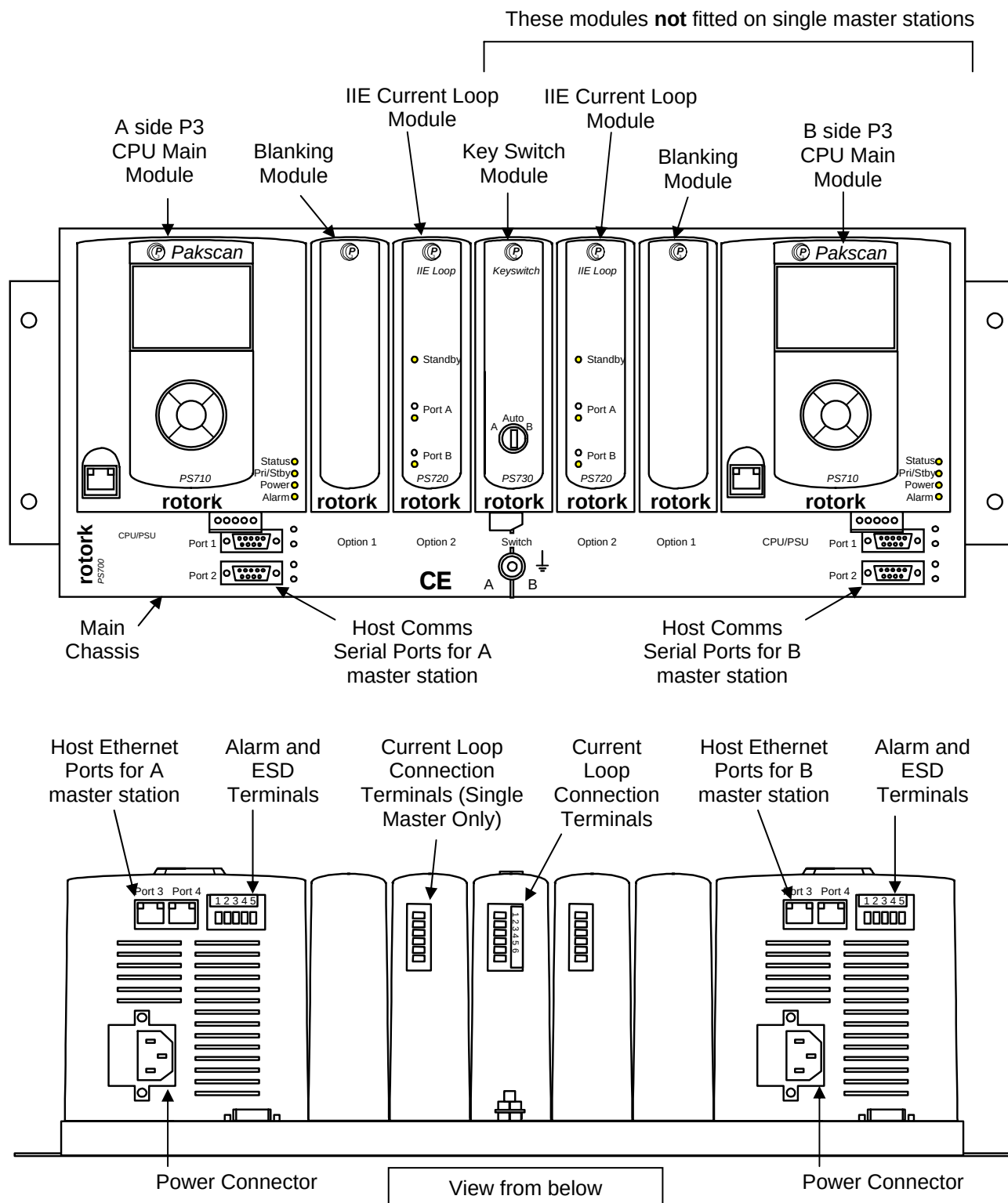


rotork



P3 - Pakscan Master Station Technical Manual

KNOW YOUR MASTER STATION



CONTENTS:

KNOW YOUR MASTER STATION	2
CONTENTS:.....	3
INTRODUCTION	5
1. MOUNTING AND CONNECTING THE MASTER STATION	7
1.1 Mechanical Fixing	7
1.2 Serial Communications Connections	8
1.3 Ethernet Communications Connections	8
1.4 Power Connectors and Fuses	9
1.5 ESD and Alarm Output Connectors	9
1.6 Current Loop Connections.....	9
1.7 Front Panel LEDs	10
2. THE FIELD NETWORK	11
2.1 Loop Checks.....	12
2.2 Connecting Up.....	12
3. CONFIGURING THE SERIAL COMMUNICATIONS LINKS	15
3.1 Setting Port 1 and 2 for RS-232 or RS-485	15
4. USING ETHERNET HOST COMMUNICATIONS	19
4.1 Setting-Up the Ethernet Communications.....	19
5. SETTING UP THE MASTER STATION BY THE KEYPAD	21
5.1 Using the Keypad.....	21
5.2 The Screen Display	22
5.3 Setting the Current Loop Option Card Parameters	23
5.4 Setting the Master Host Communications Parameters.....	25
5.5 The Other Settings	27
5.5.1 Security.....	28
5.5.2 ESD	28
5.5.3 Date and Time	28
5.5.4 Master Station Parameters.....	28
6. THE INTERNAL WEB PAGES	29
6.1 Making the Internet Connection	29
6.2 Connecting a Laptop Directly to the Master Station	29

6.3	Adjusting the Network Settings of the Laptop PC.....	30
6.4	Web Page Structure	31
6.4.1	User Levels.....	31
6.4.2	Overall Web Page Layout.....	31
6.5	The Web Pages in Detail.....	33
6.5.1	Log In Screen	33
6.5.2	Master Station	34
6.5.3	View Configuration	36
6.5.4	System Diagnostics	37
6.5.5	Master Station Data Logger [ms datalogger].....	39
6.5.6	Master Station Host Analyser [host analyser]	41
6.5.7	Pakscan 2 Loop Diagnostics [diagnostics].....	42
6.5.8	Option Card Event Logger.....	45
6.5.9	FCU Menu	46
6.5.10	FCU Control - IQ Actuator	47
6.5.11	FCU Control - Integral Actuator	52
6.5.12	FCU Control - Flowpak Actuator.....	56
6.5.13	FCU Control - General Purpose Field Unit.....	58
6.5.14	Admin.....	61
6.5.15	Users	61
6.5.16	Masterstation Configuration.....	64
6.5.17	Host Port Configuration	69
6.5.18	Alarms.....	72
6.5.19	Time.....	74
6.5.20	General	75
6.5.21	Network.....	76
6.6	Setting Up by Using the Web Pages	78
6.6.1	Master Station Set-up page.....	78
6.6.2	Option Module Set-up (including host communications protocols)	80
6.6.3	Host Port Settings.....	80
6.6.4	Setting the IP Address.....	82
7.	MAKING THE SYSTEM WORK	83
7.1	Commissioning the System.....	83
7.2	Monitoring and Controlling the Actuators.....	85
	GENERAL SAFETY INFORMATION.....	87

This manual relates to Pakscan 3 Master Stations fitted with PS720 Current Loop modules

INTRODUCTION

Pakscan 3 is the latest network control system from Rotork. It brings new technology in its data logging and remote access facilities over the Internet, with the proven current loop technology of the Pakscan IIE systems.

This manual provides a guide to setting up the Pakscan master station, the loop communications and the host connections for the most commonly found applications.

Most types of Rotork actuator can be connected to the Pakscan current loop provided they are fitted with the necessary field unit. Information on the respective actuator field units can be found in the appropriate manuals. In this guide, the type of actuator is not considered, though reference is made to both the Integral and IQ actuator types of field unit. The type of field unit does not affect the setting up of the system.

Pakscan 3 master stations are delivered either as loose items for mounting by the user, or contained in an enclosure provided by Rotork. The master station will generally be either a single unit, or a hot standby pair.

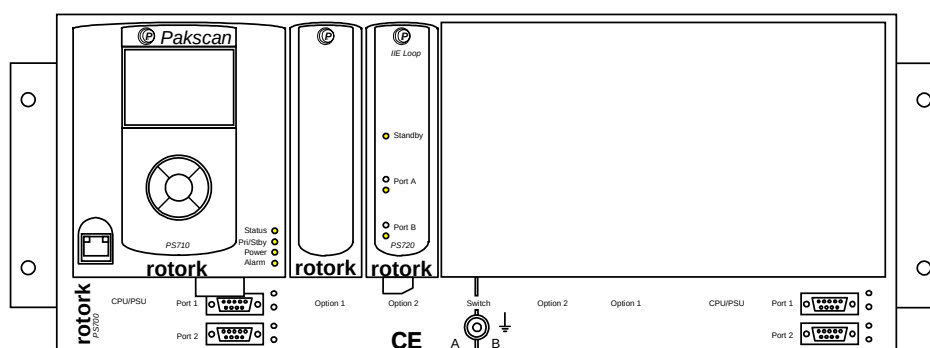


Fig 1: The Pakscan 3 Single Master Station

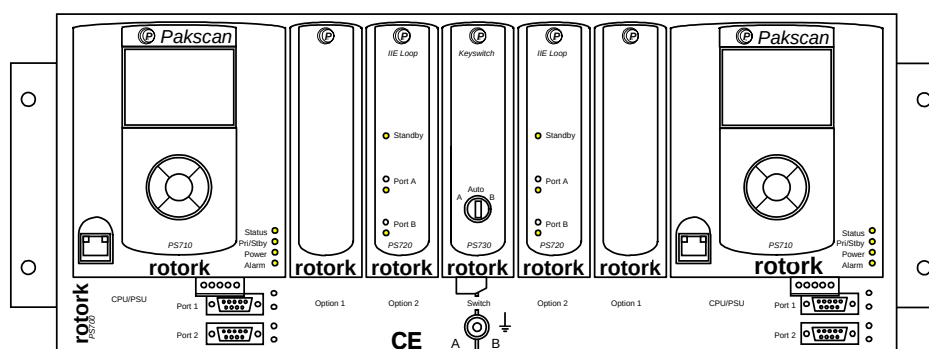


Fig 2: The Pakscan 3 Hot Standby Master Station

(This page is intentionally blank)

1. MOUNTING AND CONNECTING THE MASTER STATION

Before mounting the master station, set the communications link switches as discussed in section 3

The Pakscan 3 master station (single or hot standby) provides front access for all the user connections, including power feed and the field loop wires to the Current Loop module (PS720). The host communication links use plug in D-type connectors for the serial communications and RJ45 connections for the Ethernet links.

- ☐ The field wiring for the loop and the master station alarms is taken to screw terminals on plug in connectors that are fitted from below their appropriate module.
- ☐ Power wiring is connected using an IEC connector in the bottom of the master station module PS710. Two connections are required for a hot standby system.
- ☐ Serial communications (RS-232 or RS-485) plug into 9 way female D-type connectors on the front of the mounting chassis.
- ☐ Ethernet connections use RJ45 connectors on the bottom of the master station module PS710. The connector on the front is intended for connection to a service laptop computer.

1.1 Mechanical Fixing

Room should be left around the module for all the connections and cables, allowing for a suitable bending radius on each lead. Power wiring should be suitably fused or protected with miniature circuit breakers (MCBs) external to the master station.

The master station may be mounted on a flat surface using the mounting brackets provided, or alternatively, the extension brackets allow it to be mounted in a 19-inch rack. In either case it should be located in a way that permits easy access to the pushbuttons and easy viewing of the display panel(s).

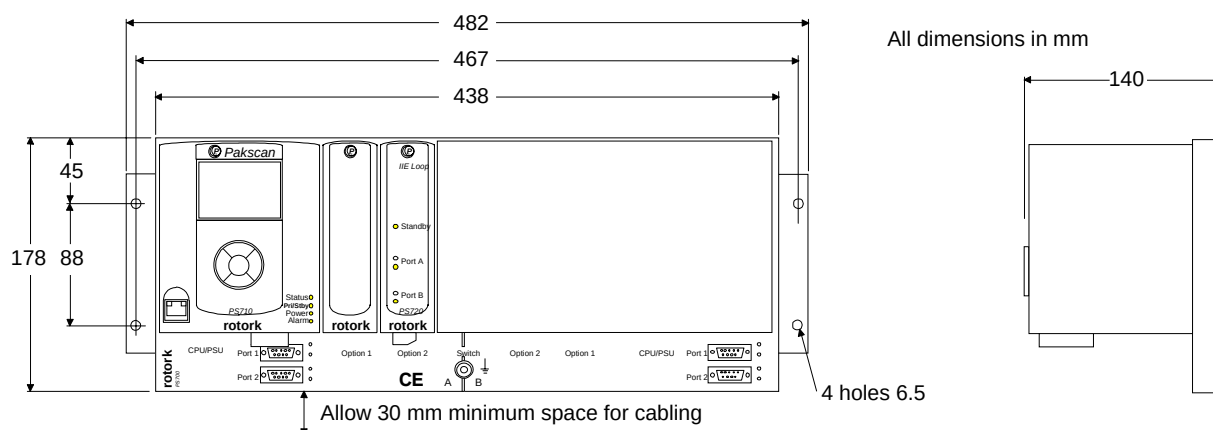


Fig 3: *Pakscan 3 surface mounting dimensions.*
(Both single and hot standby master stations may be surface mounted)

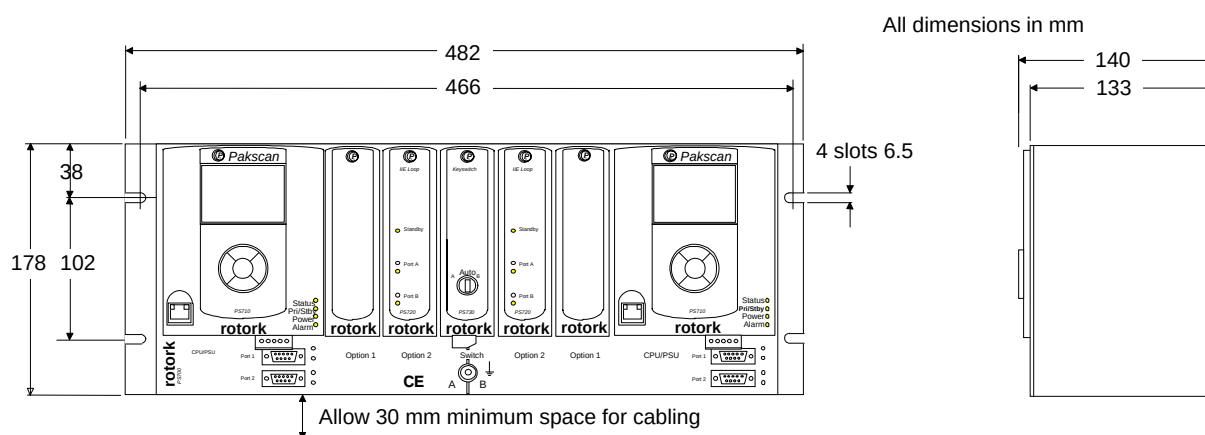


Fig 4: Pakscan 3, 19-inch rack mounting dimensions.
(Both single and hot standby master stations can be panel or rack mounted)

1.2 Serial Communications Connections

The serial data connections are via the D-type connectors below each Master Station PS710 on the main chassis. They are labelled Port 1 and Port 2 on both the A and B (left and right) sides of the assembly. All the connectors are **9 way female** and they may be set for RS-485 (2-wire) or RS-232 use. On hot standby systems they can be cross coupled to provide seamless communication when the systems change over. The pin-out connections are shown below.

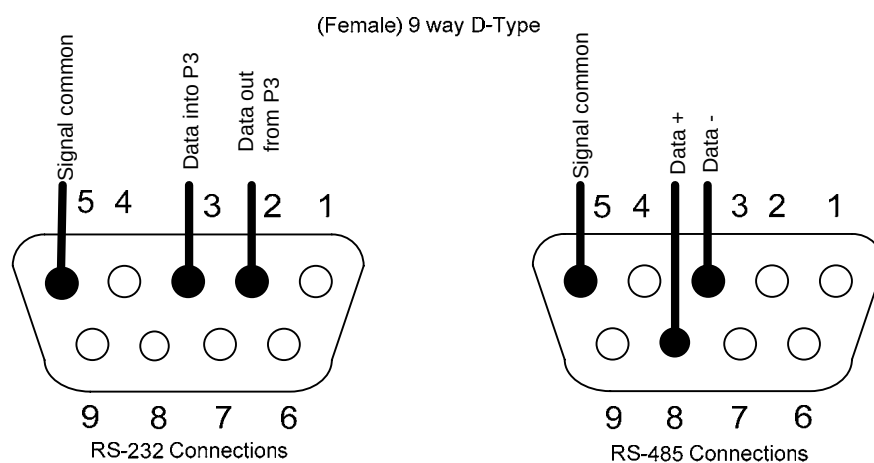


Fig 5: Serial Port Connectors. Note: all three connections must be used

- ❑ With RS-485 it is possible to arrange a multi-drop data highway for the serial communications, whilst RS-232 must be single point communications.

1.3 Ethernet Communications Connections

Each Pakscan P3 CPU module (master station module) has 2 x RJ45 Ethernet connectors for the two host communication ports (accessed from below) marked Port 3 and Port 4.

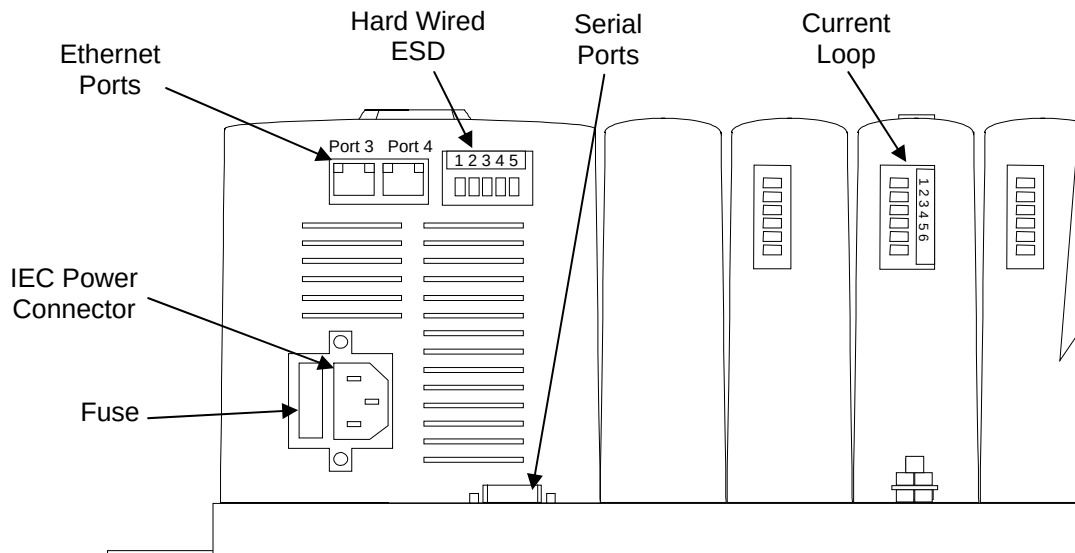


*Fig 8: View below the Pakscan P3 master station showing the Connectors
(The B side connections are similar)*

1.7 Front Panel LEDs

There are four Light Emitting Diodes on the front panel of the CPU module, in the bottom right-hand corner. These are fitted to confirm which units are powered-up, which are in Primary or Standby mode and whether there are any errors or alarms.

On power-up, there is a sequence of colour changes and flashes from the LEDs, which take almost a minute to complete and confirms that all parts of the system are operating correctly.

The Status LED sequence is: off > amber > flashing green > steady green.

The Pri/Stdbby LED sequence is: off > green > off > amber > steady green (or amber for standby).

The Power LED sequence is: off > amber > green > green > steady green.

The Alarm LED sequence is: off > red > off > red > off.

The Status LED will show steady red if communications with the host is lost over Ethernet, or there is a communications error between the master station and a field unit. The LED shows flashing green only during the power-up sequence. The LED shows steady green to confirm that all applications are running after power-up is completed.

The Pri/Stdbby LED will show steady green if it is a single unit or if it is the Primary unit of a hot standby pair. The LED will show steady amber if it is the Standby unit in a hot standby pair.

The Power LED is off when there is no power and steady green when power is present. It only shows amber during the power-up sequence.

The Alarm LED will show steady red if there are any alarm conditions in any field unit or the master station. This alarm will not prevent operation of the master station.

2. THE FIELD NETWORK

The Pakscan current loop field network must be correctly cabled and connected to the master station. The values of the field loop resistance and capacitance must be known to determine the loop speed that can be used. If these are not known then the LOWEST loop speed must be set in each actuator and the master station to ensure some field network connectivity.

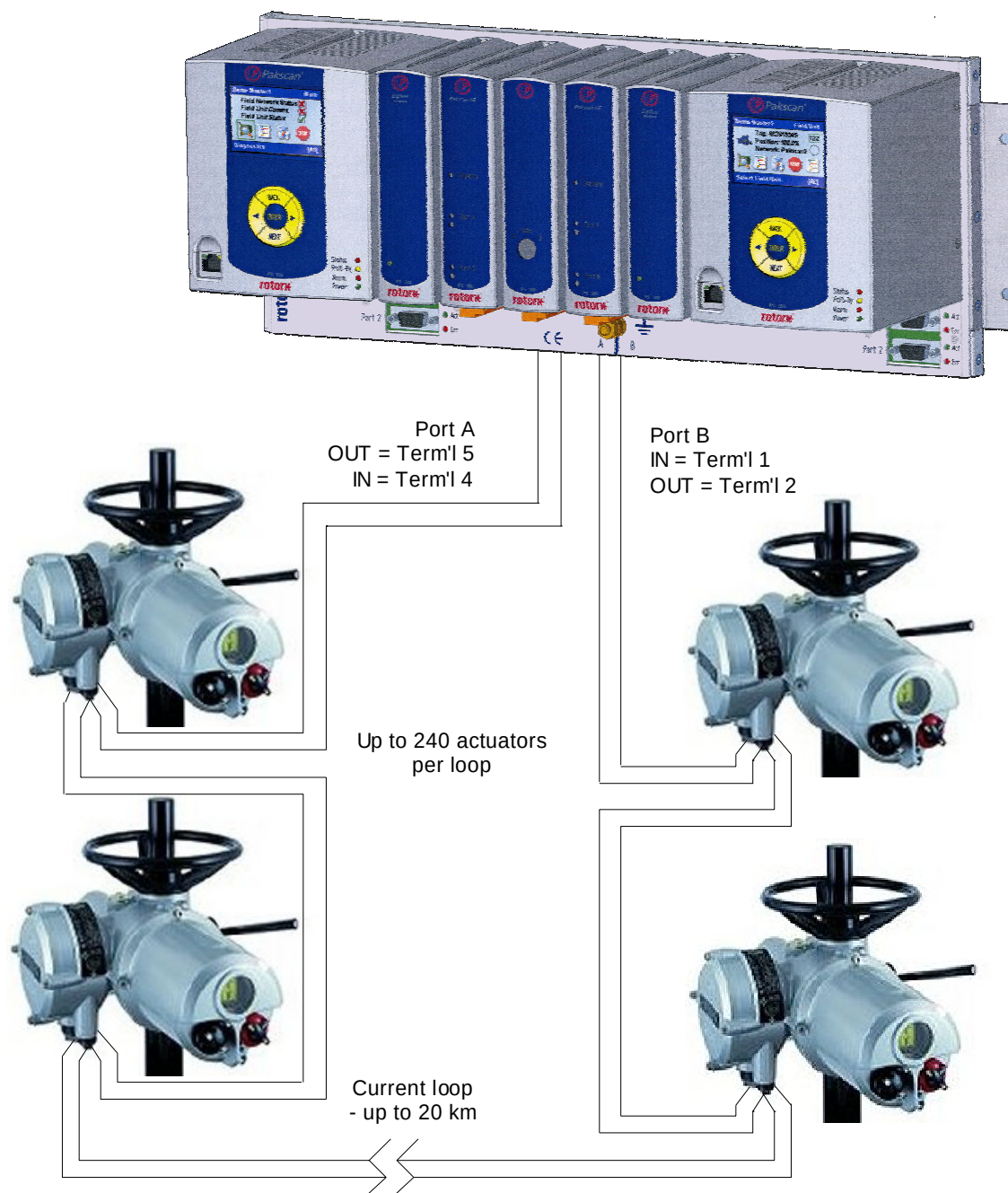


Fig 9: Pakscan P3 Network

2.1 Loop Checks

The most common errors in installing the system occur on the field wiring.

Loop Continuity

With all the field units connected, but none of them powered up, check the continuity of the 2 cores of the cable and measure its resistance.

Screen Continuity

Make sure that the screen is isolated from the loop cores and that the screen is continuous. Ensure the screen is connected to a signal earth bar at one point only or to terminals, 3 linked directly to the enclosure earth and 6 linked to the enclosure earth via an internal capacitor. *Both the screens must be connected to the terminals provided* so as to ensure the product meets the European Directive on EMC.

Cable Capacitance

The capacitance between the cores, and to the screen, is critical to the system performance. Too high a capacitance for the selected loop baud rate will result in communication failures.

