

rotork®

Keeping the World Flowing
for Future Generations

ELB (Electronic Line Break)



Instructions for Safe Use,
Installation, Setup and Maintenance



⚠ This manual contains important safety information. Please ensure it is thoroughly read and understood before installing, operating or maintaining the equipment.

UK
CA CE



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1. Introduction

1.1 Introduction to this Manual

This manual provides instruction on:

- Preparation and installation of the device
- Electrical (local and remote) operation
- Full configuration, status and monitoring
- Maintenance

Using the supplied Rotork Bluetooth® Setting Tool *Pro* to access the ELB set up procedures, non-intrusive setting of pressure levels, position limits and all other control and indication functions can be made safely, quickly and conveniently, even in hazardous locations. The ELB allows commissioning and adjustment to be carried out when the main power supply to it is switched on.

The setting tool is packed in the shipping box along with the ELB.

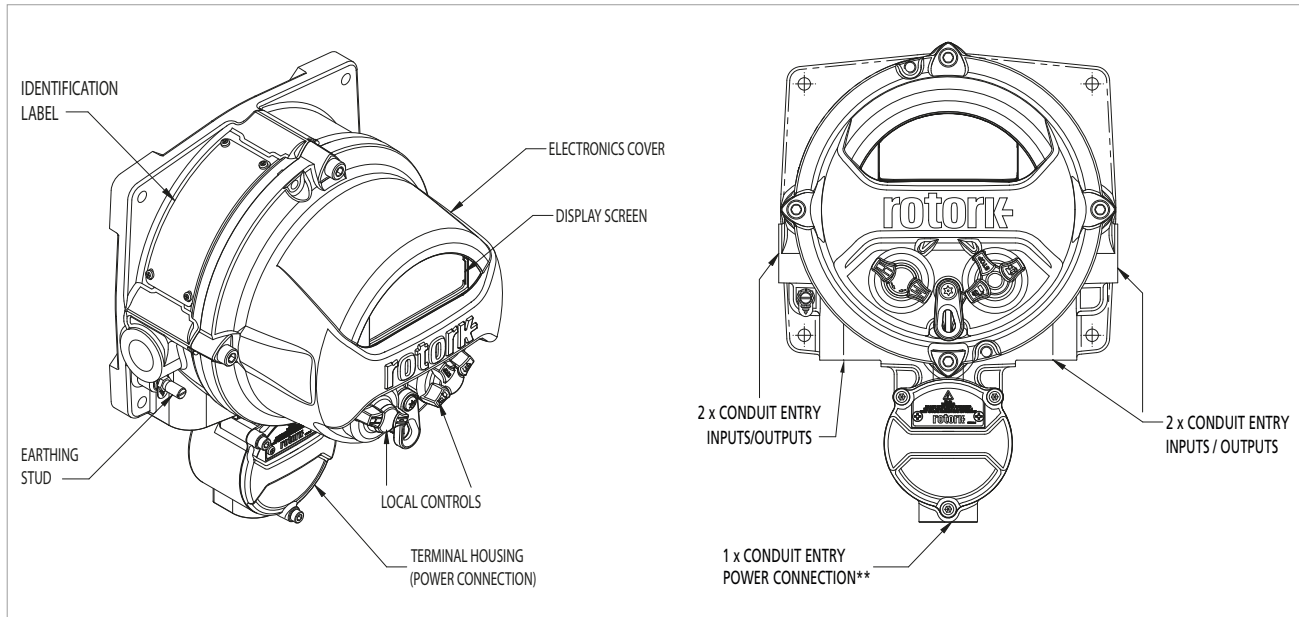
Visit our web site at **www.rotork.com** for more information on the ELB, Insight 2 software and other Rotork actuator ranges.

1.2 Introduction to the ELB

Rotork's Electronic Line Break (ELB) unit is designed to monitor pipeline systems primarily for the purpose of detecting and providing an automated response to pipeline breaks. The ELB can initiate the movement of a valve actuator to a position defined by the user. It continuously monitors pipeline pressure, logs information and also acts as an actuator controller. The ELB is capable of sensing both the downstream and upstream pressure and can initiate a process shutdown. Pipeline events including High Pressure, Low Pressure, Rate of Rise (RoR) and Rate of Drop (RoD) are also recorded in the data logger.

The ELB is available in two options; Advanced and Basic. In Advanced mode the additional features listed below are supported:

- Limit switch inputs
- Sensor 3 input (actuator position or pressure)
- Remote open, close, maintain and manual reset
- Inhibit open/close
- Partial stroke testing
- Stall detection



1.3 Rotork Setting Tool

The Rotork Bluetooth® Setting Tool Pro (BTST) combines the legacy IR and IrDA communication protocols with the latest Bluetooth wireless technology. IR / IrDA support for older Rotork products is retained (for use as an IR communication tool, please refer to publications PUB002-003 and PUB002-004).

The new BTST is able to connect to Rotork Bluetooth wireless enabled actuators and related software to setup and complete missions. Missions are configurable programs of instructions that are to be performed by the BTST on an actuator and include (but are not limited to) downloading configuration and datalogger files as well as uploading specific configurations to the actuator. Different missions can be programmed into the BTST via Insight 2.



Rotork Bluetooth® Setting Tool Pro

Specification

Enclosure: constructed in accordance with IEC 60529 to IP54.

The BTST has been built in accordance with the following standards:



II 1G
Ex ia IIC T4 Ga
CML 19ATEX2194



IECEX CML 20.0054

CML 21UKEX2122



Ex ia
Class 1, Div 1,
Group A, B, C, D T4
CSA19CA80005457



Ex ia IIC T4 Ga
GB 3836.1-2010,
GB 3836.4-2010
GYJ20.1173X

Ambient Temperature Range: Tamb = -30 to +50 °C

Operating Range: Infra-Red 0.75m, Bluetooth 10m

Enclosure Materials: Polycarbonate ABS blend, Polycarbonate and Silicon Rubber

Instructions for Safe Selection, Installation, Use, Maintenance and Repair

1. The BTST must only be used in hazardous areas (potentially explosive atmosphere) permitted by the equipment classification, temperature class and ambient temperature range stated in the specification (this is also stated on the back of the BTST).
2. The following checks must be conducted on the BTST prior to taking it into a hazardous area:
 - a. The BTST function must be checked by ensuring that the red or green LED, either in the clear window or under the 'Enter' key of the BTST, illuminates when any button is pressed. If an LED does not illuminate, there is a potential functional problem with the BTST and the inspection or battery replacement stated in paragraph 6 must be performed.
 - b. If the BTST is likely to come in contact with aggressive substances (e.g. solvents that may affect polymeric materials), then it is the responsibility of the user to take suitable precautions (e.g. regular checks as part of the routine inspections or establishing that the enclosure materials are resistant to the specific chemicals) that prevent the BTST being adversely affected, thus ensuring that the type of protection is not compromised.
3. It is essential that the actuator settings are checked for compatibility with the valve, process and control system requirements before the actuator is put into service.
4. No user adjustment of the BTST is required.
5. The BTST must be inspected every three months, in a safe (non-hazardous), dry area by suitably trained personnel, to ensure it has been maintained in accordance with the applicable code of practice.
6. In accordance with the BTST hazardous area approvals and with the recommendations from the approved battery suppliers, the following are mandatory requirements for safe use:
 - a. The inspections or replacement of the batteries must be conducted in a safe (non-hazardous), dry area.
 - b. The batteries must be removed from the BTST when it is not expected to be used for 3 months or longer.
 - c. Discharged batteries must be removed from the BTST to prevent possible damage.
 - d. The battery compartment of the BTST must be inspected every three months for any battery leakage. If any battery leakage has occurred then the BTST must not be used.
 - e. Only the following approved Alkaline-Manganese or Zinc-Manganese type 'AAA' size batteries must be fitted to the BTST:
 - Duracell: Procell MN2400
 - Energizer: E92
 - f. Always replace all four batteries at the same time. Always use four unused batteries of the same approved manufacturer, type and expiry date code.
 - g. Ensure the batteries are fitted with the correct polarity. The battery polarity (+) is indicated on the inside of the battery compartment of the BTST.
7. The BTST contains no other user replaceable parts and it cannot be repaired by the user. If the BTST is faulty or needs repairing, it must not be used.

2. Health and Safety

This manual has been produced to enable a competent user to install, operate, adjust and inspect the Electronic Line Break (ELB).

The electrical installation, maintenance and use of the ELB should be carried out in accordance with the National Legislation and Statutory Provisions relating to the safe use of this equipment applicable to the site of installation.

For the UK: Electricity at Work Regulations 1989 and the guidance given in the applicable edition of the 'IEE Wiring Regulations' should be applied. Also the user should be fully aware of their duties under the Health and Safety at Work Act 1974.

For the USA: NFPA70, National Electrical Code® is applicable. The mechanical installation should be carried out as outlined in this manual and also in accordance with any relevant national standard codes of practice. If the ELB nameplate indicates that it is suitable for use in Potentially Explosive Atmospheres (Hazardous Areas) then the ELB is suitable for use in Zone 1 and Zone 2 hazardous area classifications, as defined by the ELB's nameplate marking.

For Canada: CEC, Canadian Electrical Code is applicable.

Any equipment connected to the ELB should be of an equivalent (or better) hazardous area certification. The installation, maintenance and use of the ELB installed in a hazardous area must be carried out by a competent person and in accordance with all relevant codes of practice for the particular Hazardous Area certification.

Any inspection or repair of a Hazardous Area approved ELB should not be undertaken unless it conforms to National Legislation and Statutory Provisions relating to the specific Hazardous Area.

Only Rotork approved replacement parts should be used. Under no circumstances should any modification or alteration be carried out on the unit, as this could invalidate the conditions under which its certification was granted.

Access to live electrical conductors is forbidden in a Hazardous Area unless it is done under a special permit to work, otherwise all power should be isolated and the ELB moved to a non-hazardous area for repair or attention.

Only persons competent by virtue of their training or experience should be allowed to install, maintain and repair Rotork equipment. Work undertaken must be carried out in accordance with instructions in the manual. The user and those persons working on this equipment should be familiar with their responsibilities under any statutory provisions relating to the Health and Safety of their workplace.

WARNING: Enclosure Materials

The ELB is manufactured from aluminium alloy with A4-80 stainless steel fasteners in the electrical cover and 12.9 grade high tensile carbon steel fasteners in the terminal cover.

The cover window is toughened glass which is retained with a 2-part silicone cement.

The user must ensure that the operating environment and any materials surrounding the ELB cannot lead to a reduction in the safe use of, or the protection afforded by, the ELB. Where appropriate the user must ensure the ELB is suitably protected against its operating environment.

WARNING: Service Altitude

The installation altitude must be restricted to less than 5000m as defined by IEC61010-1 (Safety requirements for electrical equipment for measurement, control and laboratory use).

3. Environmental

End user advice on disposal at end of life of the product.

Subject	Definition	Remarks / examples	Hazardous	Recyclable	EU Waste Code	Disposal
Electrical & Electronic Equipment	Printed circuit boards	All Products	Yes	Yes	20 01 35	Use specialist recyclers
	Wire	All Products	Yes	Yes	17 04 10	
Glass	Lens/Window	IQ	No	Yes	16 01 20	Use specialist recyclers
Metals	Aluminium	Covers	No	Yes	17 04 02	Use licensed recyclers
	Copper/Brass	Wire	No	Yes	17 04 01	
Rubber	Seals & O-rings	Cover	Yes	No	16 01 99	May require special treatment before disposal, use specialist waste disposal companies

In all cases check local authority regulation before disposal.

4. Approvals

Refer to ELB nameplate for unit specific approval details.

United Kingdom – Hazardous Area

UKEX (2016 No. 1107)
II 2 G

Ex db IIB T4 Gb
Ex db IIC T4 Gb

Temperature: -50 to +60 °C

Certificate: CSAE 21UKEX1431X

European – Hazardous Area

ATEX Directive (2014/34/EU)
II 2 G

Ex db IIB T4 Gb
Ex db IIC T4 Gb

Temperature: -50 to +60 °C

Certificate: Sira 16ATEX1294X

International – Hazardous Area

IECEx (IEC 60079-0 & IEC 60079-1)

Ex db IIB T4 Gb
Ex db IIC T4 Gb

Temperature: -50 to +60 °C

Certificate: IECEx SIR 16.0095X

China – Hazardous Location

CCC (CNCA-C23-01:2019)

Ex d IIB T4 Gb
Ex d IIC T4 Gb

Temperature: -50 to +60 °C

Certificate: 2021322309003904

International – Non Hazardous

Watertight to BS EN 60529

IP66 & IP68 (7 metres for 72 hours)

Temperature: -50 to +60 °C

Maximum Constructional Flamepath Gaps

Flamepath	Type	Max. Gap (mm)	Min. Length (mm)
Electrical Cover / Back Housing	Cylindrical	0.15	26.00
Terminal Cover / Back Housing	Cylindrical	0.15	12.50
Transfer Loom Bush	Cylindrical	0.15	25.00

Thread Details

Flamepath	Thread Type	Min. Thread Length (mm)
Cable entries	M25 x 1.5P	20.00

Special Conditions of Safe Use

This ELB must only be located in areas where the risk of impact to the viewing window is low. This equipment includes some exterior non-metallic paints including the protective coating. To avoid the possibility of static build up, cleaning must only be carried out with a water dampened cloth.

Enclosure fasteners are stainless steel grade A4-80 (M8) for the main display cover and grade 12.9 high tensile carbon steel (M5) for the terminal cover.

The ELB should only be installed where external sources of heating and cooling (e.g. pipeline/valve process temperatures) will not cause the equipment to exceed its temperature class.

5. Vibration, Shock and Noise

The ELB is suitable for applications where vibration and shock severity does not exceed the following:

Type	Level
Plant induced vibration	1g rms total for all vibration within the frequency range of 10 to 1000 Hz
Shock	5g peak acceleration
Seismic	2g acceleration over a frequency range of 1 to 50 Hz if it is to operate during and after the event
Emitted noise	Independent tests have shown that at 1m generated noise does not exceed 65 db(A)

6. Storage

If your actuator cannot be installed immediately, store it in a dry, well aired place until you are ready to connect incoming cables. Avoid long-term direct exposure to sunlight.

If the ELB has to be installed but cannot be cabled it is recommended that the plastic transit cable entry plugs are replaced with metal plugs.

Rotork cannot accept responsibility for deterioration caused on-site once the covers are removed.

Every Rotork ELB has been fully tested before leaving the factory to give years of trouble free operation, providing it is correctly commissioned, installed and sealed.

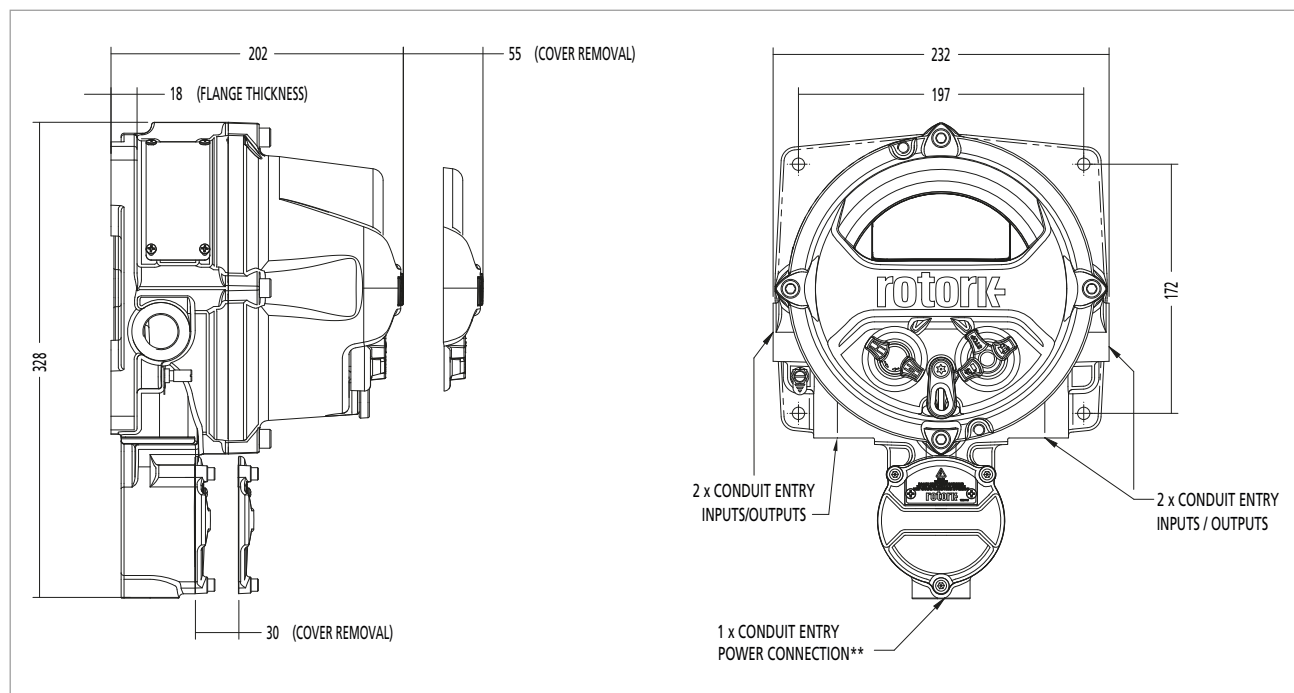
Do not store in temperatures beyond the normal operating range as stated on the nameplate.

7. Mounting the ELB

The ELB can be mounted either directly on a wall or to a pole using suitable 'C' brackets. Space should be left around the housing to allow for the fitting of cable glands or conduit. Positioning of the ELB display should be such that easy viewing and operation can be carried out at eye level. Removal of the main display cover is not necessary in order to mount the unit. The only cover that needs to be removed is the terminal housing when cabling to the actuator.

The back housing may be mounted in any position (90° increments) to accommodate different cable / conduit entry requirements. In order to maintain the correct viewing angle of the display, rotate the display cover to suit.

NOTE: Maximum Unit Weight = 9 kg



8. Electrical Connections

The ELB requires a power supply between 9-28 VDC (nominal 24 VDC), with the connections for this located in the terminal housing. The connections for the inputs and outputs are located in the electronics housing and made into screw terminals on PCB mounted plugs.

Inputs include the following:

- 3 x pressure/position sensors – 0.5 W each
- 6 x Remote Inputs – 0.15 W min/input 20-60 VDC or 40-120 VAC
- 3 x Limit Switch – 0.6 W each
- Network Inputs – Single or Dual Modbus

Outputs include the following:

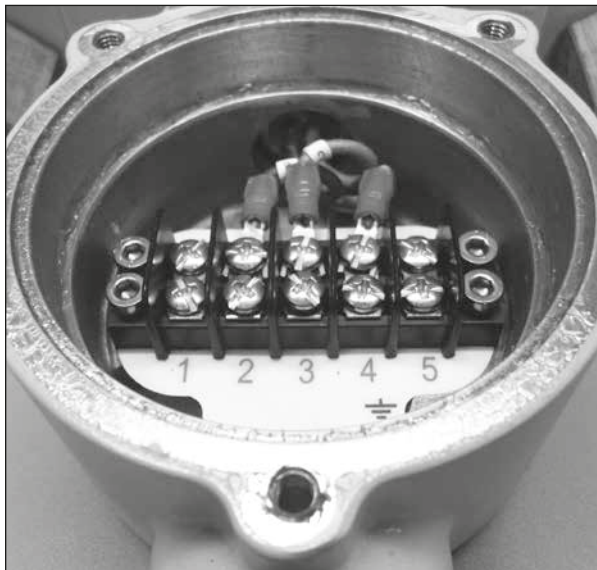
- 4 x solenoid valves – 15 W maximum total
- 4 x Indication relays – 0.7 A @ 24 VDC
- Customer supply – 10 W @ 24 VDC

Cable Entries

Only appropriately certified flameproof cable glands or conduit may be used in hazardous locations. The cable entry is tapped M25 x 1.5p. In hazardous locations, only one certified flameproof thread adaptor can be used. Additionally, any unused entries must be sealed with suitable certified blanking elements. Adaptors must not be used with blanking elements.

For installation in USA and Canada

Conduit seals must be installed at the enclosure. M25 x 1.5p to either ½", ¾", 1", 1¼" or 1½" NPT thread adaptors are factory fitted.



Earth Ground Connection:

A dedicated external earth point is provided for the attachment of a protective earth cable.

9. ELB Settings

This section helps you to configure the settings of the ELB.

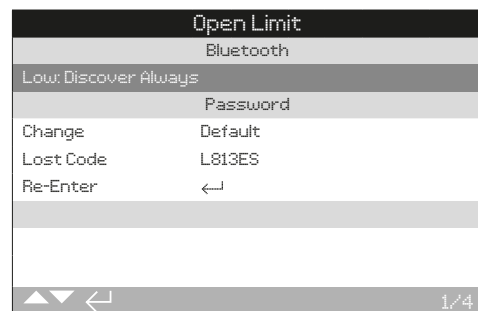
Note: The following settings can either be done at the ELB display with the aid of a setting tool or using Insight 2 with the aid of a Laptop or PC.

To configure the Bluetooth Security, do the following:

1. Navigate to **SETTINGS > SECURITY** and under the Bluetooth section, choose the level of Bluetooth access required for the ELB.

Use the up arrow or down arrow to select the ELB Bluetooth mode.

Once the required mode is highlighted, press enter to confirm. The selected mode will be saved and shown as checked on the setting entry.



Note: The ELB Bluetooth security can be configured independently. Any deactivation of Bluetooth will only be performed once the setting tool or PC is disconnected.

Setting the Home Screen Display

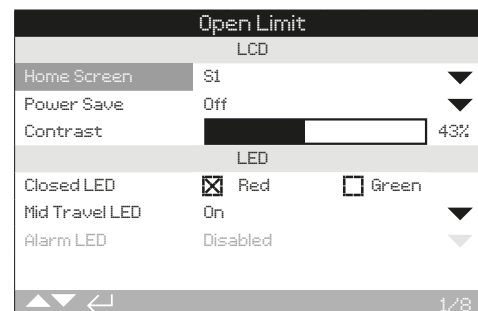
The ELB home screens can be independently configured to show different information.

To configure the device for setting the home screen display, do the following:

1. Navigate to **SETTINGS > INDICATION > LOCAL DISPLAY**. On the LCD menu, select the Home Screen mode from the following four options:
 - Pressure
 - Press + Position
 - Diff
 - Diff + Position
2. Press Enter (enter the password if applicable).

Use up arrow or down arrow to select the Home Screen. Once the required screen is highlighted, press **Enter** to confirm.

3. The selected screen will be saved and shown as checked on the setting entry.



10. Operating the ELB

The ELB provides a mountable display. It also provides a Modbus option interface. This allows the operator to monitor and control an ELB mounted from a remote location.

The connected ELB data logger can be viewed and extracted via Insight 2. For data logger extraction, please refer to the Rotork Bluetooth® Setting Tool *Pro* manual PUB095-001.

11. Interaction with ELB

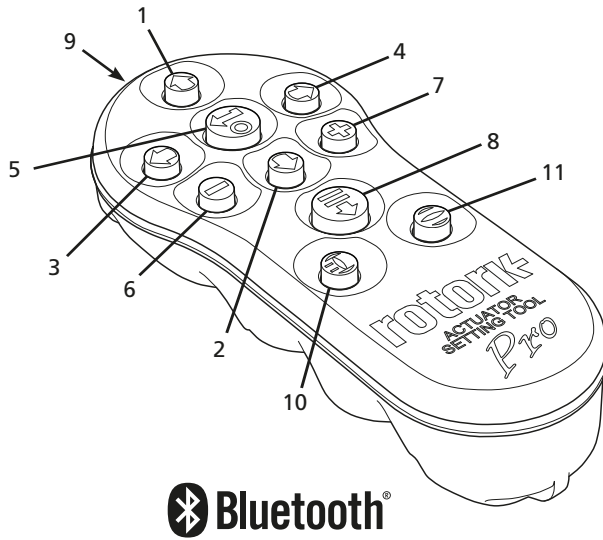
⚠ This manual provides instructions on the setup and analysis of the ELB.

A structured instruction of using the Setting Tool, navigation and password security is contained in this section. This is applied when changing settings and viewing information as set out in Section 9 onwards.

The user must therefore be familiar with the operations contained in this section before proceeding.

11.1 Using the Rotork Setting Tool

The Setting Tool is used to connect to the ELB, navigate through menus, change settings and view information presented on the ELB display.



Name	General Operation
1. Key	Scroll up.
2. Key	Scroll down / Connect.
3. Key	Decrease value / Toggle setting / Scroll left.
4. Key	Increase value / Toggle setting / Scroll right.
5. Key	Select the highlighted item. Save the highlighted setting. Stop ELB running (when Setting Tool control is enabled).
6. Key	Return to previous menu.
7. Key	Cycle between standard and zoom view on data logger Pressure Trend graphs.
8. Key	Actions the pre-configured mission stored on the Rotork Bluetooth® Setting Tool Pro.
9. (IR icon)	Infrared transmitter window.
10. Key	Send a close command to the connected ELB (when enabled).
11. Key	Send an open command to the connected ELB (when enabled).

Navigation

To navigate through screens, menus and pages, the and keys are used. A single key press results in one movement. Holding the key will result multiple movements in succession. Menus, pages and dropdowns wrap round. This means that an item at the bottom of a screen can be accessed by pressing while at the top.

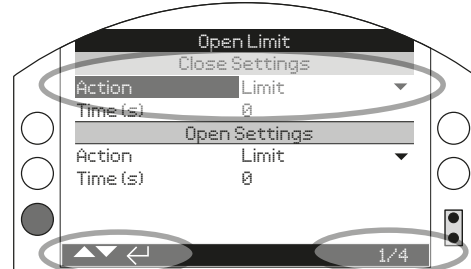
Shorthand Instructions

This manual uses shorthand instruction (example): (meaning select, edit setting, save) to prompt the user with the key operations required. The display will also indicate the relevant keys at the bottom left.

Pages, Functions and Index

The display indicates the number of each function as it is highlighted along with the total number of functions on that page. In the example below, Action is function one out of a total of four functions on that page: 1/4

This manual uses the display function number as reference for instructions.

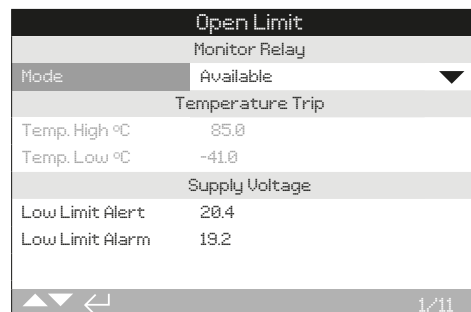


Action (highlighted) is function 1 out of a total 4 on the LIMITS page.

Selection

The key is used to select a main menu item, menu items or Instructions buttons. For a setting, is used to select when a change is required. The first time this occurs in a communication session, a password will be requested. Subsequent changes within the same session will not require the entry of a password. When selected, a menu item will be opened or a setting or function will be highlighted.

Information, instruction and password entry screens require an or button to be selected. Navigate to highlight the required button using or and press to select.



Drop down list boxes

Drop down list boxes are indicated by ▼.

The example of the Mode indication Monitor Relay Function (highlighted) drop-down list box is shown below. When selected (password entered if applicable), the current set function will be highlighted within the drop down list.

Open Limit	
Temp. Low °C	-41.8
Supply Voltage	
Low Limit Alert	Disabled
Low Limit Alarm	Closed Limit
High Limit Alert	Open Limit
High Limit Alarm	Temp Trip (High)
	Temp Trip (Low)
Function	Temp Trip (Any)
	Stop Selected
<div>▲ ▼ ◀ ▶</div> <div>8/11</div>	

The symbol ▼ in the drop down box indicates more functions are available by scrolling ⬆ or ⬇.

Use ⬆ or ⬇ to scroll through the list until the required function is highlighted. Press ⬇ to select. The drop down list box will close and the selected function will be saved and shown on the page.

To exit the drop down list without saving a new setting press ⬅ return to the previous page.

Checkboxes

Check boxes are indicated by ☒ or ☐.

Open Limit	
High Limit Alert	27.6
High Limit Alarm	28.8
S1	
Function	Disabled
Contact	<input checked="" type="checkbox"/> N/O <input type="checkbox"/> N/C
Position	<div><div></div></div> 0%
S2	
Function	Disabled
Contact	<input checked="" type="checkbox"/> N/O <input type="checkbox"/> N/C
	<div><div></div></div>
<div>▲ ▼ ◀ ▶</div> <div>11/11</div>	

An example for the S1 indication contact type check box is shown above.

When selected (password entered if applicable), the current mode will be highlighted.

Use either the ⬆ or ⬇ to toggle between modes.

Once the required mode is checked, press ⬇ to select. The selected mode will be saved and shown as checked on the page.

To exit the checkbox without saving a new setting, press ⬅ to return to the page.

Slider controls

Slider controls graphically indicate the set value followed by the exact numerical value, for example:

Contrast	<div><div></div></div>	43%
----------	------------------------	-----

The range covered by the slider is fixed and is determined by its function.

Open Limit	
LCD	
Home Screen	S1
Power Save	Off
Contrast	<div><div></div></div> 43%
LED	
Closed LED	<input checked="" type="checkbox"/> Red <input type="checkbox"/> Green
Mid Travel LED	On
Alarm LED	Disabled
<div>▲ ▼ ◀ ▶</div> <div>1/8</div>	

An example of the LCD contrast value is shown above. The % Contrast of the display will be shown.

Press ⬇ (enter password if applicable).

Use ⬆ or ⬇ to decrease or increase the value.

Slider controls wrap round so a ⬆ key press on a minimum value will wrap round and indicate the maximum value. The value step changes increase as ⬆ or ⬇ is held down.

Once the required value is set press ⬇ to select. The selected value will be saved and shown on the page.

To exit the slider control without saving a new setting, press ⬅ to return to the page.

Numerical values

Numerical values relate to fields such as time or Limit Run Time(s) – shown in the example below.

Open Limit	
Close Settings	
Action	Limit
Time (s)	6
Open Settings	
Action	Limit
Time (s)	0
<div>▲ ▼ ◀ ▶</div> <div>2/4</div>	

Press ⬇ (enter the password if applicable).

Use ⬆ or ⬇ to decrease/increase the numerical value.

Press ⬇ to select.

To exit the numerical value control without saving a new value, press ⬅ to return to the previous page.

11.2 Connecting to the actuator

The Rotork Bluetooth® Setting Tool *Pro* incorporating Bluetooth wireless technology is identified by the key symbols and the band between the top and bottom casings being transparent.

The Rotork Infrared Setting Tool *Pro* is identified by solid yellow keys and a yellow band between casings:





Yellow: Rotork Infrared Setting Tool *Pro*

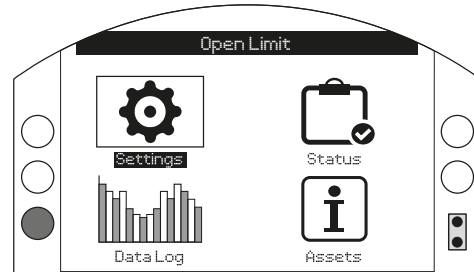
Clear: Rotork Bluetooth® Setting Tool *Pro*

Note: Rotork has made two versions of the Rotork Bluetooth® Setting Tool *Pro* with blue and black casings. Both are compatible with ELB.

Connecting to the actuator using Bluetooth



The default security setting, in the ELB, for Bluetooth connection is by initiation using an Infrared command first. This means that the user must be in close proximity and in direct line of sight of the ELB.

Point the Setting Tool at the Infrared sensor located at the lower right of ELB display window within a range of 0.25 m (10 in) and press  until the  key flashes blue.



The Setting Tool will automatically connect using Bluetooth which takes up to five seconds.

Connection is indicated by a blue light on the tool and in the ELB display window. Once connected, the tool can be used without pointing it at the ELB display window.

Bluetooth connection will be maintained while Setting Tool key commands are made. After a period of six minutes with no key commands, Bluetooth connection will be turned off and the Setting Tool and display blue lights will go out. To manually disconnect Bluetooth at any time, press  and  together.

Connecting to the actuator using Infrared

Infrared communication is used when:

- Bluetooth communication has been disabled
- Legacy Infrared only Rotork Setting Tool is used (yellow banded tool)

The Infrared only tool has solid yellow keys and a yellow band between casings.

Communication is by direct line of site Infrared commands within a range of 0.25 m (10 in). Keys have the same function as shown in this manual. Each key press sends a discreet Infrared command and therefore the tool must be in range.

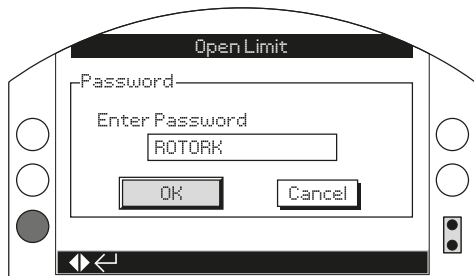
11.3 Password Security

Menus, pages and settings may be viewed when the ELB is set to Remote, Stop or Local. To change a setting, the ELB must be selected to Local or Stop using the red selector and the correct password must be entered.

The password will be requested the first time a function is selected. Once correctly entered, other changes can be made without re-entering the password for the duration of the Setting Tool session with the ELB.

If the ELB is selected to Remote and a setting is selected, the following information screen will be displayed.

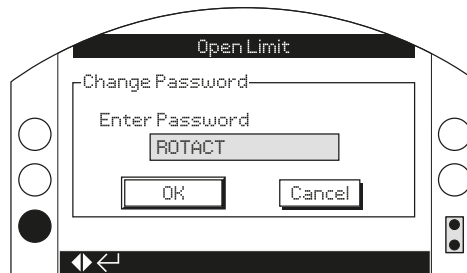
The factory set default VIEWER password ROTORK is displayed and the OK button is highlighted.



In order to make a change to a setting, the user should enter in the USER password ROTACT to enable changes made to a setting.

Press . The setting page from which the function was selected will be displayed with the function highlighted.

If the user sets their own password, the screen is displayed as shown in the figure below.



Enter user selected Password:

Use to highlight new password entry box and press .

Use to scroll through alphanumeric values to display required character.

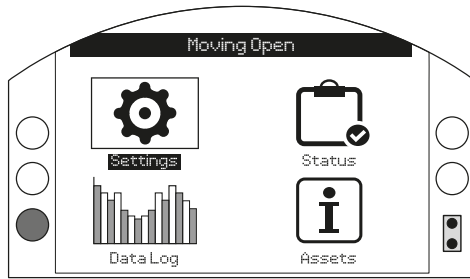
Use to move to the next character.

Use to delete the highlighted character.

Use when selected password is complete.

Navigate to the OK button using . Press .

12. Settings

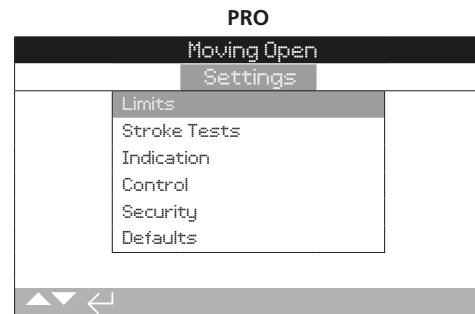


12. Settings Menu

	Page
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12.1 Settings – Limits

Limits menu is only available using ELB-PRO.



Close Settings

1/4 Close Action

Sets the Closing action required to close the valve.

Limit – The ELB moves the actuator to the set Close Limit position and stops.

Time – The time the ELB drives the actuator in the closing direction after reaching the Close Limit.

Continue – It continues the same action after reaching Close Limit.

Default = Limit

2/4 Limit Run Time (s)

The time limit set to close the actuator after reaching the close limit. The time range is 0 to 900 seconds.

Default = 0

Open Settings

3/4 Open Action

Sets the opening action required to Open the valve.

Limit – The ELB moves the actuator to the set Open Limit position and stops.

Time – The time the ELB drives the actuator in the opening direction after reaching the Open Limit.

Continue – It continues with the same action after reaching Open Limit.

Default = Limit

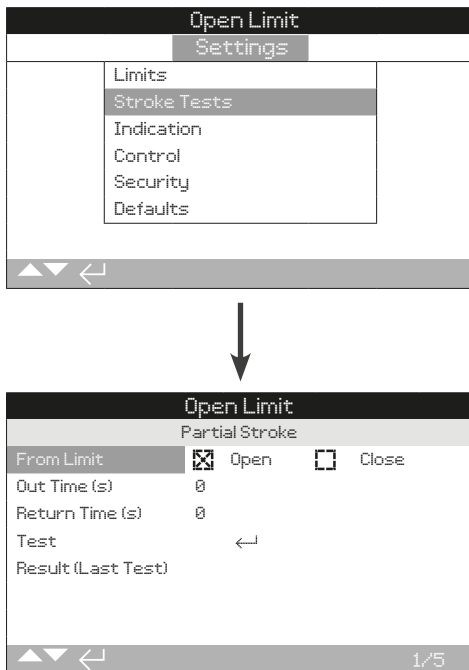
4/4 Limit Run Time (s)

The time limit set to open the actuator after reaching the open limit. The time range is 0 to 900 seconds.

Default = 0

12.2 Settings – Stroke Tests

Stroke Test menu is only available with the ELB-PRO Option.



Partial Stroke

Note: Ensure the Partial Stroke Limit Switch is setup correctly.

1/5 From Limit

Select the Start Limit Position for the partial stroke test.

Open – The partial stroke test will start from the Open Limit position, move in the close direction to the Partial Stroke Limit Switch position and then return to the Open Limit position.

Close – The partial stroke test will start from the Close limit position, move in the open direction to the Partial Stroke Limit Switch position and then return to the Close Limit position.

Default = Open

To change, . The checkbox will indicate partial stroke start/finish position.

2/5 Out Time

Set an expected time tolerance the actuator will take to travel from the Start Limit Position to the Partial Stroke Limit Switch, the time value can be calculated or timed.

Range 0 to 3600 seconds.

A value of 0 indicates that this feature is disabled.

Default = 0

To change, . The set partial stroke out time will be indicated.

3/5 Return Time

Set an expected time tolerance the actuator will take to travel from the Partial Stroke Limit Switch back to the Start Limit Position, the time value can be calculated or timed.

Range 0 to 3600 seconds.

A value of 0 indicates that this feature is disabled.

Default = 0

To change, . The set partial stroke return time will be indicated.

4/5 Test

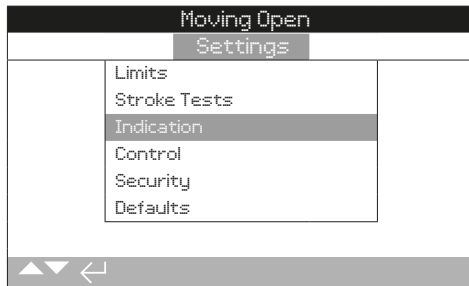
To initiate a partial stroke test using the Setting Tool, the ELB must be set to Local control using the Local/ Remote selector and at the previously set Start Limit Position.

