

# rotork®

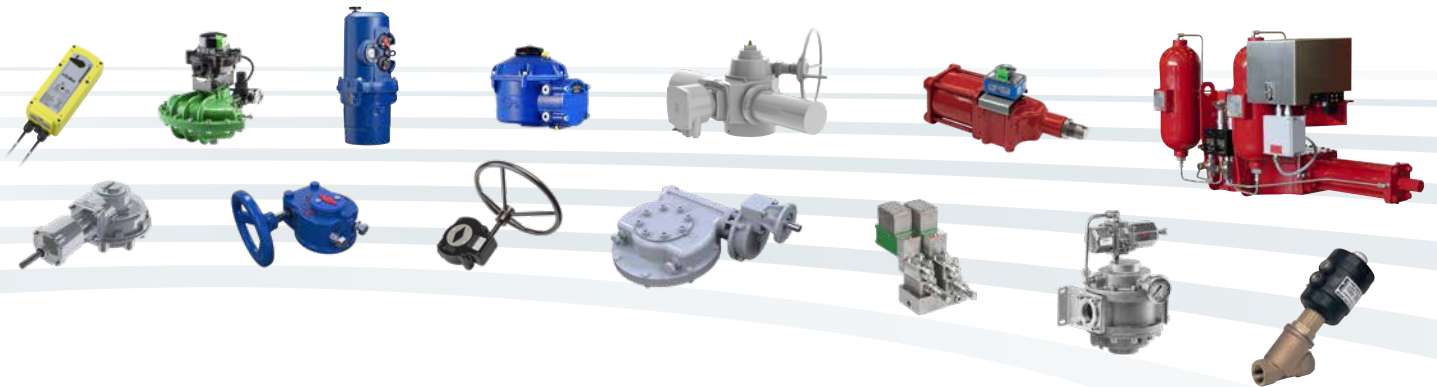
Keeping the World Flowing  
for Future Generations

Skilmatic SI Range



Spring-Return and Double-Acting Self-Contained Electro-Hydraulic Actuators

## Reliability in critical flow control applications



### › Reliable operation when it matters

Assured reliability for critical applications and environments. Whether used 24/7 or infrequently, Rotork products will operate reliably and efficiently when called upon.

### › Quality-driven global manufacturing

Products designed with 60 years of industry and application knowledge. Research and development across all our facilities ensures cutting edge products are available for every application.

### › Customer-focused service worldwide support

Solving customer challenges and developing new solutions. From initial enquiry through to product installation, long-term after-sales care and Client Support Programmes (CSP).

### › Low cost of ownership

Long-term reliability prolongs service life. Rotork helps to reduce long term cost of ownership and provides greater efficiency to process and plant.

# Skilmatic SI Range

Section	Page	Section	Page
Rotork – Reliability in critical flow control applications	2	SI Features	9
Introduction	4	Local Control and Indication	9
Skilmatic Product Overview	5	Control	10
SI Quarter-Turn Actuators	6	Partial Stroke Testing (PST)	11
SI Linear Actuators	8	Data logger	12
		Network System Connectivity	13
		Remote Hand Station (RHS)	14
		Manual Override	15
		Certification	15



## Comprehensive product range serving multiple industries

Improved efficiency, assured safety and environmental protection.

Rotork products and services are used throughout industry inclusive of Power, Oil & Gas, Water & Wastewater, HVAC, Marine, Mining, Pulp & Paper, Food & Beverage, Pharmaceutical and Chemical industries around the world.

## Market leader technical innovator

The recognised market leader for 60 years.

Our customers have relied upon Rotork for innovative solutions to safely manage the flow of liquids, gases and powders.

## Global presence local service

Global company with local support.

Manufacturing sites, service centres, sales offices and *Centres of Excellence* throughout the world provide unrivalled customer services and fast delivery.

## Corporate social responsibility

A responsible business leads to being the best business.

We are socially, ethically, environmentally responsible and committed to embedding CSR across all our processes and ways of working.

## Introduction

Rotork's SI range of self-contained electro-hydraulic actuators combine the simplicity of electrical operation with the precision of hydraulic control and the reliability of mechanical spring-return or accumulator fail-safe action.

With Rotork's continuous development and improvement policy, and to meet new applications and customer needs, Rotork has introduced the next generation of SI actuators. The SI range of self-contained electro-hydraulic valve actuators includes a full range of quarter-turn and linear units. The SI quarter-turn actuators are available from 65 to 600,000 Nm (48 to 442,500 lbf.ft). The SI linear actuators are available from 1.5 to 3,850 kN (340 to 865,500 lbf).

With over 30 years' experience of manufacturing electro-hydraulic actuators, Rotork's SI range has been specifically designed to meet today's control and safety needs for both two-position and positioning control applications. The actuators are offered with a wide range of operating speeds, Emergency Shutdown (ESD) inputs, partial stroke testing, analogue, HART® and fieldbus communication capabilities to comply with all control configurations.