Maximum Loop Speed

The cable resistance and capacitance must not exceed the permitted maximum values for each communication speed. The limiting values of C and R for each speed will depend on the number of field units actually connected. The following table gives the total figures for systems including the capacitance of the field units. Deduct 2.2nF for each field unit to determine the maximum cable capacitance allowed at each speed.

Baud Rate	R max (ohms)	C max (μ F)①
110	500	4.5
300	500	2.1
600	500	1.54
1200	500	0.6
2400	500	0.3
① Each field unit will add a capacitance of 2.2nF The C max figure given is the maximum value for the network capacitance including the field unit capacitance.		

2.2 Connecting Up

Once the checks are complete, connect the Loop Cables to the PS730 Key switch module on a hot standby system or the PS720 Current Loop module on a single system. Each PS720 module is factory set to maximum output. If you suspect that yours may not be, rotate the potentiometers on the front of the module fully clockwise until they click.

At this point leave the actuators all without power except for the one furthest from Loop Port A.

The Pakscan loop should look like figure 10, overleaf. Check the loop wiring complies with this drawing and then proceed to Section 7.1 for commissioning instructions.



(This page is intentionally blank)

3. CONFIGURING THE SERIAL COMMUNICATIONS LINKS

The Pakscan 3 CPU module has two serial ports. Each of these is configurable for RS-232 or RS-485. Most hot standby systems will probably require two RS-485 connections in a seamless redundant configuration. Single systems may use RS-232 or RS-485.

3.1 Setting Port 1 and 2 for RS-232 or RS-485

The chassis has DIP switches behind the PS710 CPU module for setting the type of serial port that is presented at the port connectors.

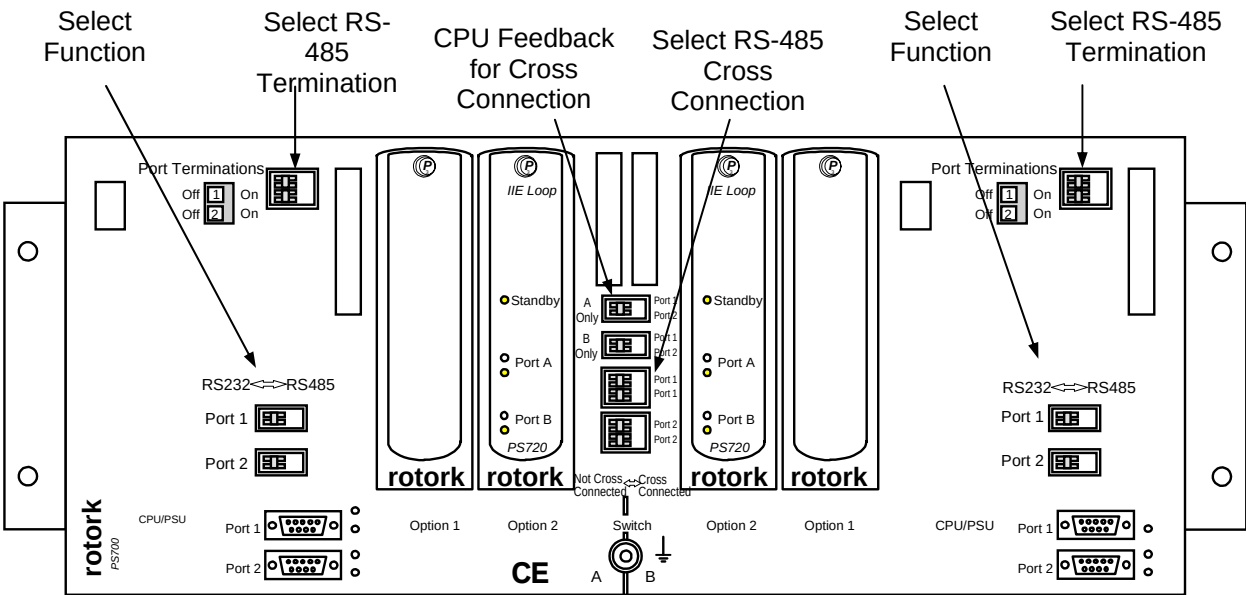
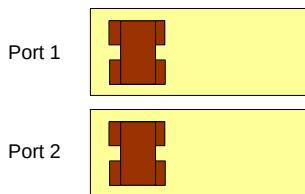


Fig 11: Pakscan P3 Chassis, CPU and Key Switch modules removed

The switches on the backplane behind the PS710 CPU Module are used to set Port 1 and Port 2 parameters.

Port Function

RS-232 ↔ RS-485



The two DIP switches allow each port to be selected between RS-232 and RS-485. For RS-485 slide the appropriate Port switches to the right, for RS-232 they should be on the left.

Each of the two ports may be set independently.

Fig 12: Port Function Switches shown in RS-232 position

Port Termination Resistors

The two DIP switches are used to connect end-of-line termination and biasing resistors to the RS-485 highway. All RS-485 network highways must be terminated at **both ends of the highway**, in this case, at the host controller and at the master station. Only RS-485 highways need termination and biasing resistors. If a CPU port is configured for RS-232, it must never be terminated.

Each CPU module serial port sits on an independent highway and they should be terminated independently. So, if ports 1 & 2 on a CPU module are both being used for redundant RS-485 communications to a Host controller, then each port may need to be terminated and biased.

However, where more than one CPU Module sits on the same RS-485 highway, then only the one furthest from the host controller needs the biasing and termination resistors to be enabled.

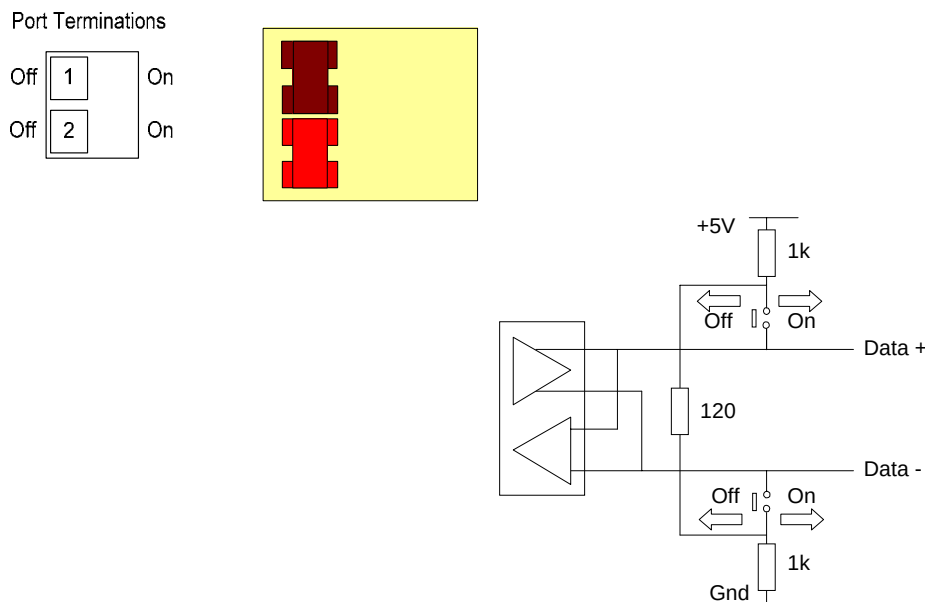


Fig 13: Port Termination Switches shown in Off position

As well as the Port Function and Port Termination switches, found on the backplane behind the PS710 CPU Module, there are more switches to be found behind the PS730 Switch Module. These are described on the next page.

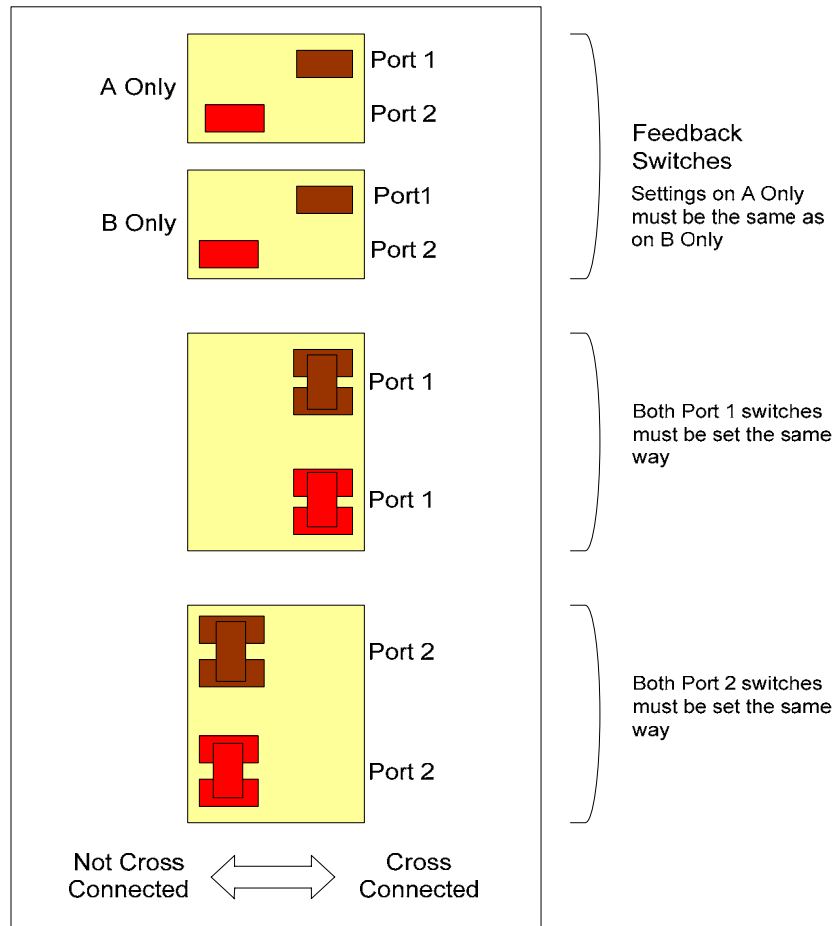


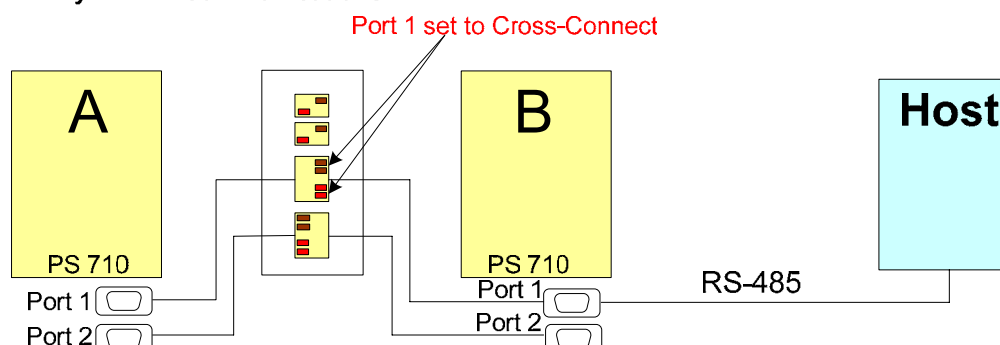
Fig 14: Detail of switch settings found on the backplane behind the PS 730 Switch Module

These are the switches found behind the PS730 Switch Module. They are shown in the Factory Default positions, which are for Hot Standby.

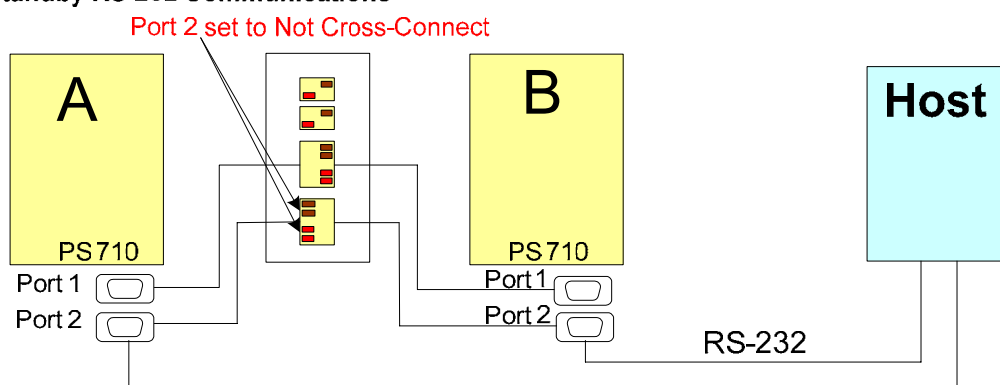
Port 1 is set to Cross-Connected for RS-485 Serial communications. Port 2 is set to Not Cross-Connected for RS-232 Serial Communications.

The feedback switch positions must reflect the Cross-Connection settings for Port 1 and Port 2.

Typical Serial Host connections to the P3 Master Station and appropriate switch settings are shown on the next page:

Hot Standby RS-485 communications

Communications between the Host and the Master Stations uses the Modbus protocol. Because the Master A is cross-connected to Master B, they both share the same Modbus address. The standby action must then be set to passive. Thus, the host can have two-way communications with the Primary (Main) module and the Standby module will only listen to the messages.

Hot Standby RS-232 Communications

With RS-232, communications between the Host and Hot Standby Master Station must be point-to-point. Multi-drop connection is not allowed, so separate cables must be run from the Host to each side of the Master Station. Also, the Cross-Connect switch must be set to Not Cross-Connect. The standby action must be set to active, so that the Host has full communications with Master A and Master B. Note: only actuator commands sent to the Primary CPU Module will be actioned.

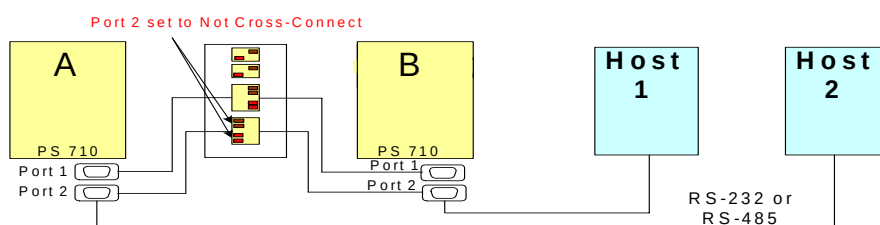
Hot Standby dual Host RS-232 or RS-485 communications

Fig 15: Hot Standby Serial Communications

Fully dual-redundant system. Port 2 set to RS-232 or RS-485 to match Host communication.

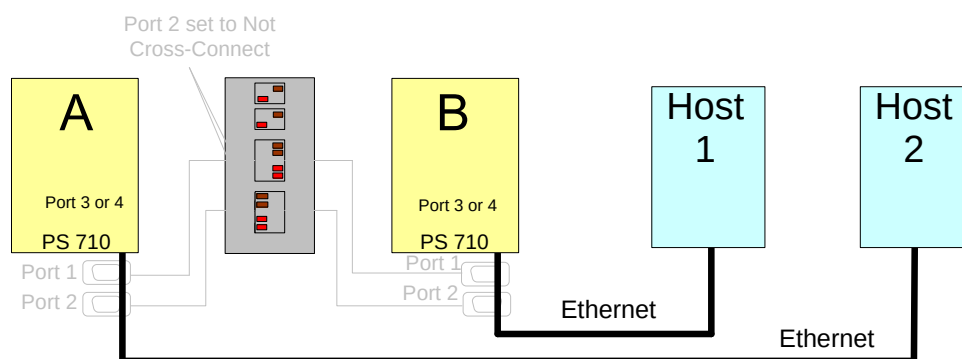
4. USING ETHERNET HOST COMMUNICATIONS

Pakscan 3 master stations come complete with two Ethernet ports for connection to host DCS or PLC systems. A third Ethernet port is also available for connection to a laptop computer for configuration purposes. The master station is ready to use with Ethernet and Modbus TCP protocol for the DCS to access data and control the actuators on the field network. The IP address is already set and can be changed during setting up the master station.

4.1 Setting-Up the Ethernet Communications

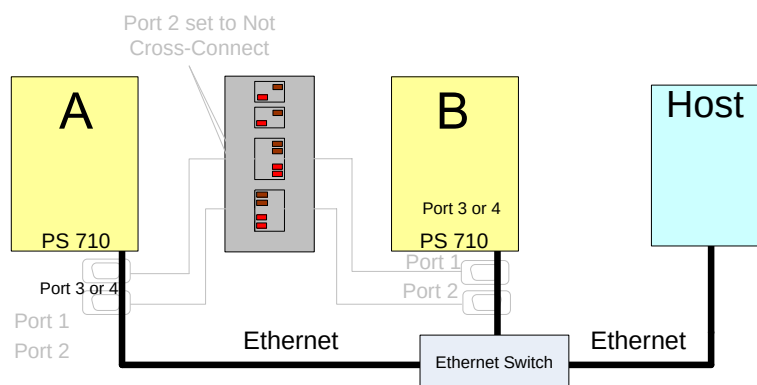
The Pakscan master station defaults to the same IP address on both ports, and can use the same address on the A and B master stations. It is possible to change the IP address on either master station, but ports 3 and 4 of each CPU Module always have the same address.

Hot Standby Ethernet communications



Ethernet comms between Hosts and Master Station are made using Port 3 or Port 4. The Cross-Connect switches can be in either position, or set appropriately for any additional serial comms. In this case, with two Hosts, Standby must be set to Active.

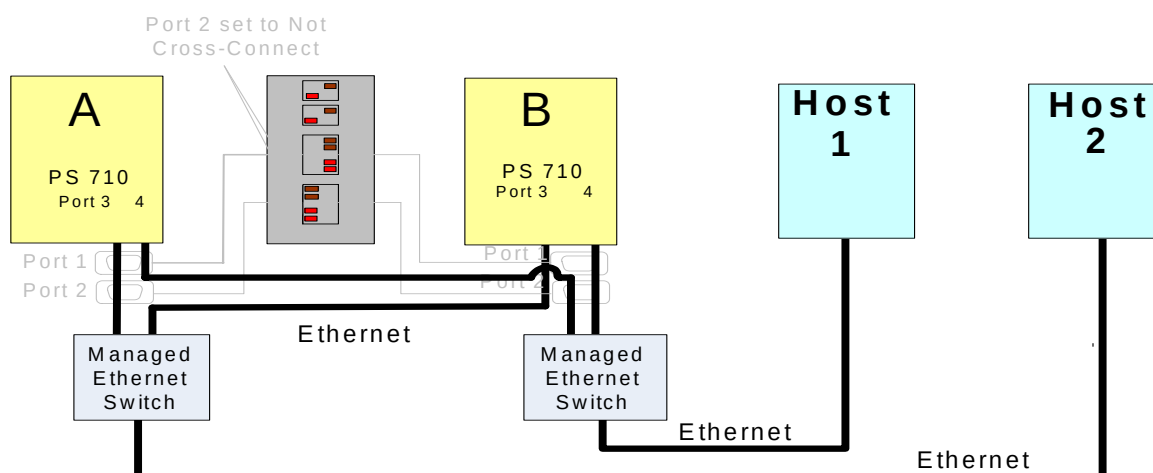
The IP address of Master A and Master B can be set to be the same or different, with Standby Active.



Where an Ethernet switch is used to connect a Host to the hot standby Master Station and the IP address is set the same for Master A and B, then Standby must be set to Passive.

Fig 16: Hot Standby Ethernet Communications

Hot Standby Redundant Host, Redundant Ethernet communications



For full Ethernet communications redundancy, use two Hosts and two Managed Ethernet Switches. Some Managed Ethernet Switches are able to prevent Ethernet Storms, where messages are re-circulated continuously. Please check before using.

Ethernet communications between Hosts and Master Station are made using Port 3 and Port 4. The Cross-Connect switches can be in either position, as they will be ignored. In this case, with two Hosts, Standby must be set to Passive.

The IP address of Master A and Master B can be set to be the same with Standby Passive, or different, with Standby Active.

Fig 17: Hot Standby, Dual Redundant Ethernet Communications

The default Ethernet parameters set in each Pakscan 3 CPU Module are given below:

DHCP	Static			
Default IP address	10	200	1	1
Subnet mask	255	255	255	0
Standby Action	Passive			

Note: changes to the IP address, Subnet Mask or clock settings will cause a re-boot of the CPU module.

5. SETTING UP THE MASTER STATION BY THE KEYPAD

The Pakscan 3 master station CPU module has a full colour display and 5 button input pad. All the settings for the performance of the master station, the Option module fitted and the Field Network can be made using these facilities. The keypad and screen also allows every connected actuator to be interrogated and its status monitored. Finally, the actuators and valves can be moved using these facilities.

Alternatively, a Laptop or other computer with an Internet browser facility can be used with the internal web server pages. These pages allow the whole system to be set up and modified. In addition, they allow the connected actuators to be viewed and controlled.

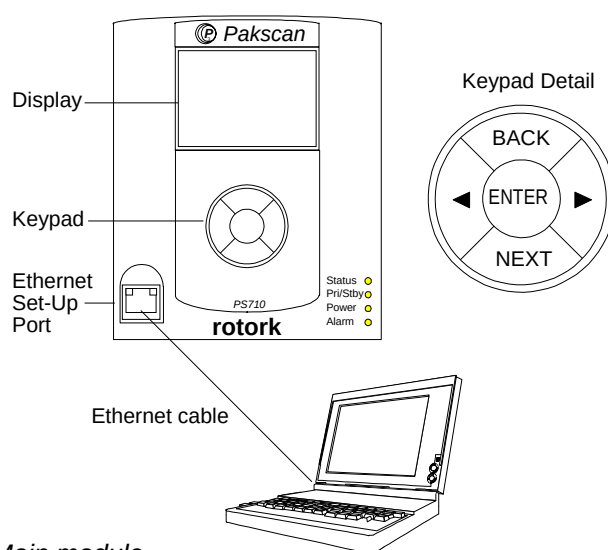


Fig 18: Pakscan P3 Main module

5.1 Using the Keypad

The keypad controls the movement through the display screens and the movement within each screen, as well as the ability to input data or requests.

- ☐ ◀ (Left), ▶ (Right) arrow keys allow active items within a page display to be highlighted. If the item is selected and a numeric input is needed, then these keys increase or decrease the number.
- ☐ ENTER Selects a highlighted element on the screen or completes the entry of information.
- ☐ BACK and NEXT **BACK** moves up one level in the menu of the displays, returning to the previous screen viewed. **NEXT** only functions if there is more data to show than fits on the screen. When there is additional data, a small arrow is shown on the right side of the screen. It points down (↓) for **NEXT** and up (↑) for **BACK** to operate.

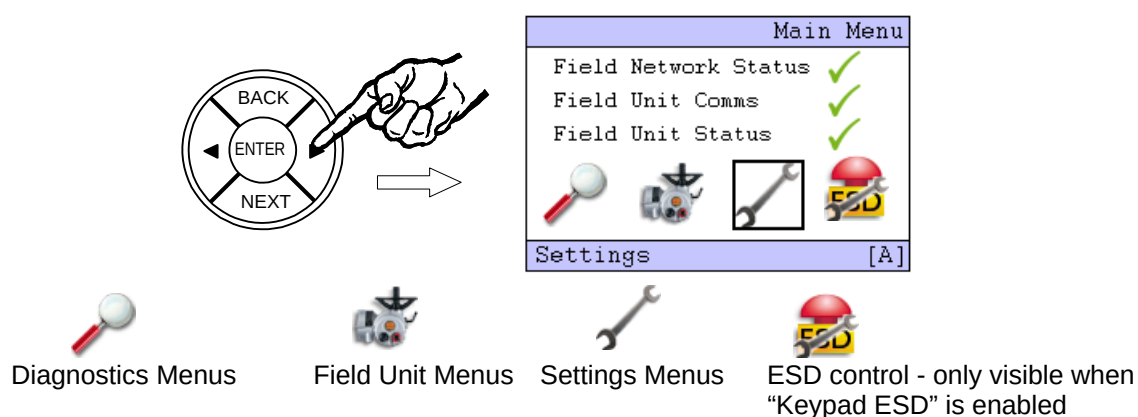
5.2 The Screen Display

The opening, or top screen display shows the network status and three icons.

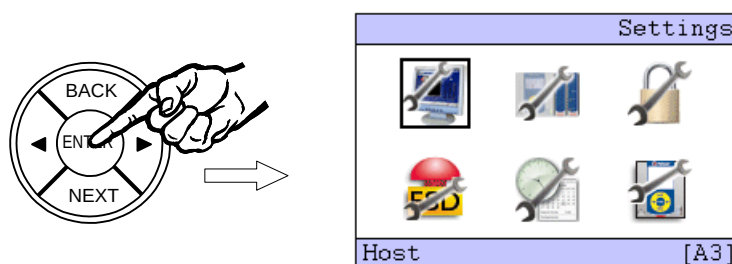
	Main Menu	<i>Menu Section</i>
<i>Network Information</i>	Field Network Status ✓ Field Unit Comms ✓ Field Unit Status ✓	<i>Current Status</i>
<i>Selected Icon Highlighted</i>	  	
<i>Selected Icon Function</i>	Diagnostics [A]	<i>Menu Location</i>

Fig 19: Pakscan P3 Main Menu screen

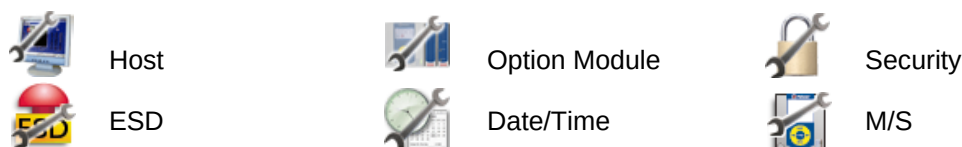
The Diagnostics icon (Magnifying Glass) will have a black square around it. The position of the square indicates the part of the menu that will be accessed if the **ENTER** key is pressed. The highlighted icon can be changed by pressing the arrow buttons (◀ or ▶) to scroll round them. The bottom bar shows the selected function as a text message.