To initiate a partial stroke test press . The partial stroke test will be initiated.

5/5 Result (Last Test)

Displays the last result of the partial stroke test (Pass/Fail, or can be blank).

12.3 Settings – Indication



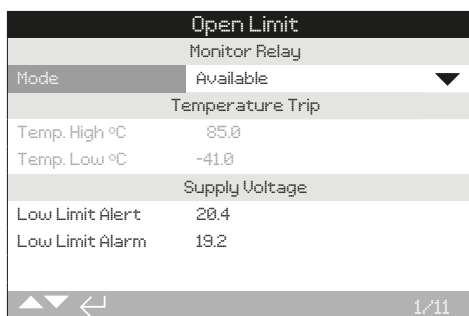
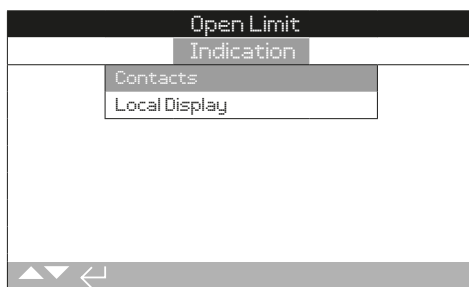
Instruction is provided on:

12.3.1 Contacts

12.3.2 Local display

12.3.1 Indication – Contacts

Monitor Relay



1/11 Monitor Relay

This shows the availability of the system. It provides a volt free change over contact. The two modes used to set monitor relay are as follows:

Available – ELB is available for remote control. It monitors power supplies, internal faults and remote control selected. A loss in one or more will cause the monitor relay to de-energize indicating "not available" for remote control.

Fault – ELB fault Monitors power supplies, and internal faults. A loss in one or more will cause the monitor relay to de-energise indicating "ELB fault".

Default = Available

To change the mode, select from the drop down list box will close and the selected mode will be shown:

Temperature Trip

2/11 Temp High °C

When Temp Trip (High) option is selected from the S1 or S2 function drop-down menu, Temp High °C option will be enabled and it will allow the user to set the High Temp set point.

Default = 85 °C

3/11 Temp Low °C

When Temp Trip (Low) option is selected from the S1 or S2 function drop-down menu, Temp Low °C option will be enabled and it will allow the user to set the Low Temp set point.

Default = -41 °C

Supply Voltage

4/11 Low Limit Alert

Low Limit Alert is active when the mains supply voltage drops below the set voltage value, the value is adjustable 10.0 V to 28.0 V.

Default = 20.4

5/11 Low Limit Alarm

Low limit Alarm is active when the mains supply voltage drops below the set voltage value, the value is adjustable 10.0 V to 35.0 V.

Default = 19.2

6/11 High Limit Alert

High limit Alert is active when the mains supply voltage increases above the set voltage value, the value is adjustable 10.0 V to 28.0 V.

Default = 26.6

7/11 High Limit Alarm

High limit Alarm is active when the mains supply voltage increases above the set voltage value, the value is adjustable 10.0V to 28.0V.

Default = 27.6

12.3.1 Indication – Contacts *continued*

S1 & S2 Contact function and Contact Type

Each relay contact can be set to any one function.

8/11	Function
Function	Indication
Disabled	Contact disabled
Closed Limit	Closed limit position reached
Open Limit	Open limit position reached
Temp Trip (High)	The maximum trip temperature when temperature is > set value
Temp Trip (Low)	The minimum trip temperature when temperature is < set value
Temp Trip (Any)	The trip temperature at either High or Low set values
Stop Selected	Selector set to STOP
Local Selected	Selector set to Local
Remote Selected	Selector set to Remote
Bluetooth	BT communication in progress
PSD Active	Process Shutdown 'PSD' signal applied
PStroke Active	Partial stroke underway
PStroke Pass	Partial stroke passed
PStroke Fail	Partial stroke failed
Alarm Relay	Anything which constitutes an alarm triggers the relay contact
Alarm Reset Active	The manual reset is required
General Alert	Anything which constitutes an alert triggers the relay contact
Volt High Alarm	Volt High Alarm when mains supply > set value
Volt High Alert	Volt High Alert when mains supply > set value
Volt Low Alarm	Volt Low Alarm when mains supply < set value
Volt Low Alert	Volt Low Alert when mains supply < set value
ROR Alarm	Rate of Rise Alarm when pressure/min > set value
ROR Alert	ROR Alert when pressure/min > set value
ROD Alarm	ROD Alarm when pressure/min < set value
ROD Alert	ROD Alert when pressure/min < set value
High Press Alarm	High Pressure Alarm when pressure > set value read by sensor 1
High Press Alert	High Pressure Alert when pressure > set value read by sensor 1
Low Press Alarm	Lo Pres Alarm when pressure < set value read by sensor 1
Low Press Alert	Lo Pres Alert when pressure < set value read by sensor 1
Hi Diff Valve Alarm	High Differential Valve Alarm when differential pressure > set value read by sensor 1 and sensor 2
Hi Diff Valve Alert	High Differential Valve Alert when differential pressure > set value read by sensor 1 and sensor 2
Stall	No output movement detected for > set value
Hi Diff Cylinder	High Differential Cylinder pressure when pressure > set value read by sensor 3
Customer Supply	Customer Supply Fail
Loss of HMI	Loss of HMI Display
Sen Sync Alarm	Pressure sensor 1 and 2 gone out of sync

Default = Disabled





9/11 Contact

Each relay contact output can be configured as normally open (make on condition) or normally closed (break on condition).

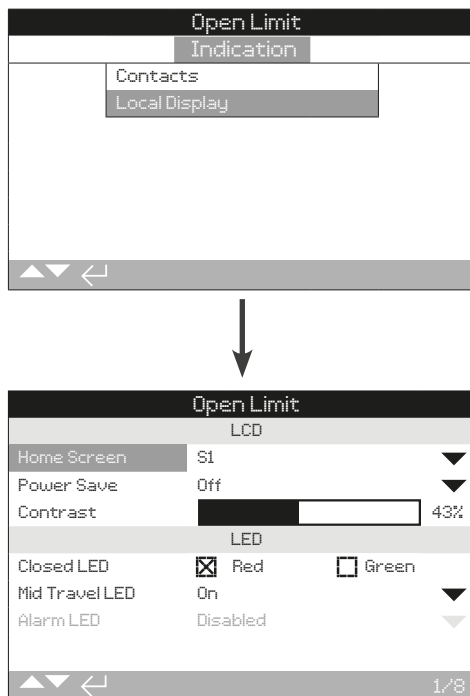
N/O – The contact will complete the circuit when the set function is present.

N/C – The contact will break the circuit when the set function is present.

Default = N/O

To change use    . The checkbox will indicate the selected contact type.

12.3.2 Indication – Local Display



LCD

1/8 Home Screen

Available Home screens included in the drop down list box.

Pressure (default) – Display indicates the current Pressure on the Home screen. Icons are used for closed and open limit positions.

Press + Position – Display indicates the current Pressure and the Position () of the valve.

Diff Press – Display indicates the current Differential pressure in valve.

Diff Press + Position – Display indicates the current Differential and Position of the valve.

To set the home screen, . The drop down list box will close and the selected home screen will be indicated.

2/8 Power save

The LCD has a white backlight to maximize contrast of the segment display and matrix characters. It may be switched off when not required, for instance if a bright display is disruptive within its environment.

To change power saver mode, select any one of the following drop-down option:

Off – The display backlight is permanently illuminated when the ELB is powered up.

Low – The display back light will de-energize after 30 seconds of inactivity.

Extra Low – The display back light will de-energize after 5 seconds of inactivity and all LEDs are permanently off.

Default = Off

To change the power save mode, . The drop down list box will close and the selected home screen will be indicated.

3/8 Contrast

Contrast sets the range between the black and white parts of the screen.

Default will be setup in factory.

To change the Contrast, . The contrast level will be indicated.

LED

LED's only available using ELB-PRO Option.

4/8 Close LED

You can enable Red or Green LED from the checkbox to indicate Closed Position Limit.

Green – The green LED's illuminate at the Closed Limit position, red at Open Limit.

Red – The red LEDs illuminate at the Closed Limit position, green at Open Limit.

Default = Red

To change the close LED, . Enable the check box corresponding to red or green.

12.3.2 Indication – Local Display *continued*

5/8 Mid-Travel LED

On – The yellow LED is on when in mid-travel.

Off – The yellow LED is off when in mid-travel.





Blinker – The yellow LED flashes at approximately 0.5 second intervals when in mid-travel. When stationary, the LED will remain on.

On/Alarm – The yellow LED is on when in mid-travel. If an alarm is active the yellow LED flashes alternately at approximately 0.5 second intervals. Refer Alarm LED.

Off/Alarm – The yellow LED are off when in mid-travel. If an alarm is active the yellow LED flashes alternately at approximately 0.5 second intervals. Refer Alarm LED.

Information regarding the nature of the alarm(s) will be shown at the top of the display.

Default = On





To change the mid-travel LED Mode,    .
The drop-down list box will close and the selected mode will be shown.

6/8 Alarm LED

Enabled – refer to section 5/8 'On/Alarm'


Disabled – refer to section 5/8 'Off/Alarm'

Default = Enabled

To change the Alarm LED mode,    .
The drop-down list box will close and the selected mode will be shown.

7/8 LED/ LCD Test

The LCD/LED test function operates a test to check all of the local display functions. It will cycle periodically between screens and LED functions to provide visual indication of the display to ensure it is in a fully working condition or otherwise.

Press  to begin the test. The screen will return to the local display menu once the test is complete.

Language

7/8 Language

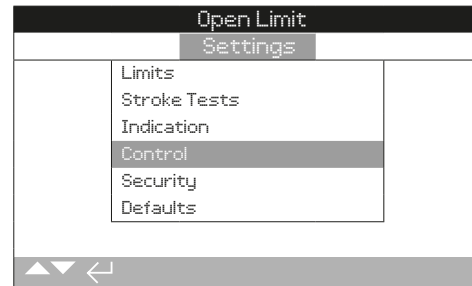
The language used on the display can be selected.

English (default) – The display on the home screen is in English.

Chinese is also available as standard. Other available languages (if available) may be downloaded from the Rotork website, loaded into the Setting Tool using Insight 2 and uploaded into the ELB. Visit www.rotork.com

To change the language,     select the option in drop down list. The selected language will be active for all screens and pages.

12.4 Settings – Control



Instruction is provided on:

12.4.1 Local

Setting Tool control, maintained local control.

The local controls interface determines the main operation of the system, when in local stop no movement is permitted.

12.4.2 Remote

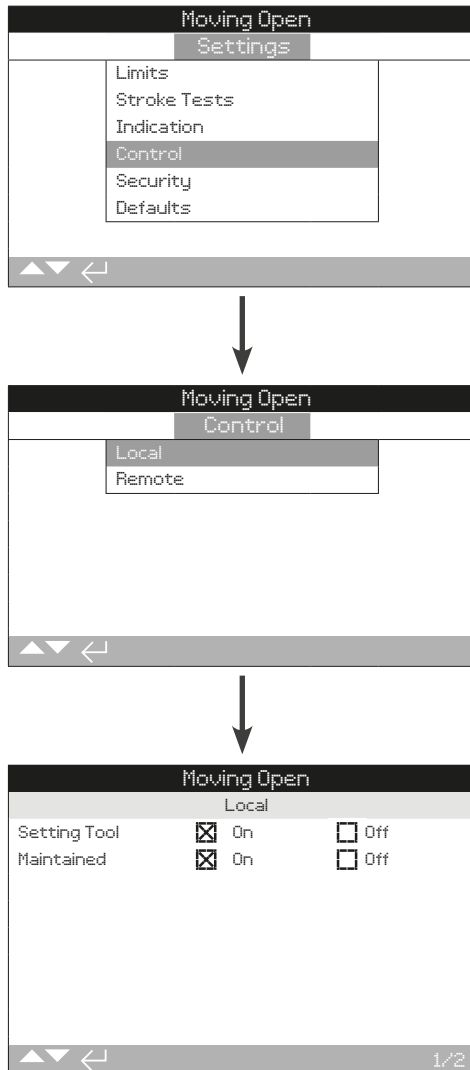
Settings for control source hardwired, networks, and PSD setup.

When in remote control, the signals from the selected remote control source are monitored and issued to the system.

12.4.3 Pipeline Alarms

If the alarms are not enabled in the factory menu, this menu will be hidden. It is used to perform user configured actions in case of an alarm.

12.4.1 Control – Local



1/2 Setting Tool

With control selectors fitted to the ELB, the Setting Tool Close, Open and stop control keys can be used to operate the ELB:

On – Setting Tool control keys active, control is possible only when the red selector is set to Local, refer to Setting Tool. Infrared local control has a range of approximately 0.25 m (10") and must be in direct line of site. Bluetooth Local control has a range up to approximately 10 m (30ft) depending on environment. The black close/open selector remains active.

Off – Setting Tool Close, Open and Stop control keys disabled. Local control is by Close/Open/ Stop selectors fitted to the ELB.

Default = On

To change the options, select the checkbox, . The checkbox will indicate the selected Setting Tool control mode.

2/2 Maintained

Sets the action as a response to Local Open or Close control signals:

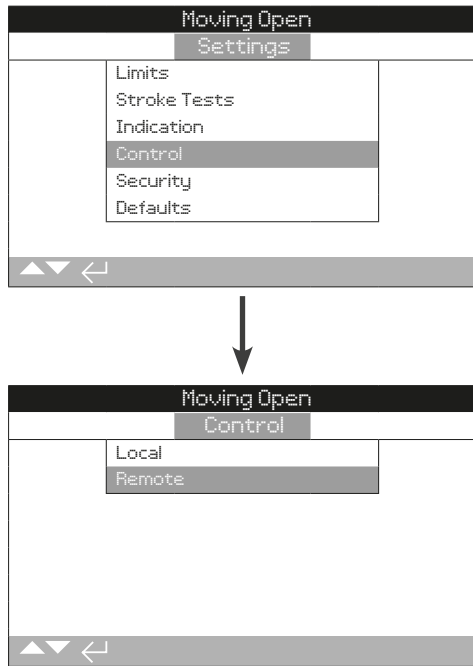
On – The ELB maintains a Local Open or Local Close command when given. It will run until it receives a stop command, it reaches a travel limit or it is reversed – maintained control.

Off – The ELB will run only while an open or close control signal is applied – push to run local control.

Default = On

To change the options, select the checkbox, . The checkbox will indicate the selected Setting Tool control mode.

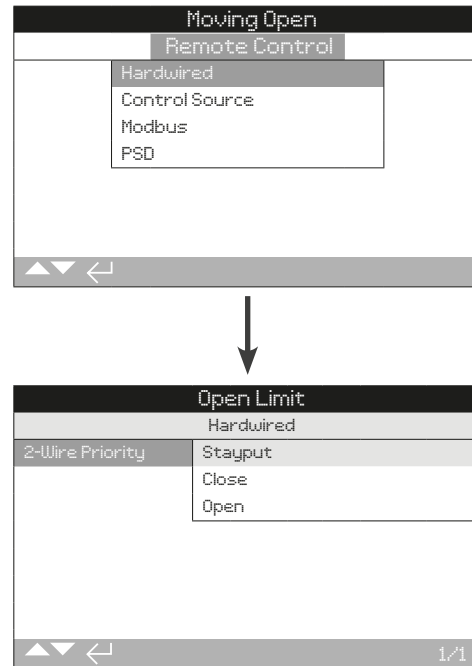
12.4.2 Control – Remote



Instruction is provided on the setup of standard hardwired and remote control options.

The Remote Control menu shows all possible entries. Some menu items displayed are optional remote control forms requiring additional hardware to be fitted in the ELB. The menu list displayed on the ELB will show only the option(s) fitted. Options not fitted will not be included in the menu list.

12.4.2-1 Control – Remote – Hardwired



Hardwired Control is a standard remote control form available on all ELB. It allows settings for hardwired 2-wire priority control.

1/1 2 Wire Priority

Sets the action to be performed by the ELB when a close and open signal is applied simultaneously. Hardwired remote control uses the priority action (open or closed) to set the ELB response.

On applying hardwired close and open signals together, the ELB will:

Stay put – The ELB will not move, or it will stop if running.

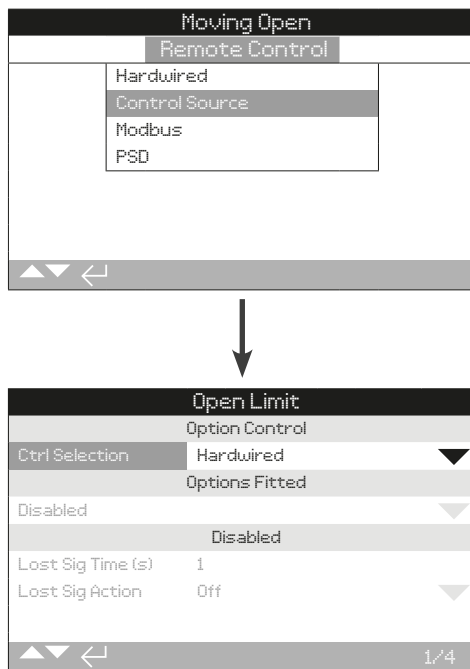
Close – The ELB will move to Close Limit position.

Open – The ELB will move to Open Limit position.

Default = Stay Put

To change, . Select the option from the drop-down list and the selected 2-wire control mode will be indicated.

12.4.2-2 Control – Remote – Control Source



The control source will be set by Rotork to the defaults required for the option(s) fitted.

1/4 Ctrl Selection

Control Selection is used to select the type of input control source to control the ELB.

Disabled – The remote control is disabled. The ELB can only be operated using the local controls.

Hardwired – Remote control is by hardwired digital inputs only.

Source 1 – Control Source 1 will be set by Rotork for the fitted remote Analogue or Network control option(s).

Source 1 + PSD – The open, close and stop commands are accepted from the source only. However the PSD is accepted from source and Hardwired.

Default = Hardwired

2/4 Options Fitted

Not editable. Factory set for the control options fitted. Up to four options can be fitted and will be indicated in the list. Unused allocations will be set to Disabled.

If a control option is fitted after manufacture, the allocation will be set to the fitted option type by Rotork Service. Where the user upgrades an ELB to include a new control option using a kit supplied by Rotork, this must be set before the control mode settings can be made. Contact Rotork for access.

To change the options, select the checkbox, [Up] [Down] [Left] [Right]. The time set after which the lost signal action will be implemented and indicated.

3/4 Lost Sig Time

Set the amount of time in seconds that a signal must be lost before the set Lost Signal Action setting is performed. Adjustable (0-255s).

Default = 1

To change, [Up] [Down] [Left] [Right]. The drop down list will close and the selected action will be indicated.

4/4 Lost Sig Action

Sets the action performed when the signal is lost:

Off – An ELB with Network Control will not perform a lost signal action when communication is lost.

Stay put – If the ELB is not moving or if it is moving it will be stopped by energizing the Stop solenoid/s if communication is lost.

PSD – ELB will perform a process shutdown action if communication is lost.

Close – The ELB runs to the Close Limit if communication is lost.

Open – The ELB runs to the Open Limit if communication is lost.

Default = Off

To change, [Up] [Down] [Left] [Right]. The drop down list will close and the selected action will be indicated.

The first screenshot shows the 'Moving Open' control interface with 'Local' and 'Remote' options. The second screenshot shows the 'Remote Control' interface with 'Hardwired', 'Control Source', 'Modbus', and 'PSD' options. The third screenshot shows the 'Modbus' configuration page with the following settings:

Modbus	
Address	247
Termination	<input type="checkbox"/> On <input checked="" type="checkbox"/> Off
Baud Rate	9600
Parity/Stop	None/1 stop
Second Address	247
Control	Ch1 Ctrl Ch2 Ctrl

The Modbus Control option settings page is shown below with its default settings. Modbus is a control option and is available in single or dual channel versions.

Note: Only Modbus option (if fitted) is shown.

1/6 Address

Modbus option must be allocated a unique address in the system to which it is attached. Changes made to this parameter will take effect immediately. The address range is 1 – 247.

Default = 247

To change, . The set address will be indicated.

2/6 Termination

Modbus networks require termination resistors at each end of the highway. The Modbus option has a passive (120 Ohm) termination resistor (2 for dual) built in, which can be switched in or out of the circuit.

On – Termination resistor(s) are switched in. In a dual channel Modbus option, when 'On' is selected the termination resistors will be switched in for both channels.

Off – Termination resistor(s) are switched off.

Default = Off

To change, . The checkbox will indicate the set termination mode.

3/6 Baud rate

The Modbus option must be set to the RS485 highway baud rate. Changes made to this parameter will take effect immediately. The baud rates selectable using the drop down box are 300, 600, 1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200.

Default = 300

To change, . The drop down list will close and the selected baud rate will be indicated.

4/6 Parity/Stop

Where Modbus parity bit detection is used, the module must be set with the same parity settings as the host. The choices of parity are None, Even, Odd. This item also allows selection for the number of stop bits as 1 or 2. The drop down box requires selection of the parity and stop bits together.

Default = None / 1 Stop

To change, . The drop down list will close and the selected parity and stop bit will be indicated.

5/6 Second Address

Used for dual Modbus option (redundant) only. Refer to wiring diagram.

A dual Modbus card has two channels available for connection to separate or the same highway(s). The second channel address is set up with this setting. It may be identical or different to the first channel depending on the requirement of the system.

To change, . The set second address will be indicated.

6/6 Control

- Ch1 Ctrl Ch2 Ctrl:** This setting allows both channels to control the actuator.
- Ch1 Ctrl Ch2 On:** This setting allows channel 1 to control the actuator and Channel 2 to monitor status only.
- Ch2 Ctrl Ch1 On:** This setting allows channel 1 to control the monitor status and Channel 2 to actuator only.
- Ch1 On:** Ch1 switches the channel on.
- Ch2 On:** Ch2 switches the channel on.

Default = Ch2 Ctrl CH1 On

To change, . The set second address will be indicated.

12.4.2-4 Control – Remote – PSD Action

The diagram illustrates the navigation between two configuration screens. The top screen, titled 'Moving Open', has a 'Remote Control' tab with a list of options: 'Hardwired', 'Control Source', 'Modbus', and 'PSD'. An arrow points down to the second screen, also titled 'Moving Open', which is the 'PSD Action' configuration screen. This screen contains a table with the following data:

PSD Action	
Contact Type	<input checked="" type="checkbox"/> N/C <input type="checkbox"/> N/O
Remap	Disabled
Remap Logic	OR

1/3 PSD Contact Type

The Process shutdown contact type can be set as either N/O or N/C.

N/C – Normally close

N/O – Normally open

Default – N/C

To change, . The checkbox will indicate the selected mode.

2/3 Remap PSD

The PSD input can be remapped as Open or Close hardwired input.

Disabled – Disables the Remap PSD.

Close – Changes the function of PSD signal to the ELB Close.

Open – Changes the function of PSD signal to the ELB Open.

Default = Disabled

To change, . The drop down list box will close and selected.

3/3 Remap PSD Logic

Remapped PSD input will be AND/OR with the hardwired Open/Close based on the Remap Logic Configuration and this will be processed as new Open/Close commands.

OR – The PSD input to the ELB will be OR'd with Open or Close signal.

AND – The PSD input to the ELB will be AND'd with Open or Close signal.

Default = OR

If the ESD is remapped to open/close, the action will depend on the Mapped Logic AND/OR. The scenarios are listed down below:

Configuration 1 – ESD is remapped to Open. Mapped Logic Set to OR. Initial position Stop.

Action 1 – Remote ESD command is given. The control action executed will be Open.

Configuration 2 – ESD is remapped to Open. Mapped Logic Set to AND. Initial position Stop.

Action 2 – Remote ESD command is given. It will stay put until Remote Open command is given. Only if both the Remote open and Remote ESD commands are given, the control action Open will be executed.

Configuration 3 – ESD is remapped to Open. Mapped Logic Set to AND. Initial position Stop.

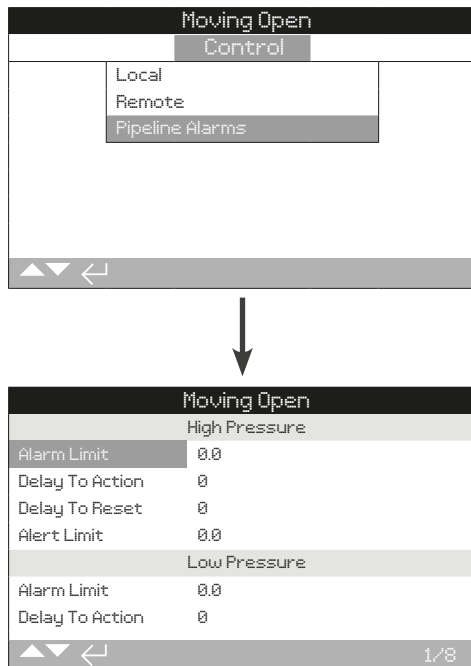
Action 3 – Remote Open command is given. It will stay put until Remote ESD command is given. Only if both the Remote open and Remote ESD commands are given, the control action Open will be executed.

To change, . The drop down list box will close and selected.

12.4.3 Control – Pipeline Alarms

Pipeline alarms are factory set to customer specifications. Only two alarm sets may be active at once.

The pipeline alarms page is shown with the default settings.



Alarm Set 1 – Rate of Rise

Rate of Rise is to monitor the rate of increase of pipeline pressure. If the rate of pressure rises over the pre-set bar/min value, first an alarm will become active to warn the user. If the rate of pressure continues to rise then an alarm condition is activated.

1/20 Alarm Limit

Sets the rate of rise limit of the pipeline alarm.
Adjustable (0.2-20.0) bar/min
Default = 0

2/20 Delay to Action

Sets the delay of action for the rate of rise alarm.
Adjustable (0-1800) seconds
Default = 30

3/20 Delay to Reset

Sets the delay of reset for the rate of rise alarm.
Adjustable (0-1800) seconds
Default = 0

4/20 Alert Limit

Sets the limit for the rate of rise alert.
Adjustable (0.2-20.0) bar/min
Default = 0

Alarm Set 2 – Rate of Drop

Rate of Drop is to monitor the rate of decrease of pipeline pressure. If the rate of pressure drops under the pre-set bar/min value, first an alarm will become active to warn the user. If the rate of pressure continues to drop then an alarm condition is activated.

5/20 Alarm Limit

Sets the limit for the rate of drop alarm.
Adjustable (0.2-20.0) bar/min
Default = 0

6/20 Delay to Action

Sets the delay of action time for the rate of drop alarm.
Adjustable (0-1800) seconds
Default = 30

7/20 Delay to Reset

Sets the delay to reset for the rate of drop alarm.
Adjustable (0-1800)
Default = 0

8/20 Alarm Limit

Sets the limit for the rate of drop alert.
Adjustable (0.2-20.0) bar/min
Default = 0

Alarm Set 3 – High Pressure

High Pressure is to monitor for any increase of pipeline pressure. If pressure rises over the pre-set value first an alarm will become active to warn the user; if the pressure continues to rise then an alarm condition is activated.

9/20 Alert Limit

Set the maximum pressure limit of the pipeline alarm.
Adjustable (0-300 bar)
Default = 0

10/20 Delay to Action

Set the delay to action of the pipeline alarm.
Adjustable (0-1800) seconds
Default = 0

11/20 Delay to Reset

Set the delay to reset of the pipeline alarm.
Adjustable (0-1800) seconds
Default = 0

12/20 Alert Limit

Set the limit of the pipeline alert.
Adjustable (0-300 bar)
Default = 0

12.4.3 Control – Pipeline Alarms *continued*

Alarm Set 4 – Low Pressure

Low Pressure is to monitor for any decrease of pipeline pressure. If pressure drops under the pre-set value first an alarm will become active to warn the user; if the pressure continues to drop then an alarm condition is activated.

13/20 Alarm Limit

Set the minimum pressure limit of the pipeline alarm.

Adjustable (0-300 bar)

Default = 0

14/20 Delay to Action

Set the delay to action of the pipeline alarm.

Adjustable (0-1800) seconds

Default = 0

15/20 Delay to Reset

Set the delay to reset of the pipeline alarm.

Adjustable (0-1800) seconds

Default = 0

16/20 Alert Limit

Set the alarm alert limit.

Adjustable (0-300 bar)

Default = 0

Alarm Set 5 – High Diff Valve

High Diff Value is to monitor for any difference in pressure between sensor 1 and sensor 2. If there is a difference in pressure over the specified value first an alarm will become active to warn the user; if the pressure difference continues to rise then an alarm condition is activated.

17/20 Alarm Limit

Sets the limit for high differential alarm.

Adjustable (0-300 bar)

Default = 0

18/20 Delay to Action

Sets the delay of action for the high differential alarm.

Adjustable (0-1800) seconds

Default = 0

19/20 Delay to Reset

Sets the delay to reset for the high differential alarm.

Adjustable (0-1800) seconds

Default = 0

20/20 Alert Limit

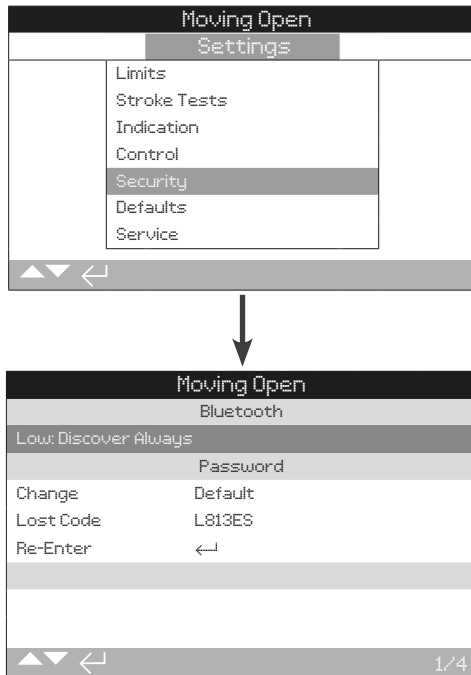
Sets the limit for the high differential alert.

Adjustable (0-300 bar)

Default = 0

Note: This is used with two pressure sensors, sensor 1 and 2. Only shows if alarm enabled in priority table. Should support unit measurement change.

12.5 Settings – Security



1/4 Bluetooth

Low: Discover always – The ELB is available for Bluetooth communication using a PC running Insight 2 at all times. This setting provides convenient connection when Insight 2 is used. Communication with the Rotork Bluetooth® Setting Tool *Pro* is available.

Medium: Discover in Local and Stop – The ELB is available for Bluetooth communication using a PC running Insight 2 when it is selected to Local or Stop using the red selector. Connection is unavailable in Remote. The Local/Stop/Remote selector can be padlocked in all three positions. Communication with the Rotork Bluetooth® Setting Tool *Pro* is available.

High: Infra-Red Initiation only – The ELB is not available for Bluetooth communication using a PC running Insight 2. Communication with the Rotork Bluetooth® Setting Tool *Pro* is available using the quick connect method.

Very High: Disabled Infra-Red only – All Bluetooth communication is disabled. Communication is by Infrared commands from the Rotork Bluetooth® Setting Tool *Pro* only.

Default = Low

Note. If requested, the user required Bluetooth security level can be set and made non-editable by Rotork. Contact Rotork.

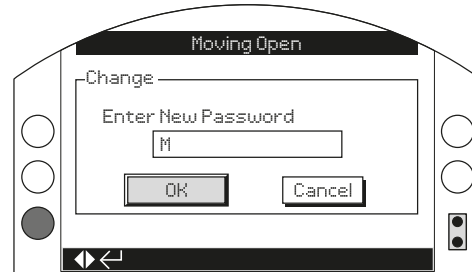
To change, . The drop down list will close and the selected Bluetooth security level will be indicated.

2/4 Change

You can change the default password provided by **ROTORK**. This can be changed to a new password selected by the user.

To set a user selected Password press . The Change password display will be shown.

Enter user selected Password:



Use directional arrows to highlight new password entry box and press .

Use to scroll through alphanumerical values to displays the required character.

Use to move to next character.

Use to delete the previous character.

Use when selected password is complete.

Navigate to the OK button using . Press .

The user selected password is now active.

2/4 Change password will then indicate: User.

The Lost Code characters will change.

3/4 Lost Code

No authentication. Lost Code is used if a user password has been set and then lost or forgotten.

Note: Contact Rotork quoting the code as read from the display. After caller verification, Rotork can then provide the user set password.

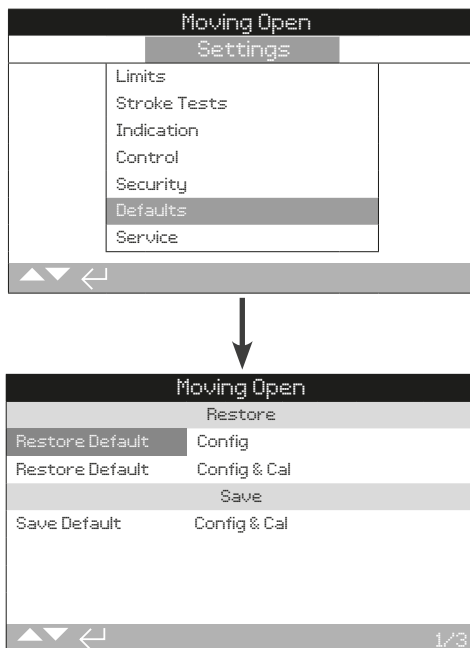
4/4 Re-Enter

The Re-enter password control is used when high level access is required by Rotork Service or by a user requiring high level access in order to make other settings available. Contact Rotork for user high level password.

Enter the provided higher access level password.

Once correctly entered, access to high level settings as indicated in this manual will be made available.

12.6 Settings – Defaults




2/3 Save

Save Default – Config and Cal

All ELB functions are saved to Rotork default before dispatch. If requested at time of order alternative user specified settings will be stored.

The configuration and calibration settings are saved.

After entering the High level password, press .

A warning will be given, to continue, press .

The current settings shown on each setting page will be saved as default.

Allows default settings and factory set limits to be restored.

1/3 Restore


Restore Default – Config


All ELB functions are configured to Rotork default settings before dispatch. If requested at time of order, alternative user specified settings will be set.

Should difficulty be encountered during commissioning, the default settings can be restored, returning the ELB configuration to its default settings.

Standard default settings are indicated in this manual.

To restore the default settings, press .

A warning will be given, to continue, press .

 All settings must then be checked / set as required for valve operation and process control/indication.


2/3 Restore

Restore Default – Config and Cal

All ELB functions are configured to Rotork default before to dispatch. If requested at time of order, alternative user specified settings will be set.

The configuration and calibration defaults are restored.

After entering the High level password, press .

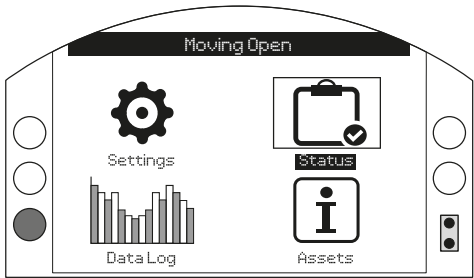
A warning will be given, to continue, press .

The current settings shown on each setting page will be copied to defaults.

13. Status

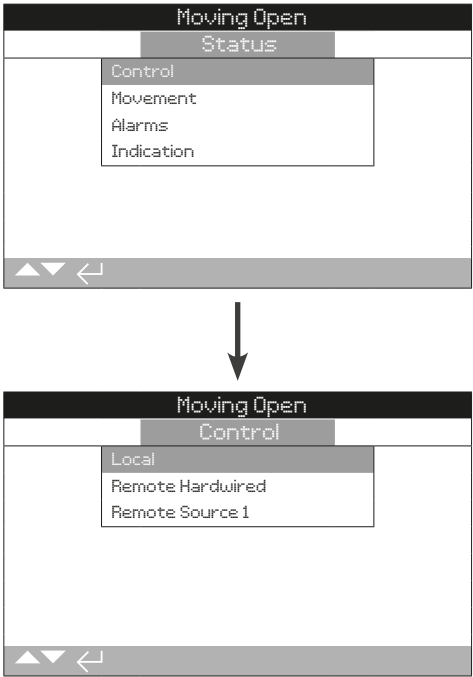
Status menus on the ELB display are provided to assist diagnostics. The displayed information is live data taken from the main EEPROM/Memory and can be used to view the status of the control signals, alarms, movement of the valve, and internal diagnostic data. A ticked checkbox indicates that the status, relay, alert or alarm is active.

Once connected, navigate to the main icon menu and using the four directional arrows, highlight and select the Status Icon:

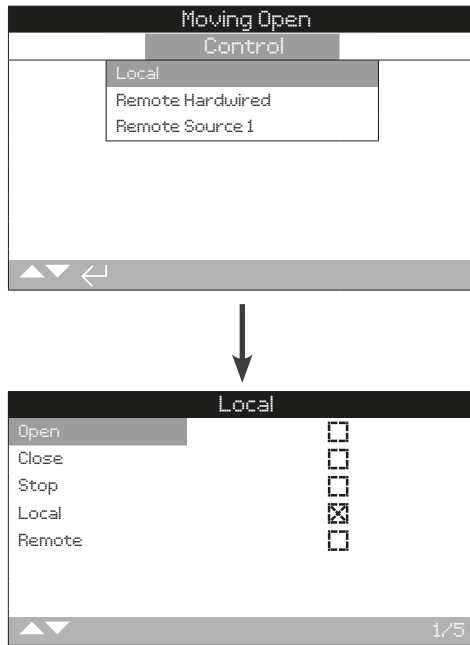


13. Status menu	Page
13.1 Control	32
13.1.1 Local	33
13.1.2 Remote Hardwired	34
13.1.3 Remote Source 1	34
13.2 Movement	35
13.3 Alarms	36
13.3.1 Process	36
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13.4 Indication	40
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13.4.2 Monitor Relay	41
13.4.3 Stroke Tests	41

13.1 Status – Control



13.1.1 Control – Local



This screen displays the status from each of the local controls knobs. As the local controls are operated the corresponding signals are produced. Movement may occur during testing of the local controls. If this is not desired, select STOP on the local selectors.

To scroll through this information use and .

1/5 Open

When active, this indicates the local controls have been turned to open and a local control open signal is being received.

2/5 Close

When active, this indicates the local controls have been turned to close and a local control close signal is being received.

3/5 Stop

When active, this indicates the local controls have been set to stop and a local control stop signal is being received.

When the local controls have been set to stop, the ELB will not move to position regardless of the local or remote control signals it receives.

4/5 Local

When active, this indicates the local controls have been set to local and a local control signal is being received.

When the local controls have been set to local the open/close control will operate the ELB, which will run to its limits unless interrupted by selecting Local Stop. Any remote control signals received will not operate the actuator while the local controls are set to local.

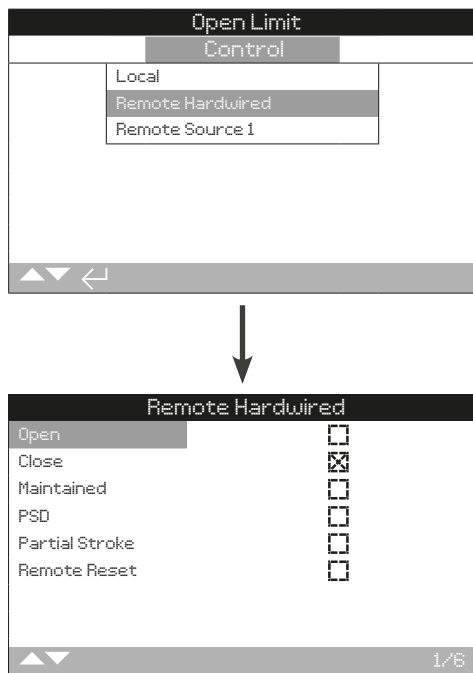
A PSD signal will still trigger the emergency shutdown action in Local. PSD can also be set to operate an actuator selected to Local Stop.

5/5 Remote

When active, this indicates that the local controls have been set to remote and a signal is being received.

When the local controls have been set to remote, the control signals from remote hardwired controls and/or remote source one will operate the actuator. Any local control signals received will not operate the actuator while the local controls are set to remote.

13.1.2 Control – Remote Hardwired



This screen displays the status from the remote hardwired controls. As the remote hardwired controls are operated, the corresponding signals are produced. Valve movement may occur during testing. If this is not desirable, select STOP on the local controls.

To scroll through this information use and .

1/6 Open

When active, this indicates that an open signal is being received.

2/6 Close

When active, this indicates that a close signal is being received.

3/6 Maintained

When active, this indicates that a maintained signal is being received.

If a signal is present the actuator will self-maintain as a response to a fleeting open or close control signal and will run until the maintain line is broken, it reaches a limit or is reversed.

4/6 PSD

When active, this indicates that a PSD (Process Shut Down) signal is being applied.

PSD can be set to open, close or stayput. PSD signals are higher priority than local or remote signals and will operate under both local and remote control selection. PSD can also be set to operate an actuator selected to Local Stop.

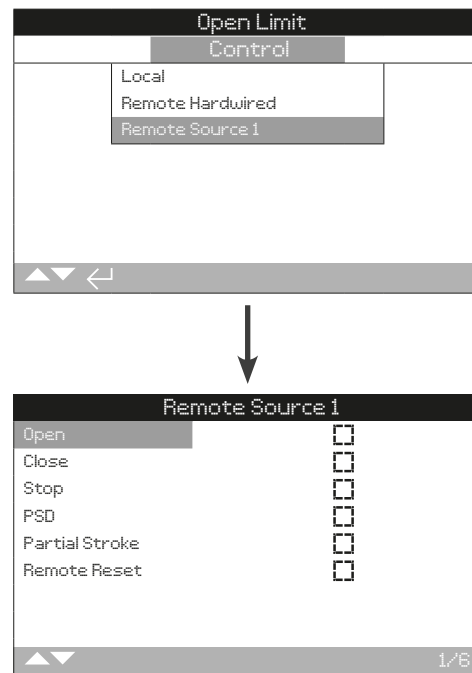
5/6 Partial Stroke

When active, this indicates that a partial stroke signal is being received.

6/6 Remote Reset

The external input remotely resets the ELB.

13.1.3 Control – Remote Source 1



This screen displays the status of remote source 1. As the remote source controls are operated, the corresponding signals are produced. Valve movement may occur during testing. If this is not desirable, select STOP on the local controls.

To scroll through this information use and .

1/6 Open

When active, this indicates that an open signal is being received.

2/6 Close

When active, this indicates that a close signal is being received.

3/6 Stop

When active, this indicates that a stop signal is being received.

4/6 PSD

When active, this indicates that a PSD (Process Shut Down) signal is being received.

PSD can be set to open, close or stayput. PSD signals are higher priority than local or remote signals and will operate under both local and remote control selection. PSD can also be set to operate an actuator selected to Local Stop.

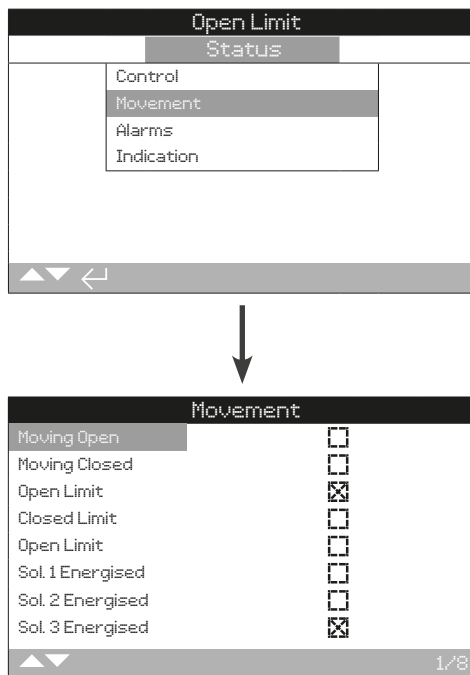
5/6 Partial Stroke

When the signal is active, this indicates a partial stroke signal is being received.

6/6 Remote Reset

The external input remotely resets the ELB.

13.2 Status – Movement



This screen displays the movement status of the actuator.

To scroll through this information use and .

1/8 Moving Open

When active, this status indicates that the actuator is moving open.

2/8 Moving Closed

When active, this status indicates that the actuator is moving closed.

3/8 Open Limit

When active, this status indicates that the actuator is at the open limit.

4/8 Closed Limit

When active, this status indicates that the actuator is at the closed limit.

5/8 Sol 1 Energised

When active, this status indicates that the solenoid 1 is energised.

6/8 Sol 2 Energised

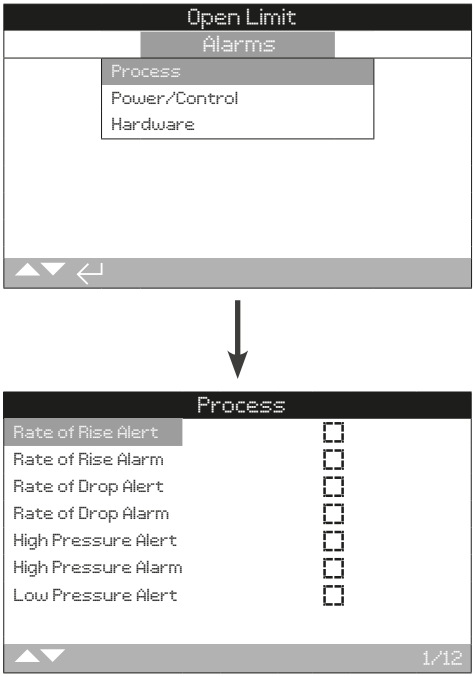
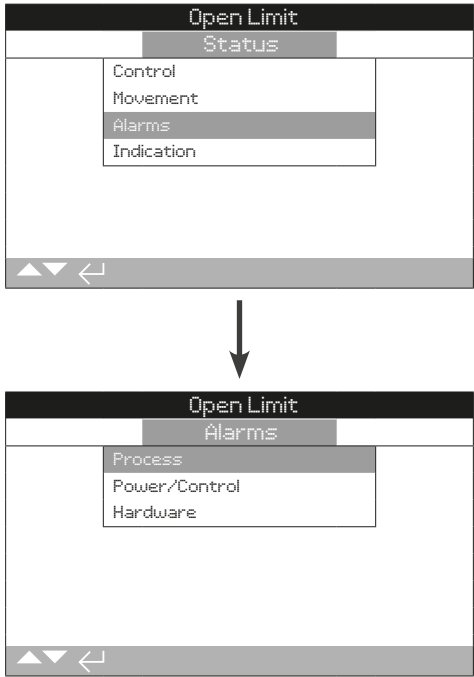
When active, this status indicates that the solenoid 2 is energised.

7/8 Sol 3 Energised

When active, this status indicates that the solenoid 3 is energised.

8/8 Sol 4 Energised

When active, this status indicates that the solenoid 4 is energised.



This screen displays the current alarm status of the ELB.

To scroll through this information use  and .

1/12 Rate of Rise Alert

When active, this status indicates that the last average pressure sample is larger than the sample 60 seconds before it by an amount that exceeds the set ROR alert limit.

2/12 Rate of Rise Alarm

When active, this status indicates that the last average pressure sample is larger than the sample 60 seconds before it by an amount that exceeds the set ROR alarm limit.

3/12 Rate of Drop Alert

When active, this status indicates that the last average pressure sample is smaller than the sample 60 seconds before it by an amount that exceeds the set ROD alert limit.

4/12 Rate of Drop Alarm

When active, this status indicates that the last average pressure sample is smaller than the sample 60 seconds before it by an amount that exceeds the set ROD alarm limit.

5/12 High Pressure Alert

When active, this status indicates that the ELB detected pressure beyond the set maximum amount of pressure for the High Pressure Alert.

6/12 High Pressure Alarm

When active, this status indicates that the ELB detected pressure beyond the set maximum amount of pressure for the High Pressure Alarm.

13.3.1 Alarms – Process *continued*

7/12 Low Pressure Alert

When active, this status indicates that the ELB detected pressure below the set minimum amount of pressure for the Low Pressure Alert.

8/12 Low Pressure Alarm

When active, this status indicates that the ELB detected pressure below the set minimum amount of pressure for the Low Pressure Alarm.

9/12 Hi Diff Valve Alert

When active, this status indicates that the ELB detected that the difference in pressure seen across the valve in the pipeline is higher than the set point for the high differential valve alert.

10/12 Hi Diff Valve Alarm

When active, this status indicates that the ELB detected that the difference in pressure seen across the valve in the pipeline is higher than the set point for the high differential valve alarm.

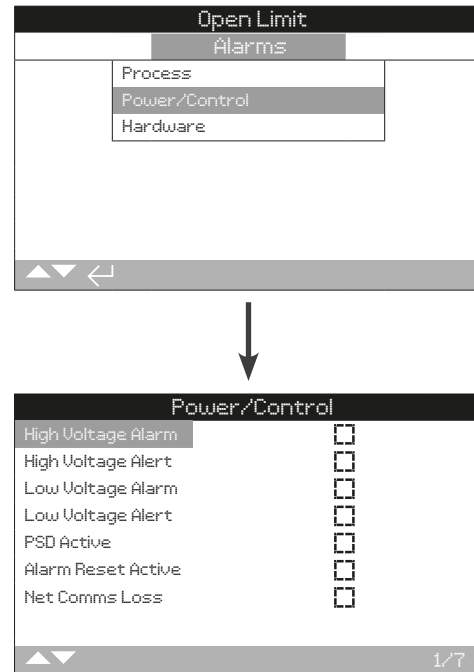
11/12 Stall

When active, this status indicates that no movement has been detected and the valve has stalled.

12/12 High Diff Cylinder

When active, this status indicates that ELB has detected that the difference in pressure seen across actuator cylinder is higher than the set point for the high differential cylinder setting.

13.3.2 Alarms – Power/Control



This screen displays the current movement of the alarm status of the ELB.

To scroll through this information use and .

1/7 High Voltage Alarm

When active, this alarm indicates that the voltage has increased above the set High Voltage Alarm limit.

2/7 High Voltage Alert

When active, this alert indicates that the voltage has increased above the set High Voltage Alert limit.

3/7 Low Voltage Alarm

When active, this alarm indicates that the voltage dropped below the set Low Voltage Alarm limit.

4/7 Low Voltage Alert

When active, this alert indicates that the voltage has dropped below the set Low Voltage Alert limit.

5/7 PSD Active

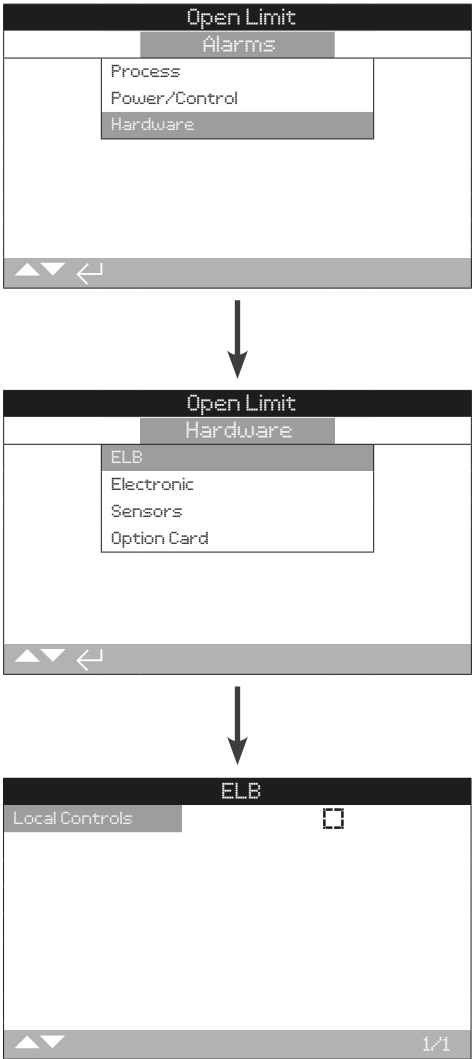
When active, this status indicates that the ELB is currently in the process of carrying out a Process Shutdown.

6/7 Alarm Reset Active

When active, this status indicates that the ELB is receiving a manual reset signal.

7/7 Net Comms Loss

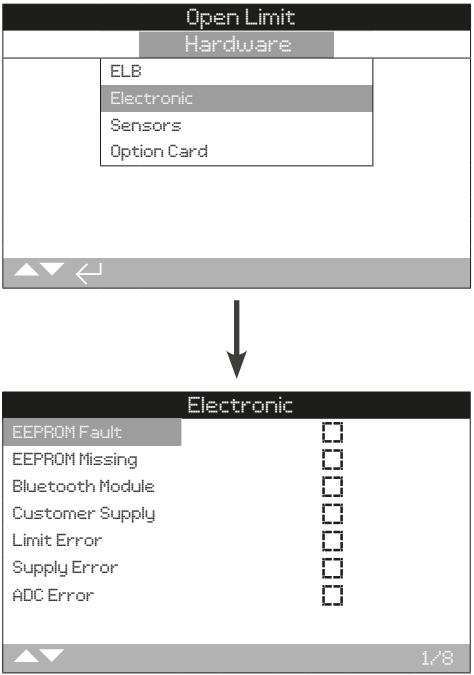
When active, this status indicates that the ELB has detected a loss of connection with its option card or CANbus.



ELB

1/1 Local Controls

When active, this status indicates that the ELB has detected that there is a fault with the Local Controls.



Electronic

- 1/8 EEPROM Fault**

When active, this status indicates that the ELB has detected a fault with the internal EEPROM.
- 2/8 EEPROM Missing**

When active, this status indicates that the ELB has detected that the internal EEPROM is not connected.
- 3/8 Bluetooth Module**

When active, this status indicates that the ELB has detected a fault with its internal Bluetooth Module.
- 4/8 Customer Supply**

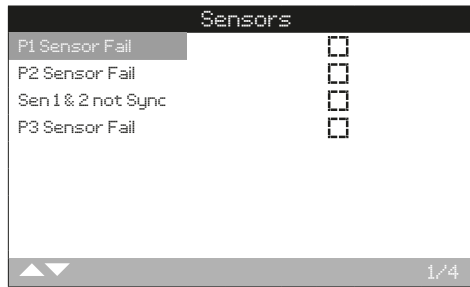
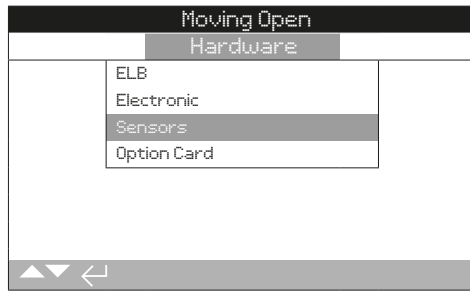
When active, this status indicates that the ELB has detected a fault with the internal Customer Supply.
- 5/8 Limit Error**

When active, this status indicates that the ELB has detected a fault at a limit.
- 6/8 Supply Error**

When active, this status indicates that the ELB has detected a fault with the internal Electrical Supply.
- 7/8 ADC Error**

When active, this status indicates that the ELB has detected a fault with the internal Analogue to Digital Converter.
- 8/8 Temp Sensor**

When active, this status indicates that the ELB has detected a fault with the internal temperature sensor.



Sensors

1/4 Press Sensor 1 Fail

When active, this status indicates that the ELB has detected a fault with Pressure Sensor 1.

2/4 Press Sensor 2 Fail

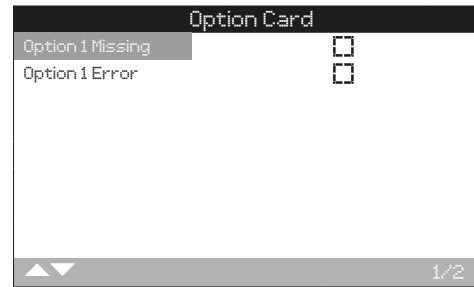
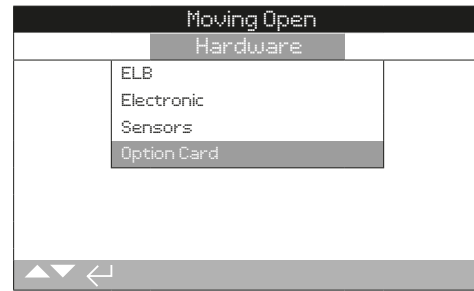
When active, this status indicates that the ELB has detected a fault with Pressure Sensor 2.

3/4 Sen 1 and 2 not Sync

When active, this status indicates that the ELB has detected a difference in pressure measured by Sensor 1 and Sensor 2 that exceeds the sensor synchronisation tolerance. This error is only possible when sensor 2 is set to check sensor 1s pressure reading.

4/4 Sensor 3 Fail

When active, this status indicates that the ELB has detected a fault with Sensor 3.



Option Card

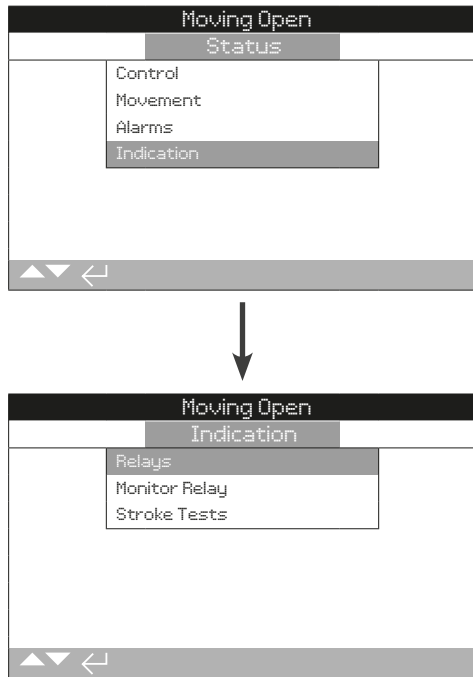
1/2 Option 1 Missing

When active, this status indicates that the ELB has detected that option 1 is missing.