The SI range has been designed primarily for fail-safe applications where functional safety is paramount. Actuators within the range can be configured to fail-safe in three ways; loss of ESD signal and/or power supply, loss of ESD signal only and loss of power supply only. The actuators are suitable for use in Safety Instrumented Systems (SIS), certified to IEC 61508:2010.

The SI can be supplied to stayput on loss of power supply. Independent limit switches and position feedback are provided along with selectable status and alarm indication, with volt free relay outputs offered as standard.

### Key Benefits

- Fail-safe closed or open on loss of ESD signal and/or loss of power supply
- Stayput on loss of power supply (option)
- Only requires an electrical power supply for operation (1-phase, 3-phase or 24 VDC)
- Hazardous area certified Ex d IIB/IIC T4
- Watertight up to IP66/68 (Control Module), IP66/67 (Complete Assembly)
- Advanced dual-stacked display presents valve and process data for asset management and data analysis
- Non-intrusive setting – no cover removal required using secure *Bluetooth*® wireless connection
- Data logger – capable of storing up to 3,000 events
- Partial Stroke Test (PST) based on time and position with pressure (torque) logged
- PST initiated via the Rotork *Bluetooth*® Setting Tool *Pro*, hardwired or remotely through network cards
- PST results displayed on the screen with the last 25 recorded in the data logger
- Configurable status and alarms with optional outputs
- 4-20 mA positioning control resolution to <0.25%
- Increased functionality over networks including *Pakscan*™, Profibus®, Foundation Fieldbus®, Modbus®, DeviceNet® and HART®
- Operating temperatures: -50 to +70 °C



## Skilmatic Product Overview

The SI range of actuators are compact, robust and sealed to the environment; they are watertight up to IP66/68 and are suitable for Zone 1 hazardous areas when specified (see Certification for details).

To maintain the integrity of the enclosure, the non-intrusive infrared Rotork Bluetooth® Setting Tool *Pro* is supplied to allow for the viewing and changing of settings and to download the actuators configuration and data log file without the removal of any actuator covers.

The SI range of actuators consist of a sealed control module with the LCD dual display located behind a sealed, toughened glass window. Set-up and reviewing of the configuration is undertaken with the handheld Rotork Bluetooth® Setting Tool *Pro*, making the actuators ideal for use in hazardous and harsh environments. The non-intrusive setting tool provides access to internal hydraulic pressure settings, position limits, control, indication functions and the data logger. The actuator is also compatible with older models of Rotork infrared setting tools. The SI range can operate using the Rotork Bluetooth® Setting Tool *Pro*, allowing access without direct line of sight over greater distances. This is achieved by pairing the setting tool and actuator in a single infrared transaction after which Bluetooth wireless connection can take over. Configuration changes are password protected and the actuator is immune to connection by non-Rotork devices or programmes.

SI actuators benefit from advances in user interface design. In addition to a configurable, information rich display, the actuators provide a highly intuitive menu structure for commissioning and diagnostics.

The latest version of the Rotork Insight software streamlines actuator set-up. The settings can be saved on a suitable PC and quickly downloaded to the individual actuators via the handheld Rotork Bluetooth® Setting Tool *Pro*. Insight 2 allows the operator to review settings, events and trends on a PC remote from the actuator.

### Double-Sealed Terminal Compartment

The SI actuator control modules are rated up to IP66/68 watertight and dust-tight. The terminal compartment is designed with a double seal to ensure protection of all internal components by separating them from the cable glands and terminal compartment with a sealed watertight terminal block. Protection is maintained during site installation when the terminal cover is removed and is independent of cable gland sealing. The terminal compartment is available as watertight or hazardous area certified (flameproof or increased safety).



## SI Quarter-Turn Actuators

The standard range of Skilmatic SI quarter-turn actuators offer a unique and reliable solution for electric fail-safe actuation on all quarter-turn valve and damper applications.

The SI2 (low pressure) and SI3 (high pressure) are compact and robust spring-return actuators designed for all types of ball, butterfly, plug valves and dampers. They consist of a self-contained electro-hydraulic control module with a spring-return scotch yoke drive. The actuators are available as either fail-safe clockwise or anti-clockwise. They can also be configured to stayput on loss of power supply.

The actuators are specifically designed for safety critical applications and accept various inputs signals as standard, including ESD and PST. Optional fieldbus communication can be provided for control and remote monitoring; this can also be used in conjunction with a hardwired ESD input to maintain the safety integrity of the system when used on ESD applications.

SI actuators are certified to IEC 61508:2010 for SIS with a Systematic Capability SC-3 and suitable for use in SIL 2 and SIL 3 system.

The actuators can also accept an analogue input signal to accurately position a control valve with a resolution < 0.25% providing also a 4-20 mA output of valve position.

The standard range consists of two product sizes.