Highlight the Spanner icon for 'Settings'; then press **ENTER**. The menu location changes to A3 and the 'Settings' menu screen appears with the 'Host' icon selected.

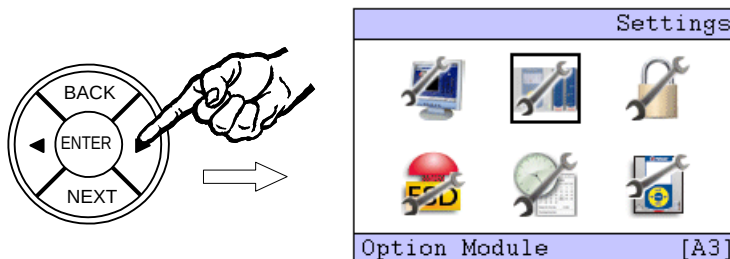


This screen also contains the icons used for access to all the other setting menus.

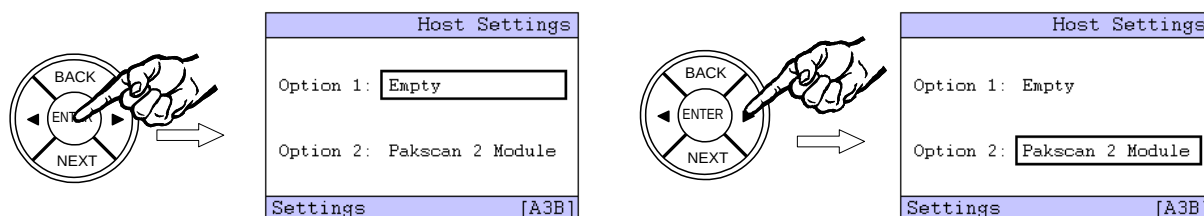


5.3 Setting the Current Loop Option Card Parameters

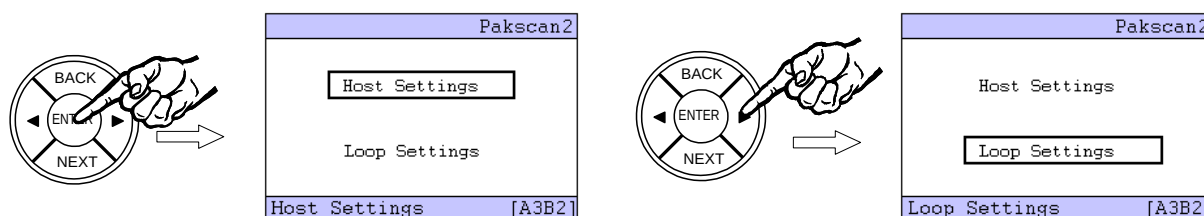
On the 'Settings' menu, select the Option Module Icon by pressing the right arrow key (►) followed by the **ENTER** key.



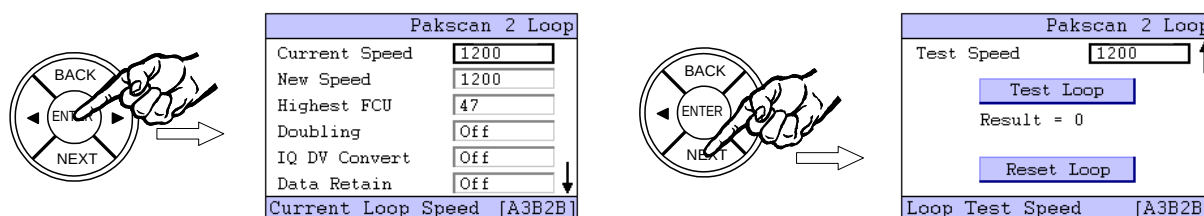
The Option choice screen appears where the module to be set can be selected. The Pakscan 2 Current Loop module is always in the Option 2 slot and this is highlighted by pressing the right arrow key (►).



Pressing **ENTER** brings the next choice for the setting. This time select 'Loop Settings' by once more using the right arrow key (►).

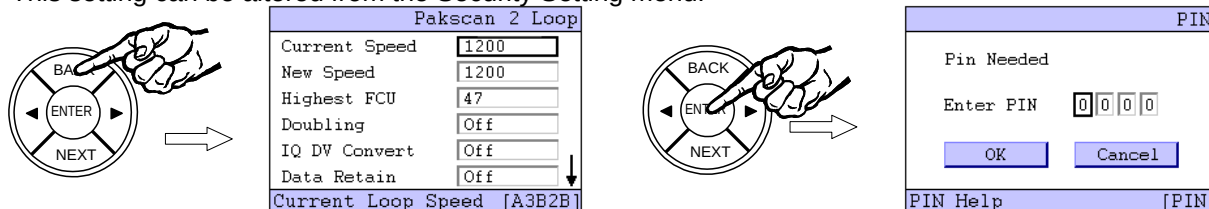


The Loop Settings screen is split over two pages, as indicated by the small arrow (↓) on the right side of the screen, so the **NEXT** and **BACK** buttons are used to jump between the two.

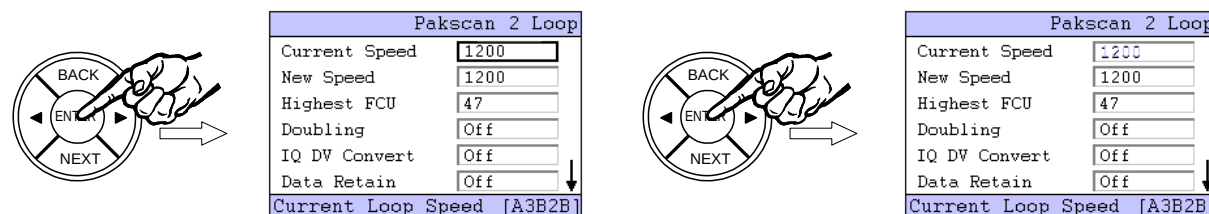


Once a setting box is highlighted, by using the left (◀) or right (▶) arrow key, press the **ENTER** key to make a change to the value. This will make the security screen appear for the PIN number entry. The

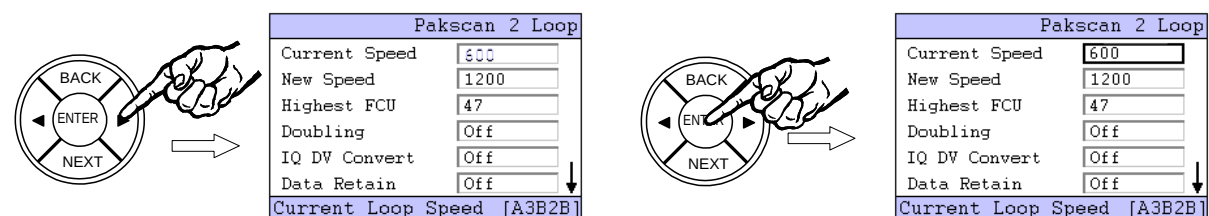
default value for the system security requires a PIN to be entered before any settings can be changed. This setting can be altered from the Security Setting menu.



The default PIN number is 0000. To enter a PIN, or accept the number, press **ENTER** and the first digit will flash. The value can be changed by using the left or right arrow keys (◀ or ▶). Once the number is correct, press **ENTER** once more. When all 4 digits of the PIN are entered correctly, select the OK button with the arrow keys (◀ or ▶).



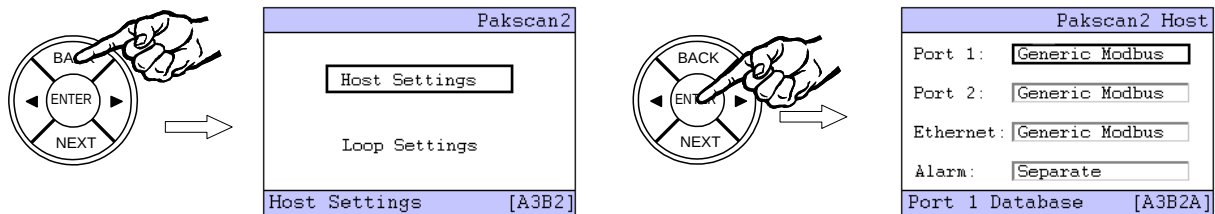
Press **ENTER** and the screen will return to the settings screen and the Current Speed will be highlighted. Press **ENTER** once more to select this parameter and the current value begins to flash.



Use the arrow keys (◀ or ▶) to change the value shown until the desired figure appears, then press **ENTER** and the new value will be set. The arrow keys can be used to navigate to other settings, and the **NEXT** button goes to the Loop Test screen and Loop Reset function.

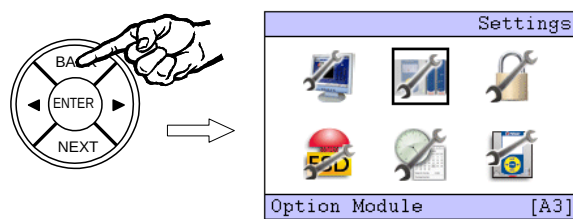
- ☐ Set the loop performance parameters in accordance with the data recorded earlier. Make sure the loop speed is compatible with the setting for the loop capacitance.
- ☐ Set the highest field unit address parameter equal to the actual highest address.
- ☐ Doubling can be set to 'On' if the loop performance is not fast enough. It has the effect of halving the time to collect data from the field units. This feature will only operate if the loop is functioning correctly with "loopbacks off".
- ☐ IQ DV Convert should be set to 'On' if position control is being used on the IQ actuators on the network.
- ☐ Data Retain set to 'Off' clears all the field unit data if communication is lost. Some host systems want the data to be retained, in which case set the parameter to 'On'.

Once the parameters are all set, leave this part of the setting menu to ensure the new values are loaded. Use the **BACK** button to return to the Host Settings page, and then **ENTER** to select the Host Settings menu.



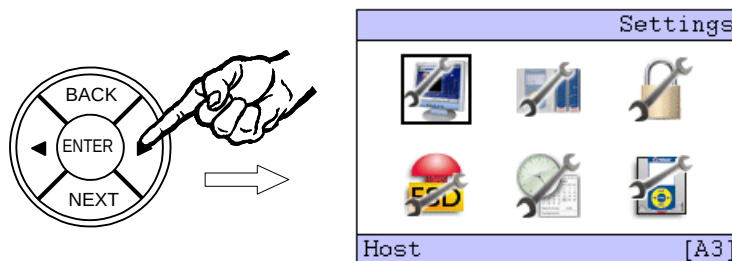
Make alterations to the host protocol settings and Alarm linkage, if required, in a similar manner to altering the loop performance parameters described earlier. The PIN will need to be entered if no keys are operated for approximately 5 minutes from the last PIN entry. Where the two serial ports are being used by the same host system it is advisable to 'Link' the alarms so that both ports always report exactly the same alarm data.

When the settings are as required, use the **BACK** key to return to the top Settings menu.

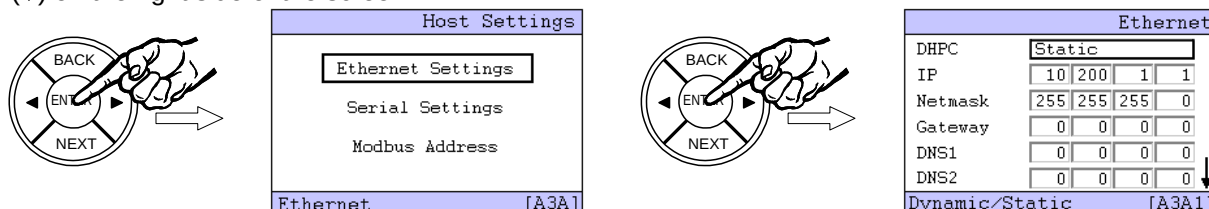


5.4 Setting the Master Host Communications Parameters

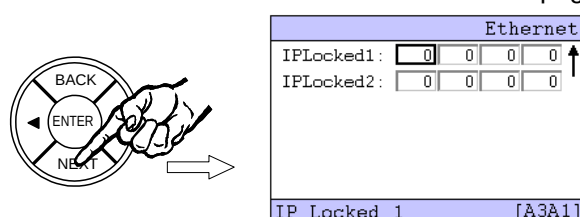
Select the Host icon using the arrow keys (**◀** or **▶**) and press **ENTER**. The Host Settings menu choices screen appears.



Select 'Ethernet Settings' using the arrow keys (◀ or ▶) and press **Enter** once more. The Ethernet settings screen appears, note that there are two pages to the menu as indicated by the small arrow (↓) on the right side of the screen.

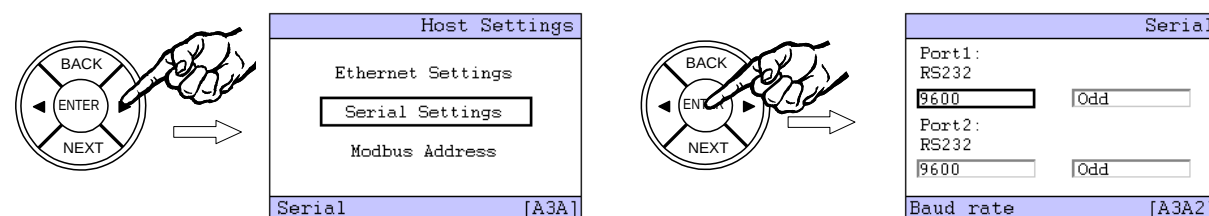


Use the **NEXT** button to move to the second page, the **BACK** button returns to the first page.



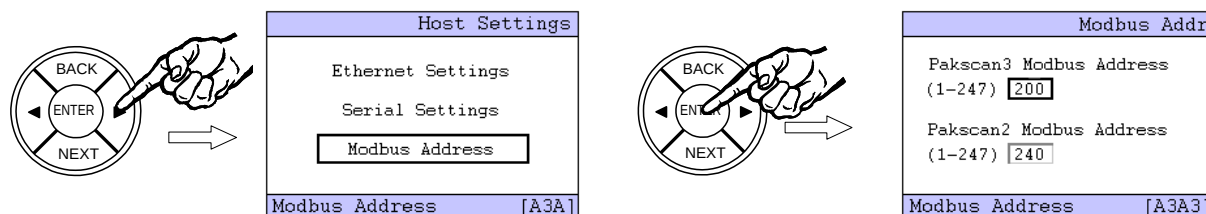
It is usually only necessary to change the IP address and Netmask to match the requirements of the network connected to the master station. When making any change it will be necessary to enter the PIN number for the master station as shown in the previous section.

To return to the previous Host Settings screen, press **BACK** and then select the Serial Settings using the arrow keys (◀ or ▶) and press **ENTER**. The communications port speed (default 9600), and parity are changed here.



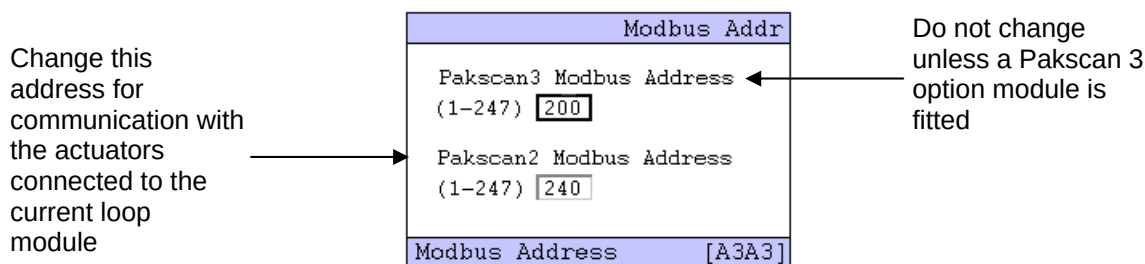
The port type is determined by the DIP switch settings on the main chassis behind the PS710 CPU module and the setting is reflected in the message on the screen. If the port is set to RS-485 and cross connected, the description changes to show these settings. This is particularly useful when determining the settings already in place. Select the option to be changed by using the arrow keys (◀ or ▶), then **ENTER** (the PIN screen may appear before a change can be made). Once the PIN is entered, the value of the parameter can be altered by the arrow keys (◀ or ▶). The speed can be varied from 2400 to 115,200 and the parity may be Odd, Even, Zero or None. Once the value is as required, press **ENTER** to set the value.

When the parameters are all as required, press **BACK** to return to the Host Settings screen, then select the Modbus Address using the arrow keys (◀ or ▶) and press **ENTER**.



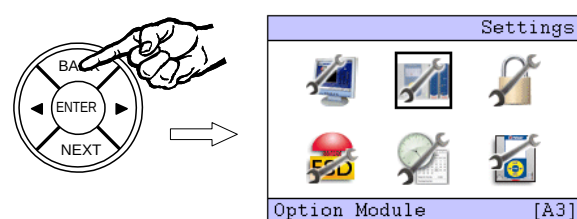
The Pakscan 3 Modbus address in the upper window is for future use and should be left at 200.

The Modbus address for the communication to the actuators on the Pakscan 2 current loop (via the module in option 2 slot) is altered in the lower window. It is recommended that this is altered to a value other than 247 to ensure that any new station introduced does not conflict with this address.



The address is changed by first selecting it with the arrow keys, then pressing **ENTER** (if the PIN requires entry the prompt page then appears). Use the arrow keys to change the number to the new value, and then press **ENTER** once more. The new address becomes active once the screen has been changed to a new one.

Once the settings are as required, use the **BACK** key to return to the top Settings menu.



5.5 The Other Settings

There are menus for setting all the parameters of the system. These are more fully explained in the system manual and, in general, the default settings will allow most systems to operate with reasonable success.

5.5.1 Security



Security is used for setting the PIN number to be used, plus the actions permitted from the keypad and the serial ports via the Interlocks. The Security setting default requires a PIN for adjusting the settings for system performance, but not for issuing actuator commands.

Interlocking controls the serial communications that are permitted to operate the actuators. The default grants permission to all the serial ports and the Ethernet ports, but prevents the web page facility from moving the valves.

- ☐ The default PIN = 0000.

5.5.2 ESD



The default condition is to disable all the possible Emergency Shut Down routes. ESD can be enabled from the serial ports, Ethernet ports, Web page, hard-wired input or keypad on an individual selection basis. If this ESD function is not required, ensure that a shorting link is fitted across pins 4 and 5 of the PS710 CPU module connector.

5.5.3 Date and Time



The date and time, plus the use of an NTP server are set from this menu. The time stamp is used for the logging facility.

5.5.4 Master Station Parameters



The master station parameters include the Tag for the master station and the setting for data transferred between the two CPU modules on a hot standby system along with several other parameters. Most of the default settings are suitable on most systems, though there is one particular set of parameters that must be correctly set in the case of hot standby systems.

M/S Settings	
Changeover Master	↑
Serial Port1:	Passive
Serial Port2:	Active
Ethernet	Active
Port1 Standby	↓
	[A3F]

The Serial Ports should appear as Passive if the Cross Connect DIP switch is set to 'cross connect'. If the port is set to RS-485 highway and is being used on a multi-drop highway it must be set to passive. If it is not shown correctly it probably means the DIP switch is incorrectly set.

Remember, the default setting is Standby Active.

6. THE INTERNAL WEB PAGES

The master station includes a set of Web pages that may be remotely accessed via Ethernet. They can be used for setting up the system, examining the system for any faults or alarms and also for controlling the actuators on the network (provided the Interlock permission is set to allow this feature).

If the master station is connected to the Internet and World Wide Web by a suitable router it will act as a server and any computer with Internet access can connect to the master station. The master station can also be configured and the field network set up by using these web pages. The host system or PC connected via the Internet, or directly, will need a web browser such as Internet Explorer to access the master station Web pages

6.1 Making the Internet Connection

Connect the master station to an Ethernet host, as described in section 4, or connect via a suitable router and an ISP directly to the internet. A laptop or PC can be directly connected to port 3 or 4 or to the front connector if there is no network connection available. Details of directly connecting a laptop are contained in the section on setting up with a PC, section 6.2, below.

Start the browser and enter the IP address of the master station. The default address is 10.200.1.1, so the address is **http://10.200.1.1**. The browser will then access the master station and bring up the opening page of the master station. In order to log in as a verified user enter a user name of **admin** and a password of **admin**. (These default names should be altered as soon as convenient to prevent unauthorized access to the system.)

Default IP address	10	200	1	1
Default User	admin			
Default Password	admin			

Once entry to the web pages has been made, if no changes to the display or information is made for between 1 and 2 minutes the system will automatically log out and the user/password must be re-entered.

6.2 Connecting a Laptop Directly to the Master Station

The simplest direct connection to the master station is by using the Ethernet port on the front of the CPU module. A standard Ethernet patch cable can be used to link the two directly. The front connector

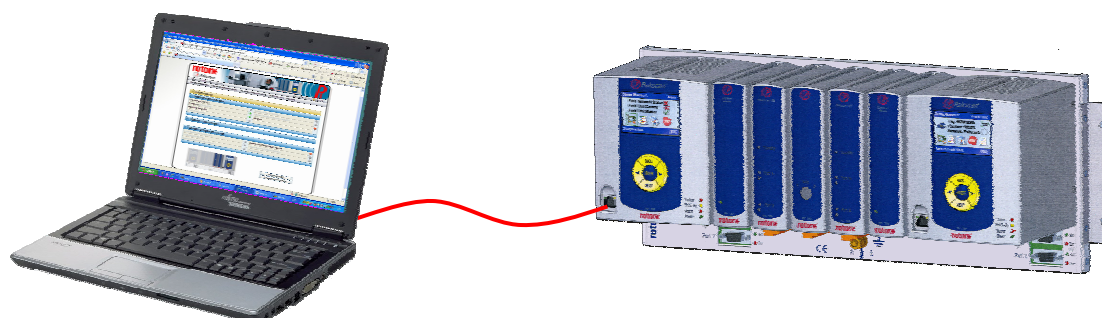


Fig 20: Connecting a Laptop to the Pakscan P3 Main Module

will accept either a standard patch cable or a direct link cable that has a twist between the transmit pair and receive pair in the cable. A permanent PC connection can also be made directly to one of the underside connectors (port 3 or 4).

In order to establish a connection it is probably necessary to adjust the settings of the Laptop Internet connection.

6.3 Adjusting the Network Settings of the Laptop PC

- ☐ Open the Control Panel and select (double click) 'Network Connections'.
- ☐ In the 'Network Connections' window, double click on the 'LAN or High Speed Internet' icon and the 'Local Area Connection Status' window will open.
- ☐ Click on the 'Properties' button, and a second window will open. Select 'Internet Protocol TCP/IP' and click on the 'Properties' button in this window.
- ☐ The 'Internet Protocol TCP/IP Properties' window will open. Next, change the setting to force the Laptop to adopt a fixed IP address and enter an address of 10.200.1.3 and a subnet mask of 255.255.255.0. Click on the 'OK' button and the window will close.
- ☐ Click 'OK' on the 'Local Area Connection Properties' window and then close the status window.
- ☐ Finally, close the 'Network Connections' window and the Control Panel.
- ☐ Reboot the PC to be sure that the new settings take effect correctly.
- ☐ Connect the cable between the PC and the Pakscan master station.

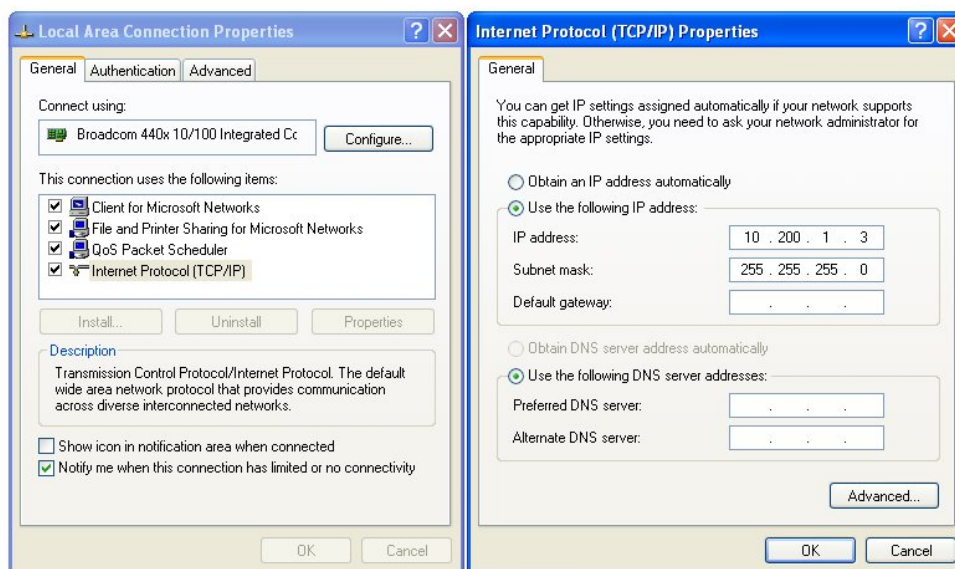


Fig 21: Changing the Network Connections TCP/IP Properties

- ❑ Start the browser and enter the IP address of the master station. The default address is 10.200.1.1, so set the address to **http://10.200.1.1**. The browser will then access the master station and bring up the opening page of the master station. In order to log in as a verified user, enter the username of **admin** and the password **admin**.

