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**Keeping the World Flowing
for Future Generations**

CK Range
CK Centronik - Full Configuration Manual

Modular Design Electric Valve Actuators

Contents

1.0 Introduction

⚠ This manual provides instruction on the setup and analysis of the actuator.

It is structured so that instruction on using the Local Controls for navigation and password security is contained in Section 1. This must then be applied when changing settings and viewing information as set out in Sections 2 – 6.

The user must therefore be familiar with the operations contained in Section 1 before proceeding.

This manual should be read in conjunction with PUB111-007 CK Range Instructions for Safe Use, Installation, Basic Setup and Maintenance supplied with the actuator.

1.1 Centronik Display Interface

The Centronik control module provides the user with a clearly defined display for setting and visual feedback purposes. Information in this manual is sectioned by menu title (B) and setting value (E).

Centronik Interface
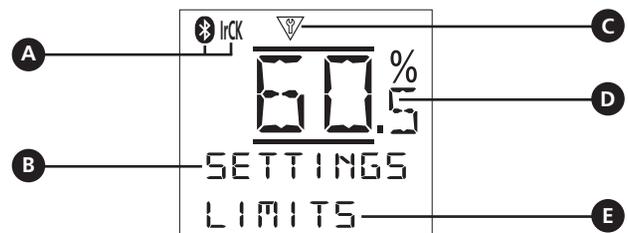
A *Bluetooth*® / Infrared Connection

B Current Menu

C Configuration Mode

D Valve Position

E Sub Menu / Setting Value

1.0 Introduction

1.2 Centronik Menu Navigation

The Centronik Control Module can be configured using two different input methods. The optional Rotork Bluetooth Setting Tool *Pro* provides a handheld solution compatible with Infrared or optional Bluetooth communication.

Alternatively the local selector knobs can be used to navigate in the same way. Be sure to read and understand the equivalent input commands. Instructions included in this manual are provided as shorthand symbols shown below.

Navigate to previous item within the current menu / decrease value / toggle setting

Exit to previous menu / exit setting change

Navigate to next item within the current menu / increase value / toggle setting

Enter menu / confirm selection / edit setting / save setting value / return to home screen*

Navigate to previous menu / decrease value / toggle setting / delete character*

Navigate to next menu / increase value / toggle setting / confirm character*

* Hold selector position for 3 seconds to special input function.

1.0 Introduction

1.3 Arrow Identification

The Centronik display interface includes various arrows throughout the menu structure which show the available navigation within the current menu/setting.

▌▐ Solid blocks on the setting indicate you are in viewing mode (see below).

◀ ▶ Arrows on the setting/menu indicate navigation is possible - both directions.

❲ ▶ This indicates you are presently at the first menu choice or lowest setting value.

◀ ❳ This indicates you are presently at the last menu choice or highest setting value.

❲ ❳ This indicates the setting is read only or only has one possible value.

▌   **Current Value**   ▐

◀   **Both Directions**   ▶

❲   **First Menu**   ▶

◀   **Last Menu**   ❳

❲   **Read Only**   ❳

It is important to note the arrow behaviour during the setting process. The CK Centronik utilises a common setting approach for all configuration features. When entering a setting it will not immediately become editable. The initial viewing mode will show you the current setting value. To edit, input 🔒 and proceed to edit the value using 🔼 and 🔽. When adjustment is complete, 🔒 will save the new value and return you to viewing mode.

1.4 Confirmation Feedback

Whilst modifying settings or navigating through the various Centronik interface menus, it is important to recognise that a change has been accepted or saved.

A small confirmation dot will be shown in the top right corner of the display if a valid input command has been recognised by the Centronik interface.
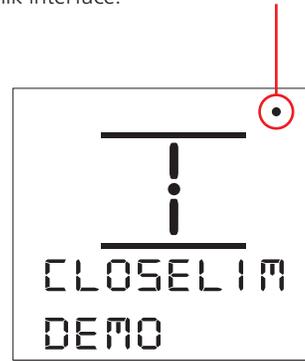
For each movement, the confirmation dot will only be shown once the Open/Close selector returns to the default rest position.

1.0 Introduction

1.5 Password Security
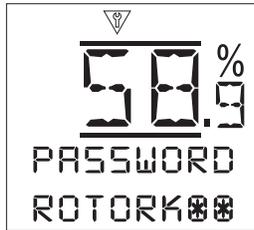
The Centronik control module offers password protection that prevents modification to any configuration settings by unauthorised operators.

1. Once a connection to the actuator has been established the ▽ symbol will appear at the top of the Centronik display to indicate configuration mode is active*.

2. The password entry screen will be displayed with the default password visible. ⊟ to confirm this entry or use **+** & **-** to enter the correct password and confirm with ⊟.

3. Blank characters will be filled with �֎ to indicate that a valid password has been entered.

4. Once a valid password has been entered the display will show the current active permission level with a symbol and text.

5. ⊖ to return to the main menu.
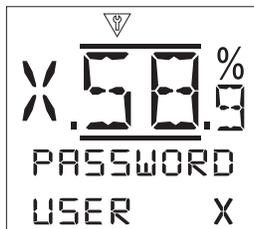
The symbol shown to the left side of the display will reference the following permission levels.

⅄   User level permission to provide basic access to settings for commissioning and configuration purposes.

⊹   Super User level permission to provide access to more advanced setting features.

✳   Service level permission to access Rotork Engineer settings.

* To access configuration mode with the local selector, ensure the actuator is in Stop mode and input the following sequence:

⬡⬡⬡⬡

Each command input must be completed within 1 second of the last and the selector knob must return to its default rest position between each input.

1.0 Introduction

1.6 Using this Manual

It is important to understand the navigation functions and setting process prior to progressing through this configuration manual.

The instructions in this document are structured to provide a logical relation to navigation on the Centronik display.

The menus and settings visible within the CK Centronik control module may vary depending on specific actuator build and optional requirements.

Each section will provide a detailed menu map as a visual prompt. Main menu navigation is shown below.

Main
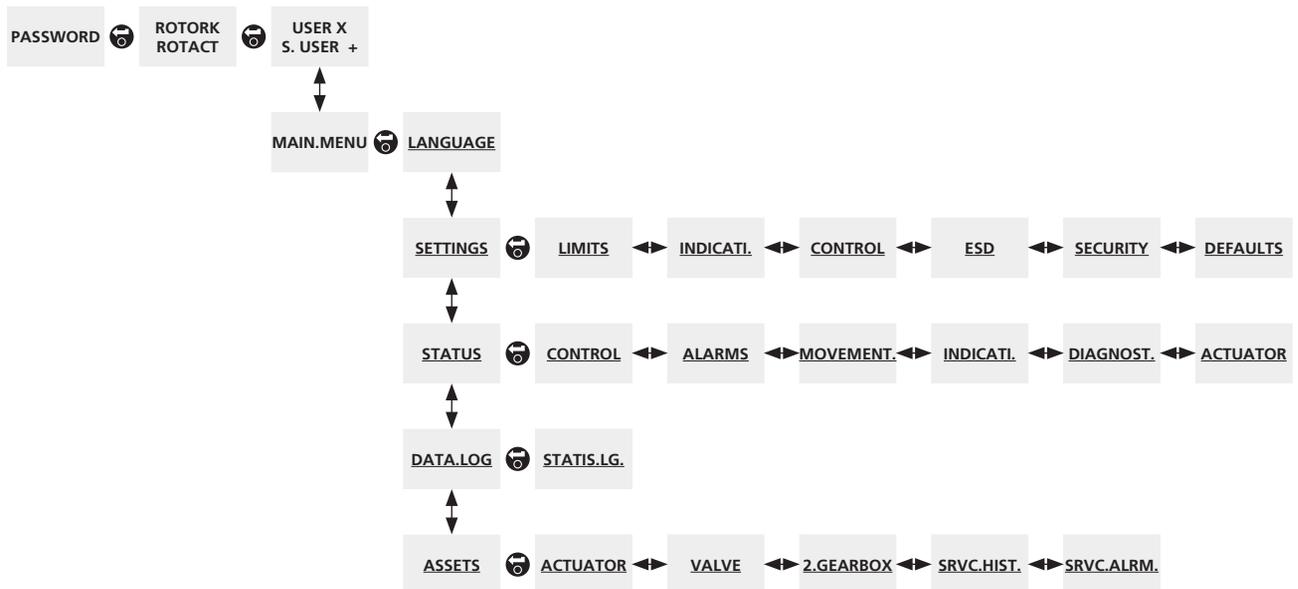
The above menu map should be used as a navigation prompt to improve configuration efficiency.
An underlined text string indicates a menu. A standard text string indicates a setting.

2.0 Language [LANGUAGE]
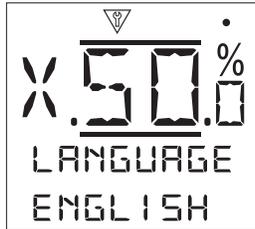
The CK Centronik module is capable of supporting a range of languages to suit global market requirements. The display language for the CK Centronik will change all of the HMI attributes to the set language. ⊟⬆⬇⊟.

3.0 Settings [SETTINGS]

SETTINGS

⊟

LIMITS	◄►	INDICATI.	◄►	CONTROL	◄►	ESD	◄►	SECURITY	◄►	DEFAULTS

The above menu map should be used as a navigation prompt to improve configuration efficiency.
An underlined text string indicates a menu. A standard text string indicates a setting.
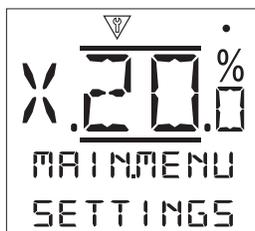
The CK Centronik module software is structured to include all of the configuration settings required for actuator operation within one menu.

3.0 Settings Menu

    3.1 Limits

    3.2 Indication

        3.2.1 Contacts

        3.2.2 Local Display

    3.3 Control

        3.3.1 Local

        3.3.2 Remote

        3.3.3 Interrupter Timer

    3.4 ESD

    3.5 Security

    3.6 Defaults

3.0 Settings

3.1 Limits [LIMITS]
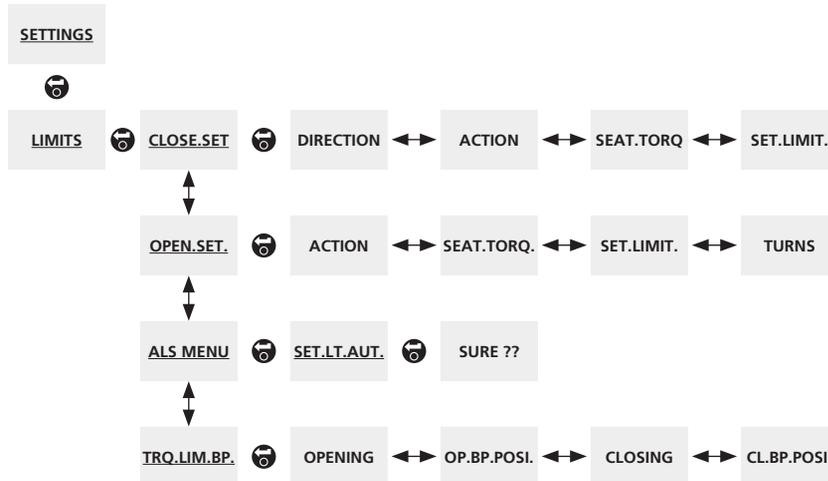
The above menu map should be used as a navigation prompt to improve configuration efficiency.
An underlined text string indicates a menu. A standard text string indicates a setting.

3.1.1 Close Settings [CLOSE.SET.]:
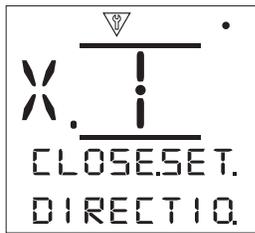
Direction to Close [DIRECTIO.]: - Specify the direction of operation required to close the valve - Clockwise or Anti-Clockwise. �“🔼🔽�”.

Action [ACTION]: - Specify the valve closing action – Seat Limit or Seat Torque. �“🔼🔽�”.

Seating Torque [SEAT.TORQ.]: - Set the amount of torque (as a percentage of rated) to apply when seating the valve. �“🔼🔽�”.

Set Limit [SET.LIMIT.]: - Set the current actuator position as the Close Limit. �“�”.

3.1.2 Open Settings [OPEN.SET.]:
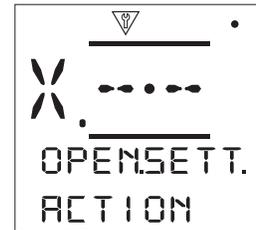
Action [ACTION]: - Specify the valve opening action – Seat Limit or Seat Torque. �“🔼🔽�”.

Seating Torque [SEAT.TORQ]: - Set the amount of torque (as a percentage of rated) to apply when seating the valve. �“🔼🔽�”.

Set Limit [SET.LIMIT.]: - Set the current actuator position as the Open Limit. �“�”.

Turns [TURNS]: - Shows the actuator output turns between the set Closed and Open Limit positions. (Set the number of output turns between the Closed and Open Limit positions.)

Note: The Closed limit must be set to adjust the number of operating turns. The open limit will be set the specified number of turns away from the Closed limit position.

3.0 Settings

3.1.3 Auto Limit Set Menu [ALS MENU]:

In certain scenarios, it is desirable to automatically configure both position limits using the valve end of travel stops as references. CKᴄ (Centronik) actuators equipped with Digital Switch Mechanism (DSM) can set the position limits using an automated process that detects end of travel positions using 40% torque.
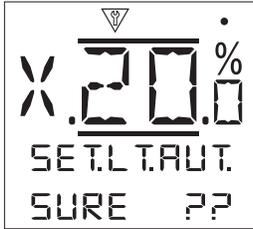
Auto Set Limits [SET.LT.AUT.]: - Start the auto set limit process. Actuator must be in LOCAL and will operate in both directions until 40% torque is registered. Limit positions will be set at these points for the relevant direction of travel. The process can be stopped at any point by switching to STOP. 🔘🔘.

Note: This feature should only be used for applications that have travel stops for both ends of travel (torque/torque). Do not use the auto set limit function if one or more of the valve limit positions can be surpassed.

3.1.4 Torque Limit B.P. [TRQ.LIM.B.P.]:

Occasionally applications will require a break to open or break to close torque that exceeds the standard torque limit. Setting the torque limit bypass will ignore existing torque limit settings and apply maximum torque across a predetermined portion of travel.
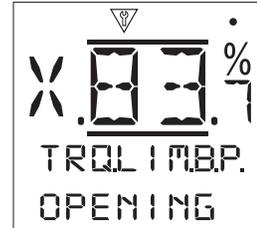
Opening [OPENING]: - Turn the Torque Limit Bypass on or off in the open direction. 🔘🔘🔘🔘.

Open B.P.Posi. [OP.BP.POSI.]: - Set the travel position that the torque limit bypass will be active to from the Closed limit. 🔘🔘🔘🔘.

Closing [CLOSING]: - Turn the Torque Limit Bypass on or off in the close direction. 🔘🔘🔘🔘.

Close B.P.Posi. [CL.BP.POSI.]: - Set the travel position that the torque limit bypass will be active to from the Open limit. 🔘🔘🔘🔘.

3.0 Settings

3.2 Settings > Indication [SETTINGS > INDICATI.]
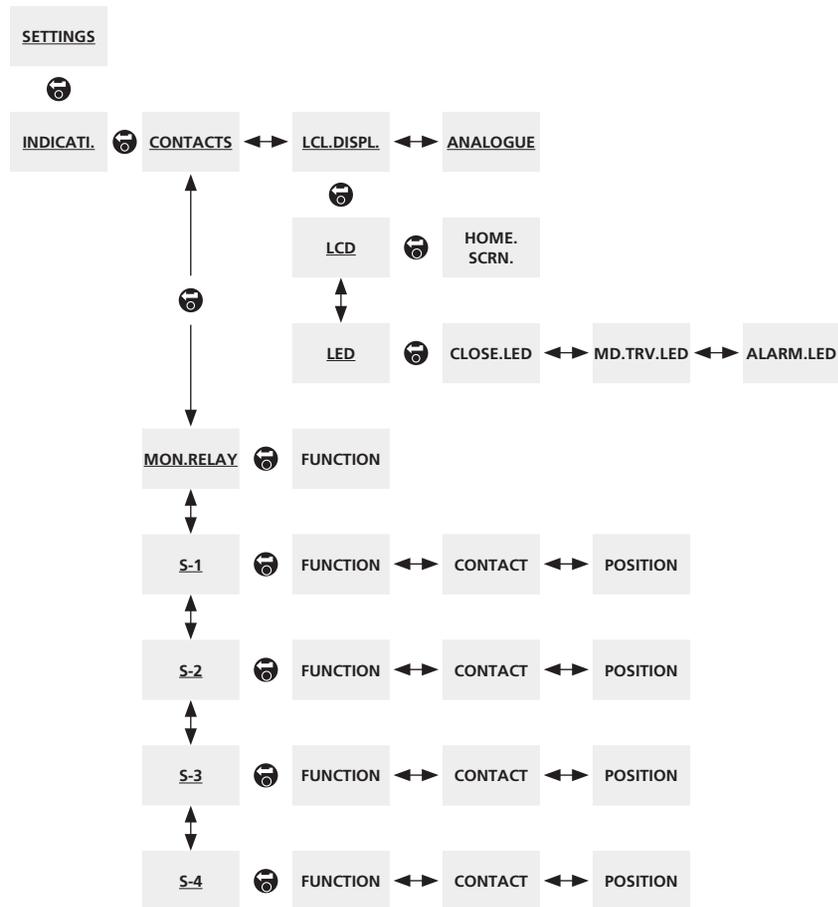
```
SETTINGS
   │
INDICATI. ──── CONTACTS ◄──► LCL.DISPL. ◄──► ANALOGUE
                  │               │
                  │              LCD ──── HOME.
                  │                       SCRN.
                  │               │
                  │              LED ──── CLOSE.LED ◄──► MD.TRV.LED ◄──► ALARM.LED
                  │
              MON.RELAY ──── FUNCTION
                  │
                 S-1 ──── FUNCTION ◄──► CONTACT ◄──► POSITION
                  │
                 S-2 ──── FUNCTION ◄──► CONTACT ◄──► POSITION
                  │
                 S-3 ──── FUNCTION ◄──► CONTACT ◄──► POSITION
                  │
                 S-4 ──── FUNCTION ◄──► CONTACT ◄──► POSITION
```

The above menu map should be used as a navigation prompt to improve configuration efficiency.
An underlined text string indicates a menu. A standard text string indicates a setting.