### SI2



Torque 65 to 4,000 Nm  
(48 to 2,950 lbf.ft)

### SI3



Torque 2,000 to 36,000 Nm  
(1,475 to 26,550 lbf.ft)



Model	Torque Nm (lbf.ft)		Operating Time (sec)			
			Hydraulic Direction		Spring Direction	
	From	To	From	To	From	To
SI2	65 (48)	4,000 (2,950)	5	120	1.5	300
SI3	2,000 (1,475)	36,000 (26,550)	15	400	0.5	700

See product specification data sheet for full details.

## SI Quarter-Turn Actuators

The Skilmatic SI4 quarter-turn actuators offer the flexibility of customisation to suit specific applications and process conditions. The high pressure actuators are self-contained and can operate either a spring-return or double-acting scotch yoke drive. This eliminates the high installation and maintenance costs associated with conventional electro-hydraulic systems which utilise central hydraulic power units.

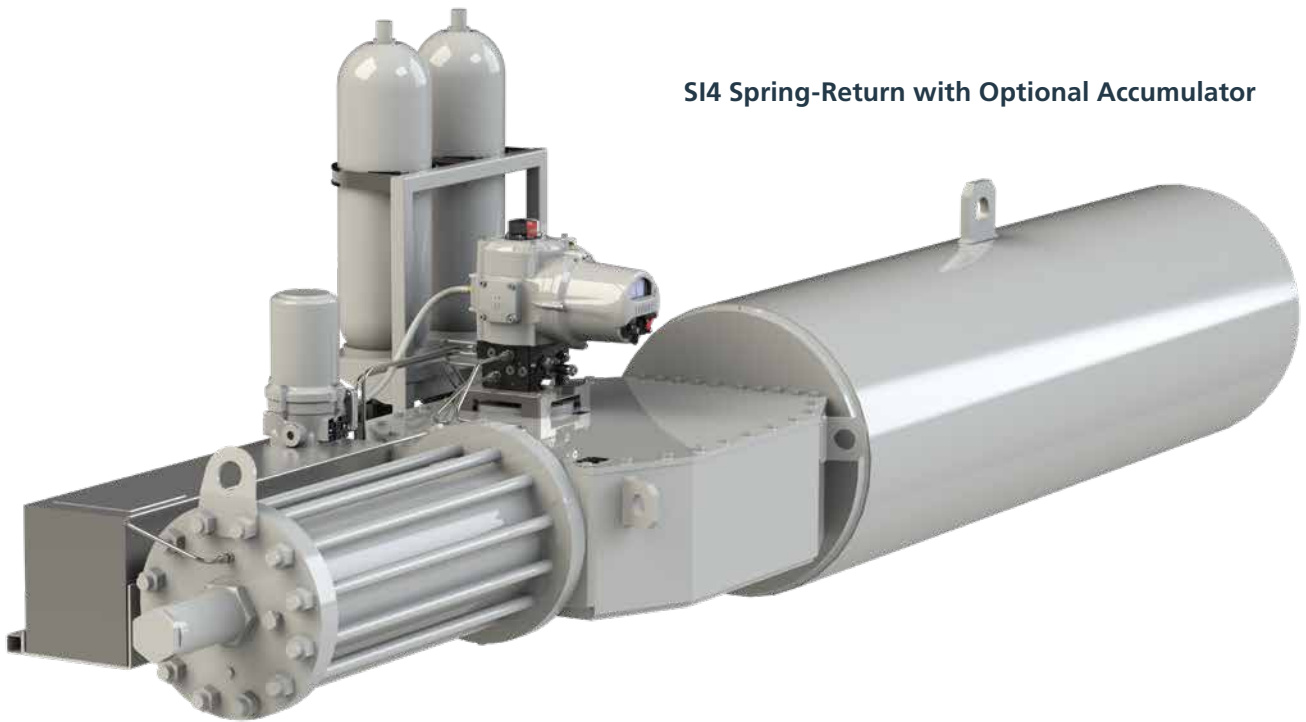
Accumulators can be offered on the SI4 range to provide multiple back-up strokes on loss of power supply, along with increasing the hydraulic stroke speed on spring-return actuators and providing an alternative to spring-return on double-acting actuators.

SI4 spring-return actuators are certified to IEC 61508:2010 for SIS with a Systematic Capability SC-3 and suitable for use in SIL 2 and SIL 3 systems.

### SI4 Double-Acting with Optional Accumulator



### SI4 Spring-Return with Optional Accumulator



Model	Torque Nm (lbf.ft)		Operating Time (sec)			
			Hydraulic Direction		Spring Direction	
	From	To	From	To	From	To
<b>SI4 (SR)</b>	2,000 (1,475)	200,000 (147,500)	5	400	0.5	700
<b>SI4 (DA)</b>	2,000 (1,475)	600,000 (442,500)	5	400	N/A	N/A

See product specification data sheet for full details.

## SI Linear Actuators

The Skilmatic SI linear actuator range provides a reliable solution for electric fail-safe and modulating control when a direct linear movement is required.