6.4 Web Page Structure

The web pages have three access levels, each requiring a password with the correct level set. A user enters the web server with a particular degree of access to the functions of the server and the master station.

6.4.1 User Levels

Access Level		Function
Lowest level	Read	Allows access to read master station status and settings, plus the option card status and settings and the actuator and field unit status on the option card network. No commands or alterations to the system are permitted.
	Write	As for read access with the addition of the ability to issue network commands, swap masters and command actuators on the option card network to change position.
Highest Level	Administrator	As for the two lower levels plus the ability to configure the master station, option cards and all system settings. Set and remove user names and passwords; set alarm reporting parameters, change system addresses and test system communications.

The Administrator level sets all other user names and passwords. As soon as the system is set up the default password should be changed.

6.4.2 Overall Web Page Layout

The web pages are organised using a menu structure with the primary menu on the top of each page. Within a page there are other controls for parameter alteration or to reveal extended information on the topic of the particular page.

Navigation between the pages is by selecting another topic on the main menu.

If there is no activity with the mouse to change the display or update the information or selection for between 1 and 2 minutes the system automatically logs out the user. The username and password must be re-entered to continue using the pages. In practice, this will occur quite frequently if you are interrupted while working.

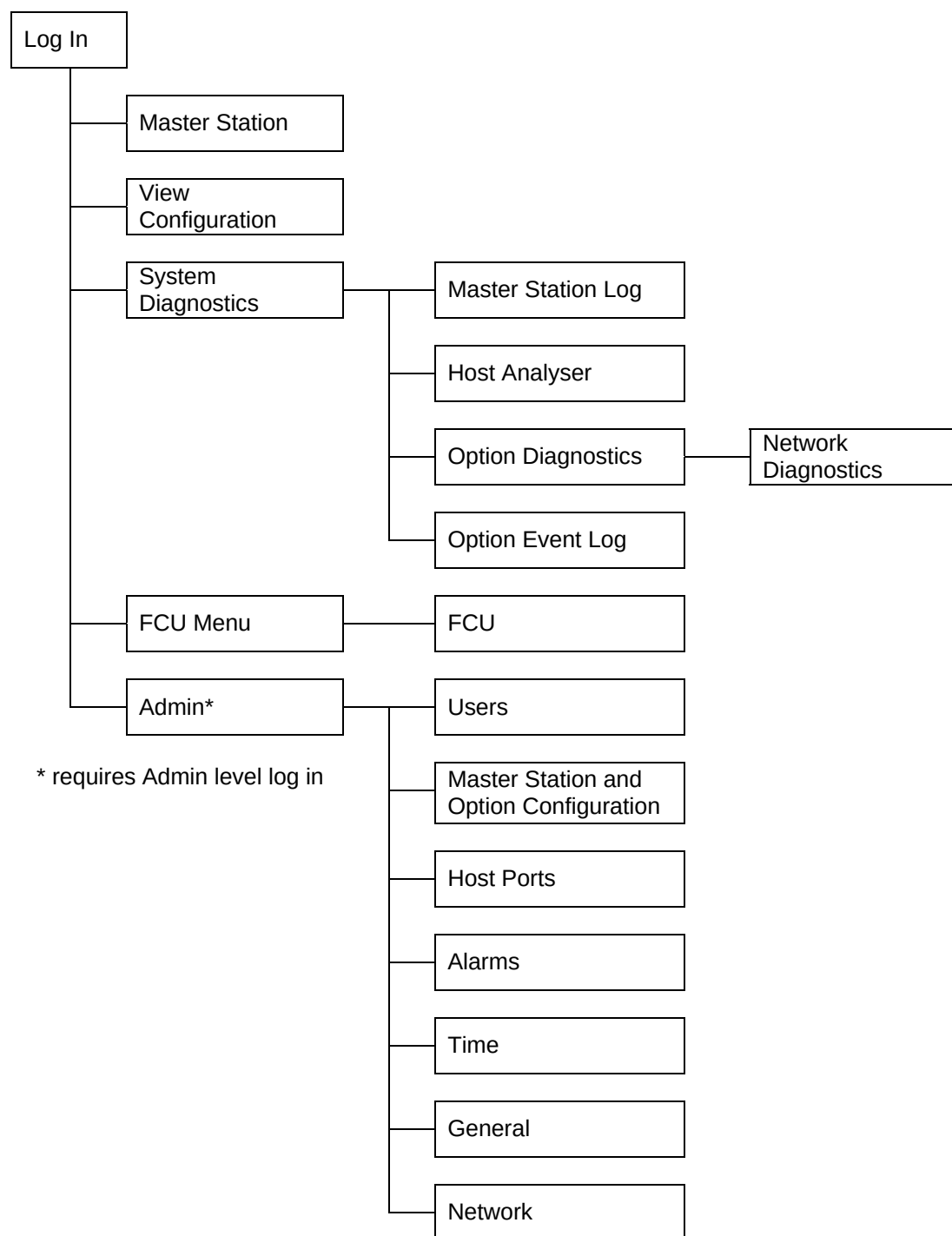


Fig 22: Web Page Menu Layout

6.5 The Web Pages in Detail

6.5.1 Log In Screen



Fig 23: Log In Screen

The first screen is the Log In screen on which the user must enter a **Username** and **Password**.

- ☐ **Username** - a case sensitive identification for an individual or group used to give access to the system. User names are listed for administrators to see on the 'Add User' page.
- ☐ **Password** - the case sensitive confirmation required before a username is accepted by the system. Passwords are not listed on any page in the system and cannot be retrieved, even at the administrator level.

Select the box with the mouse and enter the appropriate name or password, then click on the **login** button. The system will move to the next page if the login is accepted. If it fails, the data is cleared from the boxes and must be re-entered correctly in both boxes before access is granted.

The default user name is **admin** and password is **admin**. (These default names should be altered as soon as convenient to prevent unauthorized access to the system.)

User name and access level.

Menu of available screens to visit (changes to blue when selected) for Read and Write access levels

Log out when finished by clicking here (changes to red when selected).



Fig 24: Web Page Header Navigation

6.5.2 Master Station

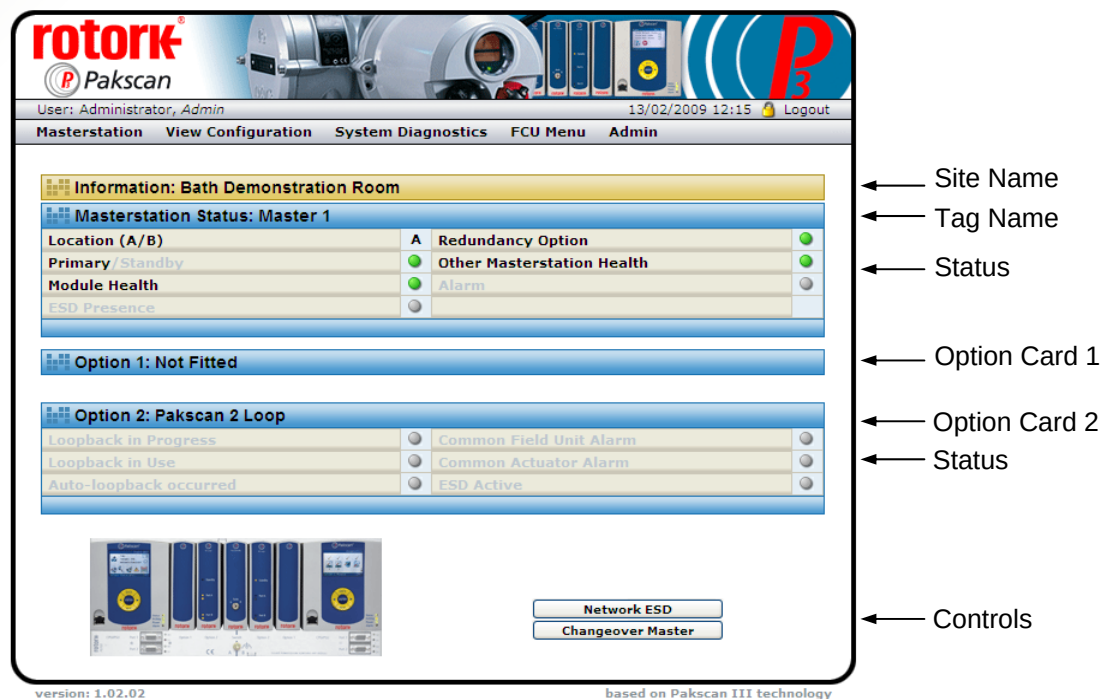


Fig 25: Master Station Overview Page

This screen is accessible to Read, Write and Administration user levels.

The screen reports the current status of the master station and the option cards fitted. The picture shows the master station, single or hot standby version. The green, orange and red lights show the condition of the associated parameter. Greyed out text and lights are not applicable or else in a safe (normal) condition.

Master station CPU Module

- Site name : The name of the site where the system is located, as entered during configuration.
- Tag name : The master station tag, as entered during configuration.

Status

- Location A/B : Indicates the CPU module currently in communication over the Ethernet.
- Primary/Standby : Shows the condition of the CPU with regard to controlling the option cards. The Primary CPU is in control. A Standby CPU is prepared to become the Primary and take control if the partner unit fails.
- Module Health : Indicates the absence (green light) or presence (red light) of a fault on the CPU.
- ESD Presence : Shows a yellow light if an Emergency Shut Down signal is active.

Redundancy Option	: Shows a green light if there is a partner module fitted.
Other Master Station health	: Indicates the absence (green light) or presence (red light) of a fault on the partner CPU.
Alarm	: Indicates the presence of an alarm (red light) somewhere on the system.

☐ **Option 1** - Shows type of Option module fitted.

☐ **Option 2** - Shows type of Option module fitted.

Pakscan 2 Loop Option Module

Loopback in Progress	: A blue light shows whilst the master station is reconfiguring the loop.
Loopback in Use	: A yellow light shows when the master station has detected a loopback fault on the system.
Auto Loopback occurred	: If a fault occurs on the network and an automatic reconfiguration of the loop occurs, then a yellow light is shown here.
Common Field Unit Alarm	: A red light shows if any field unit on the network has an alarm bit present.
Common Actuator Alarm	: A red light shows if any actuator on the network is unavailable due to its monitor relay having tripped.
ESD Active	: If there is any Emergency Shut Down signal present on the system a red light shows.

Controls - Not Available for Read level users

Network ESD	: Click here to issue an ESD to all actuators connected to either option card. The resulting action will depend on the individual actuator settings. A confirmation screen appears to verify or cancel the instruction before the action occurs.
Changeover Master	: Only applicable to hot standby systems. Click this button to make the master station CPU in control; change from A to B or B to A.

6.5.3 View Configuration

rotork
Pakscan

User: Administrator, Admin 13/02/2009 12:22 Logout

Masterstation View Configuration System Diagnostics FCU Menu Admin

View Configuration

Site name	Bath Demonstration Room			
Tag name	Master 1			
Modbus address	200			
Hot Standby module	Enabled			
ESD Settings	Ethernet ESD	Disabled	Webpage ESD	Disabled
	Hardwired ESD	Disabled	Serial ESD	Disabled
			Keypad ESD	Disabled
Command Settings	Ethernet	Enabled	Webpage	Enabled
	Serial Port 1	Enabled	Serial Port 2	Enabled
			Keypad	Enabled
Copy Options	Settings	Enabled	Tag	Enabled
	Address	Enabled	IP	Disabled
Display Language	English			
Security Level	None			
Number of channels	60			
Software version	1.02.02			

Option 1: Not Fitted

Option 2: Pakscan 2 Loop

Software version Option 2	1.0.6
P2 Modbus Address	1
Highest FCU address	25
Loop speed	1200
New loop speed	N/A
Loop speed doubling	OFF
Retain data on loss of communications	OFF
DV convert	ON
Host Port 1 Database Selection	Generic Modbus
Host Port 2 Database Selection	Yokogawa Modbus
Ethernet Database Selection	Generic Modbus
Port alarms	Separate

version: 1.02.02 based on Pakscan III technology

Fig 26: System Configuration Overview Page

This screen is accessible to Read, Write and Administration user levels.

The screen shows the settings for the control of the option card networks and the CPU control capability, software fitted and various options selected. All of these settings can be modified elsewhere, but only by users with Administration level access. There are no controls on this page.

The settings are explained in the Master Station Configuration page section, section 6.5.16.

6.5.4 System Diagnostics



Fig 27: System Diagnostics Page

This screen is accessible to Read, Write and Administration user levels.

The System Diagnostics screen shows an overview of the status of the fitted modules and also provides access to further information.

Master Station Diagnostics

- Module Health : A green light shows if the module is operating correctly and this changes to red if there is a fault.
- Primary/Standby : Indicates which module is being accessed. A green light indicates Primary, a yellow light indicates Standby and a red light indicates if there is a fault.
- Redundancy Option : Shows a green light if there is a partner module fitted.
- Other Master Station Health : Indicates the absence (green light) or presence (red light) of a fault on the partner CPU.
- Host port 1 activity : Indicates when there is serial communication taking place on communications port 1
- Host port 2 activity : Indicates when there is serial communication taking place on communications port 2
- Modbus/TCP activity : Indicates when Ethernet control using Modbus/TCP is present on either Ethernet port.

Controls - Available to all user levels

- ms datalogger : Reveals a pop-up showing a log of the activity on the master station and the source of requests or commands received. See section 6.5.5 for details.
- host analyser : Reveals a pop-up with the data logger data and the additional controls required for using the inbuilt data analyser for commands and data sent to the host system. See section 6.5.6.

Option 1 Diagnostics

- Not Fitted : Shows module type and status, or 'Not Fitted' when there is nothing in the slot.
- Option Health : Shows a green light when healthy and a red light if there is a fault on the module.

Controls - Available (when module fitted) to all user levels

- Diagnostics : Reveals the diagnostic page for the option card fitted.
- Event Log : Shows the option module event recorder.

Option 2 Diagnostics

- Pakscan 2 Loop : Shows module type and status, or 'Not Fitted' when there is nothing in the slot.
- Option Health : Shows a green light when healthy and a red light if there is a fault on the module.

Controls - Available (when module fitted) to all user levels

- diagnostics : Reveals the diagnostic page for the option card fitted. See section 6.5.7.
- event log : Shows the option module event recorder.

Controls - Available to all user levels

- Print** : Prints the logger data to a printer attached to the PC.
- Save** : Saves the logger data to a file on the PC.
The saved file is of the type cmdlog.log and can be opened in the Notepad on the PC. It can also be imported into a spreadsheet, such as Excel, for analysis as required.
- Refresh** : Updates the file with any new data.

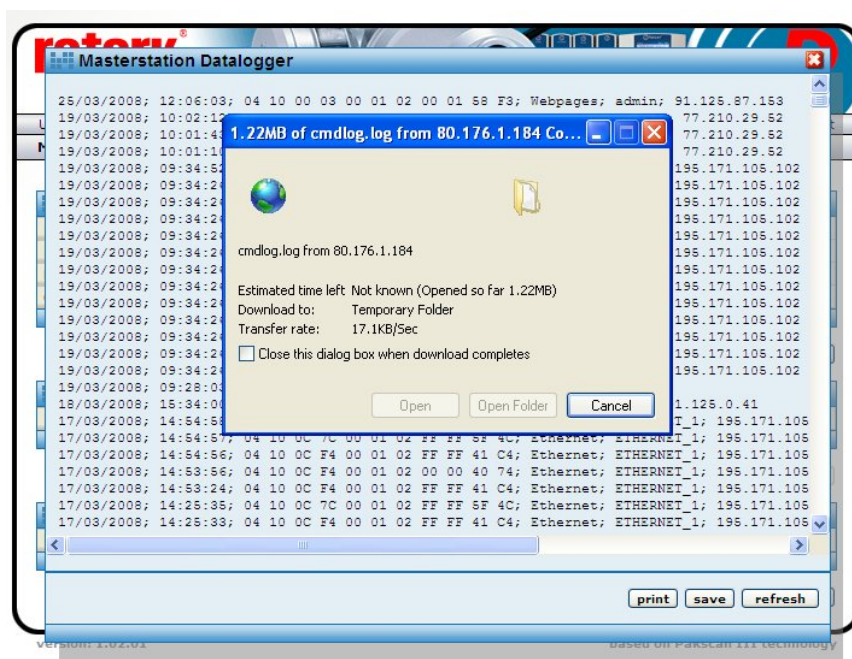


Fig 30: Saving the log file

6.5.6 Master Station Host Analyser [host analyser]

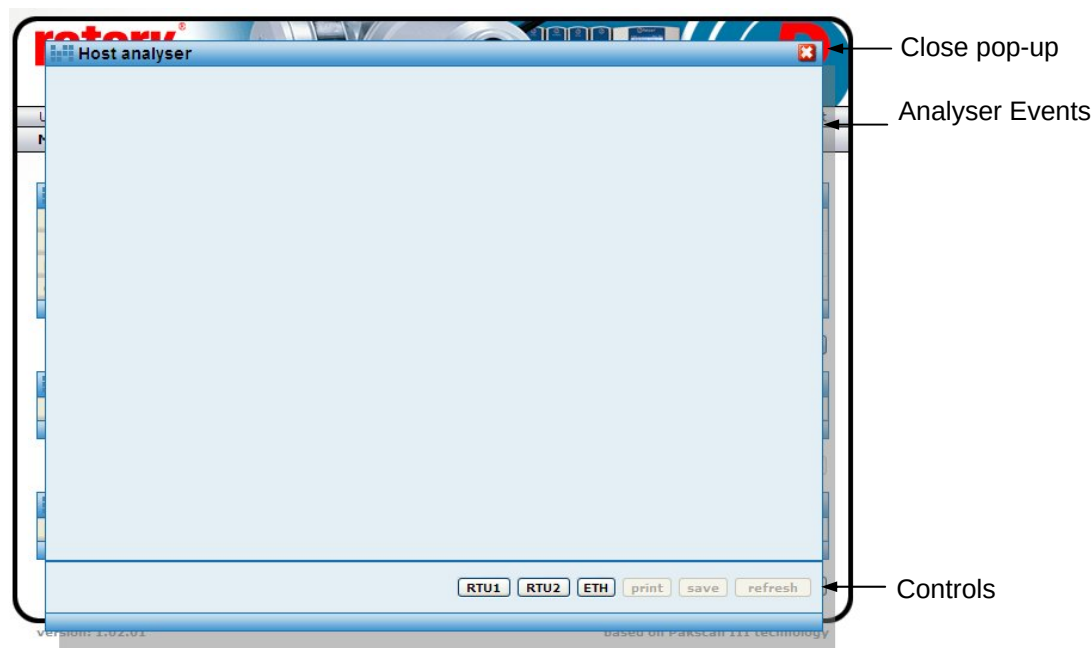


Fig 31: Host Analyser Screen

This screen may be used by Administration user level only.

The Host Analyser is a real time system analyser that can be used with either a Modbus RTU serial data control source, acting through one of the serial data ports (Port 1 or 2), or a Modbus TCP Ethernet control source, acting through the Ethernet port.

The analyser will record up to 100 messages (requests and responses) on the data line between the two points. It is especially useful for debugging a host control system to ensure that messages are correctly formatted and that the required control or data points are being accessed. In particular, the use of correct offsets in the Modbus protocol can be checked.

Controls - Available to Administration user level

RTU1	: Selects Port 1 host input.
RTU2	: Selects Port 2 host input.
ETH	: Selects the Ethernet port host input.
Print	: Prints the analyser data to a printer attached to the PC.
Save	: Saves the analyser data to a file on the PC.
Refresh	: Updates the file with any new data.

6.5.7 Pakscan 2 Loop Diagnostics

[diagnostics]

rotork® Pakscan

User: Administrator, Admin 13/02/2009 12:36 Logout

Masterstation View Configuration System Diagnostics FCU Menu Admin

Network Diagnostics

No Of Devices On Network	25
No Of FCU's Found	25
Configuration Status	
Last Network Reset Initialised By	Loop fault on outward wire (loop complete)
Network Fault Type	No faults
Loop Baud Rate	1200
No Of FCU's On Side A	25
No Of FCU's On Side B	0

reset network

Network Map

Position	Address	Failures	Type	Tag Name
1	25	0	Integral	ROMPAK
2	3	0	Integral	-
3	24	0	GPFCU - GP	-
4	23	0	GPFCU - GP	-
5	22	0	GPFCU - GP	-
6	21	0	Integral	-
7	20	0	Integral	-
8	19	0	Integral	-
9	18	0	Integral	-
10	17	0	Integral	-
11	16	0	Integral	-
12	15	0	GPFCU - GP	-
13	6	0	GPFCU - GP	-
14	7	0	GPFCU - GP	DAN TEST
15	8	0	GPFCU - GP	-
16	9	0	GPFCU - GP	-
17	10	0	GPFCU - GP	-
18	11	0	GPFCU - GP	-
19	12	0	GPFCU - GP	-
20	2	0	Integral	-
21	5	0	Integral	-
22	14	0	Flowpak	-
23	4	0	IQ	-
24	13	0	Integral	-
25	1	0	IQ	-

version: 1.02.02 based on Pakscan III technology

Fig 32: Pakscan 2 Loop Diagnostics

This screen is accessible to Read, Write and Administration user levels.

The Pakscan 2 Loop Diagnostics screen gives diagnostic information on the 2-wire loop option card and the network connected to it. The top part of the screen shows the information about the option card itself, whilst the lower part shows the loop map. This is the order in which the field units on the 2-wire loop are connected. It also shows the device type and tag name for each address and position.

Network Diagnostics

No. Of Devices On Network	: This is the number of field units that are expected to be located on the network. It is the highest address that the network will scan up to when locating field units. All field units are assumed to be consecutively addressed.														
No. Of FCUs Found	: This is the total number of field units located on the network. If all the field units are powered on and connected, the number will equal the No. of devices on the network above.														
Configuration Status	: This field shows any fault that exists on the network cabling and the stages passed through as network configuration takes place. During configuration the following sequence can be displayed - 1. Wait for Loopbacks 1 (first wait for loopbacks to come on) 2. Find FCUs on Port A (finding FCUs on port A) 3. Test Loop (testing for complete loop) 4. Find FCUs on Port B (finding FCUs on port B) 5. Wait for Loopbacks 2 (second wait for loopbacks to come on) 6. Loopbacks off on A (removing loopbacks from port A) 7. Loopbacks off on B (removing loopbacks from port B) (The normal sequence for a fault-free loop would be 1, 2 and 3. A sequence for a break in the loop, anywhere except at port A or port B, would be 1 to 7. Some of the phases may be very quick, particularly at higher baud rates, and so may not be seen on the browser display. Whilst the configuration is taking place, the master station web page shows 'Loopback in Progress' and a blue light on the Option module. If the configuration process detects a fault on the loop and switches on the loopback circuits of two field units, the master station web page shows 'Loopback in Use' and illuminates the yellow light.														
Last Network Reset Initiated By	: The loop can be reconfigured for a number of reasons and this field will show the cause of the last reset/reconfigure that occurred. The possible reasons are: <table><tr><td>Power on Reset</td><td>- loop configured because the master station powered up.</td></tr><tr><td>Fault Found</td><td>- fault detected on the loop whilst it was running without loopbacks present.</td></tr><tr><td>Fault Found A</td><td>- fault detected on the A side of broken loop whilst running with loopbacks on.</td></tr><tr><td>Fault Found B</td><td>- fault detected on the B side of broken loop whilst running with loopbacks on.</td></tr><tr><td>Reset Command</td><td>- loop Reconfigure command entered from keypad or serial port.</td></tr><tr><td>Return wire fault</td><td>- fault detected in the return current path whilst the loop was running at double speed.</td></tr><tr><td>Doubling failed</td><td>- fault detected after loop assumed double speed.</td></tr></table>	Power on Reset	- loop configured because the master station powered up.	Fault Found	- fault detected on the loop whilst it was running without loopbacks present.	Fault Found A	- fault detected on the A side of broken loop whilst running with loopbacks on.	Fault Found B	- fault detected on the B side of broken loop whilst running with loopbacks on.	Reset Command	- loop Reconfigure command entered from keypad or serial port.	Return wire fault	- fault detected in the return current path whilst the loop was running at double speed.	Doubling failed	- fault detected after loop assumed double speed.
Power on Reset	- loop configured because the master station powered up.														
Fault Found	- fault detected on the loop whilst it was running without loopbacks present.														
Fault Found A	- fault detected on the A side of broken loop whilst running with loopbacks on.														
Fault Found B	- fault detected on the B side of broken loop whilst running with loopbacks on.														
Reset Command	- loop Reconfigure command entered from keypad or serial port.														
Return wire fault	- fault detected in the return current path whilst the loop was running at double speed.														
Doubling failed	- fault detected after loop assumed double speed.														

Network Fault Type : This field shows the type of fault detected that caused the loopback to occur, or an addressing fault on the field units. The types are:

Zero Address	- a field unit has been found with an address of zero
Address too High xx	- a field unit has been found with an address higher than that setup within the master station, xx is the address.
Same Address xx	- two field units found with the same address; xx is the address.
Loop Open Circuit	- an open-circuit fault found on the loop.
Loop Short Circuit	- a short-circuit fault found on the loop.