3.0 Settings

3.2.1 Contacts [CONTACTS]:
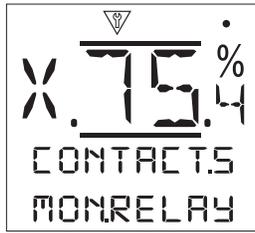
Monitor Relay [MON.RELAY]: - Specify the function of the monitor relay. ⊟ ⬆ ⬇ ⊟.

Available [AVAILABL.] – Actuator available for remote control. Monitors power supplies, motor thermostat, detected internal fault and remote control selected. A loss in one or more will cause the monitor relay to de-energise indicated "not available" for remote control.

Fault [FAULT] – Actuator fault. Monitors power supplies, motor thermostat and detected internal fault. A loss in one or more will cause the monitor relay to de-energise indicating "actuator fault".
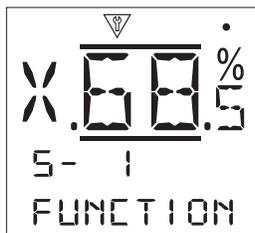
S Function [FUNCTION]: - The available contact functions that can be configured for S contact relays are detailed in table 1 opposite. ⊟ ⬆ ⬇ ⊟.
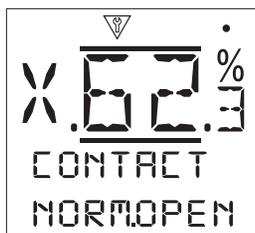
S Contact [CONTACT]: - Each relay contact output can be configured as normally open (make on condition) or normally closed (break on condition) to suit either type of field wiring. ⊟ ⬆ ⬇ ⊟.

S Position [POSITION]: - If the relay function relates to an actuator position, for example Pos % Open, this setting will become available to edit. Range 0% – 100%. ⊟ ⬆ ⬇ ⊟.

Function	Function
DISABLED	Contact disabled
CLOS.LIM.	Closed limit position (exact)
OPEN.LIM.	Open limit position (exact)
END.POSIT.	Both Closed and Open Limit positions
POS.%.OPEN	Set position mid-travel – opening and closing
MID.TRAVL.	Not at Closed or Open Limit
MOT.RUNNG.	Motor running
CLOSING	Travelling in the close direction – motor or handwheel
OPENING	Travelling in the open direction – motor or handwheel
MOVING	Travelling – motor or handwheel
HAND.OPER.	During handwheel operation
MOV.BLINK.	Travelling (make/break at 1 second intervals)
VALV.ALRM.	On torque trip mid-travel or motor stall condition
TRQ.TRP.CL.	Torque trip closing – any position
TRQ.TRP.OP.	Torque trip opening – any position
TRQ. TRIP	Torque trip closing or opening – any position
TRQ.MIDDL.	Torque trip mid-travel, closing or opening
MOT.STALL	At limit, motor energised – no output movement detected
MID.STALL	Not at limit, motor energised – no output movement detected
STOP. SEL.	Red selector set to STOP
LOCAL.SEL.	Red selector set to Local
REMOT.SEL.	Red selector set to Remote
CTRL.ALRM.	ESD signal and/or interlock active
MONITOR	Monitor relay de-energised
ESD.ACTIV.	ESD signal active
O.INTLK.AC.	Open interlock active
C.INTLK.AC.	Close interlock active
INTLK.ACT.	Open and/or closed interlock active
ACT.ALARM	Internal fault detected
THER.TRIP.	Motor thermostat has tripped
LOST.PHAS.	3-phase only: monitored phase 3 lost
24V.P.FAIL	Internal 24 VDC supply failed (Terminals 4 & 5)
PRT.STK.AC.	Partial stroke in progress
PRT.STK.ER.	Partial stroke error/fail
PRT.STK.PS.	Partial stroke pass
BLUETOOT.	Bluetooth communication in progress
DIGIT.OUT.	Network option controlled
MAINTNCE.	Scheduled maintenance due
HI.TQ.ALRM.	Set Hi torque value reached
H.H.TQ.ALRM.	Set Hi-Hi torque value reached

Table 1.

3.0 Settings

3.2.2 Local Display [LCL.DISPL.]:

LCD [LCD]:
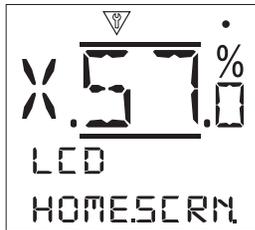
Home Screen [HOME.SCRN.]: - Specify which home screen should be visible during operation of the actuator. 🔘⬆⬇🔘. Select one of the below options:

Position [POSITION] - The display indicates the current valve position to one decimal place. Icons are used for Closed and Open limit positions.

Torque + Position [TRQ. +POS.] - The display indicates current valve position to one decimal place plus digital torque indication scaled 0% to 100% of rated torque.

Positioner [POSITIOR.] - Used only with analogue or network position control. The display indicates current valve position to one decimal place plus the position equating to the applied demand signal from 0% to 100%.

LED [LED]:
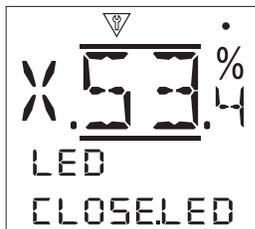
Close LED [CLOSE.LED]: - Specify the colour of the close limit indication LED on the local display – Green or Red (the Open limit will return the opposite colour to distinguish between each position). 🔘⬆⬇🔘.

Mid Travel LED [MD.TRV.LED]: - A pair of yellow LEDs can be assigned a Mid-travel function that is subject to one of the following setting conditions. 🔘⬆⬇🔘.

On [ON] - The yellow LEDs are on when mid-travel.

Off [OFF] - The yellow LEDs are off when mid-travel.

Blinker [BLINKER] - The yellow LEDs will flash at approximately 0.5 second intervals when travel in mid-travel (electric or manual operation). When stationary, the LEDs will remain on.

On / Alarm [ON/ALARM] - The yellow LEDs are on when mid-travel. If an alarm is active the yellow LEDs flash alternately at approximately 0.5 second intervals.

Off / Alarm [OFF/ALRM.] - The yellow LEDs are off when mid-travel. If an alarm is active the yellow LEDs flash alternately at approximately 0.5 second intervals.

Alarm LED [ALARM.LED]: - The alarm LED function will be read only unless the Mid Travel LED is set to On/Alarm or Off/Alarm. 🔘⬆⬇🔘.

Disabled [DISABLED] – The yellow LEDs do not indicate an active alarm.

Alarm [ALARMS] – Flashing yellow LEDs indicate active alarms.

Service [SERVICE] – Flashing yellow LEDs indicate active service alarms only. A service alarm indicates the actuator requires service due to set duty parameters being met. Refer to 6.5.

Service / Alarm [SRV./ALRM.] – Flashing yellow LEDs indicate active alarms and active service alarms. A service alarm indicates the actuator requires service due to set duty parameters being met. Refer to 6.5.

Information regarding the nature of the alarm(s) will be shown on the home screen of the Centronik display.

3.0 Settings

3.2.3 Analogue [ANALOGUE]:

Analogue position indication (4-20mA) is an optional extra, refer to wiring diagram for inclusion. If the option is not fitted then Analogue menu will not be present in the Indication menu.

The analogue output signal auto ranges to the set limits and cannot be calibrated.

Invert [INVERT]: - Specify whether the output 4-20mA signal increases or decreases whilst the actuator is moving open. ⊟🔼🔽⊟.

Off [OFF] – 4 mA output at Closed Limit position/20 mA output at Open Limit position.

On [ON] – 4 mA output at Open Limit position/20 mA output at Closed Limit position.

3.0 Settings

3.3 Settings > Control [SETTINGS > CONTROL]
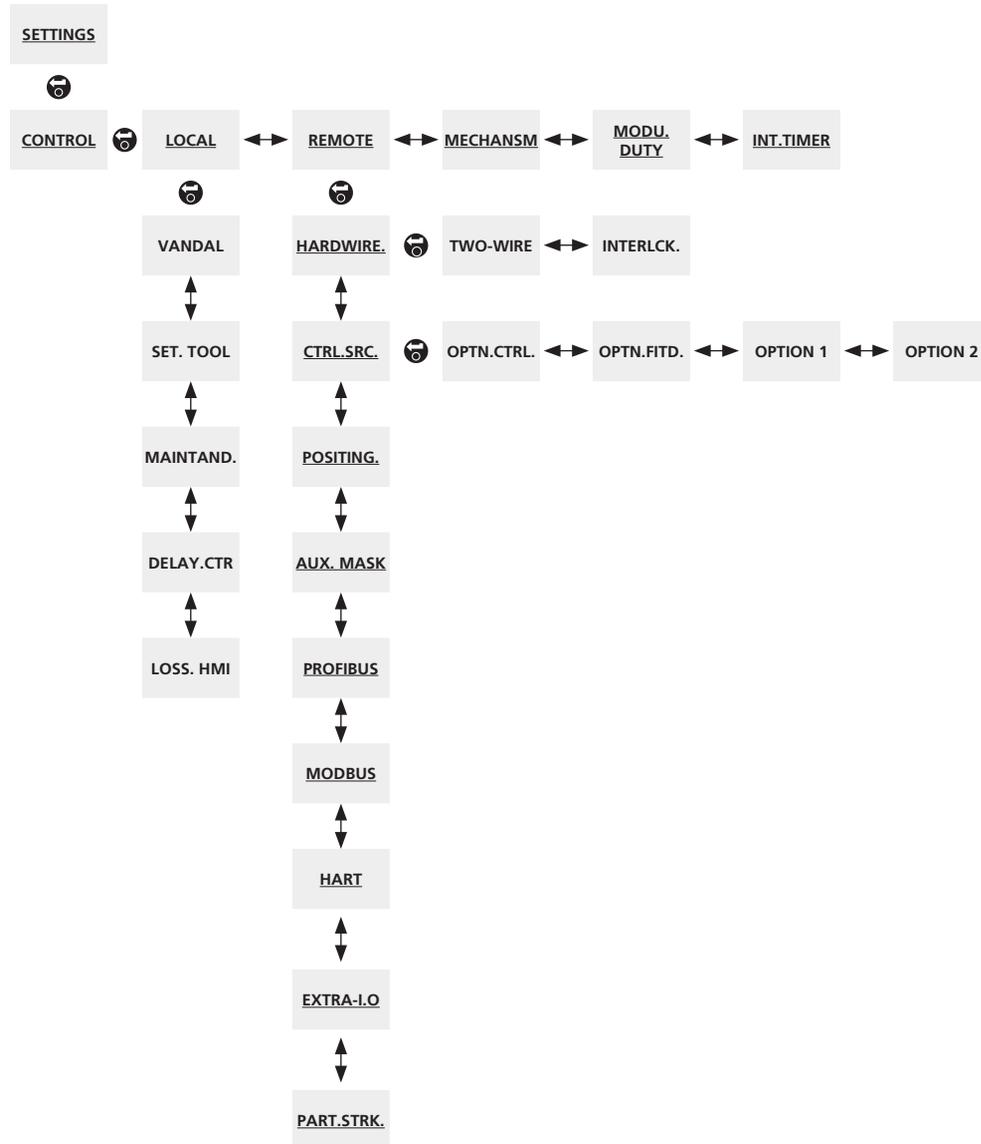
The above menu map should be used as a navigation prompt to improve configuration efficiency.
An underlined text string indicates a menu. A standard text string indicates a setting.

3.0 Settings

3.3.1 Local [LOCAL]:
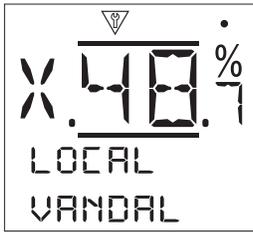
Vandal [VANDAL]: - To prevent unauthorised changes to the actuator operating mode, vandal resist can be enabled to restrict operation to one specific mode ignoring the position of the local selector knobs. ⬅️🔼🔽🛑.

    Disabled [DISABLED] –vandal resistant mode is disabled, actuator will function normally.

    Local [LOCAL] – Actuator selected for Local control and will only respond to local inputs from the Rotork Bluetooth Setting Tool *Pro*.

    Remote [REMOTE] – Actuator selected for Remote control and will only respond to remote inputs.

Setting Tool [SET. TOOL]: - The Rotork Bluetooth Setting Tool *Pro* has inclusive open, close and stop controls to control the actuator.
🛑🔼🔽🛑.

    Yes [YES] – Control keys on the Rotork Bluetooth Setting Tool *Pro* will become active. When the actuator is in Local mode on the local selector knob, the 🔄, 🔄 and 🛑 buttons will Close, Open and Stop the actuator.

    No [NO] – Control keys on the Rotork Bluetooth Setting Tool *Pro* will be disabled and operation is only viable using the local control selector knobs and remote input signals.

Maintained [MAINTAND.]: - Specify the action as a response to local open or close control signals. 🛑🔼🔽🛑.

    Yes [YES] – the actuator will self-maintain as a response to a fleeting local open or close control signal. It will run until it receives a stop command, reaches a travel limit or is reversed – maintain local control.

    No [NO] – The actuator will run only while an open or close control signal is applied – push to run local control.

Delayed Control [DELAY.CTR.]: - If there is a risk of a local close or open control signal being applied due to the selector moving inadvertently or by being hit momentarily, a delay can be set to help prevent an unintended operation.
🛑🔼🔽🛑.

    Yes [YES] – A local close or open signal must be held for approximately 2 seconds before the actuator responds.

    No [NO] – The actuator responds immediately to a local close or open control signal.

Loss of HMI [LOSS. HMI]: - The Human Machine Interface consists of the actuator display and local selectors. If for any reason the HMI stops responding, the response of the actuator can be set. 🛑🔼🔽🛑.

    Stayput [STAY. PUT] – The actuator will stay put and alarm using the monitor relay. It will not respond to remote control signals.

    Remote [REMOTE] – The actuator will alarm using the monitor relay. It will continue to respond to remote control signals.

Be aware that if site actuator control is dependent on a healthy actuator status, valid control signals will be inhibited via the monitor relay feedback (e.g. a DCS system that requires healthy monitor relay status to output control signals).

3.0 Settings

3.3.2 Remote [REMOTE]:
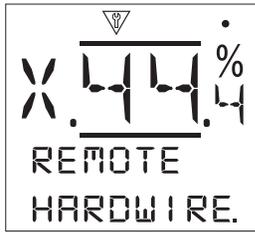
Hardwired [HRDWIRED.]:

Two Wire Priority [TWO-WIRE]: - Set the actuator the actuator will perform when a close and open signal are applied simultaneously. Hardwired remote control can be wired to use the priority action in an isolating application.
⌨️⬆️⬇️⌨️.

> **Open [OPEN]** – The actuator will move open when simultaneous signals are witnessed.

> **Stop [STOP]** – The actuator will not move, or will stop if running when simultaneous signals are witnessed.

> **Close [CLOSE]** – The actuator will move closed when simultaneous signals are witnessed.

Interlocks [INTERLCK.]: - Set the mode for the interlock inputs, refer to wiring diagram. External interlocks can be used to prevent operation of the actuator until a certain process condition is met. An example is a main and bypass valve system. The main valve is interlocked with the bypass valve such that it cannot be opened until the bypass valve is fully open. ⌨️⬆️⬇️⌨️.

> **Disabled [DISABLED]** – The interlock inputs are disabled, interlocking is not available.

> **Enabled [ENABLED]** – Close and open interlock inputs are enabled, interlocking is available and will be active in both local and remote control.
> The actuator will not run in local or remote control unless interlock signals are applied to the closed or open interlock input. If only one interlock is required, for example and interlock to prevent closed operation, the open interlock must be physically linked out.

