

## Description

Harmony sequence of events (SOE) provides distributed event monitoring, recording, and reporting capabilities for the Symphony™ Enterprise Management and Control System. An SOE event is a transition of a digital signal from either on to off or from off to on. A series of SOE modules collect and time-stamp these digital transition events which are then made available to the system. Figure 1 shows the distributed sequence of events system architecture.

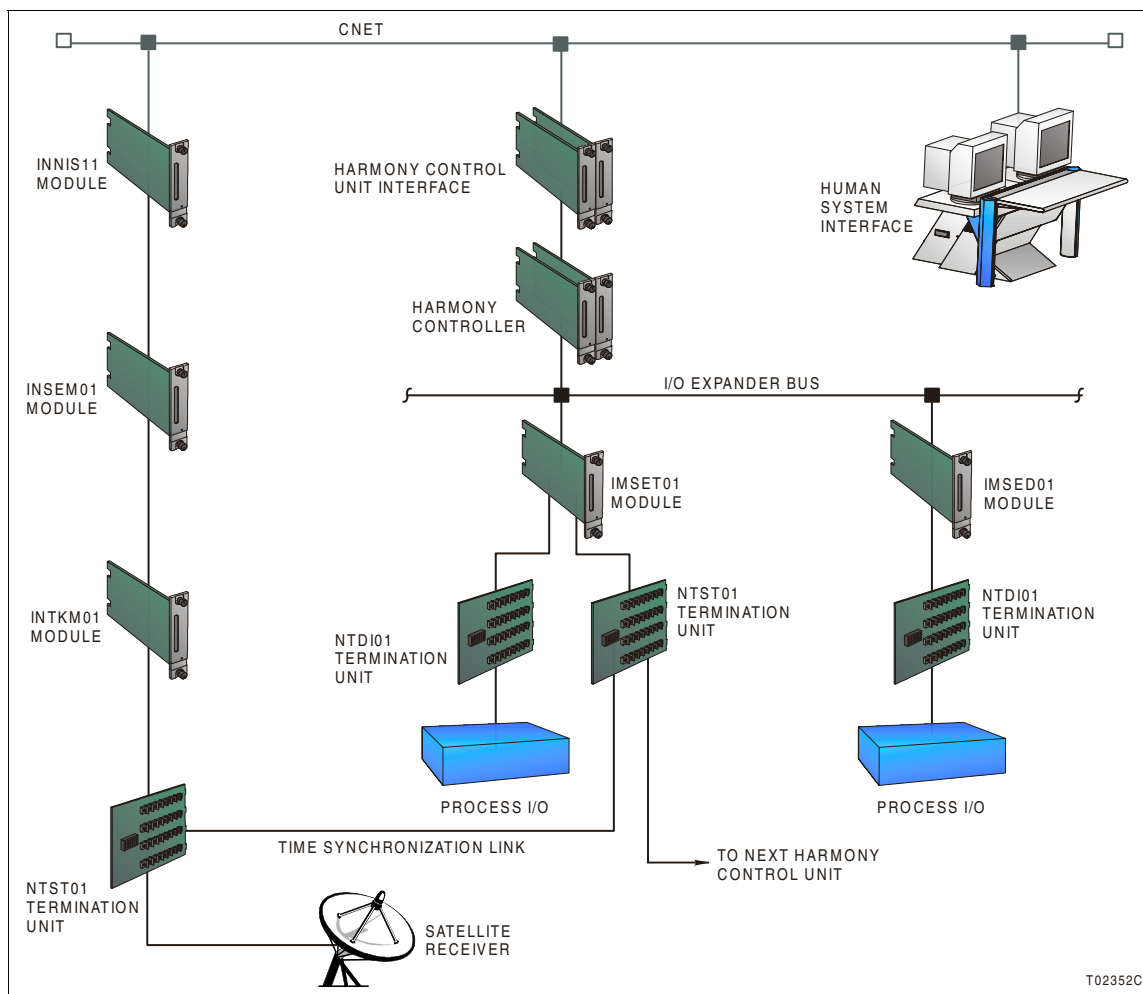


Figure 1. Distributed Sequence of Events System Architecture

## I/O Modules

### IMSET01

The IMSET01 Sequence of Events Timing module processes up to 16 digital field inputs, and receives and decodes the time synchronization link information sent by the INTKM01 module for a Harmony controller. The controller utilizes function code 241 (DSOE data interface) to interface SOE data from the IMSET01 module to the INSEM01 module, and function code 242 (SOE digital event interface) to configure and access the IMSET01 module input channels. 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 its Harmony controller over I/O expander bus. Only one IMSET01 module can operate on an I/O expander bus segment. The module cable connects to NTST01 and NTDI01 termination units. The NTST01 unit provides for time synchronization link termination. The NTDI01 unit provides for field wiring termination.