The range consists of the SI2 and SI3 for standard spring-return to extend or retract and the SI4 for customised applications for both spring-return and double-acting execution. Accumulators can also be offered with the SI4 to provide an alternative to spring-return or increase the hydraulic stroke speed. Accumulators can also be used to provide multiple strokes on loss of power supply.

Specifically designed for safety critical applications, these actuators accept various inputs signals as standard, including ESD and PST.

Optional fieldbus communication can be provided for remote monitoring and control and can be used in conjunction with a hardwired ESD input to maintain the safety integrity of the system when used on ESD applications.

The actuators can also accept an analogue input signal to accurately position a control valve with a resolution of < 0.25% providing also a 4-20 mA output of valve position.

SI Linear spring-return actuators are certified to IEC 61508:2010 for SIS, with a Systematic Capability SC-3 and are suitable for use in SIL 2 and SIL 3 systems.



Model	Thrust kN (lbf)		Operating Speed mm/sec (in/sec)		Operating Stroke mm (in)	
	From	To	From	To	From	To
<b>SI2</b>	1.5 (340)	30 (6,750)	40 (1.57)	0.5 (0.02)	65 (2.56)	105 (4.13)
<b>SI3</b>	10 (2,250)	235 (52,830)	80 (3.15)	1.0 (0.04)	65 (2.56)	320 (12.6)
<b>SI4 (SR)</b>	25 (5,600)	400 (90,000)	80 (3.15)	1.0 (0.04)	Customer Specified	
<b>SI4 (DA)</b>	10 (2,250)	3,850 (865,550)	300 (11.81)	0.5 (0.02)		

See product specification data sheet for full details.

For higher thrust output details, please contact Rotork directly.



## SI Features

### Local Control and Indication

Non-intrusive selectors are provided on the control module cover of the actuator which also includes an LCD display showing actuator position, status and alarms.

The control module cover may be rotated through 360° (in 90° increments) to suit the actuator orientation or to facilitate operator access. Set-up is over a Bluetooth interface using the supplied Rotork Bluetooth® Setting Tool *Pro*.

### Display

The LCD dual stacked display allows large segment characters for position and pressure to be displayed down to -50 °C (-58 °F), while the matrix display provides detailed setting, status and diagnostic screens. The display is backlit to provide excellent contrast even in the brightest ambient light conditions and is protected by a toughened glass window.

An optional protective clip-in cover is available where high UV levels or abrasive environments are present.

### Position Indicator LEDs

Within the display window, position indication LEDs are provided in duplicate on each side of the display to indicate end of travel limits (Open and Closed) and intermediate position.

### Local Controls

The control module features environmentally sealed and lockable local controls. The Local / Stop / Remote selector switch and Open / Close selector switch are non-intrusive and couple magnetically to switches inside the control module, maintaining environmental sealing. Note: The Open / Close switch can only be operated when Local is selected.



### Pressure and Position Monitoring

The actuator torque is measured in the form of hydraulic pressure which directly relates to the torque required to operate the valve.

SI actuators monitor the valve position and pressure; the signals are then used by the actuator's control circuit to limit position and pressure. They also provide real time indication, alarms and record valve operating profiles to the internal data logger which are date and time stamped.

### Pressure

The hydraulic pressure sensor is integral to the actuator control module and monitors the pressure generated to overcome the valve force throughout the actuator stroke.

The pressure sensor will detect obstructions in mid-travel and will trip an alarm should a high pressure be detected. The actuator can torque seat a valve at either end of travel.

When torque seating is required an option is included for the system to maintain the internal hydraulic pressure by re-starting the motor/pump automatically if the pressure drops below the required pressure.

The hydraulic pressure will automatically compensate for expansion or contraction due to large ambient temperature changes.

### Position

Reliable valve position monitoring is critical in all remote valve automation applications, constantly monitoring the position throughout the valve stroke. The monitoring system needs to provide the actuator controls with continuous position information.

All SI actuators monitor the position through a high resolution non-contacting sensor. On quarter-turn actuators it is incorporated within the control module and within the cylinder on linear actuators. The sensors are designed for high duty cycling with minimum moving parts and are directly connected to the valve drive shaft in all applications to provide a resolution < 0.25%. The actuator display will read position as 0.0% at the closed limit and 100.0% at the open limit.

Position feedback can be provided as a 4-20 mA output signal.

The actuator is capable of setting the open and closed limits on position or hydraulic pressure (torque).

### Local Mechanical Indicator

All SI actuators can be provided with a mechanical position indication, visible at over 10 metres away in stainless steel (316). Quarter-turn actuators can also be provided with a red and green visual indicator in UV resistant polycarbonate.

## SI Features

### Control

The actuator can be configured for remote control of a valve or damper in two position or positioning control applications. It is available to meet the requirements of various site control systems from simple manual push-button control, remote two position control and ESD through to positioning control using hardwired switched signals, analogue or network systems.

**Hardwired two position control** can be selected as 2 or 3 wire control – Open, Close and Maintain commands with ESD and PST configurable as standard.

**Stepping Control** will slow the rate of opening and/or closing over part or the full stroke of the valve. It can be selected to reduce pressure surges in the valve and pipeline. The required start / stop positions for the stepping control can be chosen along with the time to move between these positions and the number of steps to be taken. On spring-return actuators this will only operate in the hydraulic direction. On double-acting actuators it can operate in both directions.

### Emergency Shutdown (ESD)

The Skilmatic SI has been designed for fail-safe applications where functional safety is paramount. The actuators are suitable for use in SIS, certified to IEC 61508:2010. For use in SIL 2 and SIL 3 systems.

When used for a fail-safe application the SI can be configured through hardware selection to accept an ESD input as part of a SIS. In this configuration the actuator will only operate normally when the actuator detects a safe ESD input signal and will trip on loss of that signal. The actuator can be provided to operate in the following ESD modes.

#### Fail-Safe on Loss of ESD Signal or Power Supply

For applications where the loss of power supply is considered part of the SIS, the SI is offered as fail-safe on either loss of ESD signal or power supply. This option offers a low power consumption on the ESD input (0.2 W). In this mode the solenoid valve(s) that perform the safety function are powered from the power supply circuit; the actuator will accept an ESD input signal of 20-60 VDC or 60-120 VAC with the following functionality:

- Fail-safe on loss of ESD signal
- Fail-safe on loss of power supply

#### Fail-Safe on Loss of ESD Signal Only

For applications where the power supply is unreliable and is not critical to the functional safety of the process, the SI can be offered for fail-safe on loss of ESD signal only. In this mode there is a requirement that the solenoid valve(s) which perform the safety function will be powered from the ESD signal (24 VDC as standard) and will operate through a Pulse Width Modulation (PWM) circuit to reduce the power consumption with the following functionality:

- Fail-safe on loss of ESD signal
- Stayput on loss of power supply

An option for 24-60 VDC ESD input is also available on limited configurations.

#### Fail-safe on Loss of Power Supply Only

For applications where only the loss of power supply is considered part of the SIS. In this configuration the ESD signal is not included.

#### Stayput on Loss of Power Supply

For applications where there isn't a fail-safe requirement.

#### Additional ESD Input

The standard fail-safe configuration of the SI actuator will accept a single ESD input. The SI offers the option of a second ESD input by using an additional ESD option card. This allows the SI to operate from two shutdown systems such as ESD from a safety system and a Process Shutdown (PSD) from a DCS system without affecting the integrity of the safety system with the following functionality:

- Two ESD signals operate common solenoid valve(s). If either ESD signal is removed the actuator will perform the safety function by operating the same solenoid valve(s).
- Two ESD signals operating independent solenoid valve(s). If either ESD signal is removed then the actuator will perform the safety function by operating the associated solenoid valve.

#### ESD Manual Reset

When an ESD signal has tripped and the actuator has moved to the safe position, the actuator will only operate when the ESD signal is reinstated and a new command signal is provided.

As an added protection layer the SI has an option available - selected in the menu - to manually reset the actuator before the actuator can accept a new command signal. The manual reset can be operated by the local controls on the actuator control module which will act as a reset switch.

# SI Features

## Partial Stroke Testing (PST)

Partial Stroke Testing is a function used in two position safety critical applications where the safety valve is infrequently operated. PST allows the operator to test critical components in the actuator and valve for possible failure. The test can be performed without the need to physically close the valve and thereby maintain the process operational. This allows the user to identify any potential faults which could prevent the actuated valve from performing its safety function.

All final elements such as solenoid valve(s), flow control valve(s), actuator drive and the shutdown valve are tested during the PST.

The SI range of actuators provide partial stroke testing as a standard option on all two position configurations. When the command is given to initiate the test, the actuator will move the valve to a pre-set position and the stroke time recorded.

If two solenoid valves are fitted, the advanced PST system operates by de-energising each solenoid valve in turn to allow the valve to move to the required position and then return the valve to the original position. The degree of movement required is configured by the user during the commissioning process and is adjustable from 0 to 99% of travel. The time taken will be measured and compared to the original full stroke test recorded at the commissioning stage for each solenoid and combination of solenoids.

A pass or fail will be displayed and the alarm will be activated if enabled. Internal pressure will also be measured and recorded in the datalogger.

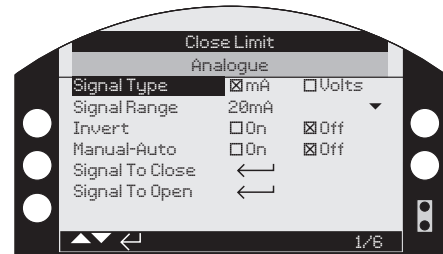
The PST can be initiated remotely hardwired, through the network card or locally with the Rotork Bluetooth® Setting Tool *Pro*.