> **Conditional [CONDITIO.]** – Close and open interlock inputs are enabled, interlocking is available and will be active in remote control mode only. The actuator will not run under remote control unless interlock signals are applied to the closed control and closed interlock input or the open control and open interlock input. Remote control is conditional on 2 signals being applied simultaneously and therefore integrity of operation due to spurious control signals is increased. Local control is available without interlock inputs.

Partial Stroke [PART.STRK.] – Partial stroke testing demonstrates the operational integrity of the valve and actuator by moving them for a set portion of stroke. A remote "partial stroke" hardwired signal applied to the open interlock input is used to initiate a partial stroke test. Partial stroke test parameters can be configured in the Partial Stroke menu. When set to partial stroke, the open interlock is disabled. Partial stroke initiated via a fieldbus command (with a fieldbus option fitted), does not require the interlocks to be configured for partial stroke.

3.0 Settings

Control Source > Option Control [CTRL.SRC. > OPTN.CTRL.]:
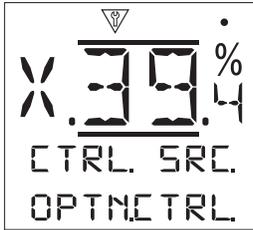
Set the control sources and control priorities for the actuator during normal operation.

Control Source 1 [CTRL.SRC.1]: - Control Source 1 will be factory configured for the fitted remote Analogue or Fieldbus control option. Refer to Control Source Settings Table to determine the correct settings for the required control method. ⊟⬡⬡⊟.

Control Source 2 [CTRL.SRC.2]: - Control Source 2 will be factory configured for the fitted remote Fieldbus control option. Refer to Control Source Settings Table to determine the correct settings for the required control method. ⊟⬡⬡⊟.

Control Selection [CTRL. SEL.]: - Control Selection is used to select the control source priority and if required, for Analogue option or Analogue with Fieldbus options, allow hardwired switching between sources using the Manual/Auto input. ⊟⬡⬡⊟.

Disabled [DISABLED] – All remote control is disabled. The actuator can only be operated using the local controls.

Hardwired [HRDWIRED.] – Remote control by hardwired inputs only. This setting is the default for actuators with no control option cards fitted.

If a Fieldbus option is fitted but not require for actuator control, select Hardwired.

Source 1 [SRC 1] – The actuator will only recognise remote input signals from the option specified as Source 1.

Hardwired / Source 1 [HRD+SRC.1] – Control available only when Analogue option is fitted. This mode enables the user to select between control by hardwired inputs or Source 1 (Analogue) control by applying or removing a signal to the Manual/Auto input, refer to wiring diagram. Manual will enable hardwired control and Auto will enable Source 1 (Analogue) control.

If an Analogue option is fitted and Manual/Auto switch is required, select Hardwired/Source 1.

Source 1 / Source 2 [SRC- 1.&.2] – Control by Analogue and a Fieldbus option only. This mode enables the user to select between Source 1 (Analogue) and Source 2 (Fieldbus) control, by applying or removing a signal to the Manual/Auto input available with the Analogue option, refer to wiring diagram. Manual will enable Source 2 and Auto will enable Source 1.

Control from two fieldbus options is not available.

Control Source Settings Table					
Settings	Hardwired (no options)	Analogue	Analogue and Hardwired	Fieldbus Only	Analogue and Fieldbus
Control Source 1	Disabled	Analogue	Analogue	Fieldbus	Analogue
Control Source 2	Disabled	Disabled	Disabled	Disabled	Fieldbus
Control Selection	Hardwired	Source 1	Hardwired / Source 1	Source 1	Source 1 / Source 2

KEY: For "Fieldbus", display will indicate the fitted option: Profibus/Modbus/Foundation Fieldbus (FF)/HART.

3.0 Settings

Control Source > Options Fitted [CTRL.SRC. > OPTN.FITD.]:
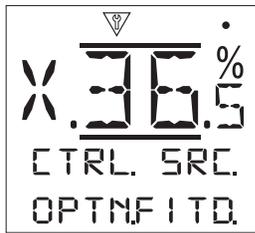
Factory set for the control options fitted. Up to 2 options can be fitted and will be indicated in this menu. Unused allocations will be set to Disabled.

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

Control Source > Option 1/2 [CTRL.SRC. > OPTION 1/2]:
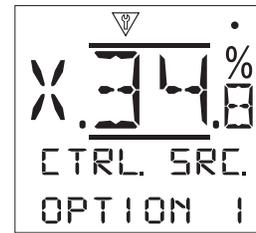
This menu shows common actuator response settings for all CK option cards during a loss of signal condition.

Option 1 / 2 [OPTION 1/2]: - This attribute will show the type of option fitted. Disabled will be displayed if there is not a valid option card fitted within the Centronik control module. The following signal loss settings will also not be available without a valid CK option card fitted.

Lost Signal Time [LOST.S.TIM.]: - Set the amount of time in seconds that a signal must be lost before the set Lost Signal Action is performed. Range 0 to 65 seconds. ⬡⬆⬇⬡.

For the Analogue option, time must be set to 0 seconds.

Lost Signal Action [LOST.S.ACT.]: - Set the action performed when the signal is lost for the set time period (Lost Signal Time). ⬡⬆⬇⬡.

> **Off [OFF]** – The lost signal feature is disabled. An actuator with Analogue control will run to the set low signal position. An actuator with Fieldbus control will stay at the current position when communication is lost.

> **Open [OPEN]** – The actuator will run to the Open Limit (position or torque as specified in the Open Limit settings).

> **Close [CLOSE]** – The actuator will run to the Closed Limit (position or torque as specified in the Closed Limit settings).

> **Stop [STOP]** – If the actuator is not moving it will remain in the current position. If it is currently moving open or closed then it will stop.

> **Go to Position [POSITION]** – The actuator will run to the mid-travel position set for Signal Loss Position.

Lost Signal Position [SG.LOS.POS.]: - When the Lost Signal Action is set for Go to Position the actuator will run to the Signal Loss Position set. Range is 0% (Closed Limit) to 100% (Open Limit). This control should be used if a lost signal position in mid-travel is required. ⬡⬆⬇⬡.

3.0 Settings

<u>Partial Stroke [PART.STRK.]:</u>

Partial Stroke is a standard feature included in all CK Centronik control modules. Partial stroke testing is used to demonstrate the operational integrity of the valve and actuator by moving over a set portion of the valve stroke. In addition, partial stroking may be used to exercise infrequently operated valves to help keep them mechanically free. Partial stroke test can only be initiated when the actuator is at the set From Limit position.

A partial stroke test may be initiated by a remote partial stroke signal applied to the open interlock*, a fieldbus command (fieldbus option fitted) or using the test control on the partial stroke menu.

*Interlocks must be set to partial stroke.

Partial stroke operation, pass and failure can be indicated by the relevant S contact functions.
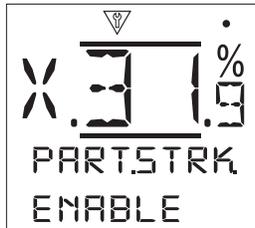
Enable [ENABLE]: - Specify whether the partial stroke function is enabled or disabled. ⬡⬆⬇⬡.

   No [NO] – Partial stroke testing is disabled.

   Yes [YES] – Partial stroke testing is enabled and other partial stroke settings will apply.

From Limit [FRM.LIMIT]: - Select the start/finish position limit position for the partial stroke test. ⬡⬆⬇⬡.

   Open [OPEN] – The partial stroke test will start from the Open Limit position, move in the close direction to the To Position value and then return to the Open Limit position.

   Close [CLOSE] – The partial stroke test will start from the Closed Limit position, move in the open direction to the To Position value and then return to the Closed Limit position.

To Position [TO.POSITI.]: - Set the intermediate position for the partial stroke test. This position is a reference to full valve stroke and must be set a minimum of 3% away from the From Limit position setting. ⬡⬆⬇⬡.

Out Time [OUT.TIME]: - Set the time required to perform the partial stroke action in the direction away from the set position limit. This is used to ensure the partial stroke test is completed in a quantified period of time. Alarms can be set to indicate a failure in meeting the set time, indicating a valve problem.

Measure or calculate the time to complete the set partial stroke test. Add 10% to this value and then half it. The resulting time should be entered for Out Time. ⬡⬆⬇⬡.

Return Time [RET.TIME]: - Set the time required to perform the partial stroke action in the return direction towards from the set position limit. This is used to ensure the partial stroke test is completed in a quantified period of time. Alarms can be set to indicate a failure in meeting the set time, indicating a valve problem.

Measure or calculate the time to complete the set partial stroke test. Add 10% to this value and then half it. The resulting time should be entered for Return Time.

For CK actuators the Out Time and Return Time must be set equal. ⬡⬆⬇⬡.

Test [TEST]: - To initiate a partial stroke test using the Rotork Bluetooth Setting Tool *Pro*, the actuator must be set to Local control using the local selector knob and at the position limit specified in the From Limit setting. ⬡⬡.

<u>Positioning [POSITING.]:</u>

The positioning menu is applicable for Analogue and HART control options and for all fieldbus control options where positioning control is required. Settings are used to tune the actuator positioning response to a change in desired value.

- Deadband and Hysteresis are combined to set positioning accuracy.

- Inhibit Time is used to set a dwell period for the actuators response.

- Low/High Signal Position sets the range of the valve stroke where position is required.
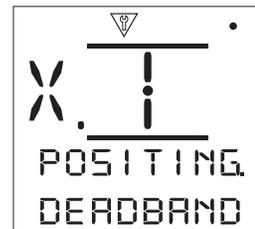
Deadband [DEADBAND]: - Affects positioning accuracy as a response to the process control system desired value (DV) signal position. A smaller deadband increases accuracy, however the widest deadband should be set whilst maintaining good control in order to protect the mechanical valve from excessive wear and/or to keep the actuator within its electrical rating.

Deadband setting should be combined with the Hysteresis setting. The actuator will run towards the DV position until the actuator position is within the set deadband minus the hysteresis setting. This has the effect of the actuator stopping nearer to the DV position. The actuator will not restart unless it overshoots and runs outside the deadband or a new command places the new desired position outside the deadband.

Range 0 to 25.5% ⬡⬆⬇⬡.

3.0 Settings

Hysteresis [HYSTERES.]: - Affects positioning accuracy as a response to the process control system desired value (DV) signal position. A larger Hysteresis setting will increase accuracy but the value set must not be greater than that set for Deadband.

Hysteresis setting should be combined with Deadband setting. The actuator will run towards the DV position until the actual position is within the set deadband minus the hysteresis setting. This has the effect of the actuator stopping nearer to the DV position. The actuator will not restart unless it overshoots and runs outside the deadband or a new command places the new desired position outside the deadband.

Range 0 to 25.5% 🔧⭕⭕🔧.
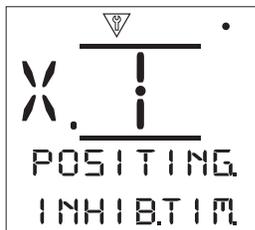
Inhibit Time [INHIB.TIM.]: - Sets a delay after the actuator stops as a result of reaching a position consistent with a new DV position. For the period set, the actuator will not respond to a change in DV. Inhibit time is used to prevent unwanted operation as a result of a rapidly oscillating or fluctuating DV signal or to slow actuator response in order to protect the mechanical valve from excessive wear and/or maintain actuator within its electrical rating. 🔧⭕⭕🔧.

Low Signal Position [LO.SIG.POS.]: - Used to set the position the actuator will move to when the low analogue signal is applied for Analogue control or for a 0% position command for Fieldbus options. Normally this will be set at Close Limit position (0%), unless position is required over a reduced portion of full travel, for example, to prevent full closure where valve throttling is required. 🔧⭕⭕🔧.

High Signal Position [HI.SIG.POS.]: - Used to set the position the actuator will move to when the High analogue signal is applied for Analogue control or for a 100% position command for Fieldbus options. Normally this will be set at Open Limit position (100%), unless positioning is required over a reduced portion of full valve travel, for example, to increase positioning resolution for a butterfly valve where position is required from Close Limit position to 60% open position. 🔧⭕⭕🔧.
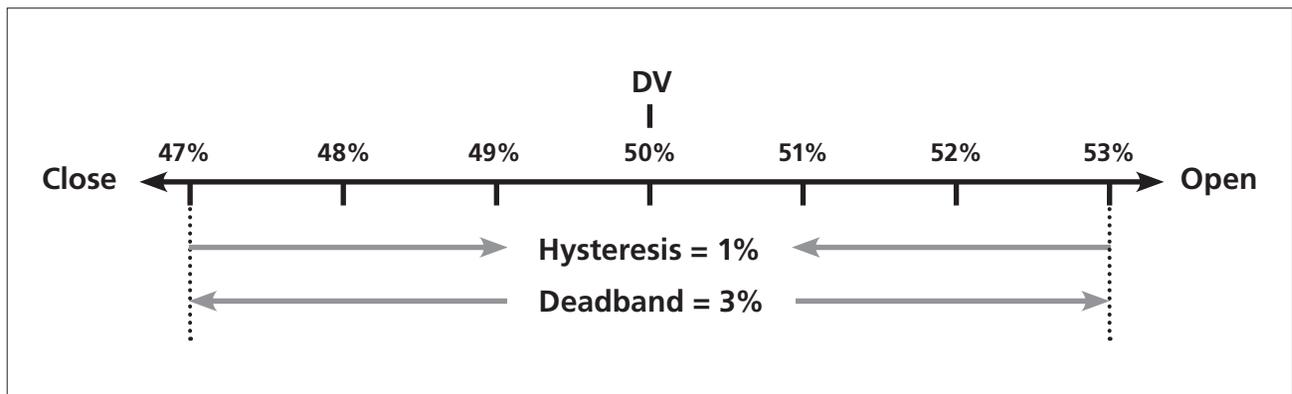
Example: An actuator set with a 3% deadband and a 1% hysteresis and a control system new Desired Value (DV) of 50% will come to rest between 48% and 53% when moving from a position less than 47%, and between 52% and 47% when moving from a position greater than 53%.

The Deadband setting will be determined by the accuracy of control required and valve overrun. Overrun is a factor of valve and actuator inertia dependent on mass, speed, valve stiffness and friction.

3.0 Settings

Analogue [ANALOGUE]:

The Analogue menu is applicable to the Analogue control option. This is in conjunction with the Positioning menu.

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 _____
 X. I
 _____
 ANALOGUE
 SIG. TYPE
```

Signal Type [SIG. TYPE]: - Specify the positioner signal type. ⊟⬑⬎⊟.

> **Current [mA]** – Positioning using a current milliamp source.

> **Voltage [VOLTS.]** – Positioning using a voltage source.

Signal Range [SIG. RANG.]:- Specify the positioner signal range. ⊟⬑⬎⊟.

> **5 [5mA/5V]** – Set the range from 0-5mA or Volts. Unit depends on signal type setting.

> **10 [10mA/10V]** – Set the range from 0-10mA or Volts. Unit depends on signal type setting.

> **20 [20mA/20V]** – Set the range from 0-20mA or Volts. Unit depends on signal type setting.

Invert [INVERT]: -Specify whether the input analogue signal increase or decreases whilst the actuator is moving open. ⊟⬑⬎⊟.

> **Off [OFF]** – Low signal equals closed limit position/high signal equals open limit position.

> **On [ON]** – Low signal equals open limit position/high signal equals closed limit position.

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   ▽      •
 _____
 X. I
 _____
 ANALOGUE
 MANU.AUTO.
```
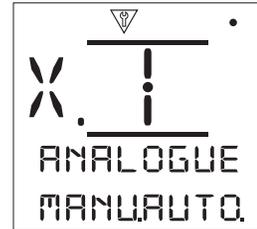
Manual Auto [MANU.AUTO.]: - Enable or disable the manual auto switch that determines control between analogue and hardwired inputs. ⊟⬑⬎⊟.

> **Off [OFF]** – Switch disabled. The actuator can only be controlled using the analogue input.

> **On [ON]** – Switch enabled. Actuator control can be switched between analogue and hardwired/fieldbus.

Set Low Signal [SET.LO.POS.]: - The actuator must be calibrated to the Low Analogue signal value. By measuring the signal it will then be able to control the actuator by moving to the Low Signal Position **[LO.SIG.POS.].** ⊟ ⊟

Set High Signal [SET.HI.POS.]: - The actuator must be calibrated to the High Analogue signal value. By measuring the signal it will then be able to control the actuator by moving to the High Signal Position **[HI.SIG.POS.].** ⊟ ⊟

3.0 Settings

Auxiliary Mask [AUX. MASK]:

When a Fieldbus option is fitted (Profibus/Modbus/ Foundation Fieldbus/DeviceNet or HART) a facility to accept 4 auxiliary inputs is available. Auxiliary inputs can be set as supplementary control for the actuator (open, close, stop/ maintain or ESD) or as digital indication inputs whose status is reported over the option network. It is also possible to have a combination of both supplementary remote control and digital inputs to provide, for example, open and close control as well as a high and low tank level alarm indication from external level transducers.

Auxiliary inputs are in addition to the standard control and feedback features incorporated into a Fieldbus option. Auxiliary inputs are connected to the standard Open, Close, Stop/maintain and ESD inputs. Refer to actuator wiring diagram.