If two field units are found with the same address, or there is an address outside the range of addresses expected (as set by No. of Devices on Network), the network will continue to operate and miss out the faulty field units.

Loop Baud Rate : Shows the current speed selected. The speed can be 110, 300, 600, 1200, or 2400 baud.

No. Of FCUs On Side A : This is the total number of field units connected to the option card Port A and communicating via Port A.

No. Of Focus On Side B : This is the total number of field units connected to the option card Port B and communicating via Port B. Port B is only used if there is a loopback present on the network.

Controls - Available to all user levels

Reset network : Causes the option card to reconfigure the 2-wire network. This should be used after a loop fault has been corrected.

Network Map

The map shows the order in which the field units have been identified and found by the option card during the last loop reconfiguration process (reset). Each time the loop is reconfigured the map is regenerated and repopulated. Any field unit that is not powered-up at the time of reconfiguration will be absent from the map.

Position : The position in the loop. Number 1 is nearest to Port A.

Address : The address of the field unit

Failures : Shows a count of communication errors with the field unit. The count has a range of 0 to 255, after which it rolls around to zero and it increments for every communication error. The system will only announce a 'Comms failure' when 3 successive tries have failed to locate the field unit. This counter therefore reflects the communications condition and can be used as an indicator of the health of the field unit to assess the probability of failure in the future.

Type : The type of field unit depends on the actuator and function required.
 Current types are -

IQ	- IQ or IQT actuator
Integral	- Non IQ actuator
Flowpak	- Flowpak actuator
GPFCU - GP	- General Purpose Field Unit
GPFCU - Act	- General Purpose in Actuator mode
IQA	- IQ Analogue card

Tag Name : The associated identification Tag assigned to this field unit.

6.5.8 Option Card Event Logger

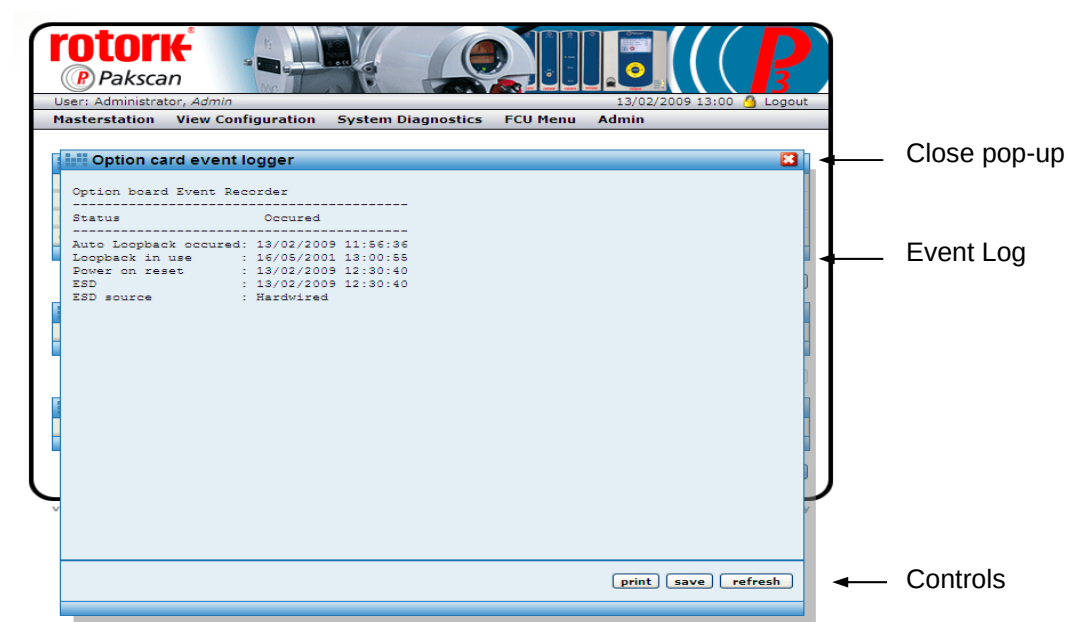


Fig 33: Option Card Event Logger

This screen is accessible to Read, Write and Administration user levels.

The event logger shows the last occurrence of the listed events and in the case of the ESD source, where the signal originated.

Controls - Available to all user levels

Print : Prints the logger data to a printer attached to the PC.
Save : Saves the logger data to a file on the PC.
Refresh : Updates the file with any new data.

6.5.9 FCU Menu

Address	Tag Name	Type	Network	Alarm	Comms Fail	Navigation
1	-	IQ	Pakscan2	●	●	FCU Control
2	-	Integral	Pakscan2	●	●	FCU Control
3	-	Integral	Pakscan2	●	●	FCU Control
4	-	IQ	Pakscan2	●	●	FCU Control
5	-	Integral	Pakscan2	●	●	FCU Control
6	-	GPFCU - GP	Pakscan2	●	●	FCU Control
7	DAN TEST	GPFCU - GP	Pakscan2	●	●	FCU Control
8	-	GPFCU - GP	Pakscan2	●	●	FCU Control
9	-	GPFCU - GP	Pakscan2	●	●	FCU Control
10	-	GPFCU - GP	Pakscan2	●	●	FCU Control
11	-	GPFCU - GP	Pakscan2	●	●	FCU Control
12	-	GPFCU - GP	Pakscan2	●	●	FCU Control
13	-	Integral	Pakscan2	●	●	FCU Control
14	-	Flowpak	Pakscan2	●	●	FCU Control
15	-	GPFCU - GP	Pakscan2	●	●	FCU Control
16	-	Integral	Pakscan2	●	●	FCU Control
17	-	Integral	Pakscan2	●	●	FCU Control
18	-	Integral	Pakscan2	●	●	FCU Control
19	-	Integral	Pakscan2	●	●	FCU Control
20	-	Integral	Pakscan2	●	●	FCU Control
21	-	Integral	Pakscan2	●	●	FCU Control
22	-	GPFCU - GP	Pakscan2	●	●	FCU Control
23	-	GPFCU - GP	Pakscan2	●	●	FCU Control
24	-	GPFCU - GP	Pakscan2	●	●	FCU Control
25	ROMPAK	Integral	Pakscan2	●	●	FCU Control

version: 1.02.02 based on Pakscan III technology

Fig 34: FCU Menu

This screen is accessible to Read, Write and Administration user levels.

The FCU Menu lists all the field units in address order (which may not be the same as the order in which they connected together on the loop).

For each address, the Tag name and Type of field unit is listed. Field unit types are described in section 6.5.7. The Network column shows which option card network each actuator is connected to; this will be Pakscan 2 for the two-wire loop option card.

The next two columns show critical alarm conditions that will prevent remote control of the actuator. An Alarm present will generally prevent operation, whilst Comms Fail indicates that the actuator is no longer in communication with the network.

The final column has Navigation controls to the individual FCU screens.

Controls - Available to all user levels

FCU Control : Allows the individual FCU control panel to be shown. The different types of devices each have different screens and only the relevant data and controls for each type are included on the screen, together with a picture identifying the type.

When not in communication the screen may still be visited, but the actuator picture will have a large red cross over it to show that a problem exists.

Click here to show the selected FCU.

6.5.10 FCU Control - IQ Actuator

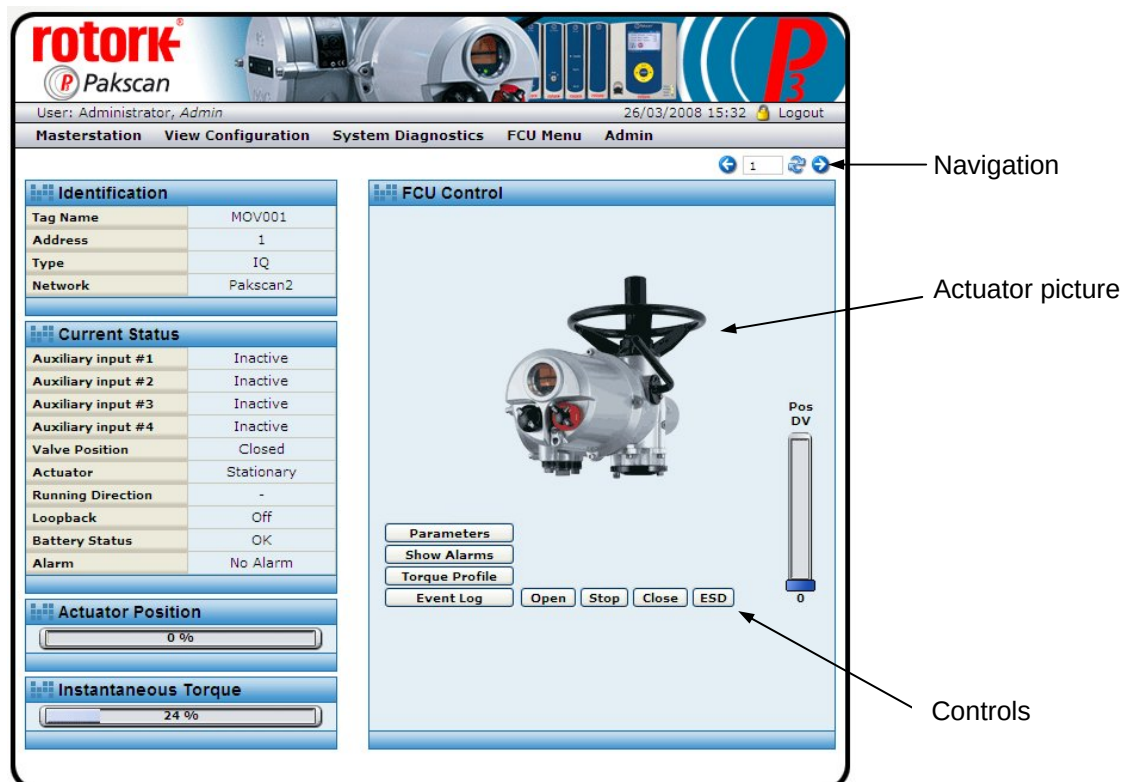
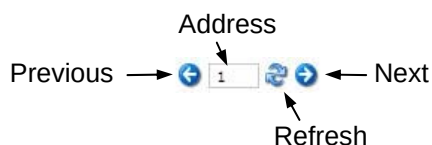


Fig 35: IQ actuator FCU Control

This screen is accessible to Read, Write and Administration user levels.

The FCU Control screen shows a control and status page for the selected field unit and actuator. The screen has information relating to the device, its current condition and system parameters. It also includes the ability to change the actuator's position by means of the control buttons. When not in communication the screen may still be visited, but the picture has a large red cross over it to show that a problem exists.

Navigation



Navigation between the field units is either by returning to the previous screen, or by using the navigation buttons on this screen. Entering an address directly in the 'Address' box and clicking Refresh moves directly to the selected field unit.

Identification

Tag name : Identification tag given for this device.
 Address : Network address.
 Type : Shows the identified actuator type as IQ.

Network : The network to which this device is connected (Pakscan 2 for 2-wire loop).

Current Status

The real-time status of the actuator is listed in this pane on the screen:

Auxiliary Input : Active or Inactive, shows the status of the input.
1 to 4

Valve Position : Current position, closed, open or stopped mid position.

Actuator : Moving or stationary.

Running direction : Opening or closing (or stationary).

Loopback : Off or On.

Battery Status : OK or Low.

Alarm Status : No Alarm or Alarm.

Actuator Position

A bar graph shows the current actuator analogue position between 0 (closed) and 100% (open).

Instantaneous Torque

A bar graph shows the current torque value between 0 and 120%.

FCU Control

Parameters - Viewable by all user levels

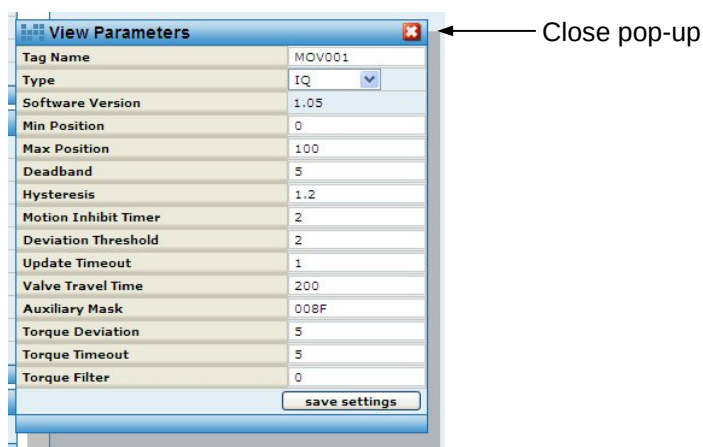


Fig 36: IQ Parameters

Pop-up screen shows the settings for all the parameters relating to the IQ actuator field unit. For users with Administration level rights, the values can be edited and, for later version field units, the type of actuator can be modified. The parameters are used to determine the way in which the actuator responds to commands and reports data. Information on how to set these fields is contained in the actuator field unit manuals.

This screen is used for changing the Tag Name.

Controls

Save Settings : Edited fields may be saved to the FCU; accessible by **Administrator** level users only.

Show Alarms - Viewable by all user levels

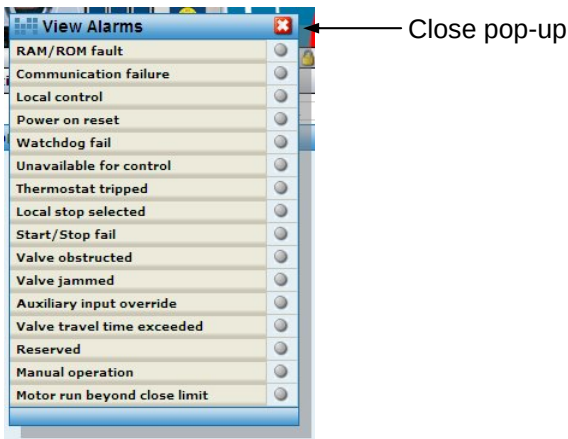


Fig 37: IQ Alarms

Pop-up screen shows the alarms on the actuator as red lights; grey is no alarm. Additional information on the meaning of these alarms is contained in the individual field unit manuals.

Torque Profile - Viewable by all user levels

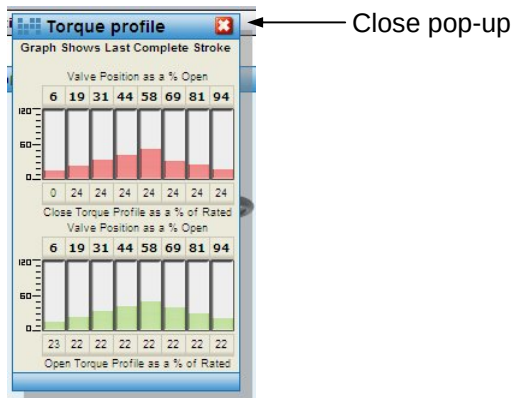


Fig 38: IQ Torque Profile

Pop-up screen shows the last complete stroke torque profile generated by the actuator.

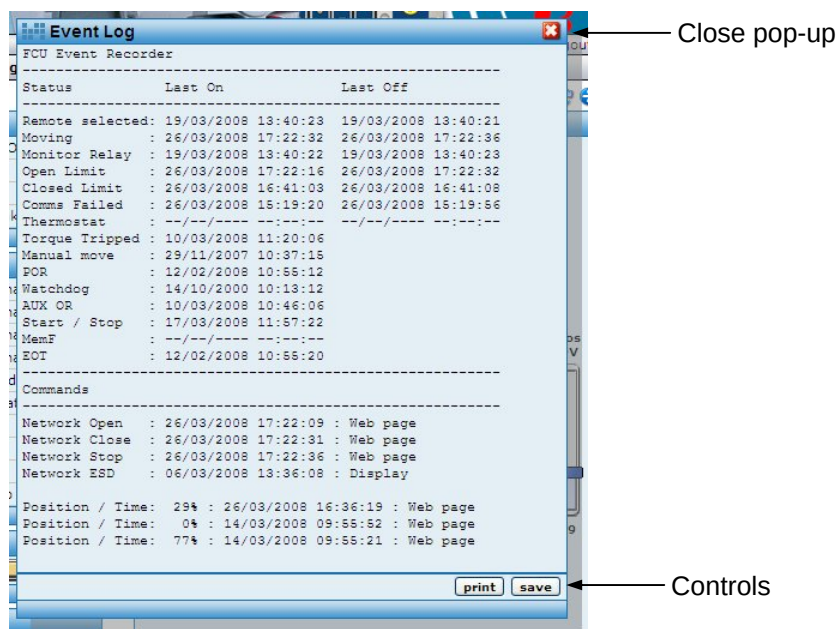
Event Log - Available to all user levels

Fig 39: IQ FCU Event Log

Pop-up screen showing a log of the last occasion on which the various control and alarm events occurred. For commands, the source of the command is also given.

Remote selected	- local / remote selector in remote position
Moving	- actuator centre column moving
Monitor Relay	- monitor relay alarm
Open Limit	- open position limit switch
Closed Limit	- closed position limit switch
Comms Failed	- loss of network communication
Thermostat	- motor thermostat tripped
Torque Tripped	- torque limit level exceeded
Manual move	- actuator moved by the handwheel
POR	- power on reset
Watchdog	- field unit watchdog alarm
AUX OR	- auxiliary input present
Start / Stop	- failure to respond to a remote control input
MemF	- FCU memory chip RAM or ROM fault
EOT	- motor running at end of travel

Network Open	- open instruction over the control network
Network Close	- close instruction over the control network
Network Stop	- stop instruction over the control network
Network ESD	- ESD instruction over the control network
Position / Time	- last position control event
Position / Time	- last but one position control event
Position / Time	- last but two position control event

Controls

Print : Prints the logger data to a printer attached to the PC.

Save : Saves the logger data to a file on the PC.

Actuator Controls - Available to Write and Administration user levels only

Open : command to open the valve fully.

Stop : command to stop the actuator in its present position.

Close : command to close the valve fully.

ESD : command to put the valve in its Emergency Shut Down position. (This can be 'stayput' or move to either the open or closed position).

Pos DV : a slider control that is used to generate a setpoint position for the valve in the range 0 - 100%.

All the controls have a confirmation pop-up, so that the action has to be confirmed before it takes place.

6.5.11 FCU Control - Integral Actuator

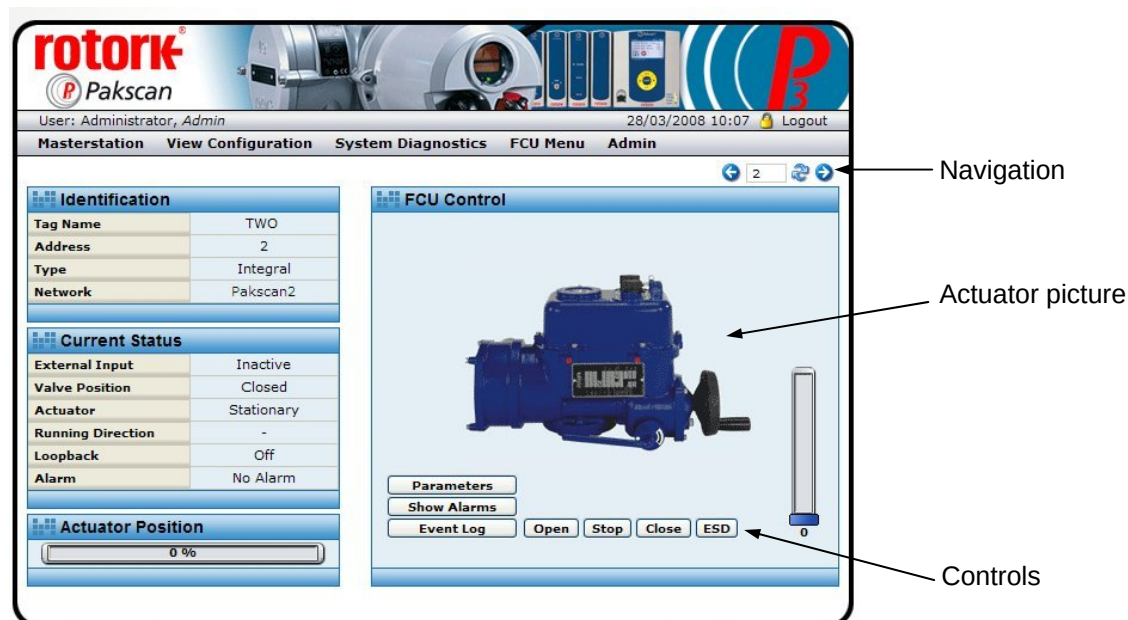


Fig 40: Q actuator FCU Control

This screen is accessible to Read, Write and Administration user levels.

The Integral actuator FCU Control screen shows a control and status page for a Q type actuator. The screen has information relating to the device, its current condition and system parameters. Control of the actuator is permitted via the control buttons for users with write level access or higher. When not in communication, the screen may still be visited, but the picture has a large red cross over it to show that a problem exists.

Navigation

Navigation between the field units is either by returning to the previous screen, or by using the navigation buttons on this screen. Entering an address directly in the 'Address' box and clicking Refresh moves directly to the selected field unit.

Identification

Tag name : Identification tag given for this device.
 Address : Network address.
 Type : Shows the identified actuator type as Q.
 Network : The network to which this device is connected (Pakscan 2 for two-wire loop).

Current Status

The real time status of the actuator is listed in this pane on the screen:

External Input : Active or Inactive, shows the status of the input.
 Valve Position : Current position, closed, open or stopped mid-position.
 Actuator : Moving or stationary.

Running Direction : Opening or closing.
 Loopback : Off or On.
 Alarm Status : No Alarm or Alarm.

Actuator Position

For actuators fitted with position feedback facilities, a bar graph shows the current actuator analogue position between 0 (closed) and 100% (open).

FCU Control

Parameters - Viewable by all user levels

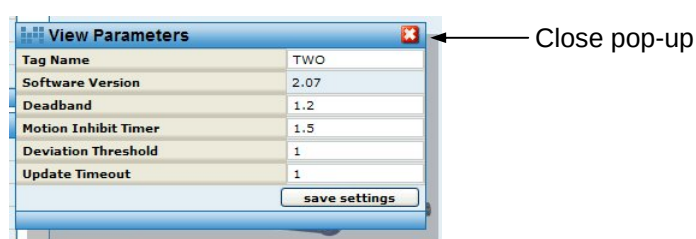


Fig 41: Q Parameters

Pop-up screen shows the settings for all the parameters relating to the integral field unit. For users with Administration level rights the values can be edited.

Save Settings : Edited fields may be saved to the FCU, accessible by **Administrator** level users only

Show Alarms - Viewable by all user levels

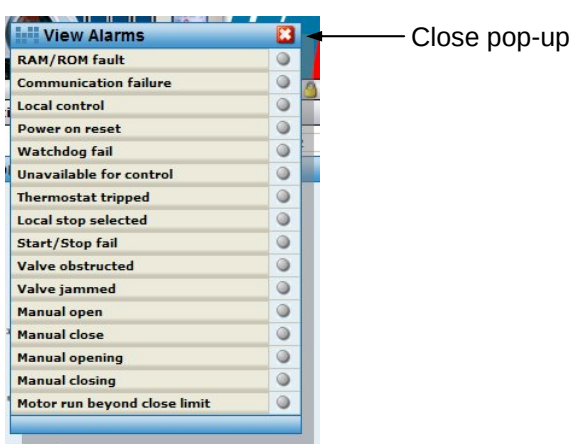


Fig 42: Q Alarms

Pop-up screen shows the alarms on the actuator as red lights, grey is no alarm.

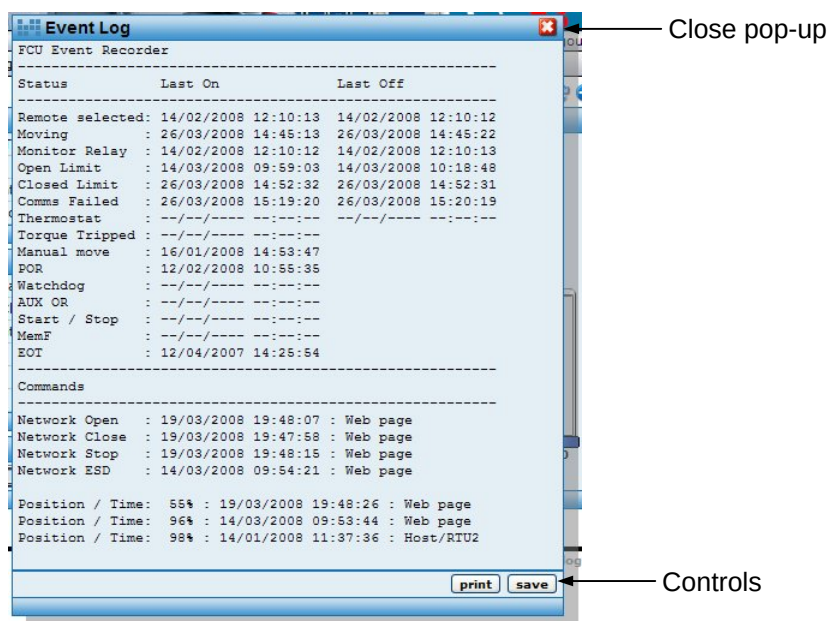
Event Log - Available to all user levels

Fig 43: Q FCU Event Log

Pop-up screen showing a log of the last occasion on which the various control and alarm events occurred. For commands, the source of the command is also given.

