Grid Solutions
a GE and Alstom joint venture

**DIGITAL INSTRUMENT TRANSFORMERS** PRODUCT SOLUTIONS

# COSI-RECT

## Rogowski electronic current transformer

High-voltage designs increasingly incorporate Intelligent Electronic Devices (IEDs) - making smart substations a reality.

In the digital chain for current measurement, the COSI-RECT uses the latest sensor technologies for Digital Instrument Transformers (DIT) applications.

**CUSTOMER BENEFITS**

- One single sensor for protection, metering and qualimetry
- Sensor enclosures are smaller than conventional CT-space gains for substations
- High electromagnetic immunity

## High-tech current sensors

Sensors are essential elements of measurement. In order to get the best results for final metering or protection applications, the sensor must be highly accurate and should be protected against the electromagnetic perturbations (EMC) of GIS substations.

COSI-RECT sensors are designed according to a Grid Solutions patent, using a double-sided PCB (Printed Circuit Board). This provides an excellent stability in the measurements, even when temperature and currents vary.

### COMPATIBLE WITH ALL GIS TYPES

Several sensor designs have been introduced to cover all types of high voltage equipment. RECT sensors are available for the whole Grid Solutions GIS range. Their small size allows for smaller enclosures and consequently smaller GIS substations.

### LESS MAINTENANCE

Thanks to the coating on the PCBs and the highly accurate processing, the sensors are designed to work whether conditions are optimal or not.

An external memory (EEPROM) is associated with the sensor, allowing all calibration values to be stored as soon as the sensors are mounted. Thus, when a sensor is connected to the PC12 primary converter, the electronics automatically adjust the compensation gains related to calibration values found in the EEPROM. The components are therefore easily and quickly replaced.

COSI-RECT 550 kV





## RATINGS (SENSOR ASSOCIATED WITH PC12)

| Module type | | **PC12-3I 3 x RECT*** |
|---|---|---|
| Rated voltage | kV | - |
| Rated current | kA | Up to 150 |
| Accuracy 50/60 Hz | % | < 0.05 |
| Delay time | µs | < 500 |
| Sample values output rate (IEC 61869-9)<br>- Protection channel<br>- Metering channel<br>- Qualimetry channel | <br>kSps<br>kSps<br>kSps | <br>4.8[1]/ 4[2]/ 5.76[2]<br>4.8[1]/ 4[2]/ 5.76[2]<br>14.4[1]/ 12.8[2]/15.36[2] |
| FFT analysis harmonics (qualimetry channel only) | Harmonic rank | 100 |
| Frequency domain (sensor input) | Hz | 0-10K |
| A/D converters | Qty | 2 + 3 refs |
| Auxiliary | Type | 4/20 mA, RDT 100 |
| MTBF (acc. To MIL-HDBK-217F) | Hours | >350 000 |

*RECT : Rogowski Electronic Current Transformer
1: Legacy, 2: Deprecated

## HIGH IMMUNITY AGAINST EMC

Based on a Grid Solutions patent, sensors are on a double-sided PCB with interlaced copper tracks, providing high immunity against EMC and external magnetic fields.

The PCB is shielded to have a perfect immunity against nearby magnetic fields.

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

## TECHNICAL CHARACTERISTICS

(Associated with PC12 Primary Converter)

**Rated supply voltage**
48 Vdc (proprietary input)
connected to PC1 power supply
(48 - 350 Vdc / 90 - 264 Vac)
Power cons. < 10 W @ 20°C

**Ambient temperature**
-40°C up to 80°C

**Protection index**
IP64, as per IEC standard

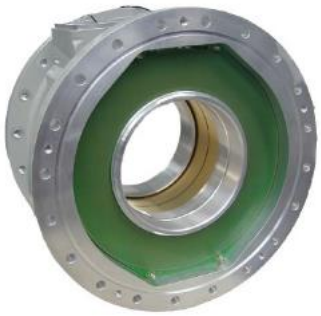
**EMC immunity standards**
IEC 61000-4-2,4,5,8,16 Level 4
IEC 61000-4-3,6,17 Level 3

**Emissions standard**
EN55022 Class A

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



Three-phase GIS design



Single-phase GIS design

For more information please contact
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