NOTE: If an Analogue option and a Fieldbus option are fitted and hardwired ESD control is required (Auxiliary 4 set to ESD), ensure Auxiliary contact 4 setup is matched to the ESD configuration when signal setting. Refer to 3.4.

The Auxiliary Mask menu allows the user to setup the 4 Auxiliary inputs as supplementary control, indication or a combination of both. Each Auxiliary input can be set for the type of contact connected.
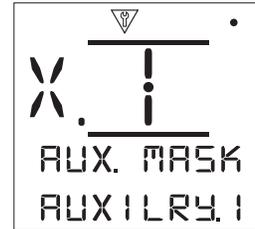
Auxiliary 1 [AUXILRY.1]: - Refer to Auxiliary input setup table below. 🔧⬆️⬇️🔧.

Dig in [DIGIT. IN] – Fieldbus option will report digital input status: 1 or 0.

Open [OPEN] – Hardwired open command signal is required. Use Auxiliary 2 to 4 for Close, Stop/Maintain and ESD.

Contact 1 [CONTACT.1]: - Refer to Auxiliary input setup table below. 🔧⬆️⬇️🔧.

Normally Open [NORM.OPEN] – A normally open contact (make when active) is used to derive input.

Normally Closed [NORM.CLOS.] – A normally closed contact (break when active) is used to derive input.

Input	Auxilary 1	Auxilary 2	Auxilary 3	Auxilary
Control	Open	Close	Stop/ Maintain	ESD
Indication	Dig	Dig	Dig	Dig
Contact Type	Contact1	Contact2	Contact3	Contact4
Normally Open	N/O	N/O	N/O	N/O
Normally Closed	N/C	N/C	N/C	N/C

3.0 Settings

Profibus [PROFIBUS]:

Profibus may be subject to other related settings depending on the control scheme. Please refer to:

Positioning

Auxiliary Mask

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 ▽
X.T  •
  PROFIBUS
  ADDRESS
```
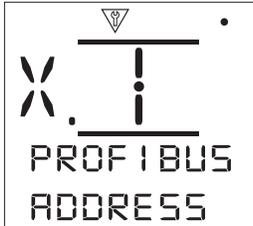
Address [ADDRESS]: - The Profibus module must be allocated a unique address in the Profibus system. Changes made to the address will take effect immediately. The range of address is 1 – 126. If flying redundancy is being used in a dual channel system then the range of address is 1 – 62.

GSD Parameter [GSD.PARAM.]: - If the user parameterisation data is to be setup using FDT, EDDL or the actuators menu, setting this menu item to No will ensure that the user parameterisation data sent to the Profibus card during the parameterisation of the Profibus network with the GSD file will be ignored. The settings previously made will not be overwritten. As default this is set to Yes to ensure that the Profibus card will be parameterised by the FSD user parameterisation data.

> **Yes [YES]** – Parameterisation by GSD file is enabled.

> **No [NO]** – Parameterisation by GSD file is disabled.

Termination 1 [TERMIN. 1]: - Profibus networks require active termination at each end of the highway. Profibus option has active termination (2 sets for dual) built in, which can be switched in or out of the circuit.

> **Off [OFF]** – Termination resistors switched out.

> **On [ON]** – Termination resistors switched in.

Termination 2 [TERMIN. 2]: - Profibus networks require active termination at each end of the highway. Profibus option has active termination (2 sets for dual) built in, which can be switched in or out of the circuit.

> **Off [OFF]** – Termination resistors switched out.

> **On [ON]** – Termination resistors switched in.

Redundancy [REDUNDCY.]: - Used for dual Profibus option (redundant) only. Refer to wiring diagram.

> **System [SYSTEM]** – System redundancy means that there are 2 completely separate Profibus highways in the network system and that each highway is connected to one of the Profibus channels. In this mode the address of both Profibus channels are identical.

> **Flying [FLYING]** – Flying redundancy means that there is 1 highway that is connect to both channels, in this mode the addresses of the channels must be different to avoid both channels responding to the same message. In flying redundancy channel 2 address will be channel 1 address plus 64.

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 ▽
X.T  •
  PROFIBUS
  EXTD.DIAG.
```
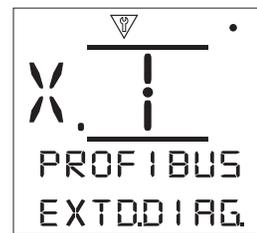
Extended Diagnostics [EXTD.DIAG.]: - Used for dual channel Profibus option (redundant) only. Refer to wiring diagram.The slave redundancy specification from the PNO describes extended diagnostics that are available in the redundant card. These messages describe, for example, the state of the backup channel. Diagnostics messages can be turned on and off depending on the capabilities of the PLC to which the module is connected.

> **No [NO]** –Diagnostic messages turned off.

> **Yes [YES]** – Diagnostic messaging turned on.

3.0 Settings

<u>Modbus</u> [MODBUS]:

Modbus may be subject to other related settings depending on the control scheme. Please refer to:

Positioning

Auxiliary Mask

```
  X.1
MODBUS
ADDRESS
```
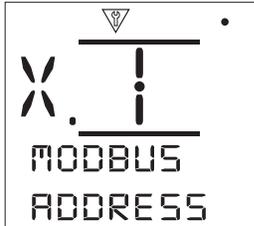
Address [ADDRESS]: - The Modbus option must be allocated a unique address to which it is attached. Changes made to the address will take effect immediately. The range of address is 1 – 247. 🔲🔼🔽🔲.

Termination [TERMINAT.]: - 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. 🔲🔼🔽🔲.

> **Off [OFF]** – Termination resistor(s) switched out.
>
> **On [ON]** – Termination resistor(s) switch in. In a dual channel Modbus option, when On is selected the termination resistors will be switched in for both channels.

Baud Rate [BAUDRATE]: - The Modbus option must be set to the RS485 highway baud rate. Changes made to this parameter will take effect immediately. The baud rate can be set to 300, 600, 1200, 2400, 4800, 9600, 19200, 38400, 57600 or 115200. 🔲🔼🔽🔲.

Parity/Stop [PAR. 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 or Odd. This item also allows selection for the number of stop bits as 1 or 2. This setting requires selection of the parity and stop bits together. 🔲🔼🔽🔲.

> **No Parity, 1 Stop [NONE.1.STP.]** – No parity and 1 stop bit.
>
> **No Parity, 2 Stop [NONE.2.STP.]** – No parity and 2 stop bits.
>
> **Even Parity, 1 Stop [EVEN.1.STP.]** – Even parity and 1 stop bit.
>
> **Even Parity, 2 Stop [EVEN.2.STP.]** – Even parity and 2 stop bits.
>
> **Odd Parity, 1 Stop [ODD.1.STOP]** – Odd parity and 1 stop bit.
>
> **Odd Parity, 2 Stop [ODD.2.STOP]** – Odd parity and 2 stop bits.

Second Address [2ND.ADRES.]: - Used for dual channel Modbus option (redundant) only. Refer to wiring diagram.

A dual Modbus card has 2 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. The range of address is 1 – 247. 🔲🔼🔽🔲.

Control [CONTROL]: - Read only. For dual Modbus option (redundant) only. Refer to wiring diagram.

Setting will indicate that control is available on both channels 1 and 2.

<u>HART</u> [HART]:

HART may be subject to other related settings depending on the control scheme. Please refer to:

Positioning

Auxiliary Mask

```
  X.1
HART
ADDRESS
```
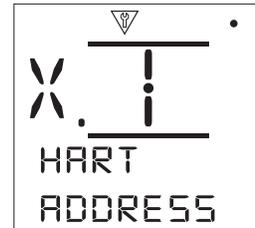
Address [ADDRESS]: - The HART option must be allocated a unique address in the HART system. Changes made to the address will take effect immediately. The range of address is 0 - 63. 🔲🔼🔽🔲.

Set Low Signal Position [SET.LO.POS.]: - The actuator must be calibrated to the Low analogue signal value. By measuring this signal it will then be able to control the actuator by moving it to the Set Low Signal Position, refer to the Positioning menu. Apply the Low analogue signal and select 🔲🔼🔽🔲.

Set High Signal Position [SET.HI.POS.]: - The actuator must be calibrated to the High analogue signal value. By measuring this signal it will then be able to control the actuator by moving it to the Set High Signal Position, refer to the Positioning menu. Apply the High analogue signal and select 🔲🔼🔽🔲.

Lower Range [LO. RANGE]: - Used to set the position the actuator will move to when the low analogue signal is applied for HART control. Normally this will be set at Closed Limit position (0%), unless positioning is required over a reduced portion of full valve travel, for example, to prevent full closure where valve throttling is required. Range 0 – 100% position. 🔲🔼🔽🔲.

Upper Range [UP. RANGE]: - Used to set the position the actuator will move to when the high analogue signal is applied for HART control. Normally this will be set at Open Limit position (0%), unless positioning is required over a reduced portion of full valve travel, for example, to increase positioning resolution for a butterfly valve where positioning is required from Closed Limit position to 60% open position. Range 0 – 100% position. 🔲🔼🔽🔲.

3.0 Settings

Pakscan [PAKSCAN]: -

The *Pakscan* menu is applicable the *Pakscan* control and monitoring option.
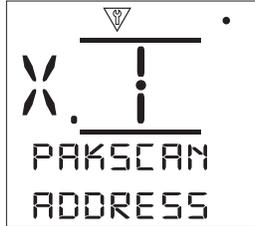
Address [ADDRESS]: - The *Pakscan* Field Control Unit option must be allocated a unique loop node address. Changes made to the address will take effect immediately. The range of address is 1 to 240. ⌨⬆⬇⌨.

Baud Rate [BAUDRATE.]: - The actuator *Pakscan* Field Control Unit option must be set to the loop baud rate. For a *Pakscan* 2-wire control loop the selected baud rate must be common in the master station and all the field units included in the loop. Changes made to baud rate will take effect immediately. The baud rate can be set to 110, 300, 600, 1200 or 2400. ⌨⬆⬇⌨.

Position Update Time [POS.UP.TIS]: - Set when mid-travel position control is required. Update time in seconds is the set period for updating the master station with position data. Also refer to **[POS.DEVIA.]**. The valve position will be reported at time intervals according to this setting value. If the FCU updates on deviation whilst the valve is moving then the update time should be set to approximately 10 times the loop scan time. If the actuator is not used for mid-travel positioning (i.e. isolating duty), then this setting should be turned off. Range 0 (Disabled) to 255 seconds. ⌨⬆⬇⌨.

Position Deviation [POS.DEVIA.]: - Set when mid-travel positioning control is required. Deviation is the set amount of change that has to occur before the position data is reported to the master station. Whilst the valve is in motion, reports about its position will be made each time the position changes by more than the Deviation setting. The recommended value is 5% where position data is required. If the actuator is not used for mid-travel positioning (i.e. isolating duty), then the deviation should be turned off. Range 5% to 99%. Less than 5% will disable this feature. ⌨⬆⬇⌨.
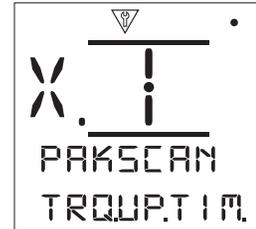
Torque Update Time [TRQ.UP.TIM]: - Torque update time (minutes) value is refreshed from a stationary actuator. If torque data is not required then the update time should be disabled. Range 5 to 255 minutes. Less than 5 will disable this feature. ⌨⬆⬇⌨.

Torque Deviation [TRQ.DEVIA.]: - Set for the amount of change in actuator measured torque that has to occur before torque data is reported to the master station. During valve travel, torque reporting will be made each time the torque changes by more than this setting. Where continuous torque data is required the recommended value is 5%. If torque data is not being used then the deviation should be set to disabled. Range 5% to 99%. Less than 5% will disable this feature. ⌨⬆⬇⌨.
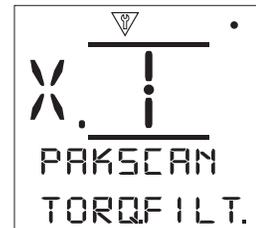
Torque Filter [TORQ.FILT.]: - Set to enable or disable auto reporting of the historical torque logs. ⌨⬆⬇⌨.

Auto [AUTO]: - The *Pakscan* option will automatically report the 6 historical torque logs for each direction once the actuator has stopped at a limit. The historical log will contain the instantaneous value of torque for both closing and opening torque logs.

Manual [MANUAL]: - The historical torque logs are not automatically updated. Historical logs are read on demand using a master station command. In Manual, the historical logs will contain the averaged (or filtered) torque logs i.e. the data from the actuator average torque logs.

Valve Travel Time [VLV.TRVL.T.]: - Valve travel time should be set to a value 10% greater than the actual valve travel stroke time (i.e. open to close). If the valve travel time is exceeded, an alarm will be raised via the *Pakscan* network. Range is 0 to 18,000 seconds. ⌨⬆⬇⌨.

3.0 Settings

Pakscan Wireless [PAKSC.WLS.]: -

The *Pakscan* Wireless menu is applicable the *Pakscan* Wireless control and monitoring option.
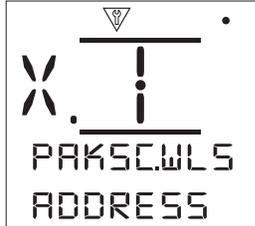
Address [ADDRESS]: - The *Pakscan* Field Control Unit option must be allocated a unique wireless loop node address. Changes made to the address will take effect immediately. The range of address is 1 to 300. ⊟⬦⬦⊟.

Pan I.D. [PAN. ID.]: - Specify the *Pakscan* Area Network ID to connect to. The PAN ID must match that set on the *Pakscan* master station. Range is a hexadecimal value from 0x0 to 0xFFFF. ⊟⬦⬦⊟.

Channel [CHANNEL]: - Specify the *Pakscan* wireless operating channel. The channel must match that set on the *Pakscan* master station. If multiple wireless networks are active within the same area, different channels should be used to avoid interference. Range 11 to 23. ⊟⬦⬦⊟.

Position Deviation [POS.DEVIA.]: - .]:- Set when mid-travel positioning control is required. Deviation is the set amount of change that has to occur before the position data is reported to the master station. Whilst the valve is in motion, reports about its position will be made each time the position changes by more than the Deviation setting. If the actuator is not used for mid-travel positioning (i.e. isolating duty), then the deviation should be turned off. Range 0% (Disabled) to 20%. ⊟⬦⬦⊟.

Torque Update Time [TORQ.+DEV.]: - Set for the amount of change in actuator measured torque that has to occur before torque data is reported to the master station. During valve travel, torque reporting will be made each time the torque changes by more than this setting. If torque data is not being used then the deviation should be set to disabled. Range 0% (Disabled) to 20%. ⊟⬦⬦⊟.

Pakscan Advanced 1 [PAKSC.AD.1.]: -

The *Pakscan* advanced 1 menu is applicable the *Pakscan* Wireless control and monitoring option.
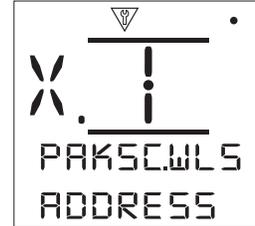
TX Power [TX POWER]: - Adjust the aerial signal strength of the wireless module fitted to the unit. The range is 0 to 20. ⊟⬦⬦⊟.

AESKEY 1 to 8. [AESKEY-1]: - These eight settings comprise the complete encryption key to access the wireless *Pakscan* network. Each setting forms a block that should match the applicable portion of the master station key. Range is a hexadecimal value from 0x0 to 0xFFFF. ⊟⬦⬦⊟.

DeviceNet [DEVIC.NET]:

The DeviceNet menu is applicable the DeviceNet control and monitoring option.
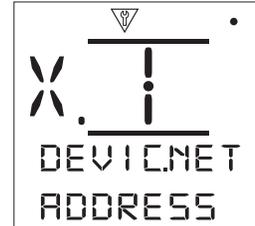
Address [ADDRESS]: - The DeviceNet option must be allocated a unique address in the system. Changes made to the address will take effect immediately. The range of address is 0 to 63. ⊟⬦⬦⊟.

Baud Rate [BAUDRATE.]: - The actuator DeviceNet option must be set to the loop baud rate. For a DeviceNet control loop the selected baud rate must be common in the host and all the field units included in the loop. Changes made to baud rate will take effect immediately. The baud rate can be set to 125, 250 or 500. ⊟⬦⬦⊟.

3.0 Settings

Extra Input / Output [EXTRA-I.O]: - The Extra I/O option for Centronik provides 4 additional digital inputs for remote control of the actuator.
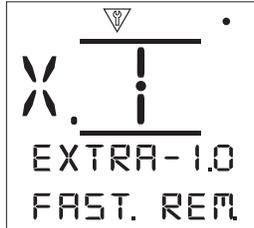
Fast Remotes [FAST. REM.]: - The extra digital inputs can be specified as fast remotes which will reduce the pulse duration length required to trigger an input signal.

> **Enabled [ENABLED]** – Remote inputs will respond to shorter pulse length signals.

> **Disabled [DISABLED]** – Remote inputs will respond to standard pulse length signals.