### IMSED01

The IMSED01 Sequence of Events Digital Input module is similar to the IMSET01 module except that it only processes up to 16 digital field inputs for the Harmony controller. It does not process time synchronization link information. The controller utilizes function code 242 (SOE digital event interface) to configure and access the IMSED01 module input channels. Up to 63 IMSED01 modules can operate on an I/O expander bus segment along with one IMSET01 module. The NTDI01 termination unit provides for field wiring termination.

## Related Documents

Number	Document Title
WBPEEUS240011??	Harmony Rack Input/Output, Overview

## Specifications

Property	Characteristic/Value
<b>General</b>	
Mounting	Occupies one slot in a standard module mounting unit.
<b>Environmental</b>	
Ambient temperature	0° to 70°C (32° to 158°F)
Relative humidity	5% to 95% up to 55°C (131°F) (noncondensing) 5% to 45% at 70°C (158°F) (noncondensing) Pollution degree: I
Altitude	Sea level to 3 km (1.86 mi)
Air quality	Noncorrosive
CE mark declaration	This product, when installed in a Symphony cabinet, complies with the following Directives/Standards for CE marking.
EMC96 Directive 89/336/EEC	EN50082-2 Generic Immunity Standard - Part 2: Industrial Environment EN50081-2 Generic Emission Standard - Part 2: Industrial Environment

<b>Property</b>	<b>Characteristic/Value</b>
CE mark declaration <i>(continued)</i> Low Voltage Directive 73/23/EEC	EN61010-1 Safety Requirements for Electrical Equipment for Measurement, Control and Laboratory Use - Part 1: General Requirements
Certifications Canadian Standards Association (CSA) Factory Mutual (FM) (pending for INTKM01, IMSED01, IMSET01)	Certified for use as process control equipment in an ordinary (nonhazardous) location. Approval for the following categories: Nonincendive for: Class I Division 2, Groups A,B,C,D Class II, Division 2, Groups F,G
<b>INSEM01</b>	
Power requirements Operating voltage Power dissipation	+ 5 VDC, ± 5% at 1.78 A typical 8.9 W typical
Microprocessor	16 bits running at 10 MHz
Memory	2 Mb RAM 512 kb ROM 512 kb NVRAM
<b>INTKM01</b>	
Power requirements - Operating voltage	5 VDC, ± 5% at 300 mA typical
Microprocessor	16 bits running at 10 MHz
Communication Input Output	IRIG-B in DC level shift format (through NTST01) RS-485 time synchronization at 62.5 kbaud (through NTST01)
Output time accuracy Synchronization time Absolute time (to INSEM01)	±10 µsec ±1 msec
NTST01 Voltage isolation between synchro link and IRIG-B input Cable type Maximum cable distance between two HCU cabinets Maximum length between INSOE01 server node and farthest HCU cabinet	1,000 VAC at 50 Hz 2,000 V <sub>p</sub> 1.2/50 usec pulse Twinaxial 4,000 m (13,123 ft) 40,000 m (131,233 ft)
<b>IMSED01/IMSET01</b>	
<b>Power requirements</b> Operating voltage	+5 VDC, ±5% at 350 mA typical
Microprocessor	16 bits running at 10 MHz
Memory	64 kb RAM 64 kb ROM
Communication (IMSET01 only)	RS-485 time synchronization
Digital inputs Voltage	24 VDC (±10%) 48 VDC (±10%) 125 VDC (±10%) 120 VAC (±10%) (only for system control logic)

Property	Characteristic/Value
Digital inputs <i>(continued)</i>	
Current (typical)	5 mA (24 VDC) 4 mA (48 VDC) 4 mA (125 VDC) 5 mA (120 VAC)
Turn on voltage (minimum)	24 VDC 21.6 VDC 48 VDC 43.2 VDC 125 VDC 112.5 VDC 120 VAC 108 VAC
Turn off voltage (maximum)	24 VDC 10 VDC 48 VDC 20 VDC 125 VDC 50 VDC 120 VAC 50 VAC
Maximum input current at minimum turn on	4 mA (21.6 VDC) 4.4 mA (43.2 VDC) 3.2 mA (112.5 VDC) 4 mA (108 VAC)
Maximum off-leakage current (for all DI voltages)	1.5 mA
Response time (typical)	DC fast 1.1 msec DC slow 18 msec AC 5 msec after first positive half cycle
Isolation	1,000 VDC/ $V_{RMS}$ channel to system 350 VDC/ $V_{RMS}$ channel to channel
Surge protection	Meets IEEE-472-1974 surge withstand capability test

SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE