32-Channel Sequence Of Events

Non-Isolated, Module-Powered

8127-DI-SE

- 32 channel module, configurable channel by channel as DI, SOE or both
- Switch or Proximity Detector Inputs
- Captures events with 1/4 ms resolution
- Distributed architecture provides accurate event recording
- Line fault detection on all inputs (switch inputs need resistors)
- 24 Vdc bussed field power required
- Module provides power to all field inputs, simplifying field wiring
- High time stamp resolution for more accurate event sequencing
- Log data from other events, including controller status and module alarms
- Export data to PC applications for reporting or further analysis

32 Channel Sequence of Events 8127-DI-SE Non-Isolated, Module-Powered

Sequence of Events (SOE recording is needed to capture both the first event and the sequence of a number of events that occurred during a shut-down or trip sequence in order to better understand the cause of the event. When this occurs, events can take place very rapidly throughout your process area. The SOE Modules and companion Event Logger Software provide a means of recording these events and use highly accurate time stamps to determine the precise order in which they occurred.

8127-DI-SE is a 32-channel SOE module whose primary focus is to monitor the status of digital inputs and record state changes to an internal buffer. The state changes are timestamped to the nearest 1/4 millisecond. Once recorded the states the state data is periodically transferred to the controller. Each module has a buffer size of 512 events which the controller can empty in about 500 ms, capturing approximately 1000 events per second.

SOE Event Logger Software

SOE event logger software is provided with all PAC8000 Workbench products. The event logger software collects time stamped data from the controller, merges information from multiple controllers into a chronological journal and exports the data to standard event viewers. Other data export options include OPC Event format or a basic text file. The event logging software can also be used to record other events in addition to SOE activity. For example, it could be used to record changes of state in the controller, such as when control switches between redundant controllers. It could be used to record when an analog limit has been exceeded or when a digital module changes state. This powerful capability enables you to record all the critical events in your process, providing you with a complete picture for further analysis.

Benefits

- **More accurate event sequencing**
  All logged events are time stamped using 1/8 ms resolution for 1/4 ms accuracy. The Controller uses Network Time Protocol (NTP) to assure time stamp accuracy between modules across the network. When using NTP, all controllers are synchronized across the network to ± 3 ms, resulting in very accurate event sequencing

- **Identify problems quickly**
  Each SOE input has a unique line fault detection feature that detects whether there is a short circuit or open circuit on each input. Problems are identified immediately for correction, saving considerable maintenance time.

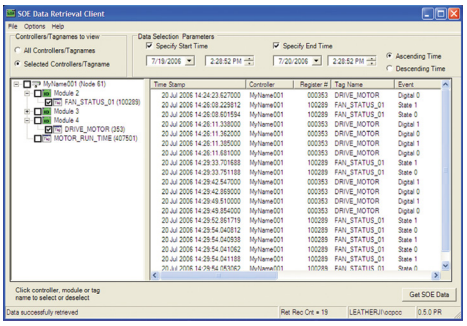
- **Simplifies field wiring**
  Field circuits are module-powered, eliminating the need to "daisy chain" power supply wiring at field terminals. Field circuits are powered with a minimum of wiring and termination effort.

- **Locate SOE modules in the process**
  Like the rest of the control platform, SOE modules can be located in your process, next to your field devices in order to record events locally on a more reliable and timely basis.

- **Easy integration with other applications**
  Events from multiple modules and controllers can be stored in a single SOE Event Logger providing an easy interface to other applications.

32 Discrete Channels

The 8127-DI-SE has 32 discrete input channels and each channel can be configured as either an SOE input or a standard discrete input. SOE input signals can also be used as standard discrete inputs as part of any control strategy. Each module can buffer



up to 512 events. Events are communicated to the controller, which uses Network Time Protocol (NTP) to accurately convert the module's time stamp data to real time. The SOE Event Logger, which constantly polls the controller for new events (typically every 2 seconds), collects each time-stamped event. After recording the events, the Event Logger sends and acknowledgement to the controller, which then clears the event from its memory. The controller retains all events until all active Event Loggers acknowledge them. Multiple Event Loggers can be used for redundant event recording and will always have consistent time stamps since all events are time stamped by the controller.

