



Keeping the World Flowing
for Future Generations

ELB Detection System

for Pipeline Monitoring and Valve Control

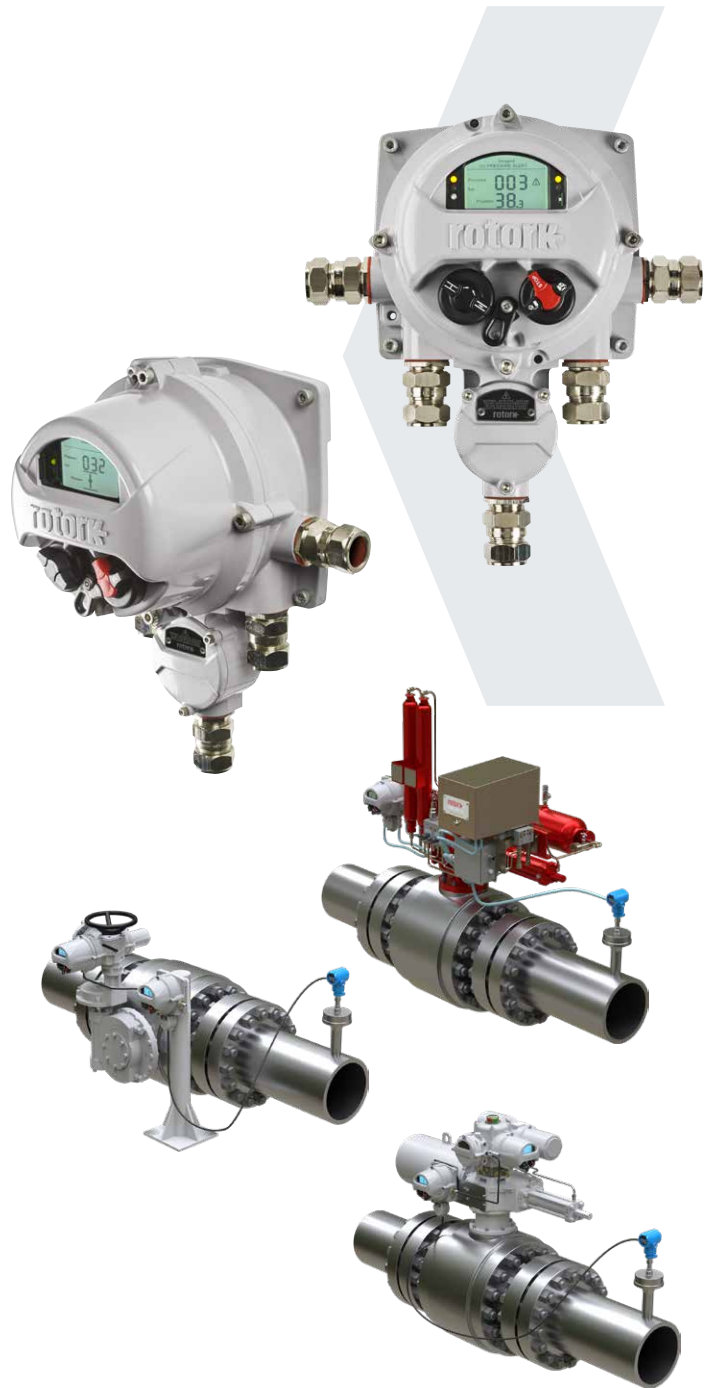
Rotork's Electronic Line Break (ELB) is a robust, self-contained pipeline monitoring system engineered for pipelines that transport oil and gas, as well as hazardous, highly volatile liquids and gases – such as carbon dioxide and hydrogen.

ELB continuously monitor pipeline pressure dynamics to provide early detection of pipeline breaks and initiate automatic valve actuator movement to an emergency position based upon user-defined parameters. The powerful and versatile system can also collect detailed operational data useful for optimising performance and enhancing pipeline safety.

The ELB system is designed to monitor the pipeline with the capability of sensing both upstream and downstream pressure. It provides valve actuator control based on rate-of-drop (RoD) and rate-of-rise (RoR) as well as high- and low-pressure limits. The ELB can also provide an array of programmable alarm and alert indications and has an extensive feature set that can be configured to meet each end user's particular requirements.