Digital Input Contact [CONTACT]: - Each digital input (DI5 – DI8) can be set to make for active contact (normally open) or break for active contact (normally closed).

> **Normally Open [NORM.OPEN]** – The digital input will be set for the normally open contact type.

> **Normally Closed [NORM.CLOS.]** – The digital input will be set for the normally closed contact type.

Digital Input Function [FUNCTION]: - Each digital input (DI5 – DI8) can be set to perform or report a specific function.
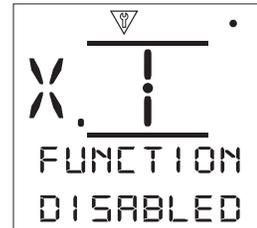
> **Disabled [DISABLED]** – The digital input is set for disabled and will not perform any function.

> **Remote Open [REM. OPEN]** – The digital input will initiate a remote open command.

> **Remote Close [REM.CLOSE]** – The digital input will initiate a remote close command.

> **Remote Maintain [REM.MAINT.]** – The digital input will provide a maintain function for pulse open or close inputs.

> **Remote ESD [REM. ESD]** – The digital input will initiate an ESD command.

> **Open Interlock [OPN.INTLK.]** – The digital input will enable remote open operation.

> **Close Interlock [CLS.INTLK.]** – The digital input will enable remote close operation.

> **Fieldbus Disable [FB.DISABL.]** – The digital input will disable the fitted fieldbus option.

> **Partial Stroke [PART.STRK.]** – The digital input will initiate a partial stroke test.

> **Hand Auto [HAND.AUTO]** – The digital input will report manual or motorised operation.

> **Velan Reset [VELAN.RST.]** – The digital input will be set for a Velan reset switch.

> **Conditional Open [COND.OPEN.]** – The digital input must be applied to initiate a remote open command.

> **Conditional Close [COND.CLOS.]** – The digital input must be applied to initiate a remote close command.

3.0 Settings

3.3.3   Switch Mechanism [MECHANSM.]:

This setting defines the configured switch mechanism for the Centronik actuator controls. The factory will configure this with one of the following values:

[MSM.SWITC.] – this defines a mechanical switch mechanism without any intermediate position indication.

[MSM.+ POT.] – this defines a mechanical switch mechanism with the additional indication drive and a POT. Intermediate position is proved to the control module using this potentiometer.

[DSM.DIGIT.] – this defines a digital switch mechanism by means of a multi-geared absolute encoder. Intermediate position and advanced functionality is possible using a Centronik control module.

Note: changing this setting will not provide increased functionality without the necessary accompanying hardware change.

3.3.4   Modulating Duty [MODU.DUTY]:

This menu includes settings relevant to CK$_R$ and CK$_{RC}$ actuators only. It will only be present if the unit is configured for modulating duty.

3.0 Settings

3.3.5 Interrupter Timer [INT.TIMER]:

The Interrupter Timer is an optional extra feature that allows the valve operating time to be increased. This is used, for example, to prevent hydraulic shock ("water hammer") when closing or to prevent surges when opening a valve. The Interrupter Timer is active in both Local and Remote control. It may be overridden during an ESD operation.

CK Range units are single speed actuators so to increase the valve operating time the timer periodically inhibits movement automatically. The timer can be set to operate over the entire travel or a portion of the closing and/or opening strokes.
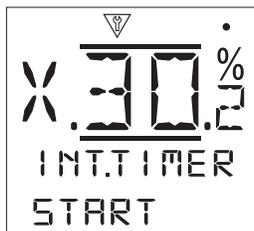
Interrupter Timer Active [INT.TIM.AC.]: - Enable or disable the interrupter timer 🔒⬆️⬇️🔒.

On Time [ON TIME]: - Set the actuator run time during timed operation. Range 2 to 100 seconds. 🔒⬆️⬇️🔒.

Off Time [OFF TIME]: - Set the actuator pause time during timed operation. Range 2 to 100 seconds. 🔒⬆️⬇️🔒.

Effective Speed [EFFCT.SPD.]: - Non-editable, for indication only. Automatically calculates the effective speed of the actuator over the timed portion(s) for the set on and off times.

Start [START]: - Set the start position for timed operation. 🔒⬆️⬇️🔒.

> **Close [CLOSE]** – Timed operation to and from the Closed Position Limit. The interrupter timer will start timed operation, in the close direction, at the position set for Closing. It will stop timed operation, in the open direction, at the position set for Opening.
>
> **Open [OPEN]** – Timed operation to and from the Open Position Limit. The interrupter timer will start timed operation, in the open direction, at the position set for Opening. It will stop timed operation, in the close direction, at the position set for Closing.

Closing [CLOSING]: - The position where the Interrupter Timer will start/stop timed operation in the close direction. If timed operation is not required in the close direction (actuator runs at normal speed), set to 0% when Start is set to Close and 100% when Start is set to Open. 🔒⬆️⬇️🔒.

Opening [OPENING]: - The position where the Interrupter Timer will start/stop timed operation in the open direction. If timed operation is not required in the open direction (actuator runs at normal speed), set to 0% when Start is set to Close and 100% when Start is set to Open. 🔒⬆️⬇️🔒.

Example: To prevent wear from high differential pressure the valve must be opened slowly and therefore timed operation is required from the Closed Limit to 30% open.

⚠ WARNING!

To minimise wear to the actuator, it is advisable to limit the number of start/stops set with the Interrupter Timer function. Using longer durations for On and Off times can achieve the specified valve operating time whilst reducing the number of starts required to achieve it.

3.0 Settings

3.4 Settings > ESD [SETTINGS > ESD]
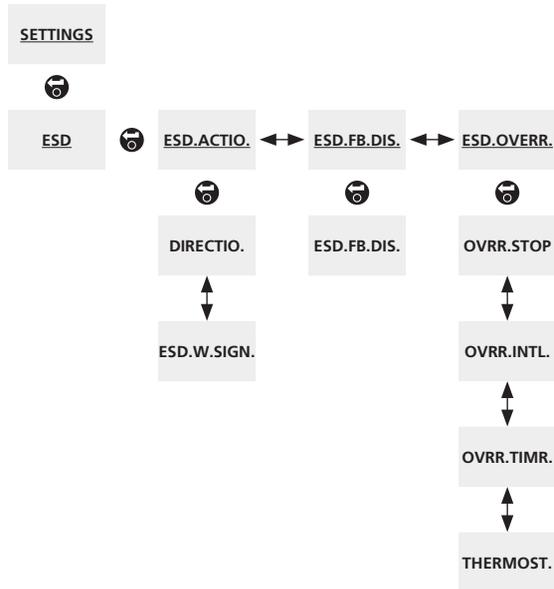
SETTINGS

ESD → ESD.ACTIO. ◄► ESD.FB.DIS. ◄► ESD.OVERR.

DIRECTIO.   ESD.FB.DIS.   OVRR.STOP

ESD.W.SIGN.   OVRR.INTL.

OVRR.TIMR.

THERMOST.

The above menu map should be used as a navigation prompt to improve configuration efficiency. An underlined text string indicates a menu. A standard text string indicates a setting.

3.4.1 ESD Action [ESD.ACTIO.]:

Direction [DIRECTIO.]: - Set the desired ESD movement direction.

Close [CLOSE] – Under ESD control the actuator will close. It will not respond to local or remote control signals until the ESD condition is cleared.

Stayput [STAY.PUT] – Under ESD control the actuator will Stop if running or remain in its current position if already stopped. It will not respond to local or remote control signals until the ESD condition is cleared.

Open [OPEN] – Under ESD control the actuator will open. It will not respond to local or remote control signals until the ESD condition is cleared.

Off [OFF] – The ESD input is disabled and nothing will occur under ESD control.

ESD When Signal [ESD.W.SIGN.]: - Set whether ESD is active when the signal is:

Applied [APPLIED] – ESD will become active when the control signal is applied to the ESD input – Normally Open (N/O) contact type.

Removed [REMOVED] – ESD will become active when the signal is removed from the ESD input – Normally Closed (N/C) contact type.

3.4.2 ESD Fieldbus Disable [ESD.FB.DIS.]:

ESD Fieldbus Disable [ESD.FB.DIS.]: - When a Fieldbus option is fitted, the ESD input can be set to disable Fieldbus control. The Fieldbus option fitted will continue to report status.

Off [OFF] – The ESD input is set for ESD control.

On [ON] – The ESD input is set to disable fieldbus control.

3.0 Settings

3.4.3 ESD Override [ESD.OVERR.]:

The ESD action of a CK actuator can be set to override certain features that would usually inhibit or affect normal operation. This is particularly useful when a critical process must be shutdown in an emergency.

Override Stop [OVRR.STOP]: - ESD control will override the local stop selection. 🔘⬆️⬇️🔘.

> **No [NO]** – ESD action is not available when the actuator is selected to stop using the local selector knob.

> **Yes [YES]** – ESD action is available when, but not exclusively, the actuator is selected to stop using the local selector knob.

⚠️ **WARNING!**

In this mode, when under ESD control, setting Stop on the local selector will not prevent operation under ESD control. The valve and actuator can operate. Extra care and consideration should be given to providing warning signs and control system information for operators. In all circumstances, Stop selection cannot be considered as a safety lockout – always isolate the electrical supply to the actuator during valve or actuator maintenance.

Override Interlocks [OVRR.INTL.]: - External interlocks can be used to prevent operation of the actuator until a certain process condition is met. If interlocks are being used, ESD can be set to override them. 🔘⬆️⬇️🔘.

> **No [NO]** – ESD action cannot override active interlocks. A simultaneous interlock signal will be required to initiate an ESD action.

> **Yes [YES]** – ESD will override any active interlock settings.

⚠️ **WARNING!**

In this mode, when under ESD control, the process or safety interlocks may be overridden. Consideration should be given to providing warning signs and control system information for operators. In all circumstances, active interlocks on cannot be considered as a safety lockout – always isolate the electrical supply to the actuator during valve or actuator maintenance.

Override Timer [OVRR.TIMR.]: - The Interrupter Timer option allows the valve operating time to be increased. If Interrupter Timer is being used, ESD can be set to override it. 🔘⬆️⬇️🔘.

> **No [NO]** – ESD action cannot override the Interrupter Timer. Under ESD control, the ESD movement will still be subject to the Interrupter Timer settings.

> **Yes [YES]** – ESD will override the Interrupter Timer. Under ESD control, the actuator will run continuously to the set ESD position at normal operating speed.

⚠️ **WARNING!**

In this mode, when under ESD control, process conditions requiring slow operation may be compromised. Consideration should be given to providing warning signs and control system information for operators.

Thermostat [THERMOST.]: - The CK motor includes two embedded thermostats. Should the duty cycle of the actuator be exceeded and the motor temperature rises to that of the thermostat trip temperature, the motor will be de-energised and the actuator will stop. On cooling, the thermostats will automatically reset and the actuator can be return to operation. 🔘⬆️⬇️🔘.

> **No [NO]** – ESD action cannot override the thermostats.

> **Yes [YES]** – ESD overrides tripped thermostats. Under ESD control, should the motor temperature rise and trip the thermostats, ESD operation will continue.

3.0 Settings

3.5 Settings > Security [SETTINGS > SECURITY]
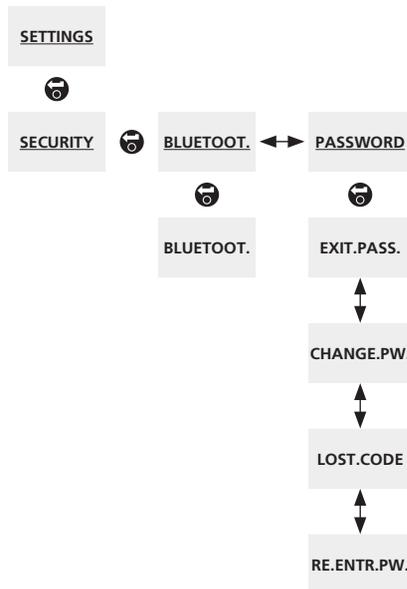
SETTINGS

⬡

SECURITY ⬡ BLUETOOT. ◄─► PASSWORD

⬡ ⬡

BLUETOOT. EXIT.PASS.

↕

CHANGE.PW.

↕

LOST.CODE

↕

RE.ENTR.PW.

The above menu map should be used as a navigation prompt to improve configuration efficiency. An underlined text string indicates a menu. A standard text string indicates a setting.

3.5.1 Bluetooth [BLUETOOT.]:

Bluetooth [BLUETOOT.]: - The optional Bluetooth module can be configured for three access levels. ⬡ ⬠ ⬡ ⬡.

X.24.6 %
BLUETOOT.
LOW
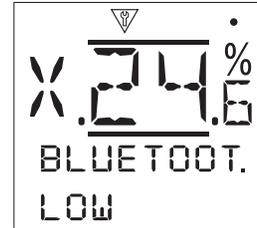
Low: Always [LOW] – The actuator is available at all times for Bluetooth communication using a PC running Insight 2 software. This setting provides convenient connection when Insight 2 is used. Communication with the Rotork Bluetooth Setting Tool *Pro* is available.

Medium: Locally [MEDIUM] – The actuator is available for Bluetooth communication using a PC running Insight 2 software when it is selected to Local or Stop using the local selector knob. The selector knob can be padlocked in all three positions. Communication with the Rotork Bluetooth Setting Tool *Pro* is available.

High: IR Initiation Only [HIGH] – The actuator is not available for Bluetooth communication using a PC running Insight 2 software. Communication with the Rotork Bluetooth Setting Tool *Pro* is available using the quick connect method.

Very High: IR Only [HIGH] – The actuator is not available for Bluetooth communication from any device. Infrared communication is still available local to the actuator.

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

3.0 Settings

3.5.2 Password [PASSWORD]:
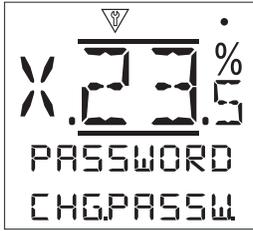
Change PW [CHANGE.PW.]: - This feature allows the user level password to be changed from the default ROTORK. Protection from unauthorised access is vital to maintaining site security and process control integrity. 🔘⬆️⬇️🔘.

Lost Code [LOST.CODE]: - Non-editable, for indication only. The Lost Code feature is used if the user password has been changed from default and then misplaced or forgotten. Contact Rotork quoting the code as read from the display. After call verification, Rotork can then provide the set user password.

Re-enter PW [RE.ENTR.PW.]: - 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 additional application specific settings available. Contact Rotork for user high level password. 🔘⬆️⬇️🔘.

Exit Password [EXIT.PASS]: - This function allows the user to exit configuration mode. 🔘🔘.

3.0 Settings

3.6   Settings > Defaults [SETTINGS > DEFAULTS]
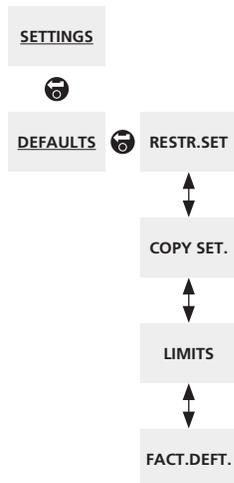
SETTINGS

DEFAULTS RESTR.SET

COPY SET.

LIMITS

FACT.DEFT.

The above menu map should be used as a navigation prompt to improve configuration efficiency. An underlined text string indicates a menu. A standard text string indicates a setting.

The Defaults menu requires high level permission to access. This prevent unintentionally defaulting the unit during commissioning or servicing. For access to these functions please contact Rotork.
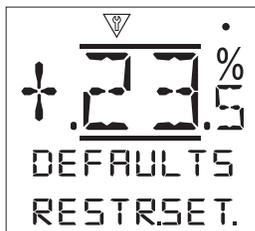
Restore Settings [RESTR.SET.]: - All CK Centronik module settings are configured and saved as the Rotork default settings before despatch. If requested at time of order, alternative user specified settings will be set.

When valve maker and site commissioning takes place, any settings entered will overwrite the factory default settings and will be the current settings used in operation along with the remaining unadjusted defaults.

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

⚠ **WARNING!: All settings must be checked/set as required for valve operation and process control/ indication after restoring the actuator defaults.**

Copy Settings [COPY SET.]: - Once the unit is satisfactorily commissioned and tested, the current settings can be copied to become the new default settings. In future, restoring the default settings will return the actuator configuration to its site commissioned setup. Refer to Restore Settings to return saved defaults. If Rotork are contracted to commission the actuator, on completion and agreement, current settings will be copied to defaults. 🔧 🔧.

Limits [LIMITS]: - This setting will restore the factory set limit positions and position the actuator at 50% open. Factory limits: 25 output turns between Closed and Open Limit positions. 🔧 🔧.

This setting will not function with an intrusive mechanical switch mechanism.

Factory Settings [FACT.DEFT.]: - This setting will restore the unit to the factory configuration. Only use this feature if instructed by Rotork or if the actuator is being re-purposed for a different application. 🔧 🔧.

