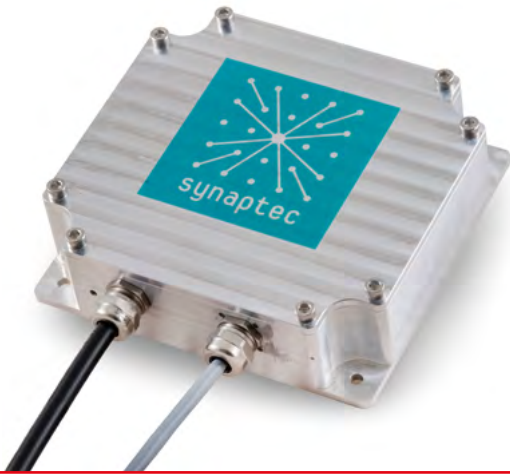# Megger

Greenlight™
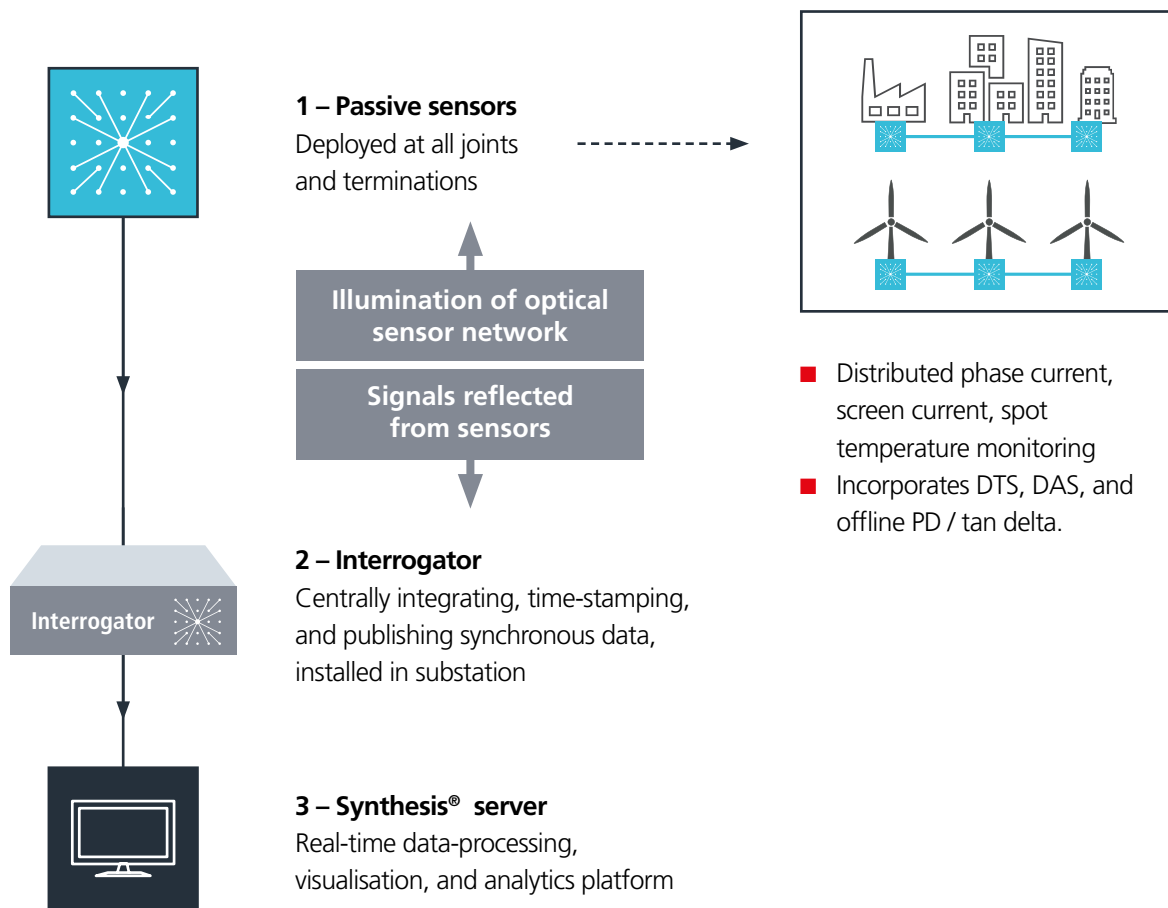## HV cable monitoring system

- **Early warnings of damages and failures**
- **Real-time analysis platform**
- **Cost-effective**
- **No maintenance**
- **Easily deployed**

DESCRIPTION

Greenlight™ leverages passive and permanent sensing to provide early warnings of damage and failure in cable assets, reducing the need for costly and high-risk manual inspection and scheduled maintenance, whilst avoiding unnecessary outages.

The Greenlight™ solution delivers high-fidelity measurements from every cable joint and termination to a real-time analysis platform, where operators can observe and react to abnormal activity on their network in advance of critical failures.

1 – Passive sensors
Deployed at all joints and terminations

Illumination of optical sensor network

Signals reflected from sensors

- Distributed phase current, screen current, spot temperature monitoring
- Incorporates DTS, DAS, and offline PD / tan delta.

