

DES Interrogator



The DES Interrogator is Synaptec's core high-performance interrogation system, designed specifically for the Distributed Electrical Sensing platform.

The DES Interrogator synchronously monitors large numbers of point sensors on a single fibre with up to 60 km range, processing and streaming waveform data in real-time with industry-leading latency and detail.

The DES Interrogator streams live data in industry standard formats including IEC 61850 Sampled Values and custom data formats, alarms in IEC 61850 GOOSE, and IEC 61850 MMS. All measurements are time-synchronised, accurately time-stamped to within a microsecond, and published at 4/4.8 kHz, enabling a range of protection and condition monitoring applications.

Specifications

Mechanical

Dimensions	19" 3U rack (447 x 425 x 132 mm)
Weight	8.3 kg

Power supply

Voltage	100-240 VAC, 110/220 or 48/125 VDC
Frequency	50/60 Hz
Maximum power consumption	90 W
Fuse	8 A, fast, 250 V, 1.5 kA breaking
Redundancy	Integrated dual-redundant

Environmental

Operating temperature	-25 to +55 °C
Storage temperature	-25 to +70 °Cw
Humidity	to 93% at +40 °C
Shock endurance	15 g (in each axis); 11 ms pulse (IEC 60255-21-2)
Sinusoidal vibration endurance	1g (10 - 150 Hz); 20 cycle/axis (IEC 60255-21-1)
IP rating	IP20

Measurement performance

Supported sensors	Passive Secondary Converter (PSC) Passive Temperature Transducer (PTT)
Accuracy	1/10TPM (IEC 61869-13) when used with PSC-X-C units for protection applications 1% (typ.) in condition monitoring applications

Optical input

Number of optical channels	1
Representative number of PSC sensors per channel ¹	18 (protection example: 5P20 equivalent performance over -5 to +40 °C) 22 (monitoring example: 1% performance to 150%In over -5 to +40 °C)
Fibre type	Standard simplex single-mode
Interface type	SC/APC, shuttered

Communications interfaces and IO

Ethernet interface	Number	Rear panel: 6
	Interface	SFP (user selectable interface type, and included with the Interrogator)
	Speed	Gigabit
Protocol(s)	IEC 61850-9-2 "LE", IEC 61869-9, IEC 61850-8-1 (GOOSE), IEC 61850-8-1 (MMS), customised datasets	
Supported sampling rates	4 kHz (for 50 Hz systems), 4.8 kHz (for 60 Hz systems)	
Relay Interface	Description	Configurable to react to one or more signals (individual zone trips, watchdog, etc.), normally open (NO) or normally closed (NC)
	Number of outputs	6
	Switching voltage	250 Vac, 30 Vdc.
	Max voltage	380 Vac, 125Vdc
	Max current	8 A
	Isolation	2 kV coil to contact and contact to contact 2 kV isolation to case
	Operate time	Operate (set): 10ms max Release (reset): 10ms max
1PPS Input/Output	Optical fibre interface, type ST, 820 nm.	

Time synchronisation

Protocol(s)	PTP: IEC/IEEE 61850-9-3 PPS: input and output via optical multimode ST fibre NTP: synchronisation of system clock to a specified NTP server (not suitable for precision synchronisation of waveform samples)
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HMI

Software configuration and management	Secure web interface – integrated within Interrogator
Configuration port	Front panel: RJ45 Gigabit Ethernet
Display	2x16 alphanumeric
LEDs	Indicators for alarms, Ethernet connections, and power

¹Maximum number of sensors per channel is application-specific and will be optimised during solution design.

Reference standards

Environmental/EMC	Product safety per IEC 60255-27 Climatic environment per IEC 60255-1 (IEC 60068-2) Mechanical environment per IEC 60255-1 (IEC 60255-21) EMC per IEC 60255-1 (IEC 60255-26)
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