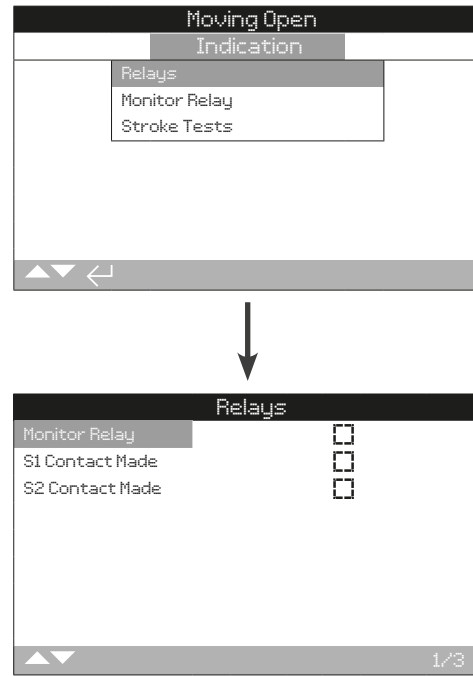
2/2 Option 1 Error

When active, this status indicates that the ELB has detected that option 1 has a fault.

13.4 Status – Indication



13.4.1 Indication – Relays



This screen displays the status of the ELB's relays.

1/3 Monitor Relay

When active, this indicates that monitor relay is active indicating ELB is available for Remote control/indicating fault as per the mode setup.

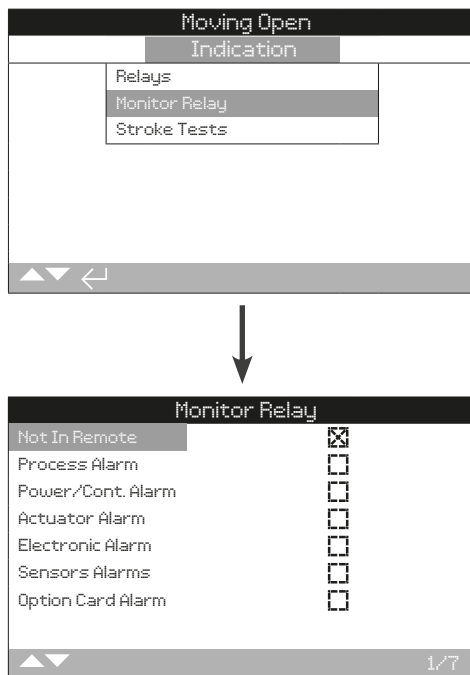
2/3 S1 Contact Made

When active, this indicates that relay S1 is energised.

3/3 S2 Contact Made

When active, this indicates that relay S2 is energised.

13.4.2 Indication – Monitor Relay



This screen displays the current monitor relay status of the ELB.

When the monitor relay is used in availability mode; an inactive relay status indicates that the ELB is not available for remote control, there are no detected internal failures and the ELB is powered. An active relay status indicates the ELB is available for remote control.

When the monitor relay is used in fault mode; an inactive relay status indicates that there are no detected internal failures and the ELB is powered. An active relay status indicates the ELB has a fault present and the ELB is not available for remote control.

1/7 Not in Remote

When active, this indicates that the ELB's local controls are not set to remote.

2/7 Process Alarm

When active, this indicates that the ELB has detected a fault related to the actuator's process such as a valve stall.

3/7 Power/Cont Alarm

When active, this indicates that the ELB has detected an issue with the power supply, controls or through an active PSD.

4/7 ELB Alarm

When active, this indicates that the ELB Alarm is Active.

5/7 Electronic Alarm

When active, this indicates that the ELB has detected a fault with the electronics.

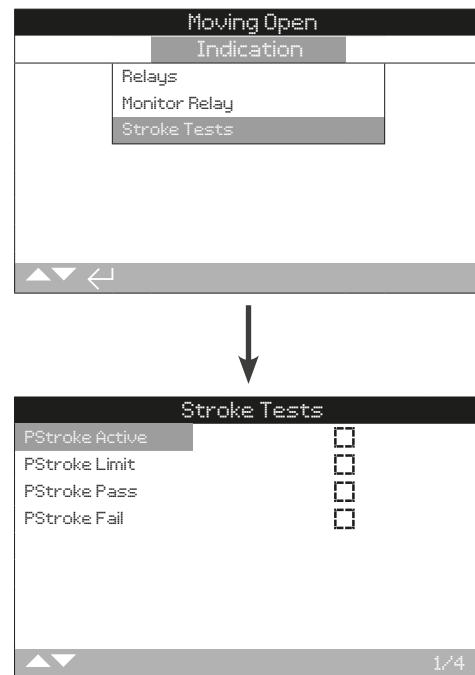
6/7 Sensor Alarm

When active, this indicates that the ELB has detected a fault with a sensor.

7/7 Option Card Alarm

When active, this indicates that the ELB has detected that there is an issue with option card (if fitted).

13.4.3 Indication – Stroke Tests



This screen displays the current partial stroke status of the ELB.

1/4 PStroke Active

When active, this indicates that a Partial Stroke test is ongoing.

2/4 PStroke Limit

When active, this indicates that the defined limit of the Partial Stroke test has been reached.

3/4 PStroke Pass

When active, this indicates that the valve has passed the Partial Stroke test.

4/4 PStroke Fail

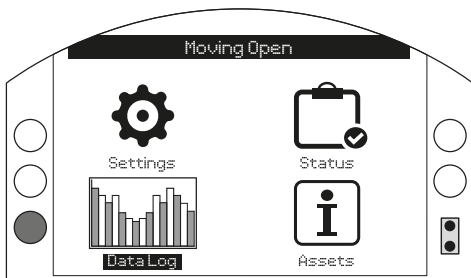
When active, this indicates that the valve has failed the Partial Stroke test.

14. Data Log

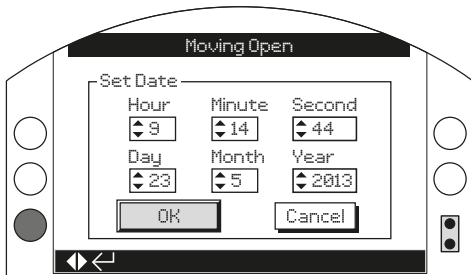
ELB can store operational and environmental information. You can view all of this stored information through the various logs in the data log menu. Due to the nature of the graphical display, information can be displayed locally at the actuator using the supplied Rotork Bluetooth® Setting Tool *Pro*.

This stored information can be used to view and identify trends for any type of alarms/errors that may affect valve operation, the ELB or the process. With asset management becoming a preferred option, the data log helps to achieve goals set out by process conditions.

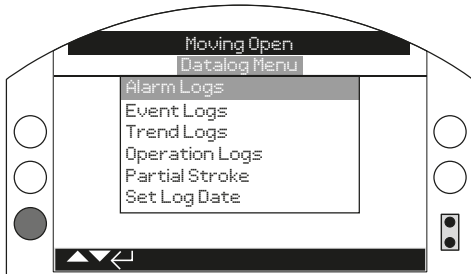
Refer to section 11.2 for connecting to the ELB. Once connected, use the four directional arrows to navigate to the main icon menu. From here you can highlight and select the data log icon:



When you enter the data log menu for the first time you will be prompted to set the current date and time. This time and date is ONLY for the local display and does not affect any data downloaded on to the data log for viewing in Insight 2.

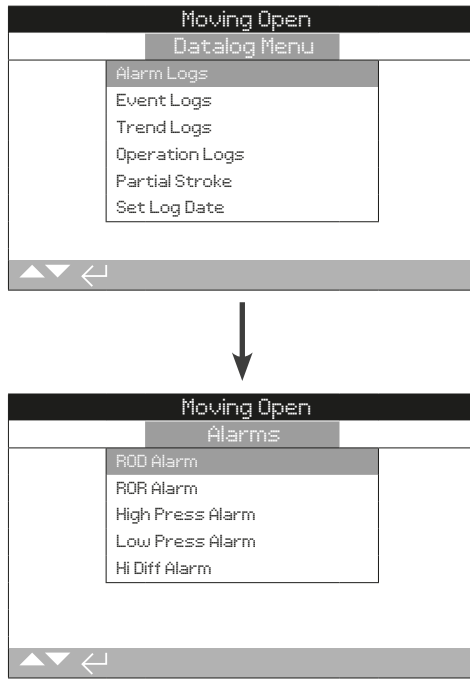



Check the current time and press enter . You will now be shown the main data log menu.



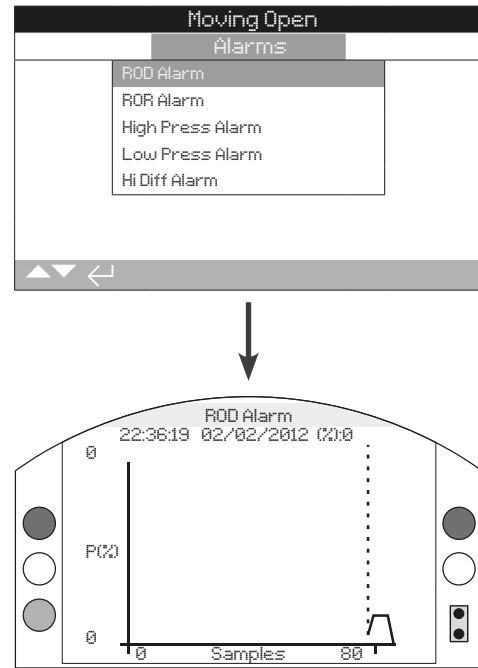
14	Data Log menu	Page
14.1	Alarm Logs	43
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14.1 Data Log – Alarm Logs



Press  to view the selected Trend Log.

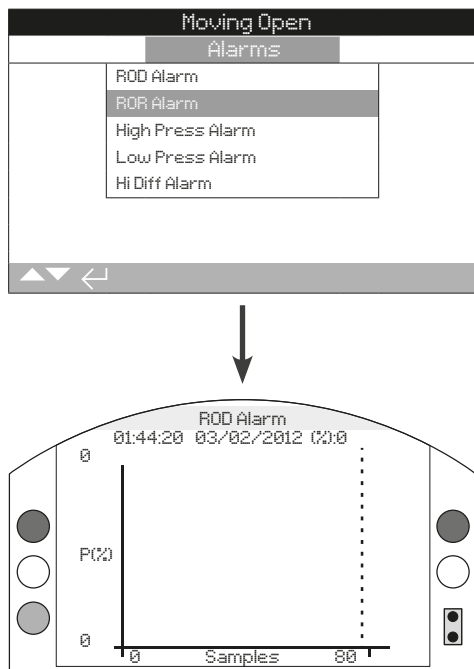
14.1.1 Alarm Logs – ROD Alarm



ROD is rate of drop in pressure. The curve represents pressure across the samples taken for the most recent rate of drop alarm event.

Use right and left keys to view samples along with amplitudes along with vertical axis in percentage.

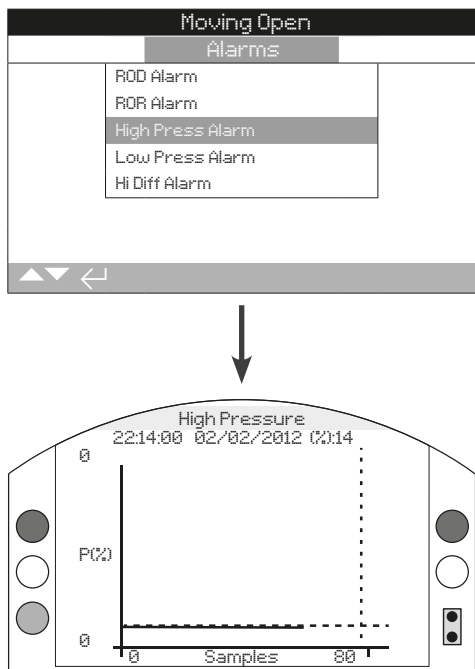
14.1.2 Alarm Logs – ROR Alarm



ROR is rate of rise in pressure. The curve represents pressure across the samples taken for the most recent rate of rise alarm event.

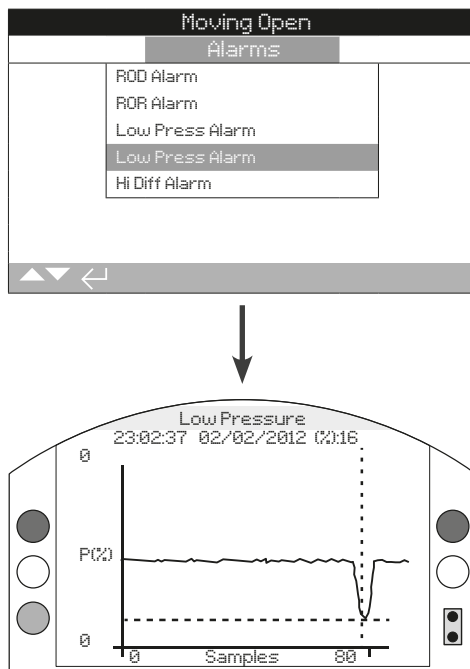
Use right and left keys to view samples along with amplitudes along with vertical axis in percentage.

14.1.3 Alarm Logs – High Pressure Alarm



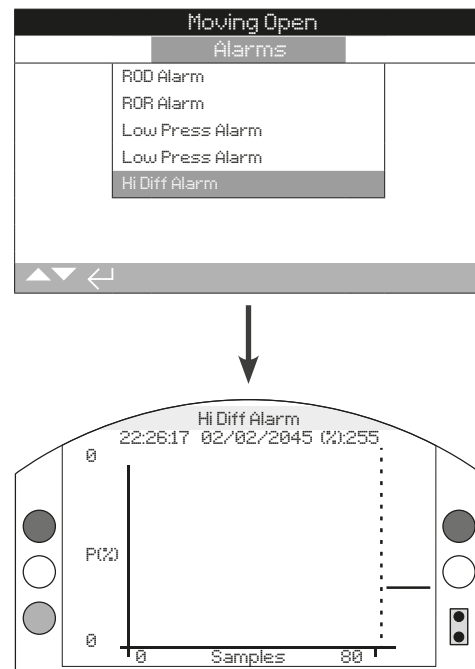
The curve shows the pressure in (%) across samples taken when the most recent high pressure alarm event was recorded by the ELB.

14.1.4 Alarm Logs – Low Pressure Alarm

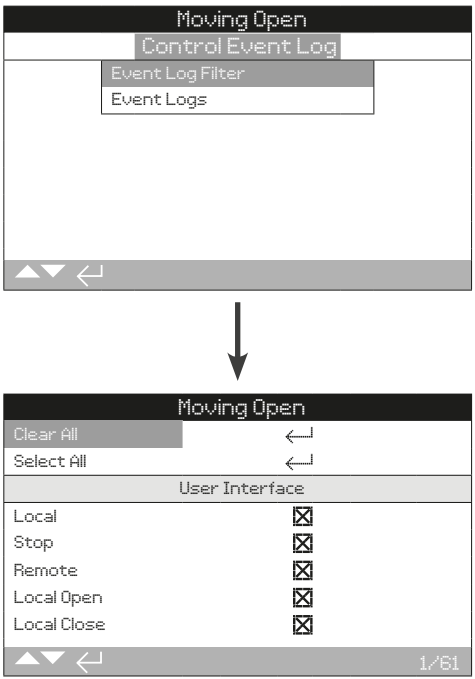
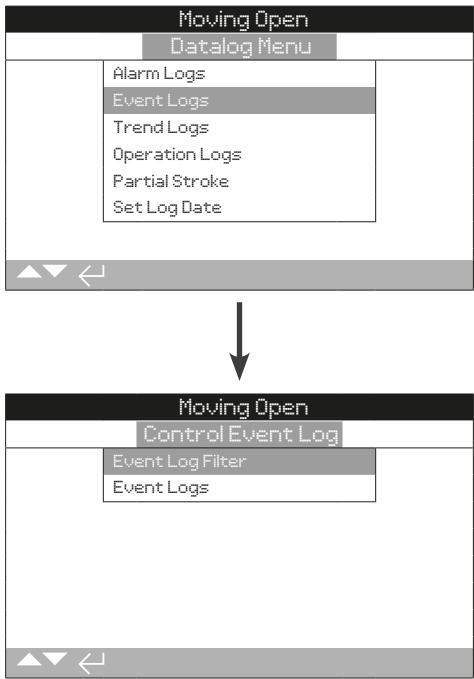


The curve shows the low pressure in (%) across samples taken when the most recent low pressure alarm event was recorded by the ELB.

14.1.5 Alarm Logs – High Diff Alarm



The curve shows the differential pressure in (%) across samples taken when the most recent high differential alarm event was recorded by the ELB.



This screen contains a list of all the possible control parameters that can be shown in the Event Log. In order to make viewing easier, the user can select the parameters they are interested in viewing. Once selected, these parameters will be listed in the Event Log screen.

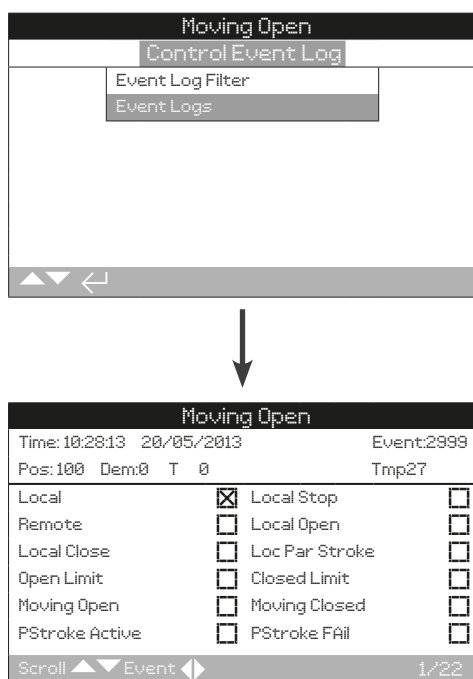
- 1/61 Clear All** – Clears all the selected options.
- 2/61 Select All** – Selects all options.

User Interface	
3/61 Local Open	Shows/hides Local Open Command events.
4/61 Local Close	Shows/hides Local Close Command events.
5/61 Local Stop	Shows/hides Local Stop Command events.
6/61 Local	Shows/hides Local Control events.
7/61 Remote	Shows/hides Remote Control events.
8/61 Local PStroke	Shows/hides Local Partial stroke Control events.
9/61 Hwired Open	Shows/hides Hardwired Open Control events.
10/61 Hwired Close	Shows/hides Hardwired Close Control events.
11/61 Hwired Maint	Shows/hides Hardwired Maintained Control events.
12/61 Hwired PSD	Shows/hides Hardwired PSD Control events.
13/61 Hwired PStroke	Shows/hides Hardwired Partial Stroke Control events.
14/61 Hwired Reset	Shows/hides Hardwired Reset Control events.
15/61 Source 1 Open	Shows/hides Remote Source 1 Open Control events.