Remote selected - local remote selector in remote position
Moving - actuator centre column moving
Monitor Relay - monitor relay alarm
Open Limit - open position limit switch
Closed Limit - closed position limit switch
Comms Failed - loss of network communication
Thermostat - motor thermostat tripped
Torque Tripped - torque limit level exceeded
Manual move - actuator moved by the handwheel
POR - power on reset
Watchdog - field unit watchdog alarm
AUX OR - auxiliary input present
Start / Stop - failure to respond to a remote control input
MemF - FCU memory chip fault
EOT - motor running at end of travel

Network Open - open instruction over the control network
Network Close - close instruction over the control network
Network Stop - stop instruction over the control network
Network ESD - ESD instruction over the control network
Position / Time - last position control event
Position / Time - last but one position control event
Position / Time - last but two position control event

Controls

Print : Prints the logger data to a printer attached to the PC.

Save : Saves the logger data to a file on the PC.

Actuator Controls - Available to Write and Administration user levels only

Open : command to open the valve fully.

Stop : command to stop the actuator in its present position.

Close : command to close the valve fully.

ESD : command to put the valve in its Emergency Shut Down position. (This can be 'stayput' or move to either the open or closed position).

Pos DV : a slider control that is used to generate a setpoint position for the valve in the range 0 - 100%.

All the controls have a confirmation pop-up, so that the action has to be confirmed before it takes place.

6.5.12 FCU Control - Flowpak Actuator

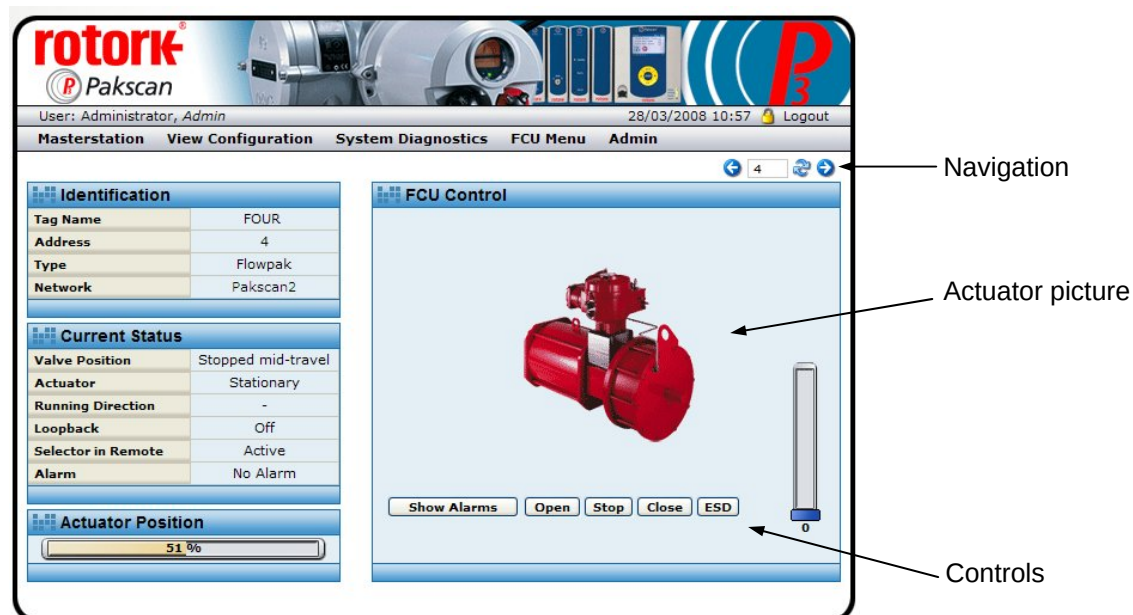


Fig 44: Flowpak actuator FCU Control

This screen is accessible to Read, Write and Administration user levels.

The Flowpak actuator FCU Control screen shows a control and status page for a Flowpak type actuator. The screen has information relating to the device, its current condition and system parameters. Control of the actuator is permitted via the control buttons for users with write level access or higher. When not in communication, the screen may still be visited, but the picture has a large red cross over it to show that a problem exists.

Navigation

Navigation between the field units is either by returning to the previous screen, or by using the navigation buttons on this screen. Entering an address directly in the 'Address' box and clicking Refresh moves directly to the selected field unit.

Identification

Tag name : Identification tag given for this device.
 Address : Network address.
 Type : Shows the identified actuator type as Flowpak.
 Network : The network to which this device is connected (Pakscan 2 for 2-wire loop).

Current Status

The real time status of the actuator is listed in this pane on the screen.

Valve Position : Current position, closed, open or stopped mid-position
 Actuator : Moving or stationary.

Running Direction : Opening or closing.
 Loopback : Off or On.
 Selector in Remote : Active when available for remote control.
 Alarm Status : No Alarm or Alarm.

Actuator Position

For actuators fitted with position feedback facilities, a bar graph shows the current actuator analogue position between 0 (closed) and 100% (open).

Controls

Show Alarms - Viewable by all user levels

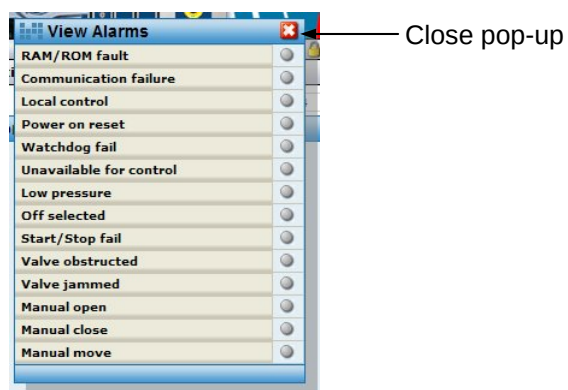


Fig 45: Flowpak Alarms

Pop-up screen shows the alarms on the actuator as red lights; grey is no alarm.

Actuator Controls - Available to Write and Administration user levels only

Open : command to open the valve fully.
 Stop : command to stop the actuator in its present position.
 Close : command to close the valve fully.
 ESD : command to put the valve in its Emergency Shut Down position. (This can be 'stayput' or move to either the open or closed position).
 Pos DV : a slider control that is used to generate a setpoint position for the valve in the range 0 - 100%.

All the controls have a confirmation pop-up, so that the action has to be confirmed before it takes place.

6.5.13 FCU Control - General Purpose Field Unit

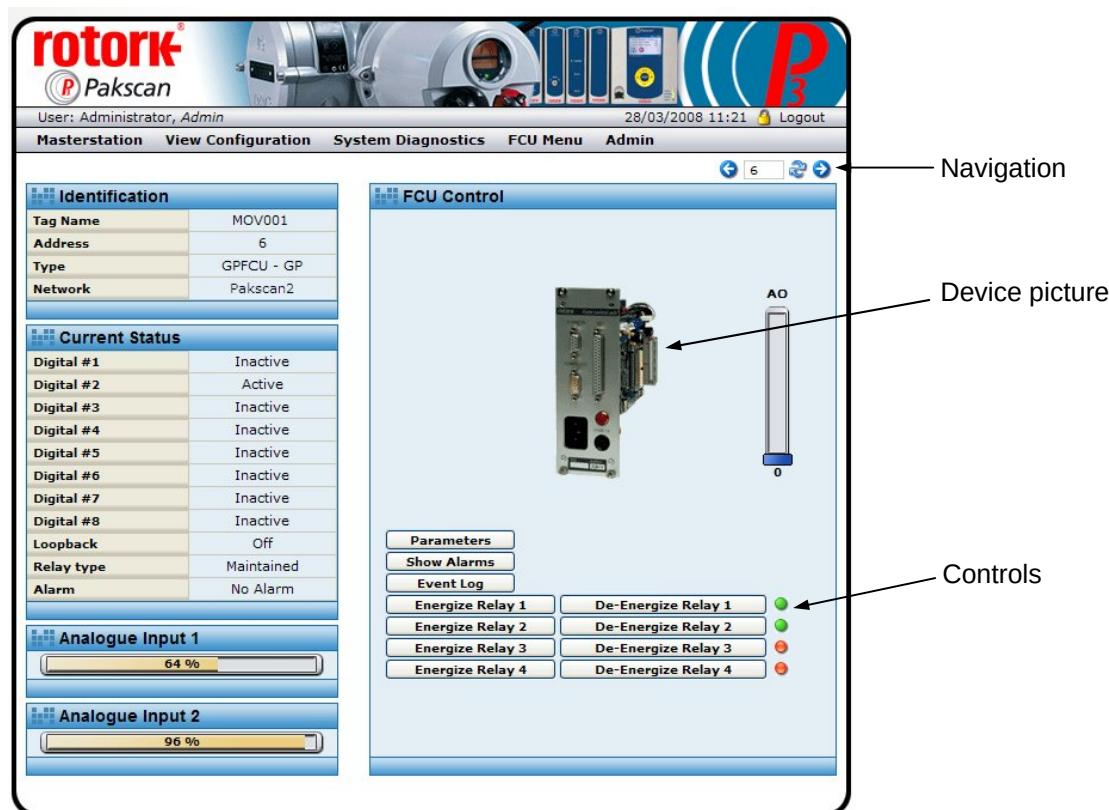


Fig 46: GPFCU Control

This screen is accessible to Read, Write and Administration user levels.

The GP FCU Control screen shows a control and status page for a general purpose field unit. The screen has information relating to the device, its current condition and system parameters. Control of the outputs is permitted via the control buttons for users with write level access or higher. When not in communication, the screen may still be visited, but the picture has a large red cross over it to show that a problem exists.

Navigation

Navigation between the field units is either by returning to the previous screen, or by using the navigation buttons on this screen. Entering an address directly in the 'Address' box and clicking Refresh moves directly to the selected field unit.

Identification

Tag name : Identification tag given for this device.
 Address : Network address.
 Type : Shows the identified device type as GPFCU-GP.
 Network : The network to which this device is connected (Pakscan 2 for two-wire loop).

Current Status

The real time status of the actuator is listed in this pane on the screen.

Digital # 1 to # 8 : Digital input signal status, active or Inactive.

Loopback : Off or On.

Relay Type : Fleeting or Maintained outputs from the relays.

Alarm Status : No Alarm or Alarm.

Analogue Input 1 and 2

For the two analogue input channels a bar graph shows the current actuator analogue position between 0 (closed) and 100% (open).

Controls

Parameters - Viewable by all user levels

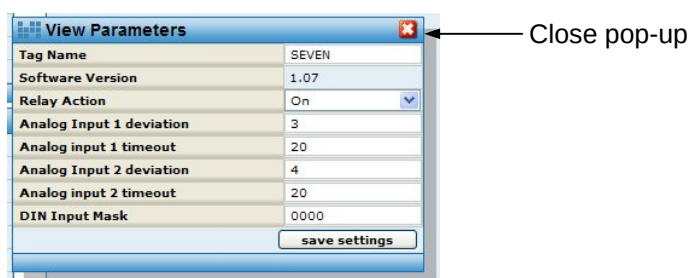


Fig 47: GP FCU Parameters

Pop-up screen shows the settings for all the parameters relating to the general purpose field unit. For users with Administration level rights, the values can be edited.

Controls

Save Settings : Edited fields may be saved, accessible by **Administrator** level users only.

Show Alarms - Viewable by all user levels

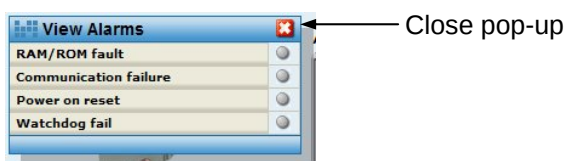


Fig 48: GP FCU Alarms

Pop-up screen shows the alarms on the actuator as red lights; grey is no alarm.

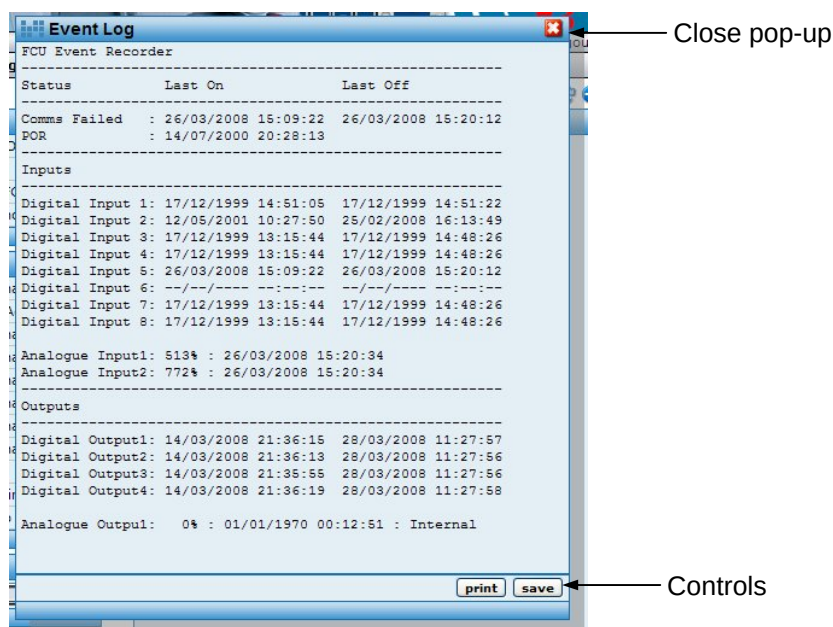
Event Log - Available to all user levels

Fig 49: GP FCU Event Log

Pop-up screen showing a log of the last occasion on which the various alarms, input and output events occurred. For commands, the source of the command is also given.

Comms Failed	- loss of communication with the field unit
POR	- power on reset
Digital Input 1-8	- when turned on and off
Analogue I/P 1-2	- when last updated
Digital Output 1-4	- when energised and de-energised
Analogue Output	- when last altered and by which source

Controls

Print	: Prints the logger data to a printer attached to the PC.
Save	: Saves the logger data to a file on the PC.

FCU Controls - Available to Write and Administration user levels only

Energise Relay 1-4	: commands to energise the relays (green light when energised).
De-energise Relay 1-4	: command to de-energise the relays (red light when de-energised).
Pos DV	: a slider control that is used to generate a setpoint position for the valve in the range 0 - 100%.

All the controls have a confirmation pop-up, so that the action has to be confirmed before it takes place.

6.5.14 Admin

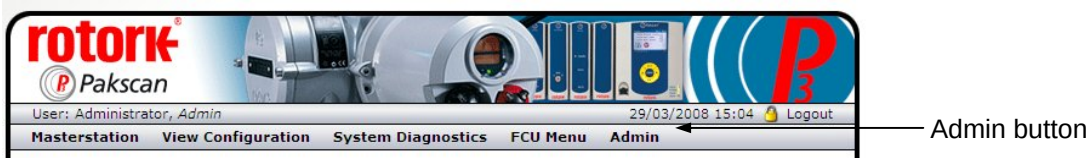


Fig 50: Administration Level

This screen is only accessible to Administration user levels.

When logged in at Administrator level, the top of the screen menu list includes the Admin button. Clicking on this button gives entry to the Administrator level screens.

6.5.15 Users

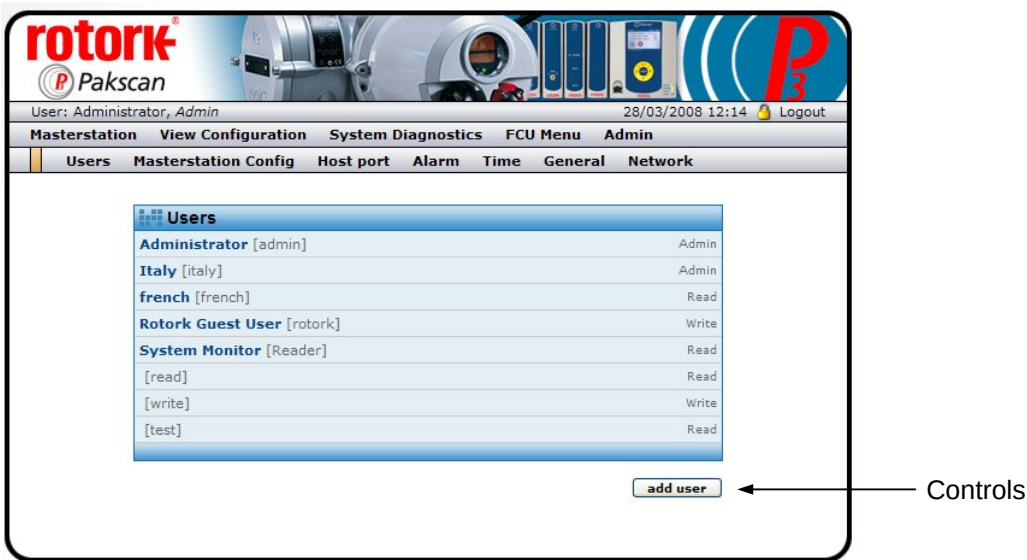


Fig 51: Users

This screen is only accessible to Administration user level.

The 'Users' screen shows all the users currently entered into the system. The actual user at any time is shown on the top left of the menu bar and is an 'Administrator' whose name is 'admin' in the example shown above.

Each user has a Name, a User ID, a User Level and a Password. When logging in to the system, to gain entry, the User ID and Password are required. The screen shows the Name, User ID and User Level, the password is not shown and cannot be revealed on any of the screens.

Every system includes a default User ID of Admin and Password of Admin on delivery, in order that the system can be set up and commissioned. This password and user ID should be removed and replaced by a unique Administrator as soon as possible to protect the system against unauthorised access.

Name	Name of the current user, displayed on the top bar.
User ID	Secret identification used to gain entry to the system, shown in user list.
Password	Secret code of letters (and numbers) used to gain entry to the system. Not shown on the system.
User Level	Indication of access level permitted for this user, shown on the top bar.

Controls - Available to Administrators only

- Add user : Click this button to bring up the screen to add a user.
- Username : Click on a user name (e.g. Administrator) to bring up the Modify User screen for editing user details.

The screenshot shows the 'Add User' screen within the Rotork Pakscan Masterstation interface. The top bar displays the user as 'Administrator, Admin' and the date/time as '28/03/2008 12:15'. The navigation menu includes 'Masterstation', 'View Configuration', 'System Diagnostics', 'FCU Menu', and 'Admin'. The 'Users' tab is selected, showing a list of users. The 'Add User' form contains the following fields: 'User ID', 'Name', 'E-mail', 'Mobile', 'Alarm User' (with 'Yes' and 'No' radio buttons), 'Language' (a drop-down menu), 'User Level' (a drop-down menu with 'Read' selected), 'Password', and 'Repeat Password'. At the bottom of the form are three buttons: 'back', 'save settings', and 'remove'. An arrow points from the 'Controls' label to the 'remove' button.

Fig 52: Add User

The Add User screen contains the fields to be completed for each permitted user, either by completing the data box, selecting from a drop-down or selecting a radio button.

- User ID : Enter a unique name to use when logging in to the system.
- Name : Enter a name to be used in all emails and on the system logs.
Several users can have the same name, but this is not recommended.
- E-mail : If E-mail messages concerning the system alarms are to be sent to this user, enter a valid E-mail address.
- Mobile : If text messages are to be sent to a mobile phone associated with this user; enter the complete phone number here.

- Alarm User : Select 'Yes' or 'No' for the choice of sending E-mails and Text messages to this user.
- Language : Select the language to be used on the screens. Choices are English, Spanish, French, German and Italian.
- User Level : Select between Read, Write and Admin levels.
- Password : Enter a unique password of letters and/or numbers kept secret by this user.
- Repeat Password : Enter the same password as above.
- Back : Exit the screen without saving anything and return to the previous screen.
- Save Settings : Save the details of this user (either new or edited values).

The screenshot shows the 'Modify User' screen in a web browser. The header includes the 'rotork Pakscan' logo and navigation tabs: Masterstation, View Configuration, System Diagnostics, FCU Menu, and Admin. Below the tabs is a sub-menu: Users, Masterstation Config, Host port, Alarm, Time, General, and Network. The main form is titled 'Modify User' and contains the following fields:

- User ID: admin (greyed out)
- Name: Administrator
- E-mail: (empty)
- Mobile: (empty)
- Alarm User: ☐ Yes ☒ No
- Language: English (dropdown)
- User Level: Admin (dropdown)
- Password: (empty)
- Repeat Password: (empty)

At the bottom of the form are three buttons: 'back', 'save settings', and 'remove'. An arrow points to these buttons with the label 'Controls'.

Fig 53: Modify User

The Modify User screen allows user details to be altered or a user to be removed. A User cannot delete himself from the system. So, here in the example, the User ID of 'admin' is greyed out, since this is the actual user.

- Remove : Delete this entry on the system. A User cannot delete themselves, only those with less access rights. If the User selects his own entry to modify the button is greyed out.

6.5.16 Masterstation Configuration

Masterstation Configuration

User: Administrator, Admin 13/02/2009 13:05 Logout

Masterstation View Configuration System Diagnostics FCU Menu Admin

Users Masterstation Config Host port Alarm Time General Network

Masterstation Configuration

Site name: Bath Demonstration Room

Tag name: Master 1

Modbus address: 200

Hot Standby module: Enabled

ESD Settings

Ethernet ESD	Disabled	Webpage ESD	Disabled
Hardwired ESD	Disabled	Serial ESD	Disabled
		Keypad ESD	Disabled

Command Settings

Ethernet	Enabled	Webpage	Enabled
Serial Port 1	Enabled	Serial Port 2	Enabled
		Keypad	Enabled

Copy Options

Settings	Enabled	Tag	Enabled
Address	Enabled	IP	Disabled

Display Language: English

Security Settings: PIN and level Settings: 0 None

Number of channels: 60

Software version: 1.02.02

Option 1: Not Fitted

Save settings

Option 2: Pakscan 2 Loop

Software version Option 2: 1.7.D

P2 Modbus Address: 1

Highest FCU address: 25

Loop speed: 1200

New loop speed: N/A

Loop speed doubling: OFF

Retain data on loss of communications: OFF

DV convert: ON

Host Port 1 Database Selection: Generic Modbus

Host Port 2 Database Selection: Yokogawa Modbus

Ethernet Database Selection: Generic Modbus

Port alarms: Separate

Save settings

version: 1.02.02 based on Pakscan III technology

Fig 54: Master Station Configuration

This screen is only accessible to Administration user level.

The master station configuration page is used to set the parameters required for successful operation of the system and the parameters for the option cards fitted. In addition, it may be used to enter the site name and tag name of the system and various security settings. The values set in these parameters can be viewed under the 'View Configuration' button, but they may only be altered by users logged in at Administrator level. To get to this page, see figure 22.

The Masterstation settings relate to the overall performance of the system and common features and actions, irrespective of the option card fitted. Where these settings are relevant, they apply to all the option cards in the master station.

The Option card settings relate to the particular option card fitted in the Option 1 and Option 2 slots. The Pakscan 2 Loop option card controls the actuators and field units over a two wire cable wired in a ring or loop visiting each actuator in turn. The data signal is a modulated 20 mA current and the system includes automatic cable failure protection.

Masterstation Configuration

Site Name	: A text field in which a description of the site can be entered for identification purposes.
Tag Name	: A text field in which a tag identifier for this particular master station on the site can be entered.
Modbus Address	: A numeric field for the address number. This is the P3 Modbus address and should be left at 200 unless a Pakscan 3 option module is fitted.
Hot Standby Module	: Either 'Enabled' or 'Disabled' When there is a partner module acting as a standby unit this option should be set to 'Enabled' to allow exchange of data between the two modules.
ESD Settings	: These five drop-down boxes can each be set to 'Enable' or 'Disable' the related Emergency Shut Down signal, depending on the particular site requirements. In general the settings should be 'Disabled' unless the particular Emergency Shut Down function is required. The action for each individual actuator has to be set locally on the actuator to either close, open or stay put (no movement on receipt of the ESD signal), as required for each valve.
Command Settings	: These five drop-down boxes can each be set to 'Enable' or 'Disable' the host system commands to the actuators and field units from the indicated source of the signal. For example, commands over the Ethernet connection can be disabled, whilst those from Serial Port 1 can be enabled. Ethernet commands are those sent via the Ethernet ports from the host system using Modbus TCP. The Webpage is the means currently being used to set up the system and commands on the individual field unit pages can be disabled by this setting. Serial Port 1 and Serial Port 2 are the RS-232/RS-485 Modbus RTU ports, which are commonly used for control and monitoring. The Keypad is the control source on the front panel of the CPU module.
Copy Options	: These four drop-down boxes can each be set to 'Enable' or 'Disable' the copying of information between the A side and B side CPU and Option modules in a hot standby system. They do not appear in a single module system.