Events are displayed by the SOE data Retrieval Client. Following data retrieval, the user can select to email the SOE data, Print it or Save it to a CSV file. The user can easily create a custom report, selecting the columns to be viewed and printed.

MODULE SPECIFICATION

See also System Specification

Number of Channels
- 32

(Each DI channel can be configured with or without SOE)

INPUT SPECIFICATION

OFF current
- <1.2 mA

ON current
- >2.1 mA

Short Circuit Current
- 8.6 mA (typ)

Output Resistance
- 950 Ω (typ)

Open Circuit output voltage
- 8.2 V dc (typ)

Line Fault Detection
- Short Circuit – <100 Ω
- Open Circuit – <50 µA

Input voltage range without damage
- 0 to +12 V dc

Isolation (channel to Railbus)
- 250 V ac

Input sampling rate(all 32)
- 8 kHz

Input Pulse Width - 250 µS (min)
- DI Counting frequency without loss – 500 Hz (max)

Applicable Specification
- NAMUR, DIN 19234

SOE SPECIFICATION

Module Event Buffer
- 480 Events+32 Overflow

Event Recording peak rate, module
- 64000 events/sec

Duration of peak rate
- 7.5 ms (max) for 32 SOE channels enabled

Event Recording continuous rate, module
- 220 events/sec (min)

Each of 32 inputs
- 6.8 events/sec (min)

Excessive Event Threshold (for 32 inputs)
- 150 events/sec (for each channel)

SOE Module time stamping resolution
- 125 µS

System Time Stamping resolution
- 250 µS

Simultaneous Inputs, Time Stamping error
- Within one module – 0.25 ms (max)
- Within one 8000 Node – 1.0 ms (max)
- Between 8000 Nodes – 5.0 ms (typ)

(Absolute time stamping accuracy will depend on Network Time Reference in use)

CONFIGURABLE PARAMETERS

SOE Logging
- Configurable per channel

Input Filter
- 0 to 8.192 secs in 250 µS steps

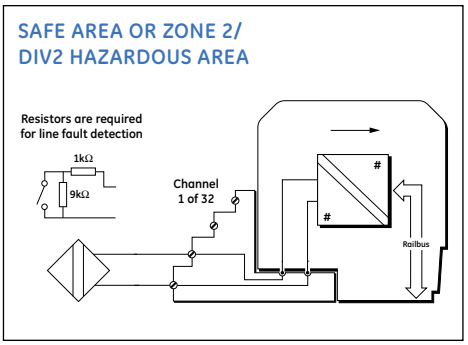
Pulse Counting
- On / Off

Latching
- On / Off

RESPONSE TIME

Input Module Scan Time
- <1 mS

(Inputs sampled at 8KHz and processed every 1 mS)



FIELD TERMINALS

Field Wiring	Recommended Field Terminal	Compatible Field Terminal
General purpose	8617-FT-NI 30 channel SOE	8619-FT-MT 30 channel SOE
Class 1, Div 2 or Zone 2 hazardous area	8617-FT-NI 30 channel SOE	8619-FT-MT 30 channel SOE

SAFETY

FM non-incendive field wiring parameters (each channel)
- $V_{oc} \leq 8.64$ V; $I_{sc} \leq 18.5$ mA; $C_a \leq 28$ µF; $L_a \leq 23.6$ mH

POWER SUPPLIES

Railbus(12V) current
- <50 mA

Bussed Field Power
- 190 mA (max) at 24 V dc

MECHANICAL

Module Key Code
- B3 Non Arcing

Module Width
- 42 mm

Weight
- 185 g