The SI range also provide the facility to undertake a Full Stroke Test (FST) during scheduled planned maintenance. FST is selected in the actuator menu.



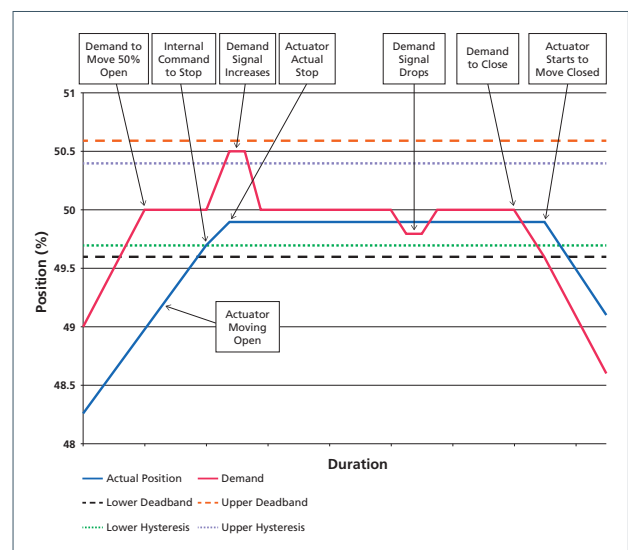
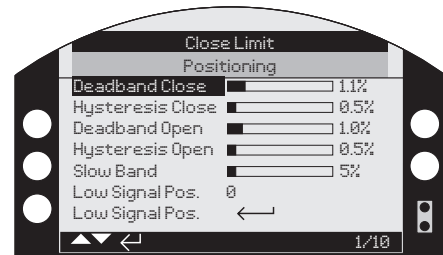
## Positioning Control

The SI actuators are suitable for positioning control applications of a valve or damper from an analogue signal (mA or voltage), digital pulsed signals or through a range of network cards or the HART® interface.



When analogue control is selected independent deadband and hysteresis adjustments are provided in the menu to optimise the control to suit the process conditions. The position against demand profile can also be tailored to suit the specific valve flow characteristics such as linear or equal percentage profile by utilising the Rotork Insight 2 software.

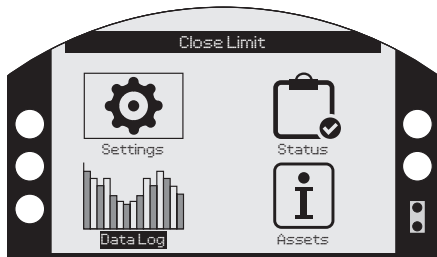
With the slow mode option selected the actuator will position the valve to a resolution of <math><0.25\%</math>. Remote position feedback is provided with the option of a 4-20 mA output signal for valve position. The option for stepping control is also available as standard and is selectable in the menu for choke valve control applications.



## SI Features

### Data logger

The internal data logger provides data of the actuator, valve and input signals. The data logger stores the configuration setup, events, trends, status and alarms with up to 3,000 events held in the actuator memory. The position, hydraulic pressure and temperature are also continuously monitored and stored.



The data can be viewed locally on the dot matrix display and can display graphs of position and pressure through to statistical operational data. All held data is secure and can be downloaded using the Rotork Bluetooth® Setting Tool *Pro* for viewing on a PC with Rotork Insight 2 software.

All configurations and data logger files are stored in non-volatile EEPROM memory, which means all settings are safe when the power is removed. An internal super capacitor is provided to maintain the real time clock when the actuator is not powered for periods of over two weeks should the power supply be disconnected.

The data logger provides comprehensive data capture and analysis for planned maintenance and troubleshooting issues with the valve and processes, which includes the following:

- Pressure profile logs
- Start profile logs
- Vibration and temperature trend logs
- Event logs
- Alarm logs
- Partial and full stroke test results

### Asset Management

Asset management data regarding the actuator and the valve can be stored within the actuator, including actuator build data, valve tag and information along with service information. Specific asset management information includes:

- Average pressure
- Starts (total number and maximum per hour)
- Total motor running time
- Maximum pressure at both open and closed limits
- Maximum and minimum temperatures
- Number of times switched on
- Last service date

### Auxiliary Supply

An auxiliary 24 VDC supply option card is offered for applications where indication relays, sensors, network cards, display, and data logger are required to be maintained when the power supply is not available. This option will also provide a log of valve movement on loss of power supply. The fail-safe action will also be recorded and remote indication will be maintained.