	Settings	- Enable to copy <i>all</i> the settings, except those listed below, between the units.
	Address	- Enable to copy the Modbus addresses of the CPU (P3 option) and Pakscan Loop option module between the units.
	Tag	- Enable to copy the Site name and system Tag name between the units.
	IP	- Enable to copy the IP address and Ethernet settings between the units
Display Language	:	This drop-down box contains the options enabling the system language to be chosen. The options are English, Spanish (Espanol), French (Francais), German (Deutsch) and Italian (Italiano).
Security Settings	:	A text box is provided in which the system PIN can be entered, and a drop-down box provides the options for access permission when using the CPU keypad and screen. Note that the 'Command Settings' above can be used to prevent keypad commands under all circumstances, but when the keypad is enabled the security settings below will apply.
	PIN	- The Password number is a variable between 0 and 9999. When a number is entered, it indicates that the PIN must be used for settings or commands to be allowed from the CPU keypad in accordance with the associated drop-down box setting.
	Security	- The drop-down box contains the options for selecting the protection afforded against inappropriate actions when using the CPU keypad.
	None	: All settings and control commands accessible via the keypad without protection by a PIN.
	Setup	: Control commands accessible via the keypad without a PIN, but all setting changes via the keypad require the PIN to be entered first.
	Setup and Control	: Any control command action or setting changes via the keypad require the PIN to be entered.
	Locked	: No keypad access permitted for any control commands or setting changes whilst there is host activity on any of the serial or Ethernet data links. [If all serial and Ethernet communication links are inactive for 5 seconds then keypad commands can be entered provided the PIN is entered (as with the Setup and Control level)].
Number of Channels	:	This value is derived from the actual hardware of the CPU and indicates the maximum number of actuators or field units that can be connected to this system.
Software Version	:	The version of software fitted to the CPU module. In hot standby systems the modules in both the A and B side should have the same version of software.

Controls

Print Page	:	Prints the settings to a printer attached to the PC.
Save Settings	:	Saves the settings to the master station CPU module. Until they are saved any alterations to the settings will not take effect.

Pakscan 2 Loop Option

- Software Version :** The version of software fitted to the Pakscan 2 Loop option module. In hot standby systems the modules on both the A and B side should have the same version of software.
- P2 Modbus :** The Modbus address entered here is the Modbus slave address used for access to the actuators and field units connected to the two-wire loop on this option card slot. In addition, the address will provide data from the main system CPU module. Note that in some cases when using Pakscan Generic Modbus protocol settings, the master station will respond to more than one address; and the setting here is the Base address. There is more information on the base address and offset addresses in the Pakscan Modbus Protocol document (S171E).
The default value is 247 and it is recommended that this is changed to avoid conflict with any new system added.
- Highest FCU :** This text box contains the setting for the highest address used for an actuator (or field unit) on the two wire loop. The Pakscan 2 Loop card polls all field units up to this highest address. The loop scan time is minimised by restricting the polling to only those field units that should be present and scanning up to the highest address. All the addresses in the selected range should be used and gaps in the address range should be avoided. Gaps or unused addresses cause the system to run more slowly as the unused addresses are still checked. In addition, unused addresses will generate a communication failure alarm.
- Loop Speed :** This shows the current loop scanning speed (loop baud rate) and the drop-down box allows a desired loop speed to be selected. The choices are 2400, 1200, 600, 300 and 110 baud. When a new speed is entered it will take effect as soon as the values are saved. The setting applies to the Pakscan 2 Loop option card only and the actuators must be changed individually.
- New Loop Speed :** The drop down box allows a new data rate speed to be selected for the field units in the actuators. The new speed will be adopted next time the loop is reconfigured. A change here should be mirrored by a change in the loop speed setting above. It is possible to select rates in the range one step up or two steps down from the current speed.
If the loop communication is not stable, it is often necessary to reduce the speed to improve reliability. If the field units are all in communication with the master station, this facility to globally change the speed of all the field units can be used to assist in improving the reliability.
- Loop Speed Doubling :** On a stable loop it is possible to halve the loop scan time by doubling the data speed using this setting. Care is needed to ensure that the loop continues to be stable, since the use of this feature slightly reduces the system's capability to reject interference from pumps and motors.
- Retain Data on Loss of Communication :** Normally the database information about an actuator is cleared to zeros if communication with the actuator is lost. This ensures that the false valve position information is not transmitted to the host system during the loss of communication. A single 'Comms Fail' data bit is set. This system setting allows the data to be kept at the last value received from the actuator. Note that the data is retained indefinitely and does not necessarily reflect the true actuator status.

- DV Convert : This option can be used to ensure that 100% and 0% Desired Value outputs to the IQ, IQT, Skil and EH actuators are transformed into actions to make the actuator run to the fully open (100%) and fully closed (0%) positions. The message is converted from a DV command to an Open or Close command. This is useful for positioning actuators, where it is possible that the valve will not fully shut or open when moved by only a small amount. When used for tight shut-off valves, with analogue position control only, the setting should be ON, the default is OFF.
- Host Port 1 Database Selection : The drop-down box allows the database organisation used on this port to be selected. The choices are Generic Modbus, Honeywell PLCG Modbus, Yokogawa Modbus and Honeywell SI Modbus.
- Host Port 2 Database Selection : The drop-down box allows the database organisation used on this port to be selected. The choices are the same as for Host Port 1.
- Ethernet Database Selection : The drop-down box allows the database organisation used on this port to be selected. The choices are the same as for Host Port 1.
- Port Alarms : This drop-down box allows port alarm handling to be configured. Alarms can either operate completely independently ('separate') for each port, or can be linked such that the same alarm information is always reported regardless of which port is used.
Alarms must be read and accepted before they can clear and return to normal. If configured as separate, alarm reading and acceptance must be done separately for each of the three ports. This ensures that the different hosts see all the alarms. When the alarms are linked, accepting an alarm on one port accepts the alarm on all the other ports as well.
The status screen displays for alarm indication cannot be linked to the serial communications alarm handling.
Linking the port alarm operations is useful in dual redundant serial link configurations between the master station and the host computer.

Controls

- Save Settings : Saves the settings to the Pakscan 2 Loop option module. Until they are saved, any alterations to the settings will not take effect.

To print out the settings use the Print Page button below the Master station Configuration section of the screen.

6.5.17 Host Port Configuration

The screenshot displays the 'Host Port Configuration' page in the Rotork Pakscan web interface. The page has a header with the Rotork logo and navigation tabs: Masterstation, View Configuration, System Diagnostics, FCU Menu, and Admin. Below the tabs is a sub-menu: Users, Masterstation Config, Host port, Alarm, Time, General, and Network. The main content area is divided into three sections: Host Port 1, Host Port 2, and Ethernet Port. Each section contains configuration options for Baud Rate, Parity, Standby Mode, Cross Connected, and Physical Interface. Host Port 1 is configured with Baud Rate 9600, Parity Even, Standby Mode Passive, Cross Connected Yes, and Physical Interface RS485. Host Port 2 is configured with Baud Rate 38400, Parity Odd, Standby Mode Passive, Cross Connected No, and Physical Interface RS232. The Ethernet Port section shows Standby Mode Passive and IP Authentication fields for IP Number 1 and 2, both set to 0.0.0.0. At the bottom of the configuration area are two buttons: 'save settings' and 'Modbus Message'. Annotations with arrows point to the 'Standby Mode' drop-down boxes in the Host Port 1 and Host Port 2 sections, and to the 'save settings' and 'Modbus Message' buttons.

Fig 55: Host Port Configuration

This screen is only accessible to Administration user level.

The host port configuration page allows the settings for the serial and Ethernet ports to be made. The two serial ports (ports 1 and 2) are independent from one another whilst the Ethernet ports (ports 3 and 4) are linked together.

Host Port 1

- Baud Rate** : This drop-down box allows the communication speed (baud rate) for the serial port to be selected. The choices are 115200; 57600; 38400; 19200; 9600; 4800 or 2400.
- Parity** : This box sets the message parity used by this port. The choices are None; Always 0; Odd or Even parity.
- Standby Mode** : The performance of the port when the CPU module is in standby mode is set by this drop-down box. The Serial Port should appear as Passive if the Cross Connect DIP switch on the system back plane is set to 'cross connect'.
If the port is set to RS-485 highway and is being used on a multi-drop highway, it *must* be set to passive. If it is not shown correctly it probably means the DIP switch is incorrectly set.

Fig 55: Host Port Configuration

When the port is set to 'Active' it will respond to incoming messages with a reply; when set to 'Passive' it will not reply. If the highway is multi-drop, then these replies will conflict with those from the CPU in Main mode. Note that a CPU in main mode is active and always replies to incoming messages.

Cross Connected: Either Yes or No, indicating the status of the cross connect DIP switch on the back plane. A system using RS-485 communication and a Hot Standby pair should be set to 'Cross Connect' and display 'Yes'.

Physical Interface: Either RS-232 or RS-485, showing the switch setting for the physical interface from the CPU module.

Host Port 2

Baud Rate : This drop-down box allows the communication speed (baud rate) for the serial port to be selected. The choices are 115200; 57600; 38400; 19200; 9600; 4800 or 2400.

Parity : This box sets the message parity used by this port. The choices are None; Always 0; Odd or Even parity.

Standby Mode : The performance of the port when the CPU module is in standby mode is set by this drop-down box. The Serial Port should appear as Passive if the Cross Connect DIP switch on the system back plane is set to 'cross connect'.

If the port is set to RS-485 highway and is being used on a multi-drop highway, it *must* be set to passive. If it is not shown correctly, it probably means the DIP switch is incorrectly set.

When the port is set to 'Active' it will respond to incoming messages with a reply; when set to 'Passive' it will not reply. If the highway is multi-drop, then these replies will conflict with those from the CPU in Main mode. Note that a CPU in main mode is active and always replies to incoming messages.

Cross Connected: Either Yes or No, indicating the status of the cross connect DIP switch on the back plane. A system using RS-485 communication and a Hot Standby pair should be set to 'Cross Connect' and display 'Yes'.

Physical Interface: Either RS-232 or RS-485, showing the switch setting for the physical interface from the CPU module.

Ethernet Port

Standby Mode : The performance of the port when the CPU module is in standby mode is set by this drop down box. The Ethernet Port should be set as Passive if the system includes a hot standby CPU to avoid conflicts in communications.

When the port is set to 'Active' it will respond to incoming messages with a reply, when set to 'Passive' it will not reply. Note that a CPU in main mode is active and always replies to incoming messages.

IP Authentication : The two IP addresses that can be set here are to do with system access permission. When controlling the system via Ethernet and Modbus TCP, it is possible to increase the system security and only permit access from specified IP locations. If both the values set here are 0.0.0.0 then any IP address can access the system.

When a specific IP address is entered in either IP Number 1 or IP Number 2, the system only allows access for messages originating from those addresses. Note that all access, including Read only access, is restricted by the entries.

Controls

Save Settings : Saves the settings for the ports. Until they are saved any alterations to the settings will not take effect.

Modbus Message: Brings up the Modbus test screen where specific messages can be sent to the system over the internet.

The screenshot displays the 'Modbus Message Generator' web interface. At the top, there's a header with the 'rotork Pakscan' logo and navigation tabs: Masterstation, View Configuration, System Diagnostics, FCU Menu, and Admin. Below the tabs, there's a sub-menu with Users, Masterstation Config, Host port, Alarm, Time, General, and Network. The main content area is divided into two sections: 'Modbus Message Query' and 'Modbus Message Response'. The 'Query' section has three input fields: 'Address (01 - F7)' with value '04', 'Function Code (01 - FF)' with value '01', and 'Data (up to 200 bytes)' with value '00200002'. A 'Send query' button is located below these fields. The 'Response' section shows the received data: 'Address (01 - F7)' is '04', 'Function Code (01 - FF)' is '01', and 'Data' is '0100'. An arrow labeled 'Controls' points to the 'Send query' button.

Fig 56: Modbus Message Generator

The Modbus Message screen allows a specific query to be sent to the system and the response to be viewed.

Modbus Message Query

Address : The CPU Master Station Modbus address for P3 or the Pakscan 2 Loop Option module Modbus address for Pakscan 2 (in the range 0 -247).

Function Code : Modbus function code to read or write register, discrete or coil.

Data : Modbus data relating to the query message.
There is no need to include the CRC in the data field as the system generates this automatically. There should be no spaces in the data field.

Controls

Send Query : Transmits the message to the master station.

Modbus Message Response

Address : The address of the responding system. It will match the query address.

Function Code : Modbus function code to read or write register, discrete or coil.

Data : Modbus data reply, without a CRC. There will be no spaces in the data field.

6.5.18 Alarms

rotork® Pakscan

User: Administrator, Admin 13/02/2009 13:07 Logout

Masterstation View Configuration System Diagnostics FCU Menu Admin

Users Masterstation Config Host port Alarm Time General Network

Alarm Email Settings

Email Alarm ☒ Enable ☐ Disable

SMTP Server (IP-number or domain name) 10.10.101.100

SMTP Authentication ☐ Enable ☒ Disable

Authentication method auto

Username

Password

Sender (Name of sender) P3 Demo

Reply Path (E-mail address) fred@maintenance

Test E-mail (E-mail address)

FCU Alarm

Address	Tag Name	
1	-	☒
2	-	☐
3	-	☐
4	-	☐
5	-	☐
6	-	☐
7	DAN TEST	☐
8	-	☐
9	-	☐
10	-	☐
11	-	☐
12	-	☐
13	-	☐
14	-	☐
15	-	☐
16	-	☐
17	-	☐
18	-	☐
19	-	☐
20	-	☐
21	-	☐
22	-	☐
23	-	☐
24	-	☐
25	ROMPAK	☐

Event List

Masterstation Alarm

- CPU module alarm ☐
- Presence of ESD ☐
- Any Alarm ☐
- Option 1 module fitted ☐
- Option 1 module alarm ☐
- Option 2 module fitted ☐
- Option 2 module alarm ☐
- Host port 1 activity ☐
- Host port 2 activity ☐
- Ethernet activity ☐
- Location A/B ☐
- Redundancy option ☐
- Primary/Standby ☐
- Other masterstation Alarm ☐

Option Alarm

- Loopback in progress ☒
- Loopback in use ☒
- Common field unit alarm ☒
- Common actuator alarm ☒
- ESD mode ☒
- RAM test fail ☒
- ROM test fail ☒
- Power on reset ☒
- watchdog fail ☒
- Auto-loopback occurred ☒

version: 1.02.02 based on Pakscan III technology

Fig 57: Alarm Reporting

This screen is only accessible to Administration user level.

This page is used to set up the e-mail alarm reporting from the system to the dedicated recipients as specified in the user setup screen. Each system user may be specified to receive alarm messages as e-mails or by text when their log-in credentials are specified. Refer to the section on Users to see how this is set up. The Alarm page has two sections. The first deals with the way e-mails are to be generated and the specifying of a suitable SMTP server, whilst the second specifies which events are to cause messages to be sent.

Alarm Email Settings

- Email Alarm : Set to Enable or Disable the whole process.
- SMTP Server : Specifies the server that the master station will use for forwarding emails. This is either a domain name or IP address for the server on which the email account has been set.
- SMTP Authentication : If the domain server supports SMTP authentication, then set this to Enable and complete the Authentication parameters. (More information on SMTP Authentication can be found in RFC 4954 available on the internet.)
- Authentication Method - auto, plain, login or cram-md5; usually set to login.
- Username - the email user name for the master station or an identifier.
- Password - the chosen verification password for authentication of the messages from the master station to the server.
- Sender : A name to identify the master station, it could be the tagname.
- Reply Path : The email address of the master station or an alternative reply address for return messages.
- Test E-mail : Enter a valid email address to send a test message to in order to ensure the system is working correctly; then click on 'Test'.

Controls

- Test : Sends a test email to the specified address
- Save Settings : Saves the Alarm Email Settings.

FCU Alarm

This table lists the devices on the field network by address and tag number. The right hand side box, when clicked, toggles between a tick and no tick. A tick indicates that if any alarm occurs on this field unit, it will be reported by the email or text facility.

Controls

- Clear All : Removes any ticks from all the boxes in the list.
- Set All : Adds a tick in all the boxes in the list.
- Save Settings : Saves the FCU Alarm list settings.

Event List

This table lists all the Master station and Option card alarms that can be used to initiate an alarm email or text. The list is split into two parts relating to the CPU module and the Option module(s).

Controls

- Save Settings : Saves the Event List settings
- Note: altering the time and/or date will cause a system re-boot.

6.5.19 Time

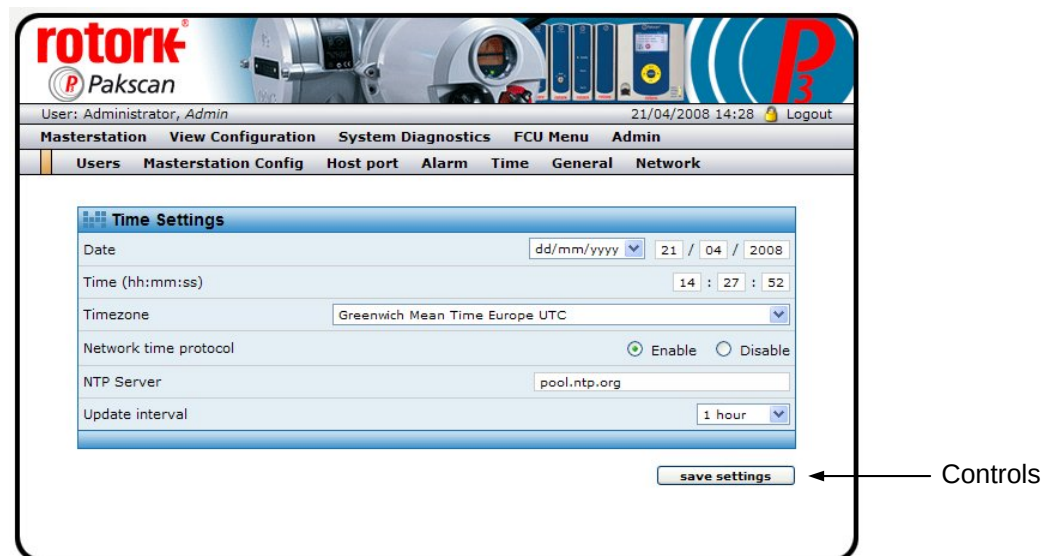


Fig 58: Time Settings

This screen is only accessible to Administration user level.

The master station keeps track of time and date in order to correctly mark events in the logs and to timestamp the emails sent. The date can be in European or American format and the clock can be synchronised with a network server when an Internet connection is provided.

Time Settings

- Date : The date can be displayed as Day/Month/Year or Month/Day/Year by choosing from the drop down menu.
- Time : Shows the current time. This can be altered by clicking in the box and entering the new time (hr, min, and sec) as required. If the system has an Internet connection this will update automatically. If there is no Internet connection then the time can be checked periodically and corrected here.
- Timezone : Select the desired time zone from the drop-down list. A new time zone entry requires that the master station reboots.
- Network Time Protocol : NTP is a protocol designed to synchronize the clocks of computers over a network. If this feature is being used it needs to be 'Enabled' by selecting the correct setting here.
- NTP Server : The time server selected is pool.ntp.org which selects from a pool of time server volunteers. Other NTP servers are available and can be used, in which case the entry here should be altered.
- Update Interval : This drop-down box allows the interval between time checks with the server to be altered between 10 minutes and 2 hours.

Controls

- Save Settings : Any changes are not implemented until the Save Settings button is clicked.

6.5.20 General

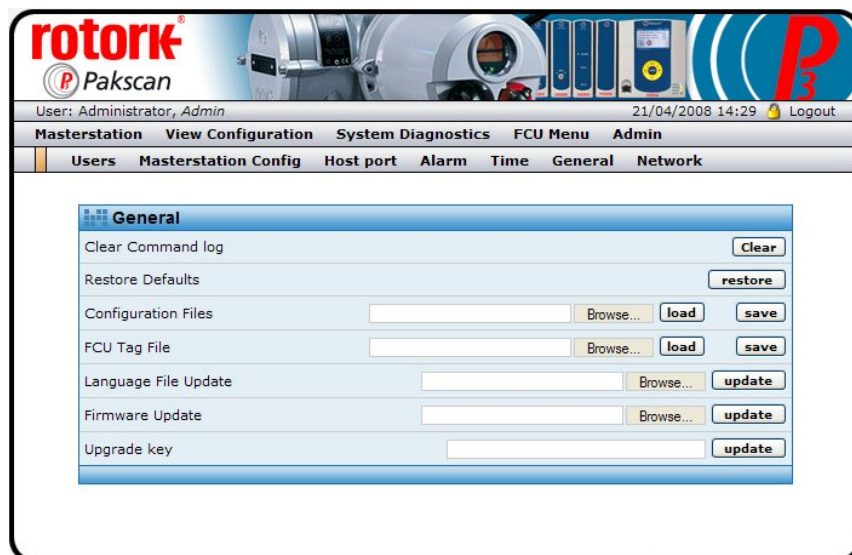


Fig 59: General Housekeeping

This screen is only accessible to Administration user level.

The General screen contains facilities for upgrading and maintaining the master station.

General

- Clear Command Log** : The Master Station data logger (which can be found under System Diagnostics, ms datalogger) creates a file for all the recorded events. The Clear Command button empties this file. If required, it can be saved by going to the ms datalogger page and using the 'Save' facility.
- Restore Defaults** : All the default settings can be restored by clicking the 'restore' button. This facility can help in setting the master station and option cards to a known state before altering the settings for a particular system.
- Configuration Files** : The system configuration file can be saved by using the 'save' button. It will be named 'backup.nbb' and filed in a location chosen during the save routine. A previously saved file can be restored by browsing to the backup.nbb file location and using the 'load' button. The filename should not be altered.
- FCU Tag File** : The list of tag names for the field units can be saved by using the 'save' button. The saved file is fcuconfig.xml and it is filed in a location chosen during the save routine. A previously saved file can be restored by browsing to the file location and using the 'load' button.

In some cases Microsoft Internet Explorer will open the fcuconfig.xml file instead of saving it. Save the file by using the 'save as' facility under the File menu on the Explorer page. When naming the file it will appear as fcuconfig_xml and the option of file type is presented. Ignore the options and change the file name and extension to fcuconfig.xml, then click on save. The resulting file will be in the desired xml format.

- Language File : To update the language files, browse to the location of the new file and click on 'Update'.
- Firmware Update: To update the firmware, browse to the location of the new file and click on 'Update'.
- Upgrade Key : If a new key code has been purchased (to enhance the overall system capabilities) the new code must be entered here. Type the code into the box and click on 'update'.

6.5.21 Network

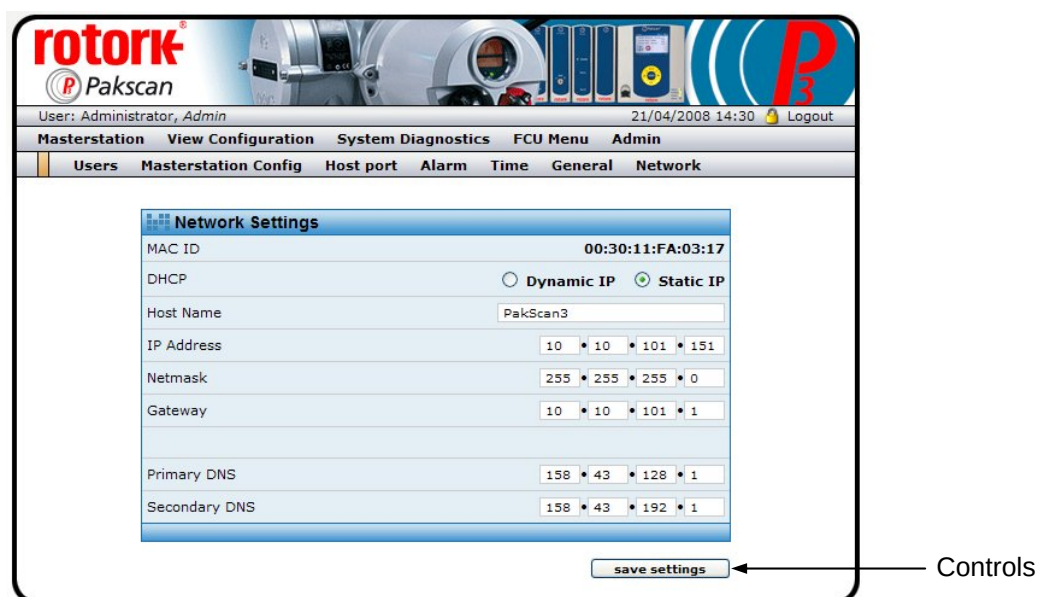


Fig 60: Network Settings

This screen is only accessible to Administration user level.

In order to connect the master station to a network there are several settings and IP addresses that must be set. If that network extends onto the internet then additional settings for the gateway and DNS servers must also be added. This page allows these settings to be made.

Network Settings

- MAC ID : The unique identifier for this hardware. The Media Access Control number is embedded in the master station Ethernet port.
- DHCP : The Dynamic Host Configuration Protocol setting allows the master station to use a fixed (static) IP address or a dynamic address which it collects from the server. In practice, a fixed Static IP is usually preferred.
- Host Name : This is the identity of the basic module used in the system for reference on the Ethernet highway. The default of Pakscan3 is generally acceptable and need not be altered, even if several master stations are on the same network.
- IP Address : The Internet Protocol address that uniquely identifies this master station. This will generally be allocated by the network system administrator.

- Netmask : The netmask is allocated by the system administrator and set here.
- Gateway : When the master station is connected to a gateway or router onto the internet, the gateway IP address is entered here so that the master station and gateway can exchange data.
- Primary DNS : When connecting to the internet, the Internet Service Provider (ISP) will have two server IP addresses that are needed by the system to complete the data routing. Usually, data is exchanged via the Primary Domain Name Server IP. The address is entered here.
- Secondary DNS : The second IP address supplied by the ISP.

