a delay of approximately 1 second before the next command is set.

#### ◀ Dial\_Command

This defines the dial command string to prefix the number to dial.

Default is to ATDT that is dial, using tone dial.

For pulse dialling use the string ATDP instead.

#### ◀ Interrupt\_Command

This defines the interruption command to break out of a connection.

Default is +++

#### ◀ Hangup\_Command

This defines the hang-up command to disconnect a phone connection.

The DTR (Data Terminal Ready) line to the modem is also dropped when this command is issued.

Default is to ATM^m

#### ◀ Connect\_Timeout

This defines the timeout period for waiting for a successful connection. If the timeout is reached the line is dropped and the number is re-dialled indefinitely.

#### ◀ Logging

If a logging device is attached to the network, information about various parameters will be reported to the logging device assigned in the Remote Control Interface system. (See Section 1)

#### ◀ Routing\_Errors

When activated, any routing errors will be available for the logging device.

#### ◀ Network\_Recons

Whenever either a network reconfigurations on each side of the bridge or a re-start occurs a log message is generated for the logging device when this function is activated.

#### ◀ Log\_Packet\_Delay

This sets a delay value for passing log data packets through the bridge. This can help to reduce the amount of network packets being passed in a large system.

#### ◀ Preset\_Unit

Selecting this item sets all adjustment functions that include a preset facility, to their preset values. Note that this is a momentary action and the text will not become reversed

#### ◀ Software\_Version

Selecting this item reveals a display showing the version of the software fitted in the module. Select OK to return to the Setup Menu.

#### ◀ Serial\_Number

Selecting this item reveals a display showing the serial number of the module. Select OK to return to the Setup Menu.

#### ◀ Re-Start\_Unit

This function will re-start or re-boot the unit. It has the same action as a power-down power-up operation but without the inconvenience.

This operation is also required to implement many of the changes such as network address or serial port speed.

#### ◀ Special\_Info

This item is a reserved facility.

## OVERVIEW

This unit has 5 modes of operation:

### 1. RollNet Segment to Segment Repeater

This is the repeater mode and is used to extend the length of segments and provide electrical isolation.

*(A repeater receives a signal from one segment, then regenerates and transmits a new clean signal to the other segment extending transmission distances. They are not intelligent devices)*

### 2. RollNet-Section to RollNet-Section Bridge

This mode may be used to create larger networks using WAN addressing. Each bridge adds one level of WAN address routing.

*(A bridge, unlike a repeater, is an intelligent device)*

### 3. RollNet-Section to RollNet-Section Half Bridge

This mode may be used to create larger networks using WAN addressing. Each pair of half bridges adds a single level of WAN address routing.

*(A bridge, unlike a repeater, is an intelligent device)*

### 4. RollNet to RS232.

This mode uses RS232 communications to join two networks. (only half bridge)

Each pair of half bridges adds a single level of WAN address routing.

### 5. RollNet to RS232 modem

This mode joins two networks using Hayes compatible modem. (only half bridge)

Each pair of half bridges adds a single level of WAN address routing.

