

HR Series I/O modules – Sequence of events

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HR Series Sequence of Events (SOE) provides distributed event monitoring, recording and reporting capabilities for the Symphony Plus control system. An SOE event is a transition of a digital single from on to off or vice versa. A series of SOE modules collects and time-stamps these digital transition events and makes them available to the system.

Server node

The SOE01 server node consists of the SPNIS21 module, the SPSEM11 SOE master module and the SPTKM01 time keeper master module.

SPSEM11

The SPSEM11 SOE module communicates with the SPNIS21 and SPTKM01 modules. It communicates with other nodes in the control network through the SPNIS21. The SPSEM11 is responsible for managing the distributed SOE system, including:

- 1,500 points from Sequence of Event Digital (SED) and Sequence of Event Timing (SET) I/O modules
- 256 complex triggers with 16 operands each
- 3,000 simple triggers



SPSEM11

Technical data	
Power requirements	+ 5 VDC, ± 5% at 1.78 A typical
Microprocessor	16 bits at 10 MHz
Memory	2 MB RAM 512 KB ROM 512 KB NVRAM
Ambient temperature	0 °C to 70 °C (32 °F to 158 °F)

SPTKM01

The SPTKM01 time keeper master module provides time information to the SPSEM11 module and to the rest of the distributed SOE system through a time synchronization link. The SPTKM01 module connects to an external receiver using the IRIG-B time code link. The module transmits absolute time to the rest of the system using the RS-485 time synchronization link.



SPTKM01

Technical data	
Power requirements	5 VDC, ± 5% at 300 mA typical
Microprocessor	16 bits at 10 MHz
Communication	
• Input	IRIG-B in DC level shift format (through NTST01)
• Output	RS-485 time synchronization at 62.5 kbaud (through NTST01)
Output time accuracy	
• Synchronization time	±10 µsec
• Absolute time (to SEM11)	±1 msec
Ambient temperature	0 °C to 70 °C (32 °F to 158 °F)

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SPSET01 and SPSED01

SPSET01 and SPSED01

The SPSET01 sequence of events timing module processes up to 16 digital field inputs, and receives and decodes the time synchronization link information sent by the SPTKM01 module. Each channel is optically isolated and can be individually programmed for 24 VDC, 48 VDC, 125 VDC and 120 VAC input.

The module communicates with the controller over an I/O expander bus. Only one SPSET01 module can operate on an I/O expander bus segment.

The SPSED01 sequence of events digital input module is similar to the SPSET01 module except that it only processes the 16 digital field inputs. It does not process information from the time synchronization link. Up to 63 SPSED01 modules can operate on an I/O expander bus segment along with one SPSET01 module.

Technical data	
Power requirements	+5 VDC, ±5% at 350 mA typical
Microprocessor	16 bits at 10 MHz
Memory	64 KB RAM 64 KB ROM
Digital input channels	16 optically isolated channels 24 VDC (±10%) 48 VDC (±10%) 125 VDC (±10%) 120 VAC (±10%) (only for system control logic)
Ambient temperature	0 °C to 70 °C (32 °F to 158 °F)