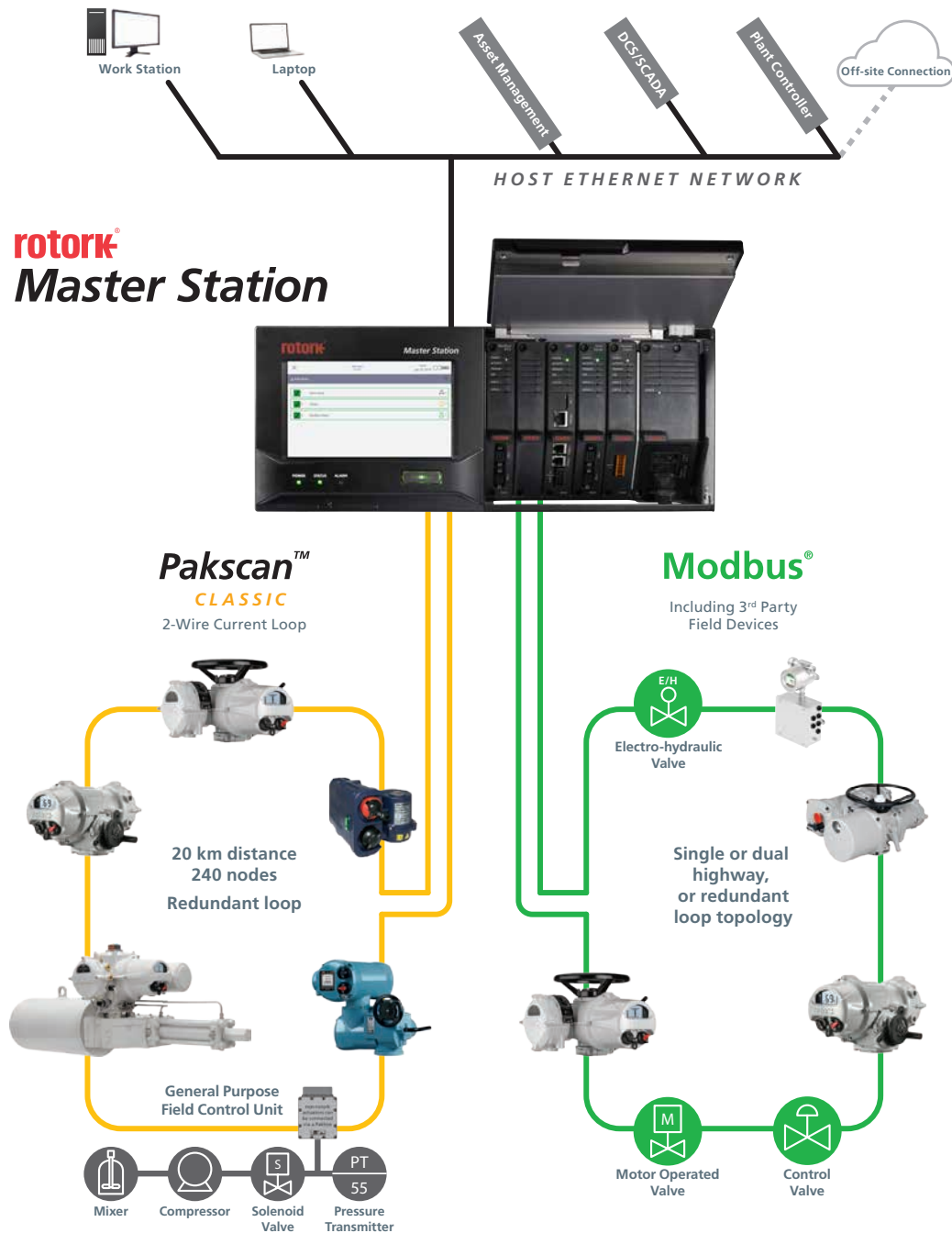
# SI Features

## Network System Connectivity

With the addition of the appropriate option card, the SI actuator can be incorporated in a number of different network control systems. SI actuators can be utilised within the Rotork Pakscan™ control system and all major open fieldbus protocols, including Profibus®, Foundation Fieldbus®, Modbus®, DeviceNet®, and HART®. All control functions, position and status indication can be communicated through the chosen network. When used in a functional safety application the actuator would be supplied with a hardwired ESD input which will take priority over all other commands.



Modbus®



## SI Features

### Remote Hand Station (RHS)

Actuators used in many applications can be mounted in locations where it is hazardous, inaccessible or inconvenient for human operation. In these cases it is useful to be able to see the status and locally operate the actuator from a safe distance. The Remote Hand Station enables safe and secure local monitoring and control of SI actuators installed in difficult locations.

Using the same display and control interface from the SI actuator, users can remotely operate, interrogate and configure the SI actuator from up to 100 m distance. Due to the familiar feature-rich interface, set-up couldn't be easier using the Rotork Bluetooth® Setting Tool *Pro* supplied with the actuator.

Duplicating the full functionality of the SI, configuration and data log information can be viewed and downloaded locally at the RHS instead of gaining access to the actuator. Power for the RHS is supplied by the actuator, removing the need for a supplementary power supply.