14.1.1 Event Logs – Event Log Filter *continued*

- 16/61 Source 1 Close** – Shows/hides Remote Source 1 Close Control events.
- 17/61 Source 1 Stop** – Shows/hides Remote Source 1 Stop Control events.
- 18/61 Source 1 PSD** – Shows/hides Remote Source 1 PSD Control events.
- 19/61 Source 1 PST** – Shows/hides Remote Source 1 Partial Stroke Control events.
- 20/61 Source 1 Reset** – Shows/hides Remote Source 1 Remote Reset Control events.
- 21/61 Moving Open** – Shows/hides Moving Open Status events.
- 22/61 Moving Closed** – Shows/hides Moving closed Status events.
- 23/61 Open Limit** – Shows/hides Open Limit Status events.
- 24/61 Closed Limit** – Shows/hides Closed Limit Status events.
- 25/61 PStroke Pass** – Shows/hides Partial Stroke Pass alarm events.
- 26/61 PStroke Fail** – Shows/hides Partial Stroke Fail alarm events.
- 27/61 Monitor Relay** – Shows/hides Monitor Relay events.
- 28/61 Alarm Relay** – Shows/hides Alarm Relay events.
- 29/61 S1 Contact Made** – Shows/hides contact S1 status.
- 30/61 S2 Contact Made** – Shows/hides contact S2 status.
- 31/61 ROD Alert** – Shows/hides Rate Of Drop Alert Alarm events.
- 32/61 ROR Alert** – Shows/hides Rate of Drop Alarm events.
- 33/61 Hi Press Alert** – Shows/hides Hi Pressure Alert events.
- 34/61 Lo Press Alert** – Shows/hides Lo Pressure Alert events.
- 35/61 Hi Volt Alert** – Shows/hides Hi Voltage Alert events.
- 36/61 Lo Volt Alert** – Shows/hides Lo Voltage Alert events.
- 37/61 Hi Diff Alert** – Shows/hides High Differential Pressure Alert events.
- 38/61 SenSync Alarm** – Shows/hides Sensor Synchronisation Alarm events.
- 39/61 ROD Alarm** – Shows/hides Rate Of Drop Alarm events.
- 40/61 ROR Alarm** – Shows/hides Rate of Rise Alarm events.
- 41/61 Hi Press Alarm** – Shows/hides High pressure Alarm events.
- 42/61 Lo Press Alarm** – Shows/hides Low Pressure Alarm events.
- 43/61 Hi Volt Alarm** – Shows/hides High Voltage Alarm events.
- 44/61 Lo Volt Alarm** – Shows/hides the Low Voltage Alarm events.
- 45/61 Hi Temp Trip** – Shows/hides the high temperature Alarm Trip events.
- 46/61 Lo Temp Trip** – Shows/hides the low temperature Alarm Trip events.
- 47/61 Cy Press Open** – Shows/hides the Cylinder Pressure Open status.
- 48/61 Cy Press Close** – Shows/hides the cylinder Pressure Close status.
- 49/61 Hi Diff Alarm** – Shows/hides High Differential Alarm Trip events.
- 50/61 Stall** – Shows/hides Actuator Stall Alarms Trip events.
- 51/61 Net Com Loss** – Shows/hides Network Communication Loss status.
- 52/61 Power Up** – Shows/hides the Mains Power Up status.
- 53/61 Sol 1 On** – Shows/hides Solenoid 1 status.
- 54/61 Sol 2 On** – Shows/hides Solenoid 2 status.
- 55/61 Sol 3 On** – Shows/hides Solenoid 3 status.
- 56/61 Sol 4 On** – Shows/hides Solenoid 4 status.
- 57/61 P1 Sensor Fail** – Shows/hides Pressure Sensor 1 Failure Alarm.
- 58/61 P2 Sensor Fail** – Shows/hides Pressure Sensor 2 Failure Alarm.
- 59/61 P3 Sensor Fail** – Shows/hides Pressure Sensor 3 Failure Alarm.
- 60/61 PosSensor Fail** – Shows/hides Position Sensor Failure Alarm.
- 61/61 Log Time Invalid** – Shows/hides Data Log Time errors.

14.2.2 Event Logs – Event Logs



This screen displays a date and time stamped log of ELB control events. The parameters that are displayed in this screen are determined by the selections made in the Event Log filter. The parameters are not selectable and are displayed by scrolling down. The parameters show both internal and external alarms related to power supplies, valve torque and motor stall events and can be used to diagnose a range of issues.

The checkbox indicates the condition or error has occurred.

To scroll through the error parameters use and .

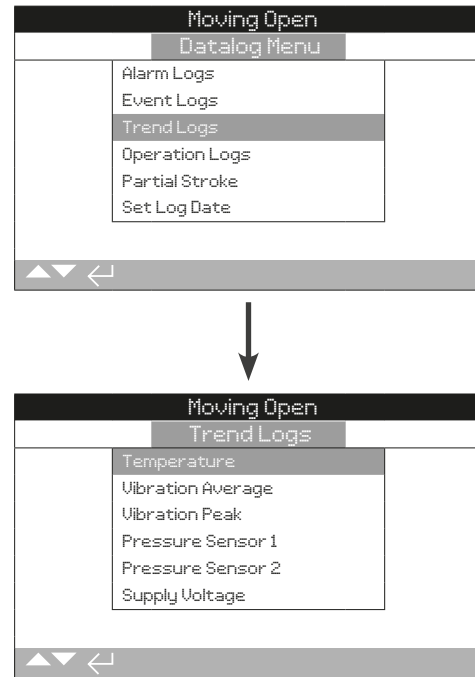
To scroll through the error events use and .

- Local Open** – Shows/hides Local Open Command events.
- Local Close** – Shows/hides Local Close Command events.
- Local Stop** – Shows/hides Local Stop Command events.
- Local** – Shows/hides Local Control events.
- Remote** – Shows/hides Remote Control events.
- Local PStroke** – Shows/hides Local Partial stroke Control events.
- Hwired Open** – Shows/hides Hardwired Open Control events.
- Hwired Close** – Shows/hides Hardwired Close Control events.
- Hwired Maint** – Shows/hides Hardwired Maintained Control events.
- Hwired PSD** – Shows/hides Hardwired PSD Control events.
- Hwired PStroke** – Shows/hides Hardwired Partial Stroke Control events.
- Hwired Reset** – Shows/hides Hardwired Reset Control events.
- Source 1 Open** – Shows/hides Remote Source 1 Open Control events.
- Source 1 Close** – Shows/hides Remote Source 1 Close Control events.
- Source 1 Stop** – Shows/hides Remote Source 1 Stop Control events.
- Source 1 PSD** – Shows/hides Remote Source 1 PSD Control events.
- Source 1 PST** – Shows/hides Remote Source 1 Partial Stroke Control events.
- Source 1 Reset** – Shows/hides Remote Source 1 Remote Reset Control events.
- Moving Open** – Shows/hides Moving Open Status events.
- Moving Closed** – Shows/hides Moving closed Status events.
- Open Limit** – Shows/hides Open Limit Status events.
- Closed Limit** – Shows/hides Closed Limit Status events.
- PStroke Pass** – Shows/hides Partial Stroke Pass alarm events.
- PStroke Fail** – Shows/hides Partial Stroke Fail alarm events.
- Monitor Relay** – Shows/hides Monitor Relay events.
- Alarm Relay** – Shows/hides Alarm Relay events.
- S1 Contact Made** – Shows/hides contact S1 status.
- S2 Contact Made** – Shows/hides contact S2 status.
- ROD Alert** – Shows/hides Rate Of Drop Alert events.
- ROR Alert** – Shows/hides Rate of Drop events.
- Hi Press Alert** – Shows/hides Hi Pressure Alert events.
- Lo Press Alert** – Shows/hides Lo Pressure Alert events.
- Hi Volt Alert** – Shows/hides Hi Voltage Alert events.
- Lo Volt Alert** – Shows/hides Lo Voltage Alert events.
- Hi Diff Alert** – Shows/hides High Differential Pressure Alert events.

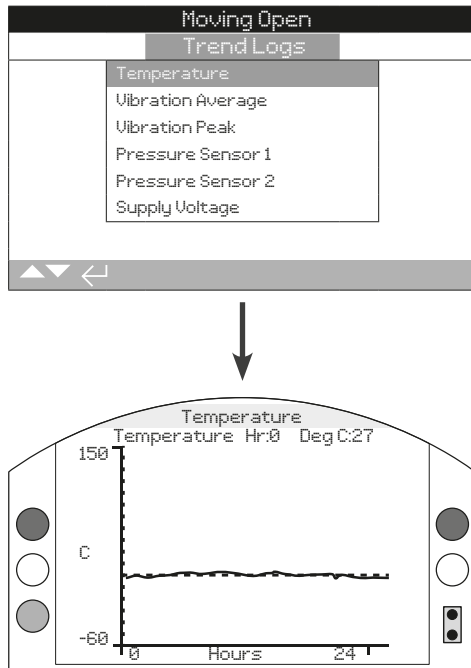
14.1.2 Event Logs – Event Logs *continued*

SenSync Alarm	– Shows/hides Sensor Synchronisation Alarm events.
ROD Alarm	– Shows/hides Rate Of Drop Alarm events.
ROR Alarm	– Shows/hides Rate of Rise Alarm events.
Hi Press Alarm	– Shows/hides High pressure Alarm events.
Lo Press Alarm	– Shows/hides Low Pressure Alarm events.
Hi Volt Alarm	– Shows/hides High Voltage Alarm events.
Lo Volt Alarm	– Shows/hides the Low Voltage Alarm events.
Hi Temp Trip	– Shows/hides the high temperature Alarm Trip events.
Lo Temp Trip	– Shows/hides the low temperature Alarm Trip events.
Cy Press Open	– Shows/hides the Cylinder Pressure Open status.
Cy Press Close	– Shows/hides the cylinder Pressure Close status.
Hi Diff Alarm	– Shows/hides High Differential Alarm Trip events.
Stall	– Shows/hides Actuator Stall Alarms Trip events.
Net Com Loss	– Shows/hides Network Communication Loss status.
Power Up	– Shows/hides the Mains Power Up status.
Sol 1 On	– Shows/hides Solenoid 1 status.
Sol 2 On	– Shows/hides Solenoid 2 status.
Sol 3 On	– Shows/hides Solenoid 3 status.
Sol 4 On	– Shows/hides Solenoid 4 status.
P1 Sensor Fail	– Shows/hides Pressure Sensor 1 Failure Alarm.
P2 Sensor Fail	– Shows/hides Pressure Sensor 2 Failure Alarm.
P3 Sensor Fail	– Shows/hides Pressure Sensor 3 Failure Alarm.
PosSensor Fail	– Shows/hides Position Sensor Failure Alarm.
Log Time Invalid	– Shows/hides Data Log Time errors.



14.3 Data Log – Trend Logs




14.3.1 Trend Logs – Temperature

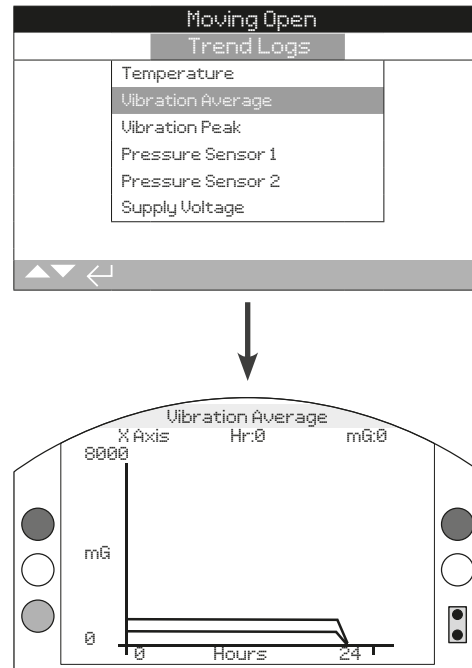


This graph displays the temperature reading over the last 24 hours/30 days/12 months/10 years. The temperature is taken from an internal sensor on the circuit board and can be affected by the heating effect of internal components. It may not reflect external ambient temperature. It can be used to monitor changes in temperature which may have an effect on operational conditions.

Pressing the  or  arrows moves the cursor along the graph by 1 hour/1 day/1 month/1 year increments.

Pressing the  key cycles through the timescales of 24 hours/30 days/12 months/10 years.



14.3.2 Trend Logs – Vibration Average




This screen displays average vibration levels (in mG) over the last 24 hours/30 days/12 months/10 years. The sensor is located on the circuit board and can detect vibration (forces) in three axes. In normal mounting position you could expect to see around 980 mG constantly acting in the Y axis. With other mounting orientations, the forces measured (nominally) will be different*. Vibration analysis graphs may help the user understand how plant induced vibration affects actuator / valve operation.

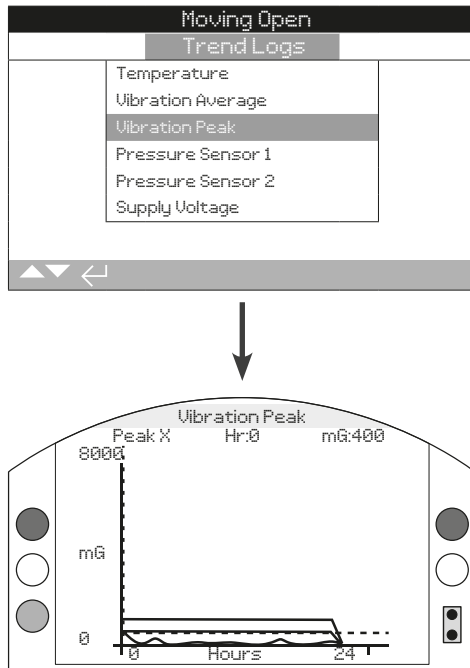
* The average vibration graph is intended to measure the vibrational forces over time in order to assist in identifying problematic vibration and is not intended for accurate vibration analysis.

Pressing the  and  arrows cycles through the X, Y and Z axis.

Pressing the  or  arrows moves the cursor along the graph by 1 hour/1 day/1 month/1 year increments.

Pressing the  key cycles through the timescales of 24 hours/30 days/12 months/10 years.

14.3.3 Trend Logs – Vibration Peak



This screen displays peak vibration levels over the last 24 hours/30 days/12 months/10 years. The levels shown will be the highest recorded for that period*.

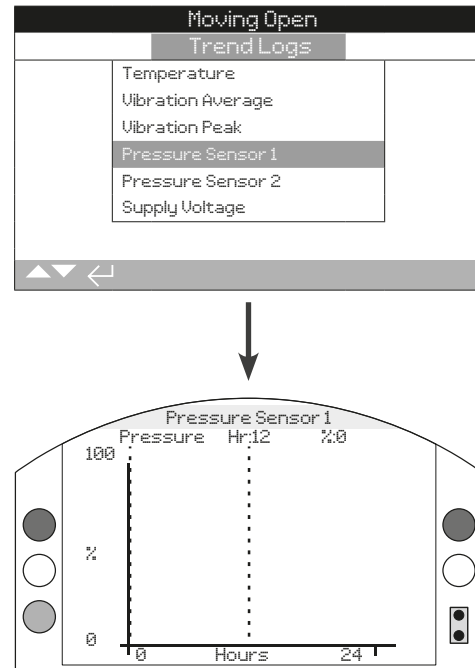
* The peak vibration graph is intended to measure the highest vibrational forces over time in order to assist in identifying problematic vibration and is not intended for accurate vibration analysis.

Pressing the **⬅** and **➡** arrows cycles through the X, Y and Z axis.

Pressing the **⬅** or **➡** arrows moves the cursor along the graph by 1 hour/1 day/1 month/1 year increments.

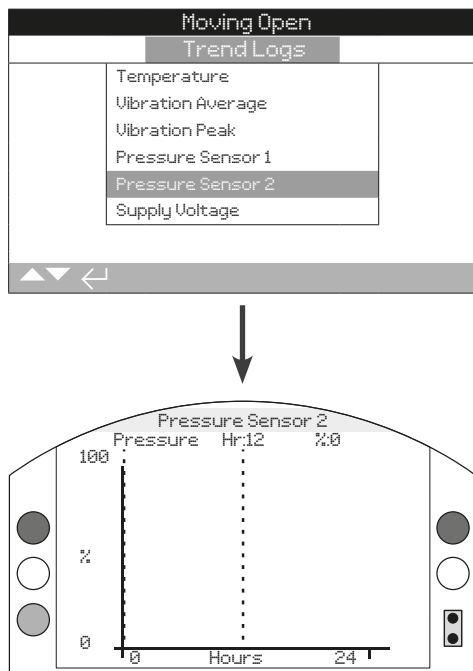
Pressing the **⊕** key cycles through the timescales of 24 hours/30 days/12 months/10 years.

14.3.4 Trend Logs – Pressure Sensor 1



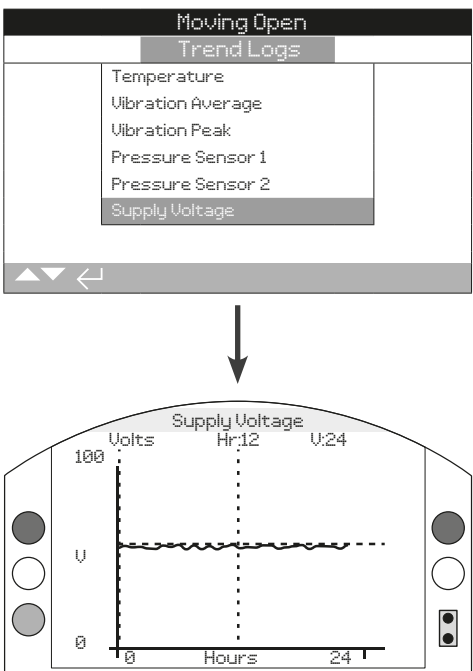
The curve shows the pipeline pressure sensor 1 pressure over the last 24 hours/ 30 days/ 12 months/ 10 years. This provides a view of the pressure trend along the pipeline under operational conditions.

14.3.5 Trend Logs – Pressure Sensor 2



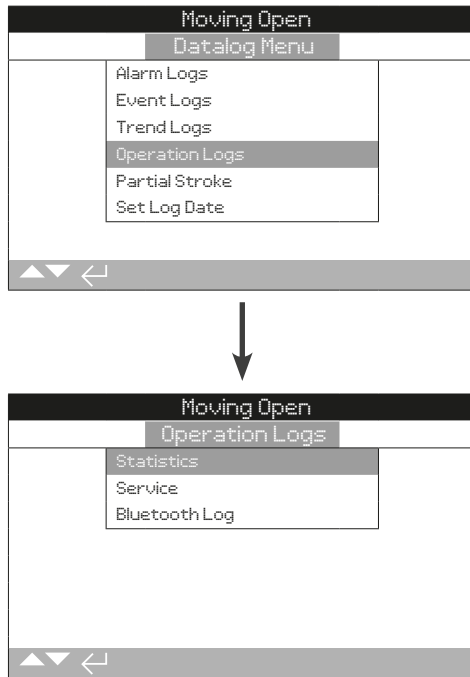
The curve shows the pipeline pressure sensor 2 pressure over the last 24 hours/ 30 days/ 12 months/ 10 years. This provides a view of the pressure trend along the pipeline under operational conditions.

14.3.6 Trend Logs – Supply Voltage

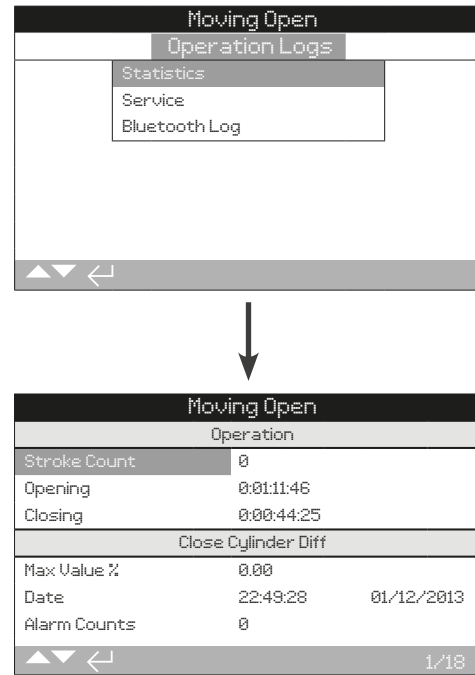


The curve shows the voltage over time. This provides a view of the input voltage trend under operational conditions.

