Grid Solutions
a GE and Alstom joint venture

GAS-INSULATED SUBSTATIONS PRODUCT SOLUTIONS

COSI-PC12

Primary digital converter

High-voltage designs increasingly incorporate Intelligent Electronic Devices (IEDs) - making smart substations a reality. In the digital chain for voltage and current measurement, the COSI-PC12 converter uses the latest technologies to convert analog signals into digital data which is transmitted to the merging unit and ultimately to the protection relays and control room.

CUSTOMER BENEFITS

- Reliable substation protection
- High performance and rugged
- Easy calibration and maintenance
- 3-phase compact design for voltage levels up to 1100 kV

High-tech converter

The digitisation of signal outputs from Digital Instrument Transformers (DIT) is crucial and requires state-of-the-art electronics using high-performance components.

The PC12 is a smart converter providing high performance and reliability. It is based on a digital conversion unit and a digital core (FPGA: Field Programmable Gate Array) for signal treatment, management and communication.
An analog condition circuit, digital filters and integrator provide low noise, high linearity and high bandwidth to the converter.

COMPATIBLE WITH ALL GIS TYPES

With a rugged and compact design, compliant with all GIS layouts, the PC12 can be easily integrated with the whole Grid Solutions GIS range.
The 3-phase design means that only one converter is required for a 3-phase measurement point.
This design is particularly adapted to harsh environments where Electromagnetic Compatibility (EMC) can be a problem, as it is the case in most HV substations.

EASY TO MAINTAIN

Thanks to its modular concept, the replacement of a PC12 module is as simple as an off-the-shelf replacement.

Calibration values for sensors are included in the sensors themselves and pre-stored in an EEPROM memory unit before leaving the factory.

If a PC12 needs to be replaced, as soon as the new sensor is plugged in, the calibration values are automatically swapped to PC12 internal memory.



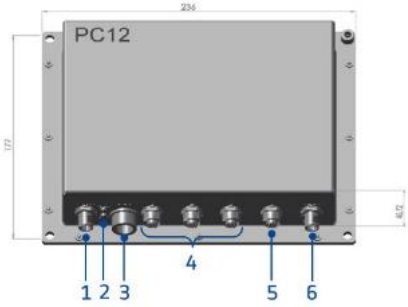
COSI-PC12



SEVERAL COMMUNICATION RATES

High speed electronics allow the simultaneous transmission of protection, metering and qualimetry sample value outputs according to the IEC 61850-9.2 / IEC 61869 standards.
The design meets Smart Grid requirements up to harmonic 100 on the qualimetry channel.

Important note:
This product may not be sold on its own. It must always be integrated in a global Digital Instrument Transformers (DIT) solution.



COSI-PC12 connectors

1. Power connector
2. LED indicators (alarm & power ok)
3. Optical fibre connector
4. Sensor connectors (from 1 to 3)
5. Auxiliary connector
6. Test connector (for commissioning)

TECHNICAL CHARACTERISTICS

Rated supply voltage
48 VDC (proprietary input)
connected to PC1 power supply
(48 - 350 VDC / 100 - 240 VAC)
Power cons. ~ 5 W @ 20°C

Ambient temperature
-40°C up to 80°C

Protection index
IP64, as per IEC standard

Case material
Stainless steel

EMC immunity standards
IEC 61000-4-2,4,5,8,16 Level 4
IEC 61000-4-3,6,17 Level 3

Emissions standard
EN55022 Class A

Communication standards
IEC 61869 -1, -6, -7, -8, -9

RATINGS

Module type		PC12-3U 3 x CEVT*	PC12-3I 3 x RECT*
Rated voltage	kV	Up to 1100	-
Rated current	kA	-	Up to 200
Accuracy 50/60 Hz	%	< 0.05	< 0.05
Delay time	µs	< 500	< 500
Sample values output rate:			
- Protection channel	kSps	4.8[1]/ 4[2]/ 5.76[2]	
- Metering channel	kSps	4.8[1]/ 4[2]/ 5.76[2]	
- Qualimetry channel	kSps	14.4[1]/ 12.8 / 15.36[2]	
FFT Analysis Harmonics (qualimetry channel only)	Harmonic rank	100	100
Frequency domain (sensor input)	Hz	0-10K	0-10K
A/D converters	Qty	2	2
Internal references	Qty	3 (1 at 0.02 %)	4/20 mA, RDT100
Auxiliary Channels	Type	4/20 mA, RDT100	
MTBF (acc. To MIL-HDBK-217F)	Hours	175 000	175 000

*CEVT : Capacitive Electronic Voltage Transformer, *RECT : Rogowski Electronic Current Transformer
1: Legacy, 2: Deprecated.

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