M-series Sequence of Events Card

DeltaV™ Sequence of Events delivers high-resolution data capture for your easy analysis.

- Captures process upset events close to the source for faster recording
- Provides increased resolution of timestamps for more accurate event sequencing
- Easily integrates data with desktop applications for detailed analysis and reporting

Introduction

When a process upset occurs, events can take place very rapidly throughout your process area. In order to correctly determine the cause of the upset, accurate recording and sequencing of the events is essential.

The DeltaV™ Sequence of Events Card provides a means of recording the events associated with a process upset, and using highly accurate time stamps to determine the precise order in which they occurred.

Benefits

Captures process-upset events close to the source for faster recording. Sequence of Events (SOE) input cards are used to capture process-upset events coming directly from devices in the field. Because events are captured and temporarily stored locally—on the SOE input card itself—faster recording for each of the channels on the card is possible.

Provides increased resolution of timestamps for more accurate event sequencing. Events captured by an SOE input card are time stamped using a ¼-millisecond resolution. Additionally, the time stamps are resolved by the DeltaV controller to ensure accuracy across the DeltaV network.

Using a Network Time Protocol (NTP) server, DeltaV controllers are synchronized across the entire network to within +/- three milliseconds. The NTP server uses the Global Positioning System satellites for an accurate time reference. As the controller reads events, they are time stamped using the NTP server as a reference. This method of synchronization, along with the increased resolution, provides a much more accurate and complete picture of the order in which the events occurred.

Easily integrates data with desktop applications for detailed analysis and reporting. The Event Chronicle stores these events electronically, so that you always have *easy, reliable access* to the data. A single Event Chronicle can capture system events spanning multiple controllers and workstations, so that you can look in one place to find all the relevant data. Additionally, multiple Event Chronicles can reside on the same DeltaV network for redundant event capturing

The events stored in the Event Chronicle can be easily viewed using the *Process History View* application, which displays the events in chronological order.

The Event Chronicle can *automatically export* data as well, so that it can be read using other software packages such as the standard Microsoft Office applications.

Product Description

The DeltaV system is designed to capture and time stamp the events as close to the source as possible, providing you with a much more *accurate picture of the sequence of events* as they occurred.

The DeltaV system receives process-upset signals using the Sequence of Events input card. This card has 16 discrete input channels and each channel can be configured as either a standard discrete input or SOE input. Optionally, SOE input signals can be used just like standard discrete inputs as part of any control strategy.

Each card is capable of buffering a maximum of 32 events. These events are communicated to the controller where the time stamp is resolved using the NTP Server to ensure accuracy. The controller then passes each time-stamped event to the workstation where it is logged into the Event Chronicle. Once the controller receives confirmation from the workstation that an event has been logged, the event is cleared from the card's buffer.

The Event Chronicle receives these events and displays them using *Process History View*. Since the events are time stamped in the DeltaV Controller, multiple Event Chronicles will always have consistent timestamps, eliminating the possibility of variance due to differences between the workstations' system clocks.

You can also set up automatic exports of event records. The export file format is simple delimited text format, so that it is easily accessible by most desktop applications (such as Microsoft Access or Excel) for further use or analysis.

To address the needs of *125 VDC* often found in the Power Industry, a termination assembly to condition those signals is available. The DeltaV SOE interface with the Mass Termination block connector is used with plug on signal conditioners. It is detailed in the Related Products section below.

Hardware Specifications

Specifications for the M-series Sequence of Events Card	
Number of channels	16 Each channel can be configured for DI or SOE operation
Time stamp accuracy	0.25 msec on a card; 1 msec in a controller. Accuracy with reference to system clock time after a 4 msec debounce filter has been applied.
Scan rate	0.25 msec. for all 16 channels
Isolation	Each channel is optically isolated from the system and factory tested to 1500 VDC.
Detection level for On	> 2 mA
Detection level for Off	< 0.25 mA
Input impedance	5K ohm (approximate)
LocalBus current (12 VDC nominal)	50 mA typical, 75 mA maximum
Field circuit power, per card	75 mA at 24 VDC (± 10%)
Field circuit voltage	24 VDC
Terminal block	32-screw termination block or 40-pin mass termination block
Environmental specifications	
Operating temperature	-40° to 70° C (-40° to 158° F)
Storage temperature	-40° to 85° C (-40° to 185° F)
Relative humidity	5 to 95%, non-condensing
Airborne contaminants	ISA-S71.04-1985 Airborne Contaminants Class G3 Conformal coating
Shock (normal operating conditions)	10 g ½-sine wave for 11 ms
Vibration (operative limit)	1 mm peak-to-peak from 5 Hz to 16 Hz, 0.5 g from 16 Hz to 150 Hz
Hazardous area/location*	ATEX EEx nA IIC T4 Class 1, Div 2, Groups A, B, C, D, T4

**Refer to Zone 2 installation instructions (12P2046) and/or Class 1 Division 2 installation instructions (12P1293) for information on installing in hazardous areas.*

System Compatibility

- Network time protocol server is recommended if SOE cards are installed in more than one controller. Contact your local Emerson Process Management representative for more information on the NTP server approved for use with the DeltaV system.

- MD Plus, MQ or MX Controller is required for SOE functionality.

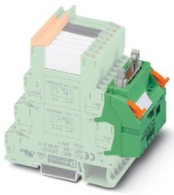
Ordering Information

Description	Model Number
SOE interface with 32-screw termination block	VE4001S5T2B4
SOE interface with Mass term block Connector	VE4001S5T2B5

Related 3rd Party Products

125 Volt Termination Assembly

Terminal Assembly Base



Cable

8 channel Interface

125 Volt Termination Assembly, as well as other Termination products available from Phoenix Contact, can be found under http://www.phoenixcontact.net/microsites/emerson/Termination%20Boards%20DI.htm

Description	Phoenix Contact Part Number
Terminal Assembly base terminal block with Optical Coupler - one per point	Part Number 2980050 Part Type PLC-OSC-125DC/24DC/2
8 Channel Interface Module - needed for each 8 points	Part Number 2304115 Part Type PLC-V8/FLK14/IN/M
1.0 Meter Cable with Connectors for DeltaV SOE Mass Term Block and Phoenix 8 channel Connector - one for each Interface module – up to 2 per SOE card	Part Number 2304791 Part Type FLK 14/20/EZ-DR/100/DV/SOE
2.0 Meter Cable with Connectors for DeltaV SOE Mass Term Block and Phoenix 8 channel Connector - one for each Interface module – up to 2 per SOE card	Part Number 2304801 Part Type FLK 14/20/EZ-DR/200/DV/SOE
3.0 Meter Cable with Connectors for DeltaV SOE Mass Term Block and Phoenix 8 channel Connector - one for each Interface module – up to 2 per SOE card	Part Number 2304814 Part Type FLK 14/20/EZ-DR/300/DV/SOE

To locate a sales office near you, visit our website at:
www.EmersonProcess.com/DeltaV
Or call us at:
Asia Pacific: 65.6777.8211
Europe, Middle East: 41.41.768.6111
North America, Latin America: +1 800.833.8314 or +1 512.832.3774

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Asia Pacific: 65.6777.8211
Europe, Middle East, Africa: 48.22.630.2443
North America, Latin America: +1 412.963.4000