14.4 Data Log – Operation Logs



14.4.1 Operation Logs – Statistics



This screen displays statistics information of ELB operation. Date and times are only accurate if the date/time is set locally.

Operation

1/18 Stroke Count – Displays the number of Stroke Counts.

2/18 Opening – Displays the number of Stroke Counts in opening direction.

3/18 Closing – Displays the number of Stroke Counts in closing direction.

Close Cylinder Diff

4/18 Max Valve % – Displays the maximum Close Cylinder Differential pressure in percent.

5/18 Date – Displays the date and time when the most recent Close Cylinder Differential alarm occurred.

6/18 Alarm Counts – Displays the number of Alarm counts.

Open Cylinder Diff

7/18 Max Valve % – Displays the maximum Open Cylinder Differential pressure in percent.

8/18 Date – Displays the date and time when the most recent Open Cylinder Differential alarm occurred.

9/18 Alarm Counts – Displays the number of alarm counts.

ROR

10/18 Peak ROR – Displays the peak rate of pressure rise.

ROD

11/18 Peak ROD – Displays the peak rate of pressure drop.

14.4.1 Operation Logs – Statistics *cont'd*

Temperature

12/18 Maximum °C – Displays the maximum temperature the internal enclosure has reached in degrees Celsius.

13/18 Date – Displays the date and time that the internal enclosure reached the maximum temperature.

14/18 Minimum °C – Displays the minimum temperature the internal enclosure has reached in degrees Celsius.

15/18 Date – Displays the date and time that the internal enclosure reached the minimum temperature.

Power

16/18 Max 24v – Displays the maximum input voltage recorded.

17/18 Min 24v – Displays the minimum input voltage recorded.

18/18 Power Ups – Displays the total number of times the ELB has been powered up.

14.4.2 Operation Logs – Service Log

Moving Open	
Operation Logs	
Statistics	
Service	
Bluetooth Log	

Moving Open	
Operation	
Stroke Count	47
Opening	0:01:11:46
Closing	0:00:44:25
Last Close Limit	22:39:27 02/02/2012
Last Open Limit	22:39:25 02/02/2012
Close Cylinder Diff	
Max Value %	0.00

This log displays the operational data of the ELB. This section is primarily oriented towards operations that affect the servicing of the ELB, therefore some of the parameters are repeated from the statistics log. Date and times are only accurate if set locally.

Operation

1/21 Stroke Count – Displays the number of Stroke Counts.

2/21 Opening – Displays the number of Stroke Counts in opening direction.

3/21 Closing – Displays the number of Stroke Counts in closing direction.

4/21 Last Close Limit – Displays the last time and date the ELB reached its closed limit. Hours: Minutes: Seconds Day/Month/Year.

5/21 Last Open Limit – Displays the last time and date the ELB reached its open limit. Hours: Minutes: Seconds Day/Month/Year.

Close Cylinder Diff

6/21 Max Valve % – Displays the maximum Close Cylinder Differential pressure in percent.

7/21 Date – Displays the date and time when the most recent Close Cylinder Differential alarm occurred.

8/21 Alarm Counts – Displays the number of Alarm counts.

ROR

9/21 Peak ROR – Displays the Peak Rate of pressure rise.

ROD

10/21 Peak ROD – Displays the Peak Rate of pressure drop.

14.4.2 Operation Logs – Service Log *continued*

Open Cylinder Diff

11/21 Max Valve % – Displays the maximum Open Cylinder Differential pressure in percent.

12/21 Date – Displays the date and time when the most recent Open Cylinder Differential alarm occurred.

13/21 Alarm Counts – Displays the number of alarm counts.

Temperature

14/21 Maximum °C – Displays the maximum internal ELB temperature in degrees Celsius.

15/21 Date – Displays the time and date stamp when the highest ELB temperature was recorded. Hours: Minutes: Seconds Day/Month/Year.

16/21 Minimum °C – Displays the minimum internal ELB temperature in degrees Celsius.

17/21 Date – Displays the time and date stamp when the lowest ELB temperature was recorded. Hours: Minutes: Seconds Day/Month/Year.

Power

18/21 Max 24v – Displays the maximum input voltage recorded.

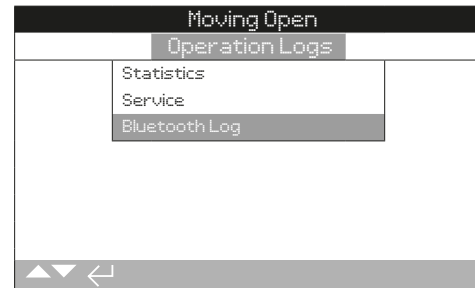
19/21 Min 24v – Displays the minimum input voltage recorded.

20/21 Power Ups – Displays the total number of times the ELB has been powered up.

Service

21/21 Last Service – Displays the time and date of the ELB last service. Hours: Minutes: Seconds Day/Month/Year.

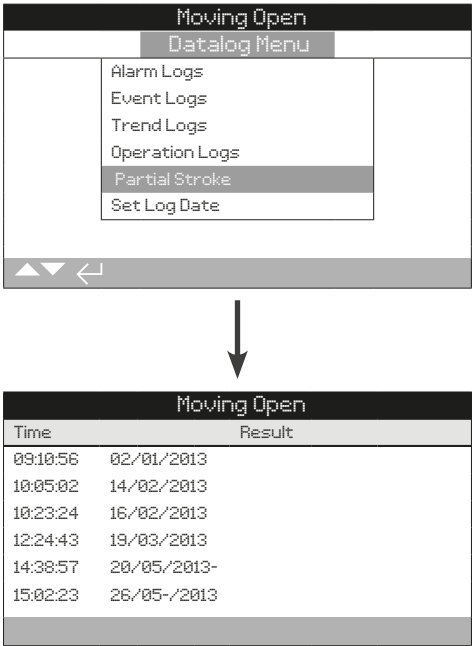
14.4.3 Operation Logs – Bluetooth Log




Moving Open			
Time	Name		
15:36:24	09/05/2013	BST	100E86D24.10
15:46:33	09/05/2013	BST	100E86D24.10
15:49:15	09/05/2013	BST	100E86D24.10
07:56:33	10/05/2013	BST	100E86D24.10
08:06:27	10/05/2013	BST	100E86D24.10
08:26:26	10/05/2013	BST	100E86D24.10





This log displays the information of the devices that have connected via Bluetooth to the ELB. The devices which are connected via Bluetooth leaves a footprint of its name, computer address and access level, along with a time and date stamp (if set locally as per section 14.6).

14.5 Data Log – Partial Stroke

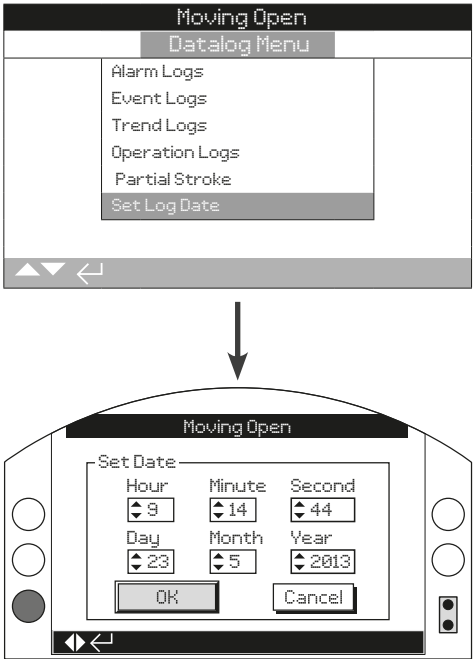


Press  to view the selected Partial Stroke Log.



This screen displays the results of the Partial Stroke movement that has taken place. The results are displayed as a simple pass or fail next to the date and time stamp of each partial stroke.



To scroll through the Partial Stroke Logs use   and  .


14.6 Data Log – Set Log Date



This screen allows the user to locally set the current date and time for the data log. This time and date is only used for local indication and does not affect the stored data when downloaded to a PC device when viewing within Rotork Insight 2 software.

To select the date and time fields use  and  arrows.

To change the selected date and time fields use  and  arrows.

To confirm the changes select OK and press .

15. Assets

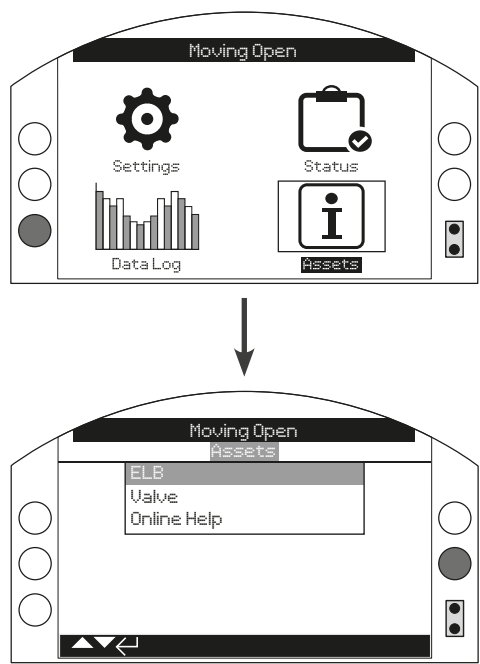
Asset management is an increasingly desirable requirement in process industries and can be used to manage valve asset performance, availability and maintenance schedules. Information regarding the process, valve and actuator can be stored in the ELB. In addition to this, the installation and commissioning dates as well as the service history of the device can be recorded. Asset management alarms can also be set to indicate possible maintenance required.

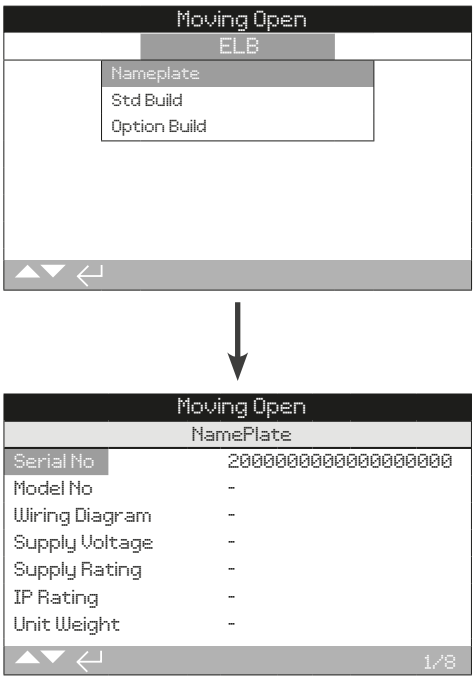
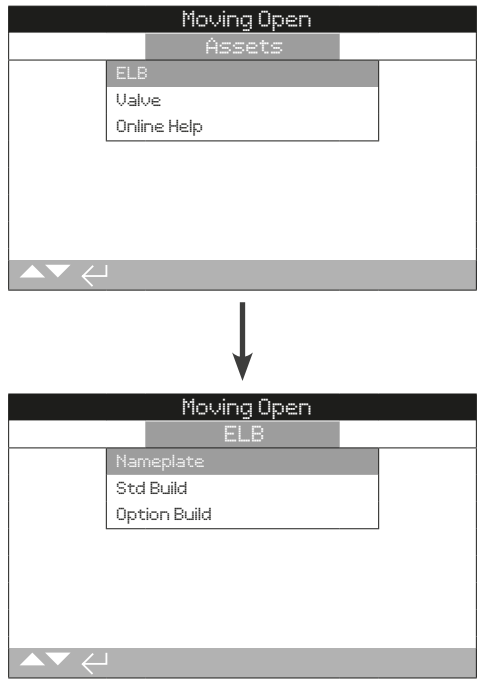
Stored asset information can be shown on the actuator display using the supplied Rotork Bluetooth® Setting Tool *Pro*. When the actuator configuration file is downloaded, using the Rotork Bluetooth® Setting Tool *Pro* or directly with a PC running Insight 2, asset data is added along with the actuator build and configuration data. The actuator configuration and asset data can be exported as a CSV file from Insight 2.

It is therefore important that data regarding the valve/actuator tag, valve details and process information are populated by the user or their agent. Rotork will populate actuator build data automatically on manufacture. Other applicable data will be populated when contracted to commission or service the actuator.

The asset menu is split into different categories for each type of data. The full assets menu structure is shown below.

5.0 Assets menu		Page
15.1	ELB	58
15.1.1	Nameplate	58
15.1.2	Std Build	59
15.1.3	Option Build	59
15.2	Valve	60
15.3	Online Help	60





This screen displays the nameplate information of the ELB. Should the physical nameplate become damaged or removed, the information for the ELB will remain accessible. The information shown is read only with the exception of the ELB Tag which can be edited by the user after entering a valid password.

- To change, press to select the highlighted field.
- Use and to scroll through alphabetic and numerical figures to display the required character.
- Use to move to the next character.
- Use to delete the previous character.
- Use to save the information.

1/8 Serial No

Displays the serial number of the ELB.

2/8 Model No

Displays the model number of the ELB.

3/8 Wiring Diagram

Displays the wiring diagram number for the ELB.

4/8 Supply Voltage

Displays the supply voltage.

5/8 Supply Rating

Displays the supply rating.

15.1.1 ELB – Nameplate *continued*

6/8 IP Rating

Displays the IP rating.

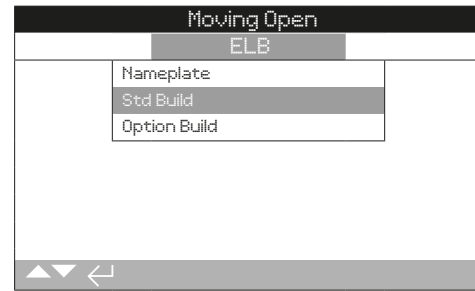
7/8 Unit Weight

Displays the ELB unit weight.

8/8 Build Date

Displays the ELB build date.

15.1.2 ELB – Std Build



The screenshot shows a screen titled 'Moving Open' with a sub-header 'User Interface'. Below this, there is a table with two columns: 'Software Version' and 'v101 (4907)'. The table has five rows: 'BT Mac', 'FCC ID:', 'IC:', 'Telec R', and '205 WU 2010067'. Below the table, there is a section titled 'Control Board' with a row for 'Software Version' and 'v101 (4419)'. At the bottom of the screen, there are navigation arrows (up, down, left) and a page indicator '1/6'.

User Interface	
Software Version	v101 (4907)
BT Mac	00:07:80:3d:52:b9
FCC ID:	Q00WT12
IC:	5123A-B0TWT12A
Telec R	205 WU 2010067

Control Board	
Software Version	v101 (4419)

This screen allows the user to view the standard build details of the ELB. All information shown is read only.

To scroll through this information use and .

User Interface

1/6 Software Version – Displays the software version of the user interface module.

2/6 BT Mac – Displays the Bluetooth MAC address of the user interface module.

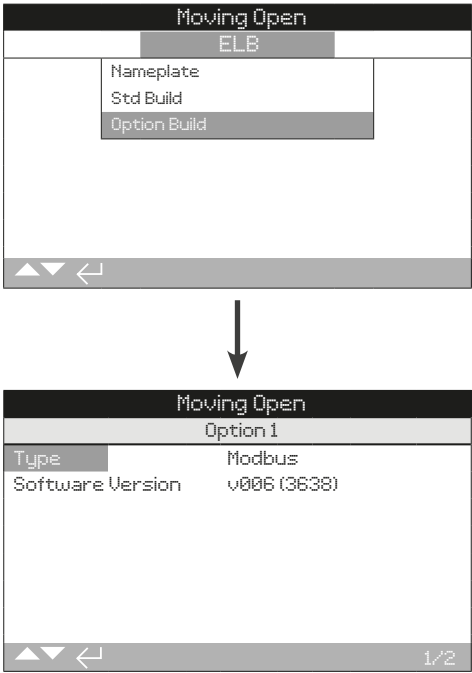
3/6 FCC ID – Displays the Federal Communications Commission Bluetooth identification.

4/6 IC – Displays the Industry Canada Bluetooth identification.

5/6 Telec R – Displays the Telecom Engineering Center Bluetooth identification.

Control Board

6/6 Software Version – Displays the software version of the control board.



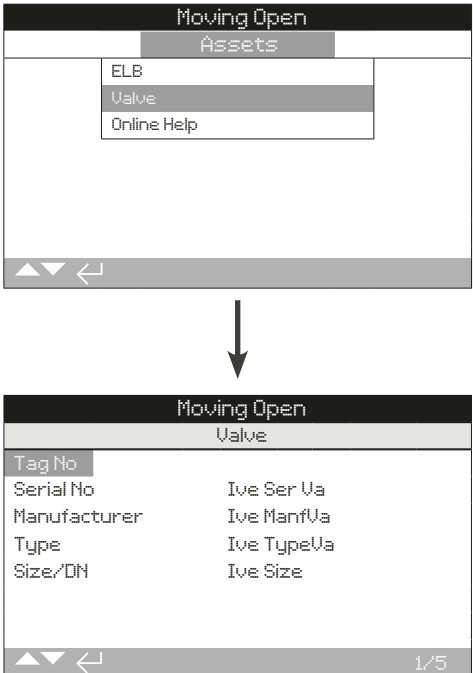
This screen allows the user to view the details of Modbus option fitted to the ELB.

To scroll through this information use and .

Option 1

1/2 Type – Displays the type of option fitted.

2/2 Software Version – Displays the software version of the option fitted.



This screen allows the user to view and edit information about the attached valve, once a valid password has been entered. This may be useful for displaying the valve details if the valve tag plate is missing, or for matching a valve to an ELB after valve/ELB repair.

To edit information, use and to select the highlighted field.

To change, press to select the field.

Use and to scroll through alphabetic and numerical figures to display the required character.

Use to move to the next character.

Use to delete the previous character.

Use to save the information.

To escape without saving press .

1/5 Tag – Displays the valve tag.

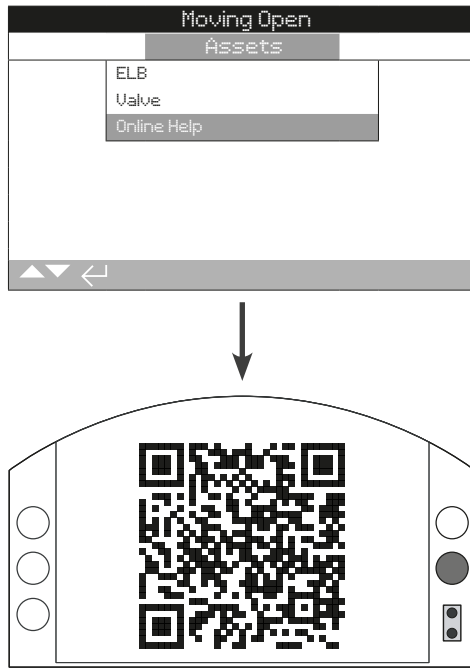
2/5 Serial No – Displays the serial number of the valve.

3/5 Type – Displays the valve type.

4/5 Size / DN – Displays the valve size.

5/5 Manufacturer – Displays the valve manufacturer.

15.3 Assets – Online Help



This screen displays a QR code to direct users to the support section of the ROTORK website. This enables the user to source documentation, software and training resources for Rotork products.

A stylized world map in a light gray tone, centered on the Atlantic Ocean. The map is overlaid with several concentric, wavy lines that radiate outwards from the center, creating a sense of global connectivity or signal transmission.

www.rotork.com

A full listing of our worldwide sales and service network is available on our website.

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