⚠ **WARNING!: All settings must be checked/set as required for valve operation and process control/ indication after restoring the actuator defaults.**

4.0 Status [STATUS]

The above menu map should be used as a navigation prompt to improve configuration efficiency.
An underlined text string indicates a menu. A standard text string indicates a setting.
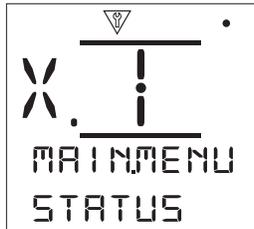
Status screens on the CK Centronik module are designed to provide diagnostic assistance. The displayed information is live data taken from the main control processor and can be used to view control signals, alarms, movement and internal diagnostic data.

4.0 Status Menu

    4.1 Control

        4.1.1 Local

        4.1.2 Remote Hardwired

        4.1.3 Remote Source 1

        4.1.4 Remote Source 2

    4.2 Alarms

    4.3 Movement

    4.4 Indication

    4.5 Diagnostics

    4.6 Actuator

4.0 Status

4.1 Status > Control [STATUS > CONTROL]
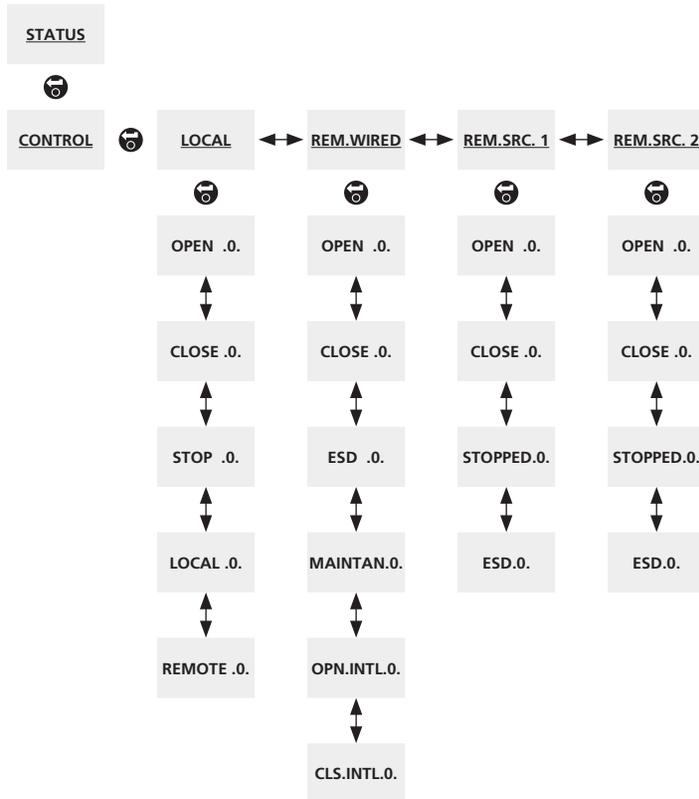
STATUS

CONTROL → LOCAL ◄──► REM.WIRED ◄──► REM.SRC. 1 ◄──► REM.SRC. 2

LOCAL	REM.WIRED	REM.SRC. 1	REM.SRC. 2
OPEN .0.	OPEN .0.	OPEN .0.	OPEN .0.
↕	↕	↕	↕
CLOSE .0.	CLOSE .0.	CLOSE .0.	CLOSE .0.
↕	↕	↕	↕
STOP .0.	ESD .0.	STOPPED.0.	STOPPED.0.
↕	↕	↕	↕
LOCAL .0.	MAINTAN.0.	ESD.0.	ESD.0.
↕	↕		
REMOTE .0.	OPN.INTL.0.		
	↕		
	CLS.INTL.0.		

The above menu map should be used as a navigation prompt to improve
configuration efficiency. An underlined text string indicates a menu.
A standard text string indicates a setting.

4.0 Status

4.1.1 Local [LOCAL]:

This menu displays the signal statuses from the local control selectors. As the local controls are operated, the corresponding signals are produced. The checkbox indicates a signal is being received, which is useful in testing the operation of the local controls. Movement may occur during testing of the local controls. If this is not desired, select STOP on the local selector knob when testing OPEN and CLOSE inputs.

To scroll through the various statuses use ⬆ and ⬇.
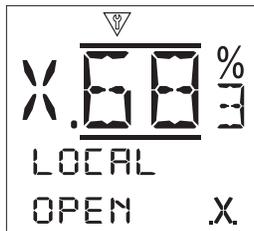
Open [OPEN]: - Displays the current Local Open signal status. When active, this indicates the local controls have been turned to open and a local control open signal is being received.

Close [CLOSE]: - Displays the current Local Close signal status. When active, this indicates the local controls have been turned to close and a local control close signal is being received.

Stop [STOP]: - Displays the current Local Stop signal status. When active, this indicates the local controls have been turned to stop and a local control stop signal is being received.

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

The ESD function has the ability to override Local Stop. Refer to 3.4.

Local [LOCAL]: - Displays the current Local signal status. 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 selector will operate the actuator, 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.

An ESD signal will still trigger the emergency shutdown action in Local.
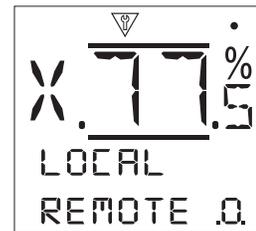
Remote [REMOTE]: - Displays the current Remote signal status. When active, this indicates the local controls have been set to remote and a remote mode signal is being received.

When the local controls have been set to remote, the control signals from remote hardwired controls and remote sources 1 and 2 will operate the actuator. Any local control signals received will not operate the actuator while the local controls are set to remote.

4.0 Status

4.1.2 Remote Hardwired [REM.WIRED]:

This menu displays the signal statuses from the remote hardwired controls. As the remote hardwired controls are operated, the corresponding signals are produced. The checkbox indicates a signal is being received, which is useful in testing the operation of the remote control signals. Valve movement may occur during testing. If this is not desirable, select STOP on the local selector knob.

To scroll through the various statuses use ⬆ and ⬇.
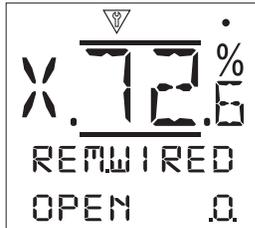
Open [OPEN]: - Displays the current Remote Hardwired Open signal status. When active, this indicates that an open signal is being received from the remote hardwired control.

Close [CLOSE]: - Displays the current Remote Hardwired Close signal status. When active, this indicates that a close signal is being received from the remote hardwired control.

ESD [ESD]: - Displays the current Remote Hardwired ESD signal status. When active, this indicates that an ESD (Emergency Shut Down) signal is being applied from the remote hardwired control.

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

Maintained [MAINTAN.]: - Displays the current Remote Hardwired Open signal status. When active, this indicates that a maintained signal is being received from the remote hardwired control.

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.

Open Interlock [OPN.INTL.]: - Displays the current Remote Hardwired Open Interlock signal status. When active, this indicates that an open interlock signal is being received from the remote hardwired control.

The actuator will not run in the open direction until a signal is applied to the open interlock and a remote hardwired open control signal is received. To configure the open interlock refer to 3.3.2 Hardwired.

Close Interlock [CLS.INTL.]: - Displays the current Remote Hardwired Close Interlock signal status. When active, this indicates that a close interlock signal is being received from the remote hardwired control.

The actuator will not run in the close direction until a signal is applied to the close interlock and remote hardwired close control signal is received. To configure the close interlock refer to 3.3.2 Hardwired.

4.1.3 Remote Source 1 [REM.SRC.1]:

This menu displays the signal statuses from the remote source 1; refer to 3.3.2 Option Control for details of the Source 1 control. The checkbox indicates a signal is being received.

Note: only digital remote control options are able to report a control status. For Analogue control, please use the Positioner home screen to view demand and position values. Refer to 3.2.2.

To scroll through the various statuses use ⬆ and ⬇.
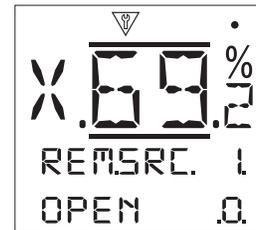
Open [OPEN]: - Displays the current Remote Source 1 Open signal status. When active, this indicates that an open signal is being received from remote source 1.

Close [CLOSE]: - Displays the current Remote Source 1 Close signal status. When active, this indicates that a close signal is being received from remote source 1.

Stopped [STOPPED]: - Displays the current Remote Source 1 Stopped signal status. When active, this indicates that a stopped signal is being received from remote source 1.

ESD [ESD]: - Displays the current Remote Source 1 ESD signal status. When active, this indicates that an ESD (Emergency Shut Down) signal is being received from remote source 1.

ESD can be set to open, close or stayput. ESD signals are higher priority than local or remote signals and will operate under both local and remote control selection. ESD can also be set to operate an actuator selected to Local Stop. Refer to 3.4.

4.1.4 Remote Source 2 [REM.SRC.2]:

This menu displays the signal statuses from the remote source 2; refer to 3.3.2 Option Control for details of the Source 2 control. The checkbox indicates a signal is being received.

To scroll through the various statuses use ⬆ and ⬇.

Open [OPEN]: - Displays the current Remote Source 2 Open signal status. When active, this indicates that an open signal is being received from remote source 2.

Close [CLOSE]: - Displays the current Remote Source 2 Close signal status. When active, this indicates that a close signal is being received from remote source 2.

Stopped [STOPPED]: - Displays the current Remote Source 2 Stopped signal status. When active, this indicates that a stopped signal is being received from remote source 2.
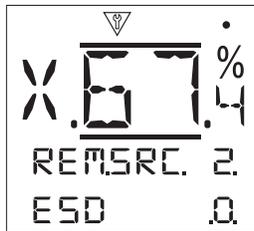
ESD [ESD]: - Displays the current Remote Source 2 ESD signal status. When active, this indicates that an ESD (Emergency Shut Down) signal is being received from remote source 2.

ESD can be set to open, close or stayput. ESD signals are higher priority than local or remote signals and will operate under both local and remote control selection. ESD can also be set to operate an actuator selected to Local Stop. Refer to 3.4.

4.0 Status

4.2 Status > Alarms [STATUS > ALARMS]
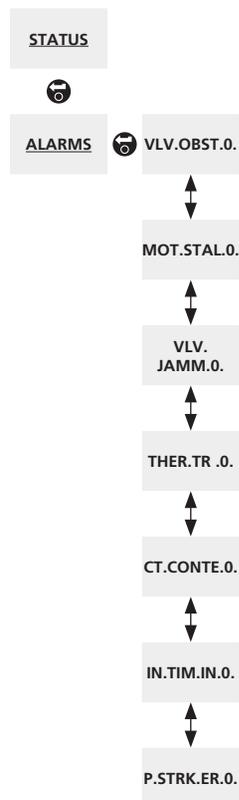
STATUS

⊖

ALARMS ⊖ VLV.OBST.0.

↕

MOT.STAL.0.

↕

VLV.
JAMM.0.

↕

THER.TR .0.

↕

CT.CONTE.0.

↕

IN.TIM.IN.0.

↕

P.STRK.ER.0.

The above menu map should be used as a navigation prompt to improve configuration efficiency. An underlined text string indicates a menu. A standard text string indicates a setting.

This menu displays the current status of the actuator alarms. The checkbox indicates that the alarm is currently active.

To scroll through the various statuses use ⬆ and ⬇.

Valve Obstructed [VLV.OBST.]: - Displays the Valve Obstruction alarm status. When active, this alarm indicates that the valve is obstructed or has reached the torque limit set. Check that the valve is free of any obstruction and is operating correctly.

Motor Stall [MOT.STAL.]: - Displays the Motor Stall alarm status. When active, this alarm indicates that the actuator has received a valid control command but has not detected any movement within 5 seconds.

Valve Jammed [VLV.JAMM.]: - Displays the Valve Jammed alarm status. When active, this alarm indicates that the valve has jammed in either the open or closed position. Check valve operation by hand.

Thermostat Trip [THER.TRI.]: - Displays the Thermostat Tripped alarm status. When active, this alarm indicates that the motor is over temperature and the thermostat has tripped. Check that operating conditions are within specification.

Control Contention [CT.CONTE.]: - Displays the Control Contention alarm status. When active, this alarm indicates that more than one control signal is being received. In this even the actuator will remain in position or stop if already travelling.

Interrupter Timer Inhibit [IN.TIM.IN.]: - Displays the Interrupter Timer Inhibit alarm status. When active, this alarm indicates that the interrupter time is actively inhibiting actuator movement.

The Interrupter Timer is used to increase the valve operating time, the timer stops and starts the actuator automatically. The timer can be set to operate over all or a portion of the closing and/or opening strokes.

Partial Stroke Error [P.STRK.ER]: - Displays the Partial Stroke Error alarm status. When active, this alarm indicates that the partial stroke was unable to be completed in the specified time.

4.0 Status

4.3 Status > Movement [STATUS > MOVEMENT]
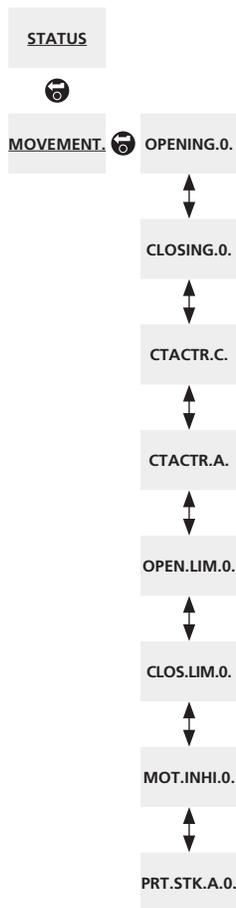
The above menu map should be used as a navigation prompt to improve configuration efficiency. An underlined text string indicates a menu. A standard text string indicates a setting.

This menu displays the current movement status of the actuator. The checkbox indicates that the status is currently active.

To scroll through the various statuses use ⬆ and ⬇.
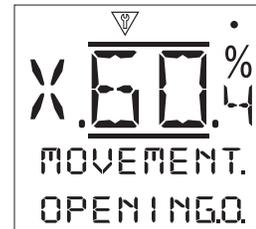
Opening [OPENING]: - Displays the actuator Moving Open status. When active, this status indicates that the actuator is moving open.

Closing [CLOSING]: - Displays the actuator Moving Closed status. When active, this status indicates that the actuator is moving closed.

Contactor CW [CTACTR.C.]: - Displays the Clockwise Contactor energised status. When active, this status indicates that the clockwise contactor is energised.

Contactor ACW [CTACTR.A.]: - Displays the Anticlockwise Contactor energised status. When active, this status indicates that the anticlockwise contactor is energised.

Open Limit [OPEN.LIM.]: - Displays the Open Limit status. When active, this status indicates that the actuator is at the open limit position.

Closed Limit [CLOS.LIM.]: - Displays the Closed Limit status. When active, this status indicates that the actuator is at the closed limit position.

Motion Inhibit Timer [MOT.INHI.]: - Displays the Inhibit Timer status. When active, this status indicates that the inhibit timer is counting to the set time. Range 0-255 seconds, default 5 seconds.

The Inhibit Timer sets a delay after the actuator stops as a result of reaching a position consistent with a new desired value position. For the period set, the actuator will not respond to a change in the desired value. The inhibit timer is used to prevent spurious operation as a results of rapidly oscillating or fluctuating desired position signal. It can also be used to slow actuator response in order to protect the mechanical valve from excessive wear and/or maintain actuator duty within its electrical rating. Refer to 3.3.2 Positioning.

Partial Stroke Active [PRT.STK.A.]: - Displays the Partial Stoke status. When active, this status indicates that the actuator is carrying out partial stroke movements.

Partial stroking is used to demonstrate the operational integrity of the valve and actuator by moving over a set portion of valve stroke. In addition, partial stroking may be used to exercise infrequently operated valve to help keep them mechanically free.

4.0 Status

4.4 Status > Indication [STATUS > INDICATI.]
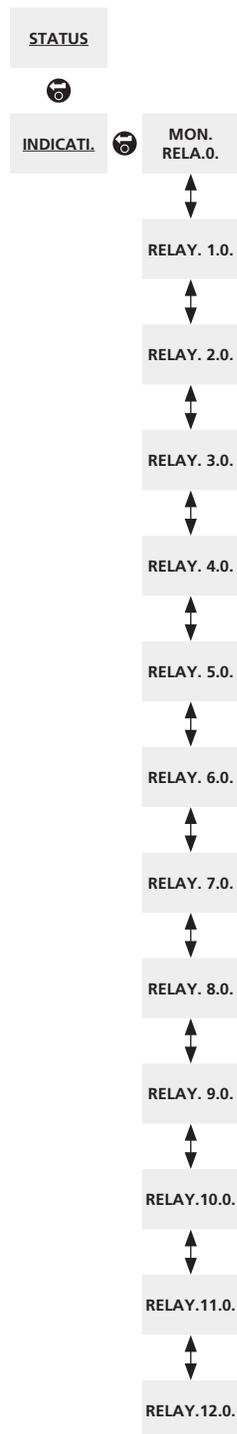
The above menu map should be used as a navigation prompt to improve configuration efficiency. An underlined text string indicates a menu. A standard text string indicates a setting.

This menu displays the indication relays statuses. The checkbox indicates that the relay is energised.

The Monitor Relay and relays S1-S4 are provided as standard, relays S5-S8 and relays S9-S12 are available options that are not visible if the option card is not present within the Centronik module. For each relay function, please refer to 3.2.1.