Controls

- Save Settings : Any changes are not implemented until the Save Settings button is clicked.

6.6 Setting Up by Using the Web Pages

In order to set up the system by using the web pages, it is necessary to access the system from a PC. This can either be directly connected, as described earlier, or via an Internet connection. Once the PC is connected, it is necessary to log in to the system at Administration level using the correct password. Systems are shipped with a default administrator username of **admin** and password of **admin**.

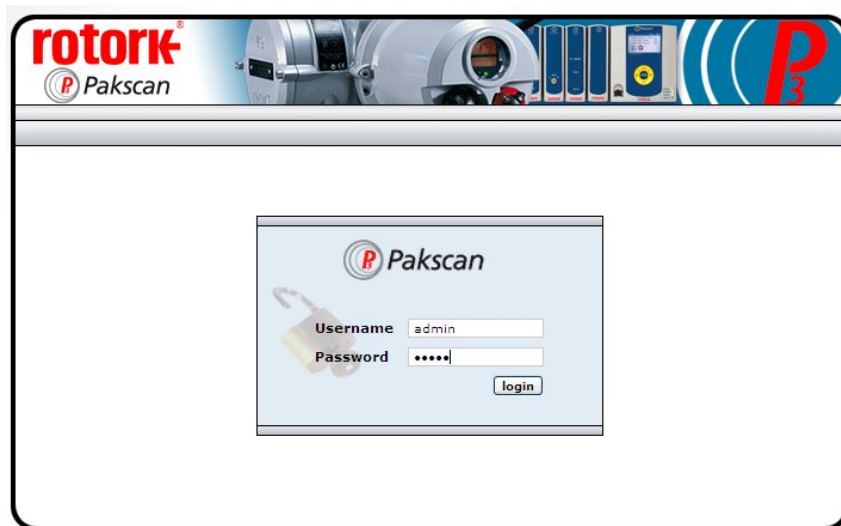


Fig 61: Log In Screen

6.6.1 Master Station Set-up page

In order to set up the system or make changes to the set-up of the system, log in at administration level and select **Admin** to go to the start of the system set-up pages.

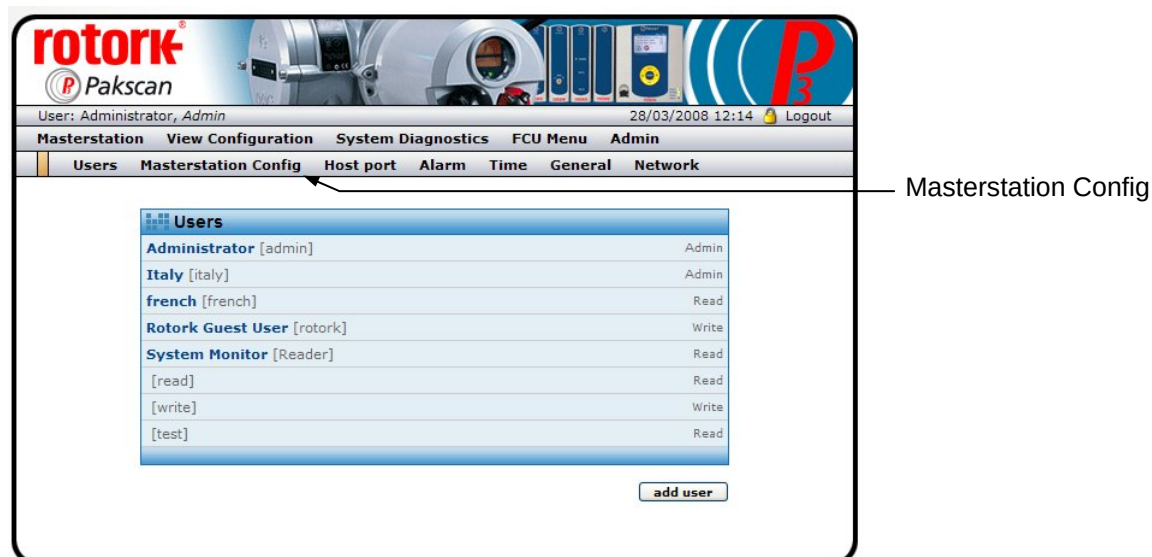


Fig 62: User Administration page

Because the system and browser remember visited pages, the Users page will come up, or one of the previously visited Admin level pages will appear.

Click on **Masterstation Config** to enter the main system configuration page.

rotork® Pakscan

User: Administrator, Admin 13/02/2009 13:05 Logout

Masterstation View Configuration System Diagnostics FCU Menu Admin

Users Masterstation Config Host port Alarm Time General Network

Masterstation Configuration

Site name: Bath Demonstration Room

Tag name: Master 1

Modbus address: 200

Hot Standby module: Enabled

ESD Settings

Ethernet ESD	Disabled	Webpage ESD	Disabled
Hardwired ESD	Disabled	Serial ESD	Disabled
		Keypad ESD	Disabled

Command Settings

Ethernet	Enabled	Webpage	Enabled
Serial Port 1	Enabled	Serial Port 2	Enabled
		Keypad	Enabled

Copy Options

Settings	Enabled	Tag	Enabled
Address	Enabled	IP	Disabled

Display Language: English

Security Settings: PIN and level Settings: 0 None

Number of channels: 60

Software version: 1.02.02

[print page](#) [Save settings](#)

Option 1: Not Fitted

[Save settings](#)

Option 2: Pakscan 2 Loop

Software version Option 2: 1.7.D

P2 Modbus Address: 1

Highest FCU address: 25

Loop speed: 1200

New loop speed: N/A

Loop speed doubling: OFF

Retain data on loss of communications: OFF

DV convert: ON

Host Port 1 Database Selection: Generic Modbus

Host Port 2 Database Selection: Yokogawa Modbus

Ethernet Database Selection: Generic Modbus

Port alarms: Separate

[Save settings](#)

version: 1.02.02 based on Pakscan III technology

Fig 63: Master station Set-up page

Modify this page to set up the master station parameters by using the drop-down menus on each parameter. Most default values will be suitable for getting the system started, though consideration should be made for every setting.

6.6.2 Option Module Set-up (including host communications protocols)

The master station set-up page is also used for setting up the Option cards, including the Pakscan 2 Current Loop option card. The web pages automatically populate the parameters with the option modules fitted.

- ☐ Set the loop performance parameters in accordance with the data recorded earlier. Make sure the loop speed is compatible with the setting for the loop capacitance.
- ☐ Set the highest field unit address parameter equal to the actual highest address.
- ☐ Doubling can be set to 'On' if the loop performance is not fast enough. It has the effect of halving the time to collect data from the field units.
- ☐ IQ DV Convert should be set to On if position control is being used on the IQ actuators on the network.
- ☐ Data Retain set to Off clears all the field unit data if communication is lost. Some host systems want the data to be retained, in which case set the parameter to On.

The Modbus address and communications protocol are also set on this page:

- ☐ Change the P2 Modbus address to match the desired serial communications and Modbus TCP address for access to the actuators on the current loop. It should not be left at 247.
- ☐ Select the desired host protocol on each serial communications port and the Ethernet ports for access to the actuators on the current loop.
- ☐ On Hot Standby systems link the alarms if both serial ports go to the same DCS or PLC in a redundant communications configuration.

Once the settings are as required, they must be downloaded to the master station CPU module. Click on **save settings** and wait for the messages to be exchanged before moving to the next task.

6.6.3 Host Port Settings

The physical parameters relating to the serial ports that may be altered are set by accessing the **Host Port** page.

The port type is determined by the DIP switch settings on the main chassis behind the PS710 CPU module and the setting is reflected in the message on the screen. If the port is set to RS-485 and cross connected, the description changes to show these settings.

This is particularly useful when determining the settings already in place. In hot standby systems the Cross Connected status of both the serial ports also depends on the settings of the DIP switches behind the Key Switch module on the main chassis.

- ☐ For each serial port, set the Baud rate and Parity as required. The speed may be varied between 2400 and 115,200 baud, the parity may be Odd, Even, Zero or None.
- ☐ On hot standby systems the Standby mode will normally be correct, when cross coupled, ports should be Standby Passive.
- ☐ On hot standby systems the Ethernet port needs to be set Standby Passive if both Ethernet ports are on the same Ethernet highway to the DCS. If there are two routes to the host they may be set Standby Active.

Fig 64: Host Ports Set-up Page

Once the serial port settings match the system requirements for communication to the host system they must be sent to the master station CPU module. Click on **save settings** to send the values to the module.

The **Modbus Message** button opens up a page where messages can be created and sent to the master station one at a time. The reply is shown and can be examined to ensure that the expected performance is being obtained. Note that these messages are sent over the Ethernet link using Modbus TCP and not over the Serial link; and therefore do not test all the serial port settings.

6.6.4 Setting the IP Address

The IP address for TCP/IP and Modbus TCP communication is set on the **Network** page.

The MAC ID for each Pakscan 3 CPU module is different, but fixed at time of manufacture. The IP address and Netmask can be altered to suit the individual application and match the needs of the network.

The screenshot displays the 'Network Settings' interface of the Rotork Pakscan Master Station. At the top, there's a header with the Rotork Pakscan logo and navigation tabs: Masterstation, View Configuration, System Diagnostics, FCU Menu, and Admin. Below this, a sub-menu includes Users, Masterstation Config, Host port, Alarm, Time, General, and Network. The 'Network Settings' form contains the following fields:

Network Settings	
MAC ID	00:30:11:FA:03:17
DHCP	☐ Dynamic IP ☒ Static IP
Host Name	PakScan3
IP Address	10 • 10 • 101 • 151
Netmask	255 • 255 • 255 • 0
Gateway	10 • 10 • 101 • 1
Primary DNS	158 • 43 • 128 • 1
Secondary DNS	158 • 43 • 192 • 1

A 'save settings' button is located at the bottom right of the form.

Fig 65: Network IP Address set up page.

Once the desired values have been set, click the **save settings** button to download the values to the Master Station CPU module. When the IP address is changed, the communications link will fail when the new value becomes active in the master station. The web browser must be restarted and directed to the new IP address.

Re-establishing Ethernet Communication with a new IP address:

Because most PCs associate a MAC ID to each IP address, the chances are that the PC will not be able to re-establish communication with the master station until the PC has been rebooted through a complete power cycle.

7. MAKING THE SYSTEM WORK

Always ensure the plant is in a safe condition and all the actuator controls are placed in Local before commencing any commissioning or fault finding on the system.

7.1 Commissioning the System

The current loop needs to be commissioned to enable the system to locate and identify every actuator. The master station and laptop PC can be used to perform the commissioning. At the time of commissioning the loop all the actuators must be made available, though they may be locked in 'hand only' control.

The two-wire loop and all the actuators should be connected to the master station, with all the actuators left without power, except for the one furthest from port A. Disconnect the wires from port B and browse to the master station web pages on the PC, go to **System Diagnostics** page.



Fig 66: System Diagnostics page.

Select **Option 2 Diagnostics** by clicking on the **diagnostics** button.

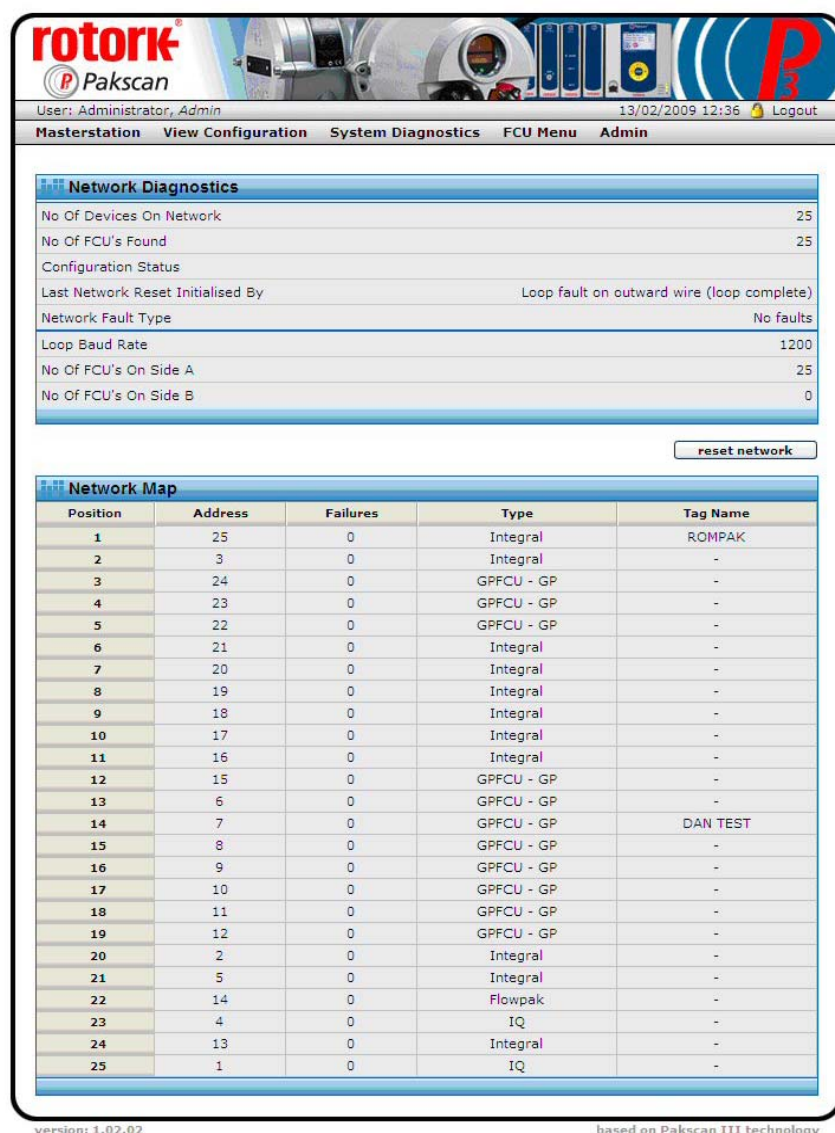


Fig 67: Pakscan 2 Option Card (Loop Card) Diagnostics page showing complete loop.

Reset the network (current loop) by clicking the **reset network** button. The status information will change and show the configuration stages. Once complete, the actuator furthest from port A should be shown on the Network Map.

Power on the next nearest actuator to port A and reset the network again. This actuator should appear on the list. Continue to power on the actuators and reset the network working back towards port A until all the actuators are connected and appear on the map.

Now connect the port B wires and disconnect the port A wires. Reset the network and check that all the actuators are still on the map. Having verified the loop wiring and the connection of all the actuators in both directions; finally connect the port A wires, reset the loop and all the actuators will be ready for control.

The commissioning sequence can also be carried out using the master station screens using the Option Module 2 Diagnostics. This is a 2 page menu and contains similar information to the web page.

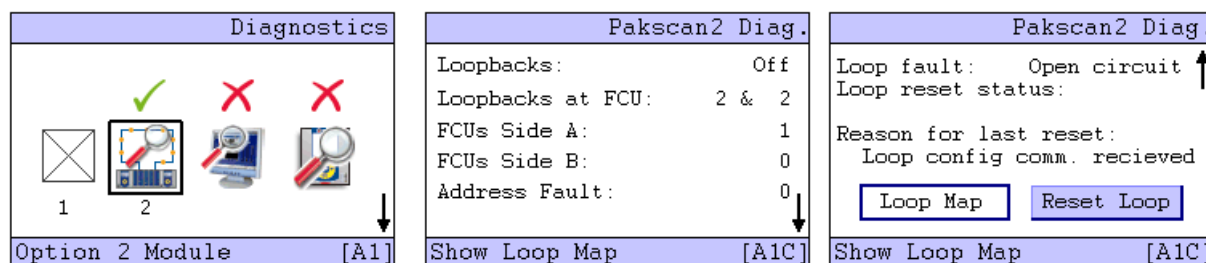


Fig 68: Option 2 (Loop Card) Diagnostics screens.

To view the loop map, select Loop Map and **ENTER**. To reset the loop, select Reset Loop, with the arrow keys (◀ or ▶) and **ENTER**.

Once the system is working with actuators connected and no loopbacks present, the diagnostic and control pages can all be used.

7.2 Monitoring and Controlling the Actuators

The web browser includes the capability to control and monitor all the actuators on the Pakscan current loop connected to Option Module 2. Go to **FCU Menu** to open the page showing all the connected actuators and their status.

Address	Tag Name	Type	Network	Alarm	Comms Fail	Navigation
1	-	IQ	Pakscan2	●	●	FCU Control
2	-	Integral	Pakscan2	●	●	FCU Control
3	-	Integral	Pakscan2	●	●	FCU Control
4	-	IQ	Pakscan2	●	●	FCU Control
5	-	Integral	Pakscan2	●	●	FCU Control
6	-	GPFCU - GP	Pakscan2	●	●	FCU Control
7	DAN TEST	GPFCU - GP	Pakscan2	●	●	FCU Control
8	-	GPFCU - GP	Pakscan2	●	●	FCU Control
9	-	GPFCU - GP	Pakscan2	●	●	FCU Control
10	-	GPFCU - GP	Pakscan2	●	●	FCU Control
11	-	GPFCU - GP	Pakscan2	●	●	FCU Control
12	-	GPFCU - GP	Pakscan2	●	●	FCU Control
13	-	Integral	Pakscan2	●	●	FCU Control
14	-	Flowpak	Pakscan2	●	●	FCU Control
15	-	GPFCU - GP	Pakscan2	●	●	FCU Control
16	-	Integral	Pakscan2	●	●	FCU Control
17	-	Integral	Pakscan2	●	●	FCU Control
18	-	Integral	Pakscan2	●	●	FCU Control
19	-	Integral	Pakscan2	●	●	FCU Control
20	-	Integral	Pakscan2	●	●	FCU Control
21	-	Integral	Pakscan2	●	●	FCU Control
22	-	GPFCU - GP	Pakscan2	●	●	FCU Control
23	-	GPFCU - GP	Pakscan2	●	●	FCU Control
24	-	GPFCU - GP	Pakscan2	●	●	FCU Control
25	ROMPAK	Integral	Pakscan2	●	●	FCU Control

Fig 69: List of Connected Field Units

This screen lists the FCUs in address order; their type and current condition. The **FCU Control** button will bring up the page showing the information in more detail.

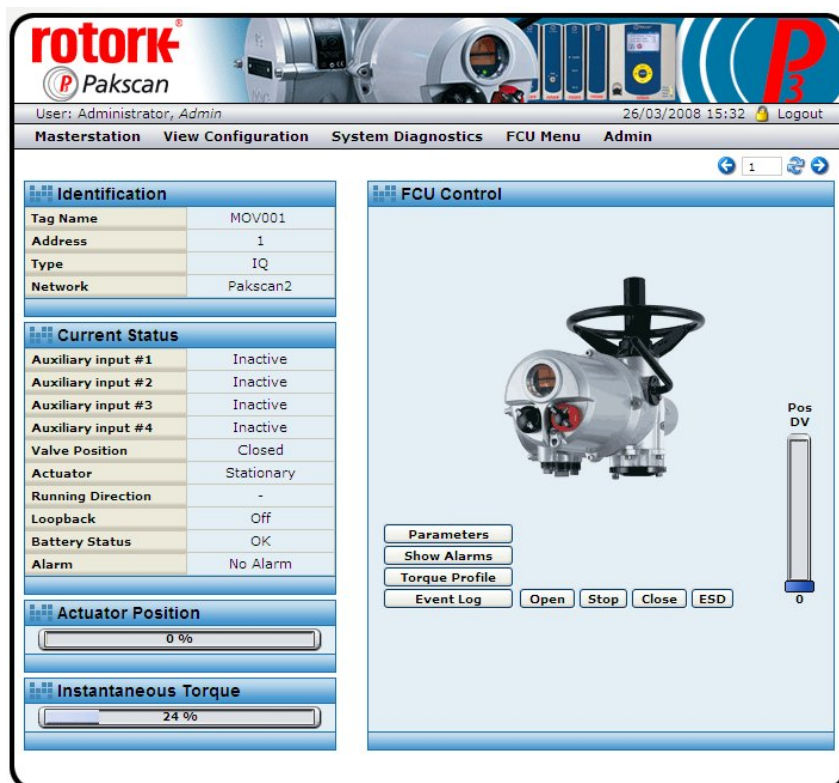


Fig 70: Detailed Actuator Condition page.

The actuator can be moved by the **Open** and **Close** buttons and any alarms present can be displayed by clicking **Show Alarms**. The page will automatically refresh if the valve is moved; and the buttons at the top of the page can be used to move to the next or previous actuator on the network.

Control and monitoring can also be achieved using the master station keypad and screen. Select Field Unit Menu and the connected field units will appear in turn.

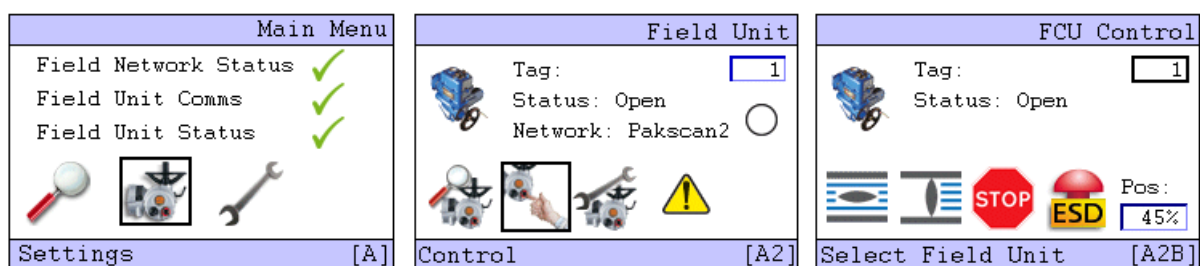


Fig 71: Actuator Control screen

Once the system is running correctly, make a note of all the settings and field unit parameters for future reference.

The Pakscan Current Loop network and associated actuators will now be available for the host DCS or PLC to control and monitor the plant.

GENERAL SAFETY INFORMATION

Customer information regarding installation, user safety, environmental and electromagnetic compatibility

This information is provided to assist with conformance to the Health and Safety Act 1974 and various directives of the European Community.

☐ **Mechanical**

Care should be taken to avoid dropping heavy items - for example during installation or maintenance. Protective footwear should be worn when appropriate. Rotork products are not intended to carry the stresses involved in support of items supplied by others unless this has been specifically agreed to by the company.

Care should be taken to avoid contact with sharp edges or points, particularly if the product is partially dismantled.

☐ **Electrical**

Products should be installed in accordance with BS6739.

Electrical supplies and earthing should be in accordance with BS7671.

Care should be taken to ensure that voltages or currents in excess of those specified, or of reversed polarity, are not applied to the terminals of any products. If such excess is applied, the product should be returned to Rotork or otherwise checked by a competent person before re-use, even if no damage is immediately evident. Use only the specified fuse type and rating as replacements.

Products should not be operated with safety protective covers removed, or with safety interlocks overridden. Some products are designed to allow access by skilled persons whilst power is applied. The user must control such skill level and access and it should be remembered that electromagnetic compatibility may be compromised.

Galvanically isolated input or output signal circuits are provided by certain products. A competent person must decide upon any earthing arrangements for such circuits and users should regard them as carrying a dangerous voltage, unless they are earthed locally.

☐ **Batteries**

Batteries must not be short circuited, or disposed of by burning. They must not be opened, punctured or crushed. Large batteries should only be used in well ventilated places. Their cases are generally ABS plastic resin and as such should be cleaned only with a damp cloth and not exposed to organic solvents.

☐ **Electromagnetic Compatibility**

To ensure conformance to the EC Directive 89/336/EEC, installation should adopt the following cable arrangements:

All digital data cables and all analogue signal cables operating at or below 50 Volts should be shielded either by braid, armouring or metal conduit.

Such shields should be earthed as closely as possible to the product. If for the avoidance of ground loops it is not possible to earth these shields locally at low frequencies, they should nevertheless be so earthed via a capacitor effective at radio frequencies.

A single shield may be shared by any number of analogue signal cables.

☐ **Functional Reliability**

Reliability predictions, (including failure mode and effect analysis), are calculated by Rotork using statistical methods and the resulting figures should only be used for statistical purposes. These predictions are only valid if the maintenance procedures and maintenance intervals stated in Rotork documentation are observed.

☐ **Environmental**

Products should only be operated within the environment specified on the product data sheet. Take care not to obstruct ventilation paths.

In the event of ingress of any fluid or spray, products should be immediately switched off, and cleaned and dried by a competent person before re-use.

☐ **Chemical**

Specific hazards will be the subject of product data. As a matter of good working practice, oral contact should be avoided.

☐ **Independently Certified Products**

Such products must not be modified in any way by the user, and must be applied, operated and maintained in accordance with the relevant standards, certificates and reports.

☐ **Product Data Sheets**

These should be checked for information which supplements or replaces that given above.

(This page is intentionally blank)



<http://www.rotork.com>

Rotork reserves the right to amend and change specifications without prior notice.

Published data may be subject to change. Please see the Rotork web site above for latest version.

UK Head Office

Rotork Controls Ltd
Bath
England
BA1 3JQ

Tel: +44 (0) 1225 733 200
Fax: +44 (0) 1225 333 467
E-mail: mail@rotork.co.uk