Design Features

- Intuitive user interface featuring an advanced backlit display and Chinese language option
- Comprehensive data logging in non-volatile memory with real-time clock
- Manual reset option to maintain Process Shutdown (PSD) position until human intervention allows a return to normal operation
- Pressure monitoring with RoD and RoR calculation
- Configurable PSD position to Open, Close, or Stay-in-place
- Configuration and data retrieval via Rotork Bluetooth® Setting Tool *Pro* or PC (using Rotork Insight 2)
- Will operate on 9-28 VDC supply voltage
- Local controls OPEN, CLOSE, LOCAL / REMOTE / STOP
- Remote control available via either hard-wired connections or Modbus® serial communication protocol
- Partial stroke available
- Provision for up to six remote inputs
- Optional position sensor input
- Up to four configurable solenoid outputs
- Rotork designed hazardous area enclosure
- Can be mounted either on the actuator or remotely
- Compatible with a variety of actuator types



Compatible with GO, Skilmatic SI and IQ range actuators

Environmental Sealing

The enclosure is approved to IP68. Using a Rotork Bluetooth® Setting Tool *Pro*, no covers need to be removed for commissioning, adjusting, analysis, or accessing data logs.

Display

An advanced dual-stacked display has a wide viewing angle making it easily legible. In normal mode the LCD display indicates valve position. The matrix layer provides high-resolution screens for setting menus, status, alarm and graphical data log screens. Screen display can be set to English or Chinese languages. All display elements are protected by a toughened glass window with an optional shield for protection against UV light and abrasive media.

Local Controls

Local OPEN/CLOSE and lockable LOCAL/STOP/REMOTE selectors are coupled magnetically to the designated switches and therefore do not penetrate the control cover. This further enhances the non-intrusive protection of the ELB.

Temperature Range

-50 to +60 °C (-58 to +140 °F)

Area Approvals

Hazardous

- IEC Ex db IIB/IIC T4 Gb
- ATEX II 2 G Ex db IIB/IIC T4 Gb
- CSA Class I, Zone 1, Ex d IIB/IIC T4
- CSAus Class I, Zone 1, AEx d IIB/IIC T4

Non-Hazardous:

- IP66/IP68 (7m / 72 hours)
- NEMA 4, 4X, 6

Functions

Electric LOCAL/STOP/REMOTE Selector

The LOCAL/STOP/REMOTE selector is lockable. When the selector is in the LOCAL position, the actuator is controlled via the OPEN/CLOSE selector. When in LOCAL mode, there is an option for the emergency signal to override the local user. When in the STOP position no movement is permitted, unless alarms overriding Stop are enabled. When the selector is in the REMOTE position, the actuator is controlled via remote signals.

Independent Rate of Pressure Drop (RoD) and Rate of Pressure Rise (RoR)

RoD/RoR slope check can be set to occur every sample, or at any multiple of samples (1-60).

Adjustable set point between 0.2 to 20 bar/min (0.02 to 2.0 MPa/min).

Delay Time Setting RoD / RoR

Delays RoD / RoR trip until alarm condition is present for at least a specified amount of time.

Time adjustment from 0 - 1,800 seconds, default 30 sec.

Minimum Sample Period

To 99 sec, default 5 sec.

Pressure Averaging

1 to 100 point averaging (1 = no averaging). Default is 30.

Low Pressure (PSL) Close/Open

Closes or opens valve after low-pressure alarm.

High Pressure (PSH) Close / Open

Closes or opens valve after high-pressure alarm.

Delay Time Setting PSL / PSH

Delays PSL / PSH trip until alarm condition is present for at least a specified amount of time.

Time adjustment from 0-1,800 seconds, default 0 is seconds.

High Differential Open Inhibit

Inhibits opening of valve when differential pressure is above a set point. This option only available with two sensors fitted.

Process Shut Down (PSD)

Remote PSD input with option to override all functions and drive the valve to the fail position. The controller can be configured to override the local selector and drive the valve to the fail position when alarm pressures or alarm rate of drop set points are exceeded, or upon receipt of a remote PSD signal.

Partial Stroke

Moves valve from open position to a set point then back to open position. If set point is not reached within a specified time, user is alerted.

Reset

System may be configured to either automatically reset after signals drop below alarm levels, or alternatively to require a manual reset after any emergency operation. If configured for manual reset, this can be done via local controls, the Rotork setting tool, or remote input. An administration password is required for manual reset with the Rotork Setting Tool.

Note: All functions may be individually disabled to allow the customer to capture pressure data using the datalogger over a period of weeks, and then use this data to determine appropriate trip set points.

Diagnostics

Clock / Calendar

Real time clock / calendar with backup power via supercapacitor

Alarms

Indication relays triggered by:

- Alert level - high pressure set point*
- Alert level - low pressure set point*
- Alert level - rate of drop (RoD) set point*
- Alert level - rate of rise (RoR) set point*
- Hardware fault
- Memory error
- Pressure transmitter out of range
- Two pressure transmitters out of sync.*
- Over voltage on battery supply power*

- Low voltage on battery supply power*
- Temperature out of range
- When a second sensor is configured for error checking the first sensor, should the two pressures deviate from each other by more than the allowable alarm setting, the indication relay shall be triggered.

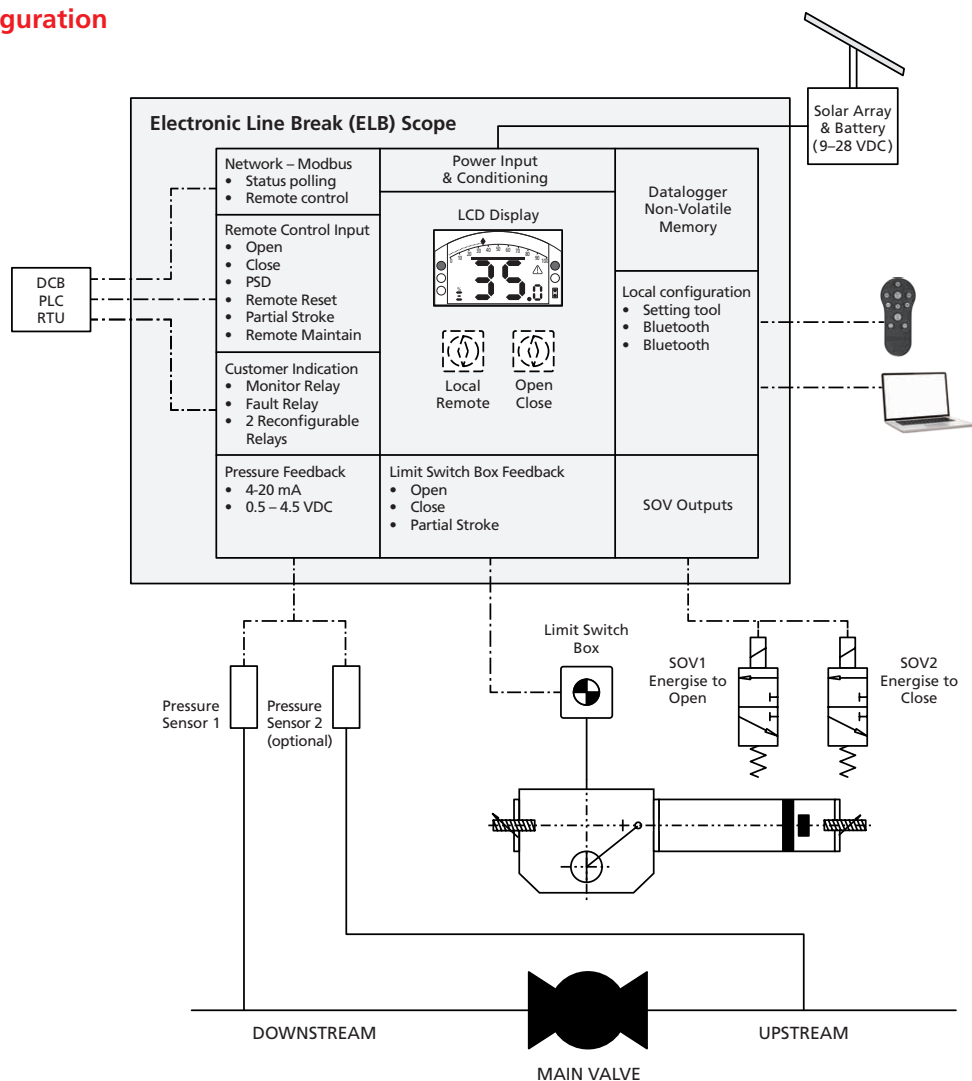
Fault relay triggered by:

- Alarm level - high pressure set point*
- Alarm level - low pressure set point*
- Alarm level - rate of drop (RoD) set point*
- Alarm level - rate of rise (RoR) set point*
- An active PSD condition
- High differential pressure across the valve

All triggers may be individually disabled in the configuration software.

*Configurable

Typical Configuration

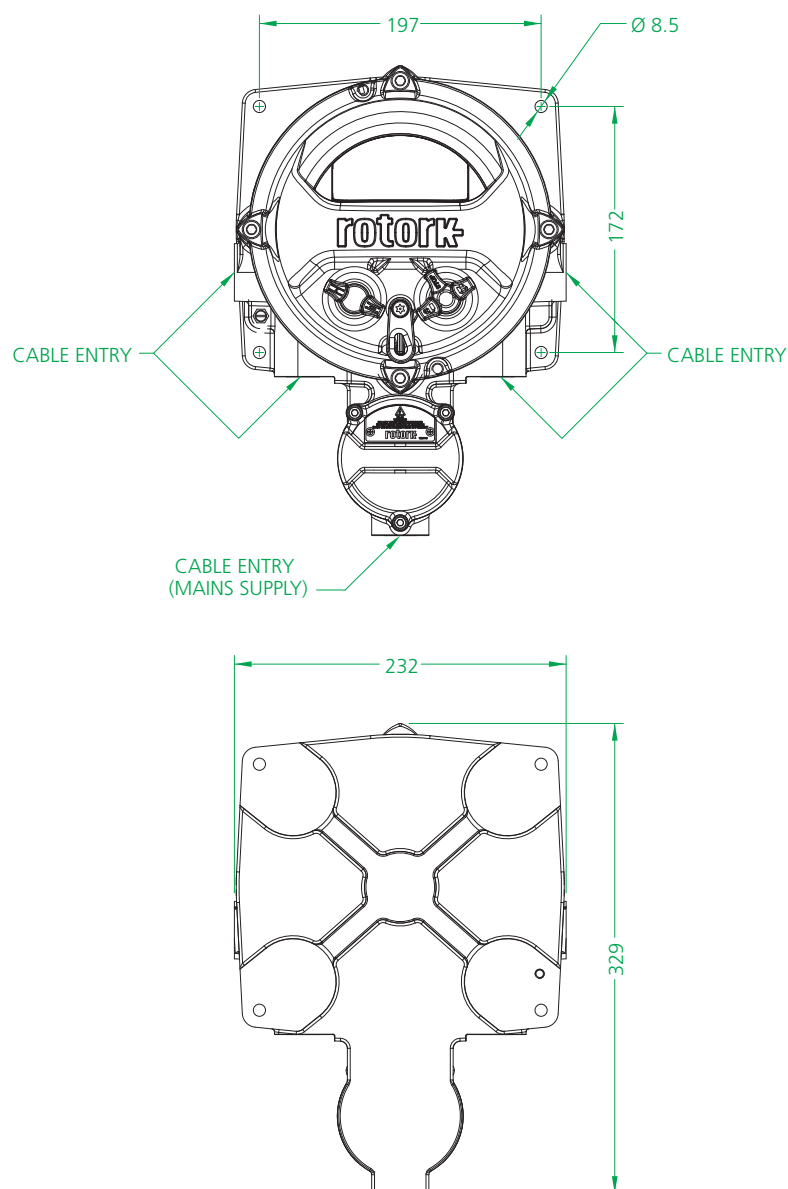


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Dimensions (mm)

Maximum weight is 9 kg



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