To scroll through the various statuses use ⬆ and ⬇.
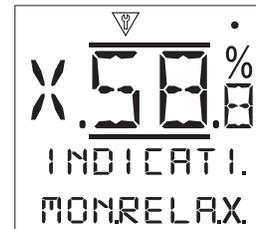
Monitor Relay [MON.RELA.]: - Displays the Monitor Relay status. A checked checkbox shows the relay is active, whilst an unchecked checkbox represents inactive.

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

S1 [RELAY. 1.]: - Displays the S1 relay status. When active, this indicates that the relay S1 is energised.

S2 [RELAY. 2.]: - Displays the S2 relay status. When active, this indicates that the relay S2 is energised.

S3 [RELAY. 3.]: - Displays the S3 relay status. When active, this indicates that the relay S3 is energised.

S4 [RELAY. 4.]: - Displays the S4 relay status. When active, this indicates that the relay S4 is energised.

S5 [RELAY. 5.]: - Displays the S5 relay status. When active, this indicates that the relay S5 is energised.

S6 [RELAY. 6.]: - Displays the S6 relay status. When active, this indicates that the relay S6 is energised.

S7 [RELAY. 7.]: - Displays the S7 relay status. When active, this indicates that the relay S7 is energised.

S8 [RELAY. 8.]: - Displays the S8 relay status. When active, this indicates that the relay S8 is energised.

S9 [RELAY. 9.]: - Displays the S9 relay status. When active, this indicates that the relay S9 is energised.

S10 [RELAY.10.]: - Displays the S10 relay status. When active, this indicates that the relay S10 is energised.

S11 [RELAY.11.]: - Displays the S11 relay status. When active, this indicates that the relay S11 is energised.

S12 [RELAY.12.]: - Displays the S12 relay status. When active, this indicates that the relay S12 is energised.

4.0 Status

4.5 Status > Diagnostics [STATUS > DIAGNOST.]
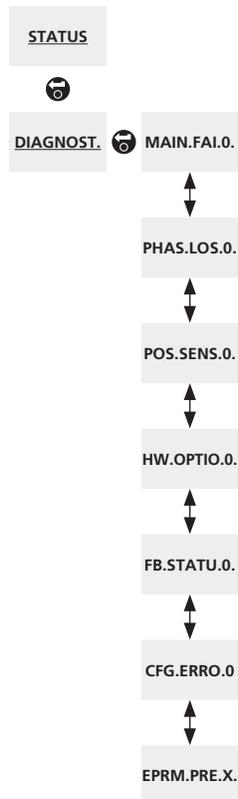
STATUS

⬡

DIAGNOST. ⬡ MAIN.FAI.0.

⬍

PHAS.LOS.0.

⬍

POS.SENS.0.

⬍

HW.OPTIO.0.

⬍

FB.STATU.0.

⬍

CFG.ERRO.0

⬍

EPRM.PRE.X.

The above menu map should be used as a navigation prompt to improve configuration efficiency. An underlined text string indicates a menu. A standard text string indicates a setting.

This menu displays the actuators diagnostics status. The checkbox indicates that the fault is present.

To scroll through the various statuses use ⬆ and ⬇.

Mains Fail [MAIN.FAI.]: - Displays Power Supply failure status. When active, this status indicates a power supply failure has occurred. If the backlight is still present it is likely that the third phase has been lost. Check all incoming phases.

Phase Loss [PHAS.LOS.]: - Displays Phase Loss status. When active, this status indicates that one or more phases have been lost. Only the third phase is monitored, if the display backlight is still present then check the third phase is present. If the display backlight is not present check all incoming phases.

Position Sensor [POS.SENS.]: - Only relevant to units fitted with a digital switch mechanism. Displays the Position Sensor fault status. When active, this status indicates that a fault with the absolute encoder has occurred. Check the encoder operation and loom.

Hardware Option [HW.OPTIO.]: - Displays Hardware Option status. When active, this status indicates a communication fault between the main control board and a fitted option board has occurred. Check all connections between the option PCB and the main control PCB.

Fieldbus Status [FB.STATU.]: - Displays the Network Alarm status. When active, this status indicates that a fault has occurred in the fieldbus network. Check all field connections for continuity and correct connection.

Configuration Error [CFG.ERRO.]: - Displays a Configuration Error status. When active, this status indicates that a fault with the EEPROM has occurred. Check all configuration settings.

EEPROM Status [EPRM.PRE.]: - Displays the presence of an EEPROM. When active, the EEPROM is present. When inactive, the EEPROM is missing and an alarm will display. The EEPROM stores all the actuators settings and calibration data. If the EEPROM is physically missing, please contact Rotork for further advice.

4.0 Status

4.6   Status > Actuator [STATUS > ACTUATOR]
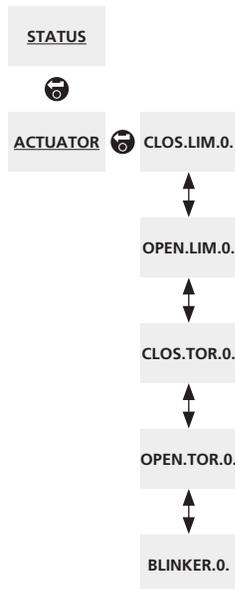
STATUS

ACTUATOR   CLOS.LIM.0.

OPEN.LIM.0.

CLOS.TOR.0.

OPEN.TOR.0.

BLINKER.0.

The above menu map should be used as a navigation prompt to improve configuration efficiency. An underlined text string indicates a menu. A standard text string indicates a setting.
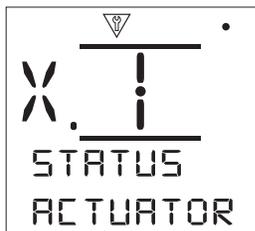
This menu displays the actuator switch statuses. The checkbox indicates that the condition is present.

To scroll through the various statuses use ⬆ and ⬇.

Close Limit [CLOS.LIM.]: - Displays the actual status of the Closed Limit switch, bypassing any Centronik software.

Open Limit [OPEN.LIM.]: - Displays the actual status of the Open Limit switch, bypassing any Centronik software.

Close Torque [CLS.TORQ.]: - Displays the actual status of the Closed Torque switch, bypassing any Centronik software.

Open Torque [OPN.TORQ.]: - Displays the actual status of the Open Torque switch, bypassing any Centronik software.

Blinker [BLINKER.]: - Displays the actual status of the Blinker switch, bypassing any Centronik software.

5.0 Data log [DATA. LOG.]
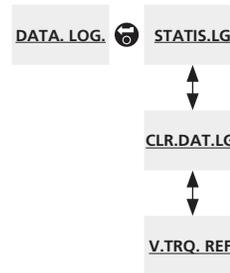
DATA. LOG.   STATIS.LG

CLR.DAT.LG.

V.TRQ. REF.

The above menu map should be used as a navigation prompt to improve configuration efficiency. An underlined text string indicates a menu. A standard text string indicates a setting.
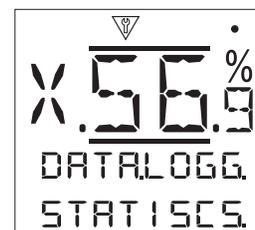
This CK Centronik Data log feature is planned for release in the first quarter of 2015. Instructions will be provided when the feature is available.

5.0 Data log

5.1 Statistics Log [STATIS.LG.]
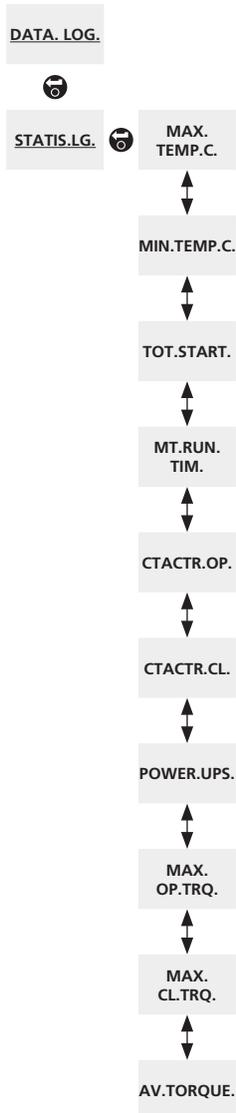
```
DATA. LOG.
    ⊖

STATIS.LG.  ⊖   MAX.
                TEMP.C.
                  ↕
                MIN.TEMP.C.
                  ↕
                TOT.START.
                  ↕
                MT.RUN.
                TIM.
                  ↕
                CTACTR.OP.
                  ↕
                CTACTR.CL.
                  ↕
                POWER.UPS.
                  ↕
                MAX.
                OP.TRQ.
                  ↕
                MAX.
                CL.TRQ.
                  ↕
                AV.TORQUE.
```

The above menu map should be used as a navigation prompt to improve configuration efficiency. An underlined text string indicates a menu. A standard text string indicates a setting.

The Data Logger within the CK Centronik control module records a number of useful attributes to aid with actuator and valve analysis. All recorded data is only valid for the duration of the data log. If the log has been reset then all prior data will be cleared.

To scroll through the various logged attributes use ⬆ and ⬇.

Maximum Temperature [MAX.TEMP.C.]: - Displays the maximum recorded temperature within the Centronik control module during normal operation.

Minimum Temperature [MIN.TEMP.C.]: - Displays the minimum recorded temperature within the Centronik control module during normal operation.

Total Starts [TOT.START.]: - Displays the total number of motor starts the actuator has performed.

Motor Running Time [MT.RUN.TIM.]: - Displays the total time the motor has been operated.

Open Contactor Starts [CTACTR.OP.]: - Displays the number of starts in the open direction.

Close Contactor Starts [CTACTR.CL.]: - Displays the number of starts in the close direction.

Number of Power Ups [POWER.UPS.]: - Displays the total number of power ups the actuator has experienced.

Maximum Opening Torque [MAX.OP.TRQ.]: - Displays the maximum recorded torque in the opening direction.

Maximum Closing Torque [MAX.CL.TRQ.]: - Displays the maximum recorded torque in the closing direction.

Average Torque [AV.TORQUE.]: - Displays the average torque recorded.

5.2 Clear Data Log [CLR.DAT.LG.]
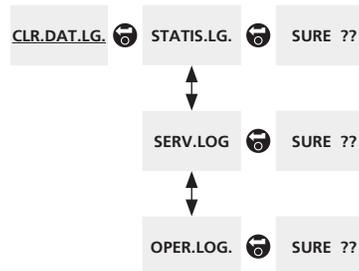
```
CLR.DAT.LG.  ⊖   STATIS.LG.  ⊖   SURE ??
                     ↕
                 SERV.LOG    ⊖   SURE ??
                     ↕
                 OPER.LOG.   ⊖   SURE ??
```

The above menu map should be used as a navigation prompt to improve configuration efficiency. An underlined text string indicates a menu. A standard text string indicates a setting.

Clear Statistics Log [STATIS.LG.]:- Clear all data currently recorded within the statistics log.

Clear Service Log [SERV. LOG.]:- Clear all data currently recorded within the service log.

Clear Operations Log [OPER. LOG.]:- Clear all data currently recorded within the operations log.

5.3 Valve Torque Reference [V.TRQ. REF.]

```
V.TRQ. REF.  ⊖  TRQ.V.POS.  ⊖   SURE ??
```

The above menu map should be used as a navigation prompt to improve configuration efficiency. An underlined text string indicates a menu. A standard text string indicates a setting.

Record Valve Torque Reference Stroke [V.TRQ.REF]: - Save the last valve stroke as the torque reference profile.

6.0 Assets [ASSETS]

The above menu map should be used as a navigation prompt to improve configuration efficiency. An underlined text string indicates a menu. A standard text string indicates a setting.

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 Centronik module. In addition to this, the installation and commissioning dates along with the service history of the actuator 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 local control selector or the optional 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 Software, asset data is appended along with the actuator build and configuration data. The actuator configuration and asset data be exported as a CSV file from Insight 2 for site asset management purposes.

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 the actuator build data automatically during manufacture. Other applicable data will be populated when contracted to commission or service the actuator.

*Requires the Bluetooth option for the Centronik Control Module.

6.0 Assets Menu

    6.1 Actuator

        6.1.1 Actuator Nameplate

        6.1.2 Actuator Standard Build

        6.1.3 Actuator Option Build

    6.2 Valve

    6.3 2nd Stage Gear Box

    6.4 Service History

    6.5 Service Alarms

6.0 Assets

6.1 Assets > Actuator [ASSETS > ACTUATOR]
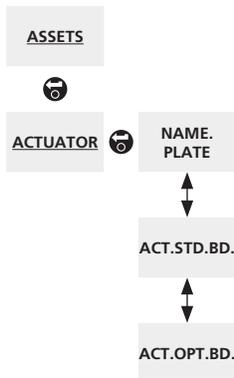
The above menu map should be used as a navigation prompt to improve configuration efficiency. An underlined text string indicates a menu. A standard text string indicates a setting.

6.1.1 Actuator Nameplate [NAM.PLATE]:

This menu displays the nameplate information of the actuator. Should the physical nameplate become damaged or lost, the information for the actuator will remain accessible. The information shown is user editable with the exception of the actuator serial number.

To change the stored assets use ⊖ ⬆ ⬇ ⊖.

Use ⬆ and ⬇ to scroll through the alphabetic and numerical figures for the highlighted character slot.

Use ➡ to navigate to the next character slot.

Use ⬅ to delete the highlighted character slot.

Pressing ⊖ will begin editing an attribute or save the current attribute.

Note: Adjusting these values will not modify the operating characteristics of the actuator. These settings are for asset management recording purposes only.
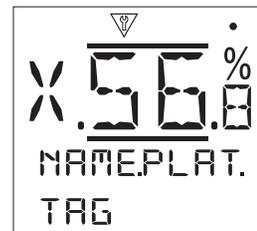
Tag [TAG]: - The tag entry will be shown on the actuators set home screen display. The tag name entered should be the valve and/or actuator reference that identifies the asset within the site process control scheme. If the tag was supplied at time of order, Rotork will populate the entry automatically.

Serial No [SERIAL.NO]: - Displays the actuator serial number. This should always be quoted when making any enquiry to Rotork or our agents. Only approved Rotork Service Centres can modify the serial number attribute.

Size [SIZE]: - Displays the actuator model and size, for example "CKRC120".

Base [BASE]: - Displays the actuator base size according to standard ISO 5210 for metric bases and MSS SP-102 for imperial bases, for example "F10".

Coupling [COUPLING]: - Displays the actuator drive coupling type and designation according to standard ISO 5210. The drive couplings available are: B1, B3, B4 and A.

Wiring Diagram [WIR.DIAGR.]: - Displays the actuator Wiring Diagram number. Standard wiring diagrams can be downloaded from www.rotork.com/en/documents under the wiring diagrams tab. If the unit has a non-standard wiring diagram, please contact Rotork for a copy.

6.0 Assets

Speed [SPEED]: - Displays the actuator output speed in RPM. If a 2nd stage gearbox is used in combination with the actuator, the combination output speed will be subject to the gearbox ratio. For multi turn combinations (gearbox types prefixed "IB" or "IS" refer to 6.3) divide the displayed speed by the gearbox ratio to obtain the combination output speed in RPM.

For quarter turn combinations (gearbox types prefixed "IW" refer to 6.3) divide the gearbox ratio by 4 then divide the result by the actuator speed (RPM). Multiply by 60 to get the 90° operating time in seconds.

Max Torque [MAX.TORQU.]: - Displays the actuator maximum (catalogue) rated torque in Newton Metres (Nm). The maximum rated torque is that at 100% torque setting. The torque may be set in the range 40% to 100%, refer to 3.1. Unless specified with order, on despatch, the torque will be set at 40%.

Enclosure [ENCLOSUR.]: - Displays the actuator enclosure type. For full details, refer to the actuator physical nameplate.

Supply [SUPPLY]: - Displays the actuator power supply build voltage. The build voltage is that specified by the end user and must be used when operating the actuator at all times.

For actuators built with 3 phase AC power supplies, the supply can be confirmed as three phase if the voltage matches one of the following: 220*, 240*, 380, 400, 415, 440, 460, 480, 500, 600.

For actuators built with single phase AC power supplies, the supply can be confirmed as single phase if the voltage matches one of the following: 110, 115, 220*, 230, 240*.

*Some voltages are available for single phase and three phase power supplies. In this instance or for any other power supply queries please contact Rotork quoting the actuator serial number.

As standard, actuators are specified to operate at their stated catalogue torque performance with a tolerance of nominal voltage +/- 10%. Duty performance is specified at nominal voltage +/- 0%.

Excess or insufficient voltage supply may cause increased motor heating and impact the possible duty cycle of the actuator.

For valve maker FAT purposes, where the actuator is built for a power supply different to that available at the valve maker's or integrator's site, contact Rotork prior to powering up the actuator.

Build Date [MANU.DATE]: - Displays the actuator production test date. YearMonthDay (YYYYMMDD).

6.1.2 Actuator Standard Build [ACT.STD.BD.]:

This menu allows the user to view the standard build details of the actuator. All information shown is read only and configured at the factory.

To scroll through this information use ⬢ and ⬢.
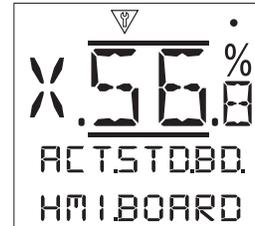
HMI Board [HMI.BOARD]:

The following attributes pertain to the HMI module.

Serial No [SERIAL.NO.]: - Displays the serial number of the HMI module fitted within the Centronik control module.

Software Version [SW.VERSIO.]: - Displays the software version of the HMI module. Rotork technical support may ask for confirmation of this during the support process.

BT Mac [BT. MAC]: - Displays the Bluetooth MAC address of the HMI module

FCC ID [BT. FCC.ID.]: - Displays the HMI modules Federal Communications Commission Bluetooth identification.

IC [BT. IC. ID.]: - Displays the HMI modules Industry Canada *Bluetooth* identification.

Telec R [BT.TELEC.R.]: - Displays the HMI modules Telecom Engineering Center Bluetooth identification.

Control Board [CTRL.BOAR.]:

The following attributes pertain to the Control PCB.

Serial No [SERIAL.NO.]: - Displays the serial number of the Control module fitted within the Centronik control module.

Software Version [SW.VERSIO.]: - Displays the software version of the Control module. Rotork technical support may ask for confirmation of this during the support process.

Position Sensor [POS.SENSR.]:
The following attributes pertain to the Position Sensor.

Serial Number [SERIAL.NO.]: - Displays the serial number of the Position Sensor fitted within the Centronik control module.

Software version [SW.VERSIO.]: - Displays the software version of the Position Sensor. Rotork technical support may ask for confirmation of this during the support process.

6.0 Assets

6.1.3 Actuator Option Build [ACT.OPT.BD.]:

This menu allows the user to view the build details for any options fitted to the actuator. Up to two options can be fitted to the CK Centronik control module. All information shown is read only and configured at the factory.

To scroll through this information use ⬡ and ⬡.
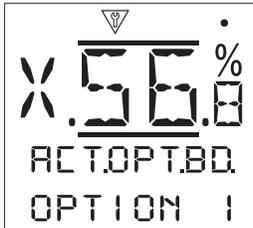
Option 1 [OPTION 1]:

The following attributes pertain to the board fitted as option 1.

Type [TYPE]: - Displays the type of option fitted.

Serial No [SERIAL.NO.]: - Displays the serial number of the option board fitted within the Centronik control module.

Software Version [SW.VERSIO.]: - Displays the software version of the option fitted. Rotork technical support may ask for confirmation of this during the support process.
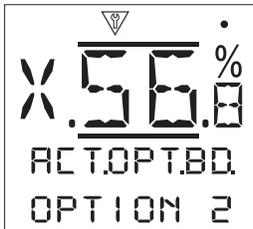
Option 2 [OPTION 2]:

The following attributes pertain to the board fitted as option 2.

Type [TYPE]: - Displays the type of option fitted.

Serial No [SERIAL.NO.]: - Displays the serial number of the option board fitted within the Centronik control module.

Software Version [SW.VERSIO.]: - Displays the software version of the option fitted. Rotork technical support may ask for confirmation of this during the support process.

6.0 Assets

6.2 Assets > Valve [ASSETS > VALVE]
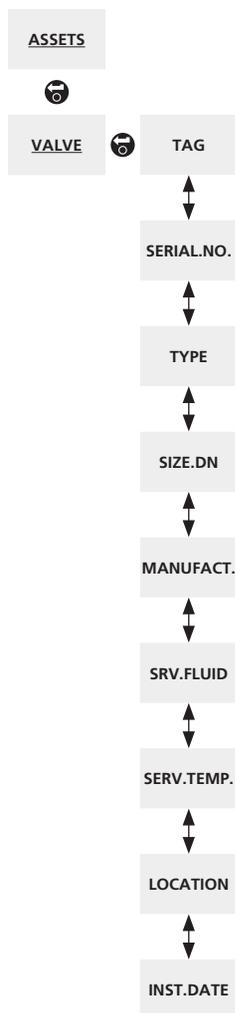
The above menu map should be used as a navigation prompt to improve configuration efficiency. An underlined text string indicates a menu. A standard text string indicates a setting.

This menu 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 actuator after valve/actuator repair.

To change the stored assets use 🔘 🔼 🔽 🔘.

Use 🔼 and 🔽 to scroll through the alphabetic and numerical figures for the highlighted character slot.

Use ▶ to navigate to the next character slot.

Use ◀ to delete the highlighted character slot.

Pressing 🔘 will begin editing an attribute or save the current attribute.
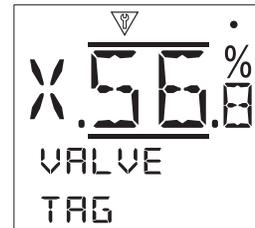
Tag [TAG]: - Displays the valve tag.

Serial No [SERIAL.NO]: - Displays the serial number of the valve.

Type [TYPE]: - Displays the valve type.

Size / DN [SIZE.DN]: - Displays the vale size.

Manufacturer [MANUFACT.]: - Displays the valve manufacturer.

Service Fluid [SRV.FLUID]: - Displays the valve service fluid.

Service Temp [SERV.TEMP.]: - Displays the valve service temperature.

Location [LOCATION]: - Displays the recorded location of the valve commonly using a site area reference.

Installation Date [INST.DATE]: - Displays the installation date of the valve. YearMonthDay (YYYYMMDD).

6.0 Assets

6.3 Assets > 2nd Stage Gear Box
[ASSETS > 2.GEAR.BOX]
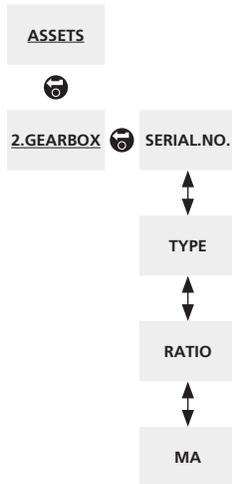
The above menu map should be used as a navigation prompt to improve configuration efficiency. An underlined text string indicates a menu. A standard text string indicates a setting.

This menu allows the user to view information about the attached gearbox and edit this information once a valid password has been entered.

To change the stored assets use ⬡⬆⬇⬡.

Use ⬆ and ⬇ to scroll through the alphabetic and numerical figures for the highlighted character slot.

Use ➡ to navigate to the next character slot.

Use ⬆ to delete the highlighted character slot.

Pressing ⬡ will begin editing an attribute or save the current attribute.
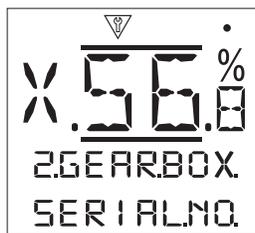
Serial No [SERIAL.NO.]: - Displays the serial number of the gearbox.

Type [TYPE]: - Displays the gearbox type.

Ratio [RATIO]: - Displays the gearbox ratio. This is the number of actuator output turns required to output one full gearbox turn.

Mechanical Advantage [MA]: - Displays the gearbox mechanical advantage. This is the factor that the actuator output torque is multiplied by to give the actuator/gearbox combination output torque.

6.4 Assets > Service History
[ASSETS > SRVC.HIST.]
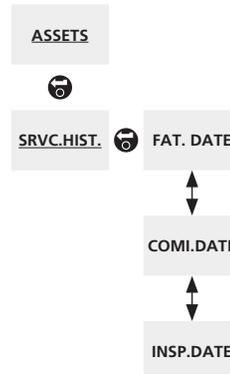
The above menu map should be used as a navigation prompt to improve configuration efficiency. An underlined text string indicates a menu. A standard text string indicates a setting.

This menu allows the user to view and edit information about the actuator's service history, once a valid password has been entered.

FAT Date [FAT. DATE]: - Displays the actuator factory acceptance test date. YearMonthDay (YYYYMMDD). ⬡⬆⬇⬡.

Commission Date [COMI.DATE]: - Displays the actuator commission date. YearMonthDay (YYYYMMDD). ⬡⬆⬇⬡.

Inspection Date [INSP.DATE]: - Displays the actuator inspection date. YearMonthDay (YYYYMMDD). ⬡⬆⬇⬡.

Note: The data format for service history attributes may vary depending on user preference.

6.0 Assets

6.5 Assets > Service Alarms
[ASSETS > SRVC.ALRM.]
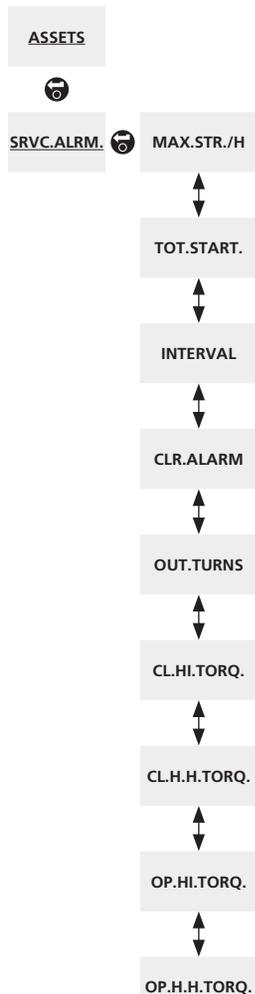
ASSETS

⬇️

SRVC.ALRM.   MAX.STR./H

↕

TOT.START.

↕

INTERVAL

↕

CLR.ALARM

↕

OUT.TURNS

↕

CL.HI.TORQ.

↕

CL.H.H.TORQ.

↕

OP.HI.TORQ.

↕

OP.H.H.TORQ.

The above menu map should be used as a navigation prompt to improve configuration efficiency. An underlined text string indicates a menu. A standard text string indicates a setting.

This menu allows the user to set actuator service alarms if a valid high level password has been entered. Actuator service alarms are meant for indication only and will aid the user to schedule effective maintenance of the actuator/valve. Service torque alarms will only display a visual alarm and will not inhibit actuator movement the same way a conventional torque trip alarm would.

Alarms can be set to activate when a selected condition has occurred. This is a visual indication displayed locally at the actuator. The user can also set the Yellow LED to flash when one or more of the set conditions are in an alarm state.

An example of the service alarm functions could be torque level detection. If the application requires a torque trip level to be set at 80% but the user wants indication for when the valve torque demand reaches a high level; the user can set the Hi Alarm to 70%. If the user also wants multiple indication that a torque trip is imminent, they can set the Hi Hi Alarm to 75%. Both the Hi and Hi Hi alarms will trigger prior to a torque trip.

To prevent spurious torque level alarms being generated, the Hi and Hi Hi Alarms ignore valve seating torque trips. They are only generated if mid-travel torque exceeds the levels set for the service alarms. Please contact Rotork for access to these functions.

Max Starts/Hr [MAX.STR./H.]: - Allows the user to set a value for the max starts per hour alarm. E.g. 50 starts.

Total Starts [TOT.START.]: - Allows the user to set a value for the total starts alarm. E.g. 5000 starts.

Interval (Months) [INTERVAL]: - Allows the user to set an alarm for the next service due. Displays number of months between each service.

Clear Active Alarms [CLR.ALARM]: - Clears all active service alarms.

Total Turns [OUT.TURNS]: - Allows the user to set a value for the total turn's alarm. E.g. 15,000 turns.

Close Hi Alarm % [CL.HI.TORQ.]: - Allows the user to set a value for an close torque alarm. E.g. 70%.

Close Hi Hi Alarm % [CL.H.H.TORQ.]: - Allows the user to set a value for a second close torque alarm. E.g. 75%.

Open Hi Alarm % [OP.HI.TORQ.]: - Allows the user to set a value for a open torque alarm. E.g. 70%

Open Hi Hi Alarm % [OP.H.H.TORQ]: - Allows the user to set a value for a second open torque alarm. E.g. 75%.

7.0 Troubleshooting

7.1 NAMUR 107

All CK Centronik control modules include a series of symbols
visible on the display that reflect the severity and type of
alarm status to NAMUR 107 guidelines.

Failure [FAILURE]

Function Check [FNC.CHECK]

Out of Specification [OUT.OF.SPC.]

Maintenance Required [MAINTENA.]

7.0 Troubleshooting

7.2 Displayed Alarm Conditions

The Centronik control module includes many alarm features that help to identify problems with actuator operation, configuration errors and potential valve issues. The alarms detailed below will commonly be accompanied by a more detailed status that identifies the specific alarm trigger.

Subject	Definition	Disposal
Potential Valve Issues		
[VALV.ALRM.]	One of the following conditions is active: **[TRQ.MIDDL.]** Motor tripped on torque in mid travel **[TRQ.TRP.OP.]** Motor tripped on torque in open direction **[TRQ.TRP.CL.]** Motor tripped on torque in close direction **[VLV.JAMMD.]** Valve jammed (at limit) **[VLV.OBSTR.]** Valve obstructed (mid travel) **[MOT.STALL]** Motor has stopped due to stall	Check valve is clear of obstructions and lubricated sufficiently. Check Centronik display reports positional movement during operation.
[P.STRK.ERR.]	Partial stroke test has not completed successfully	Check valve is clear of obstructions and lubricated sufficiently.
Potential Actuator Issues		
[ACT.ALARM]	One of the following conditions is active: **[PHAS. LOSS]** Lost phase on incoming power supply **[CST.SUP.ER.]** Customer 24 VDC (120 VAC) supply lost **[FAILED]** Internal failure detected **[THER.TRIP]** Thermostat tripped **[P.SEN.FAIL]** Position sensor failed **[TRQ.SEN.FL]** Torque sensor failure	Check power supply to the actuator. Check motor cover is not excessively hot. Consult Rotork if problems persist.
[SRVC.ALRM.]	One of the service alarm conditions is active: **[SERV.HI.TP.]** High Torque level **[SERV.HH.TP.]** High High Torque level **[MAX.STR./H.]** Maximum number of starts per hour **[SERV.STRT.]** Total cumulative starts **[SERV. DUE]** Service interval	A service condition is present indicating the actuator or valve may require maintenance.
[ACT.ALARM]	One of the following conditions is active: **[L/R.CT.FLT.]** Local Remote control knob fault **[O/C.CT.FLT.]** Open Close control knob fault **[LCD.FAULT]** Segment LCD Fault	Check control knobs are present and retained in default position.
Potential Control Issues		
[CTRL.ALRM.]	One of the following conditions is active: **[ESD.ACTIV.]** ESD is active **[INTLK.ACT.]** Interlock is actively preventing operation	Check field wiring and configuration settings for ESD and Interlocks.
Configuration Issues		
[LIMTS.<2.5]	The actuator Close and Open limit positions are too close together (less than 2.5 output turns apart)	Reset both limits to application requirement using manual operation
[INVAL. PW.]	The password entered is incorrect for this unit.	Re-enter password and consult Rotork if problems persist quoting the **[LOST.CODE]**.
[HW.OPTION]	The option hardware is missing or has failed.	Ensure **[CTRL.SEL.]** matches the required control source. Check **[OPTN.FITD.]** matches the physically fitted options. Consult Rotork if problems persist.

7.3 Non-displayed Alarm Conditions

Certain issues may not necessarily present themselves on the Centronik display however key information can still be deduced based on visible symptoms. Some issues may require extensive diagnosis or repair work, therefore a temporary action is advised to quickly resume normal operation.

Issue	Possible Cause	Action
No movement of valve after local command	Inhibiting torque or position limit active	Check Centronik display for position or torque status
	Vandal resist mode enabled	Ensure **[VANDAL]** setting is disabled or local
	Drive bush worn excessively or not fitted	Check operation with manual override Separate actuator from valve and replace drive bush and lubricant
No movement of valve after remote command	Inhibiting torque/position limit active	Check Centronik display for position/torque
	Control signal not received	Check wiring is correct and confirm signal at actuator terminals
	Incorrect control source settings	Ensure **[CTRL.SEL.]** matches the required control source
	Drive bush worn excessively or not fitted	Check operation with manual override Separate actuator from valve and replace drive bush and lubricant
No display present from Centronik module	Loss of main power supply	Check main power at actuator plug and socket terminals
	Low voltage fuse blown	Check fuses within Centronik module
	Internal loom issue	Check connection between display and CPIO board
Incorrect operation direction	Inverted control wiring	Check command inputs to actuator wiring diagram and test each input
	Syncrophase failure (3 phase only)	Switch 2 phases and cycle incoming power supply - temporary
Actuator continues running beyond position limit	Configuration is set to open/close on torque	Check open and close limit settings and ensure **[ACTION]** is set for limit.
Actuator does not seat valve fully	Configuration is set to open/close on limit	Check open and close limit settings and ensure **[ACTION]** is set for torque.
Cannot communicate with Centronik module via Bluetooth enable device	Actuator *Bluetooth* security is set too high	Ensure **[BLUETOOT.]** is set for medium or low
	Communication device *Bluetooth* strength is not sufficient	Recommend use of external USB to *Bluetooth* adapter with 100m range
Cannot edit or save configuration changes on Centronik display	Currently in viewer access mode	Re-enter user or high level password when prompted
	Actuator is in remote mode	Move local control knob to stop
	Specific setting is read only	Refer to setting details within this manual

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