2 – Interrogator
Centrally integrating, time-stamping, and publishing synchronous data, installed in substation

Interrogator

3 – Synthesis® server
Real-time data-processing, visualisation, and analytics platform
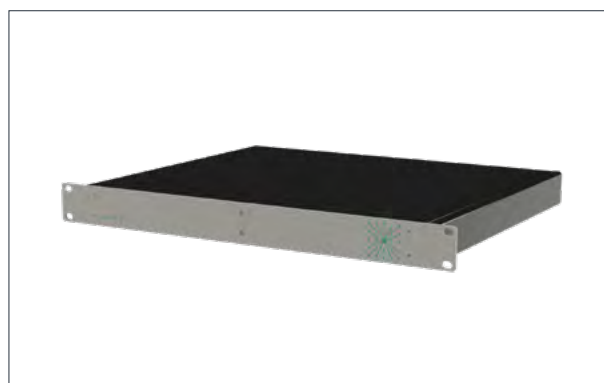
1 - Passive Secondary Converter (PSC)

The PSC is available in two form factors:

- The PSC-1 is designed for all-weather outdoor installations. The PSC-1 has a standard mounting hole arrangement for adaptation to any suitable installation location, and provides a single-phase measurement of new or existing instrument transformers.

- The PSC-3 is designed for installation in a substation environment. The PSC-3 installs in a standard 19 inch rack and provides a three-phase measurement of existing instrument transformers.

PSC-1

PSC-3

TECHNICAL DATA PSC

Electrical	PSC-1-C	PSC-1-V	PSC-3-C	PSC-3-V
Rated input	1 A[1]	User specified	1 A[1]	User specified
Accuracy class	1/10TPM IEC 61869-13	3P IEC 60869-3	1/10TPM IEC 61869-13	3P IEC 60869-3
Rated continuous thermal current[2]	2 A	-	2 A	-
Rated short-time thermal current	40 A, 1 s	-	40 A, 1 s	-
Environmental				
Operating temperature range	-40 to +80 °C	-40 to +80 °C	-5 to +40 °C	-5 to +40 °C
Humidity	100% storage, 90% operating	100% storage, 90% operating	100% storage, 90% operating	100% storage, 90% operating
Mechanical				
Dimensions	190 x 175 x 52 mm	190 x 175 x 52 mm	1U x 376 mm	1U x 376 mm
Weight	2.6 kg	2.6 kg	4.8 kg	4.8 kg
Mounting	Universal mounting hole arrangement	Universal mounting hole arrangement	19" rackmount	19" rackmount
IP protection	IP66	IP66	IP2X[3]	IP2X[3]
Optical				
Fibre type	Standard single-mode simplex	Standard single-mode simplex	Standard single-mode simplex	Standard single-mode simplex
Fibre connection	Single-mode fibre splice	Single-mode fibre splice	SC/APC patch cable	SC/APC patch cable

[1] Other ratings available on request. [2] Assuming 1A rated current. [3] When installed in suitable 19 inch rack.

2 - DES Interogator

The DES Interrogator is Synaptec's core, high-performance Interrogator, designed primarily for Distributed Electrical Sensing (DES). The DES Interrogator streams live data in industry standard formats including IEC 61850 Sampled Values or custom data formats, and alarms in GOOSE format. The DES Interrogator synchronously monitors up to 30 sensors over a 60 km range, processing and streaming waveform data in real time with industry-leading latency and detail.

DES Interogator

TECHNICAL DATA INTEROGATOR

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
Redundancy	Integrated dual-redundant
Environmental	
Operating temperature	-25 to +55 °C
Storage temperature	-25 to +70 °C
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	IP3X
Optical input	
Number of optical channels	1
Number of sensors per channel	30
Fibre type	Standard simplex single-mode
Interface	SC/APC
Communications interfaces and IO	
Number of Ethernet ports	6x Gigabit Ethernet
Ethernet interface	SFP (user selectable interface type, and included with the Interrogator)
Redundancy	IEC 62439-3 PRP
Protocol(s)	IEC 61850-9-2 "LE", IEC 61869-9, IEC 61850-8-1 (GOOSE), customised datasets
Supported sampling rates	4 kHz, 4.8 kHz, 14.4 kHz
Watchdog contact	Normally open (NO) and normally closed (NC) terminals
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
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)

3 - Synthesis® Server

Synthesis® Server is ruggedised for deployment in harsh, safety-critical environments, such as electrical substations. It offers reliable, high-performance computation in a robust, fanless, and low-maintenance form-factor.

Synthesis® Server

TECHNICAL DATA SYNTHESIS SERVER

Mechanical	
Certification	CE, FCC, IEC-61850-3, IEEE-1613, UL
Dimensions (width x depth x height)	483 x 478 x 88 mm
Enclosure	SECC and aluminium
Weight	13.0 kg
Mounting	2U rackmount
Cooling	Fanless
Power supply	
Voltage	100 - 240 VAC, 100 - 240 VDC
Frequency	50/60 Hz
Maximum power consumption	2x 150 W
Redundancy	Dual-redundant, hot-swappable
System hardware	
CPU	Optimised multi-core CPU
Memory	64 GB as standard
Storage	Configured to guarantee at least 12 months of local data storage Uses solid state drives (SSDs) for improved performance and reliability Storage redundancy is included as standard for error ride-through
Communications interfaces and IO	
Network ports	4x 10/100/1000 Mbps BASE-T RJ45 Ethernet ports, 500 V isolation
Serial ports	2x RS-232/422/485 (DB9 connectors, standard), 2,500 V isolation
Relay output	Relay output: Form C Contact: 5 A at 125 VAC, or 5 A at 30 VDC
Environmental	
Operating temperature	0 to +70 °C (standard) -25 to +70 °C (on request)
Storage temperature	-40 to +85 °C
Humidity	5 to 95% RH (non-condensing)
Shock	IEC 60068-2-27: 20G half sine, 11 ms
Vibration	IEC 60068-2-64: Random 1 Oct./min, 1 hr/axis

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