#### Features and Benefits

- Up to 100 metres from the actuator
- Pole or wall mountable
- Installation using standard data cable
- Powered from the actuator
- Replicates the SI user interface, including set-up and configurations
- Actuator data logs available to view and download locally
- Hazardous area certified for ATEX, IECEx and cCSAus
- Double-sealed enclosure IP66/68 (7 m for 72 hours)



#### Specification

Type	Standard	Optional
Enclosure Non-Hazardous	IP66/68 (7 m / 72 hours), NEMA 4, 4X & 6, Double-sealed	–
Enclosure Hazardous	ATEX, cCSAus and IEC	–
Temperature Range	-30 to +70 °C (-22 to +158 °F)	-50 °C (-58 °F)
Power Supply	Actuator derived 24 VDC	–
Mounting Options	Wall or pole mounted	–
Coating	Polyester powder coated	Off-shore paint, special colours
Support Tools	Rotork Bluetooth® Setting Tool <i>Pro</i> , Insight 2	–
Local Control	Non-Intrusive, Local/Stop/Remote (lockable) selector and Open/Close selectors	Vandal-proof cover

## SI Features

### Manual Override

On loss of power supply or control signal, all SI actuators are available with the option of a hand pump manual override (the SI2 quarter-turn is also available with a gearbox). The manual override consists of a hydraulic hand pump and a lockable selector valve. The manual selector valve is normally locked in the electrical operating position for normal actuator operation. When the power supply or control signal is not available the pipeline valve can be operated manually by removing the lock on the manual override selector valve and rotating the selector valve to the manual position.

The hand pump can be operated to move the actuator in the hydraulic direction. The manual selector valve is also used to return the actuator in the spring direction. On double-acting actuators the hydraulic direction can also be selected.

SI4 actuators can also be operated with the manual selector valve if accumulators are fitted and there is enough stored energy available to move the actuator. Accumulators can be sized to give multiple strokes of operation on loss of power supply or control signal.

Care must be taken when using the manual override; in the manual position the actuator will not be part of the SIS and will not respond to an ESD command. The manual selector valve will detect when manual mode has been selected and prevent electrical operation until the valve has been returned to the normal electrical control position. The local mechanical position indicator will show the position of the valve.

Should the power supply be reinstated while the actuator is in manual mode the actuator will display a manual alarm.



### Certification

Please refer to the specific product specification for full regulatory details and temperature options.

### Functional Safety

SI actuators are certified to IEC 61508:2010 for SIS with a Systematic Capability SC-3 and suitable for use in:

- SIL 2 (HFT = 0)
- SIL 3 (HFT = 1)

Certificates are available from Rotork with applicable PFD and SFF data.

Hardware Fault Tolerance (HFT) according to Table 6 of IEC 61511-1 should be observed.

### Non-Hazardous Areas Certification

All SI control modules comply to IEC 61010 for electrical safety and are watertight up to IP66/68 (7 m for 72 hours), plus NEMA 4 and 6.

Complete actuators assemblies are watertight to the following:

- SI2: up to IP66/IP67
- SI3: up to IP66/IP67
- SI4: up to IP65

### Hazardous Area Certification

All SI control modules are certified as follows:

ATEX(Europe):	Directive ATEX 2014/34 EU II 2 G c Ex db <sup>1</sup> IIB T4 Gb II 2 G c Ex db <sup>1</sup> IIC T4 Gb
IECEx (International):	Ex db <sup>1</sup> IIB T4 Gb Ex db <sup>1</sup> IIC T4 Gb
EAC (Russia):	TR TC 012/2011 1 Ex d <sup>1</sup> IIB T4 Gb 1 Ex d <sup>1</sup> IIC T4 Gb
Ambient range:	-50 to +70 °C
cCSAus (Canada & USA):	Canada Ex db <sup>2</sup> IIB T4 Gb Ex db <sup>2</sup> IIC T4 Gb USA Class 1, Zone 1, AEx db <sup>2</sup> IIB Gb Class 1, Zone 1, AEx db <sup>2</sup> IIC Gb Ambient range: -40 to +70 °C

<sup>1</sup> "e" added on versions with increased safety terminal enclosure specified

<sup>2</sup> "eb" added on versions with increased safety terminal enclosure specified

The Rotork Bluetooth® Setting Tool Pro is certified Intrinsically Safe permitting power-on commissioning in hazardous areas. For actuator drive certification please refer to PUB011-001 and PUB014-001.

*Hazardous area approvals for other countries are available; please contact Rotork.*

# rotork®



[www.rotork.com](http://www.rotork.com)

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

Rotork plc  
Brassmill Lane, Bath, UK  
*tel* +44 (0)1225 733200  
*email* [mail@rotork.com](mailto:mail@rotork.com)

PUB021-064-00  
Issue 08/19

As part of a process of on-going product development, Rotork reserves the right to amend and change specifications without prior notice. Published data may be subject to change. For the very latest version release, visit our website at [www.rotork.com](http://www.rotork.com)  
The name Rotork is a registered trademark. Rotork recognises all registered trademarks. The Bluetooth® word mark and logos are registered trademarks owned by Bluetooth SIG, Inc. and any use of such marks by Rotork is under license. Published and produced in the UK by Rotork. POWJB0421