

BETTIS™

LineGuard 2200 Electronic Linebreak Detection System



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DESCRIPTION

The LineGuard 2200 Electronic Linebreak Detection System is a self-contained pipeline monitoring and line-break protection system for monitoring line pressure at the pipeline valve site and providing data acquisition and supervisory control (SCADA) of a single valve actuator. The LineGuard 2200 protects your pipeline three ways – It senses rate of pressure drop, it affords low pressure protection and protects against high pressure. It also provides data archival for future analysis. The LineGuard 2200 is offered in two basic models, both of which are available in a standard CSA version for use in Class 1, Division 2 hazardous locations.

MODEL 2200-407

This device is a powerful microprocessor-based computer ideally suited for line pressure monitoring and data acquisition. It is highly accurate and incorporates remote and built-in components that make it versatile and easy to use. Its most outstanding features and benefits include:

Memory – The Model 407 utilizes a 16-bit CMOS coupled with 512 KB of RAM and 512 KB of flash ROM for storing firmware.

Built-ins – two process inputs are built in for interface with measurement instruments. The device also has its display and keypad built in to the face of the unit.

Modular – Four I/O sockets are located in the unit allowing for expansion with any combination of I/O modules to support solenoids and position switches as required for the application. Optional analog and discrete I/O, and HART® interface, can be added.

PC Interface – The Model 407 can link to a personal computer running ROCLINK™ software allowing for easy functionality configuration and status monitoring.

Rugged and Compact – The die-cast weather-tight type 4X enclosure protects against harsh environments and is physically a compact 12" high x 9.3" wide x 4.4" deep. Pressure transmitter and actuator solenoids are externally mounted.

Reliable Communication – In addition to serial communications, the Model 407 accommodates communication options including EIA-232, EIA-422/485, radio, leased line and dial-up. Communication protocols include Native ROC and MODBUS.

FUNCTIONS

High Scan Rate and Pressure Averaging – The raw pipeline pressure data is read at a 1-second scan rate. These values are averaged over a configurable "average sample period" of 5 to 60 seconds and are used for all data logs and control routines.

ROD Calculation – Rate Of pressure Drop (ROD) is calculated every 5 seconds and is the current average pipeline pressure minus the average pipeline pressure one minute earlier. The ROD rolling average is based on the configured "average sample period" and is used for all data logs and control routines.

Data Logging – Four types of data logs are archived and include Minor pressure logs (H, L, & H ROD), Major pressure logs (HH, LL, & HH ROD), Event logs and Alarm logs. The unit can store up to 100 circular **Minor logs**, each consisting of 60 average pressure and 60 average ROD values, recorded at configurable intervals of 30 to 300 seconds. After a Major Event, the unit captures one **Major log**, consisting of 60 average pressure and 60 average ROD values, recorded at a configurable interval of 5 to 30 seconds, with 30 values recorded before and 30 values after the alarm is activated. A circular **Event log** captures operator change data to a maximum of 240 records. A circular **Alarm log** captures up to 240 records of data that are not directly related to operator change or pipeline pressure.

Event Duration (Time Delay) – The averaged static and ROD pipeline pressure readings are used to detect a linebreak condition every sample cycle. The readings must remain outside of the configured Major Event set point for a certain period of time to be considered a linebreak. This "Event Duration" is configurable from 0 to 1800 seconds.

Valve Control – The line valve can be opened and closed remotely and locally. The stroke duration time-out is configurable from 5 to 1800 seconds.

Auto-Close – Automatic valve closure can be initiated by any combination of a high pressure (HH), a low pressure (LL) or a high ROD (HH ROD) condition. Any or all of these auto-close controls can be individually disabled.



LineGuard 2200-407

MODEL 2200-312

This model is a remote microprocessor-based operations controller. It provides self-contained pipeline monitoring and linebreak protection. It uses a single board design that places the main circuitry, with five process inputs and two process outputs, on a common circuit board. The most outstanding features and benefits of the Model 312 are as follows:



Modular – The FlashPAC plug-in module, standard with this model, contains the operating system, communications protocol and application firmware.

Memory – The Model 312 utilizes a 16-bit CMOS microprocessor with on-board memory. It comes standard with 128 KB of static random access memory (SRAM) and 8 KB of electronically erasable and programmable read-only memory (EEPROM). The FlashPAC offers an additional 1 MB of memory.

Expandable – The Model 312 has six built-in I/O configured with ROCLINK software. In addition, six expansion slots for I/O modules are available for any combination of I/O. In total, the 12 I/O points support multiple pressure sensors, RTD temperature sensors, actuator solenoids for open and close commands, and limit switches for position feedback.

Low Power Consumption – This feature, along with a wide operating temperature range, makes the Model 312 suitable for use with solar-powered installations.

Communication – In addition to its built-in serial port, an optional communications card allows for the addition of a variety of communications capability.

Protected – The controller has a NEMA 1 metal case to protect it from damage, and is mounted in a CSA Type 4 metal enclosure for further protection against the elements. A four-button keypad and LCD display are mounted on the enclosure.

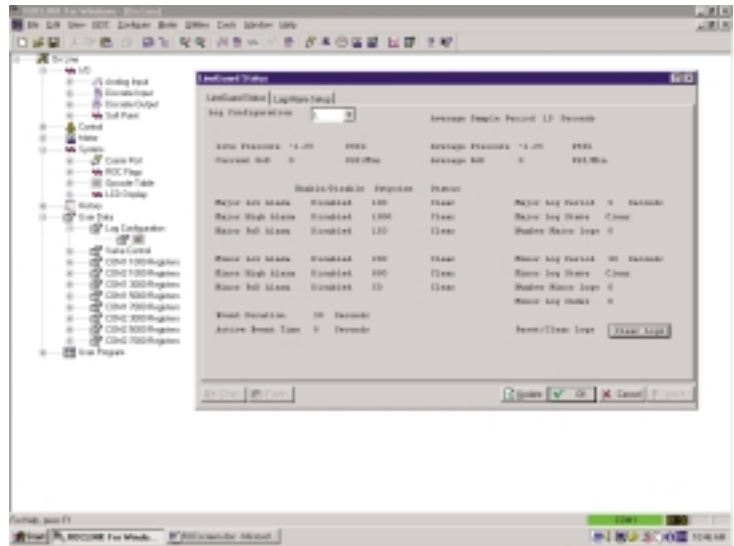


LineGuard 2200-312S

ROCLINK™ FOR WINDOWS™

The ROCLINK for Windows software package couples the flexibility and power of the configuration software with the industry standard operating system, with terminology designed for field personnel. The results is a robust package that allows its user to:

- Configure and view I/O points, system parameters and pressure change calculations
- View and print event and alarm logs
- Create and edit graphical displays containing live data
- Set up communications parameters including RBX
- Receive on-line help with a single keystroke
- Retrieve data easily
- Use the FST Editor to create up to 4 Function Sequence Table applications; adding analog and discrete sequence control capabilities



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