

Low-power instrument transformers for high-voltage gas-insulated switchgear

Product information

Hitachi Energy's digital gas-insulated switchgear (GIS) comes integrated with low-power instrument transformers (LPIT) for metering, protection and control accuracy in a single device. The measurement principle of LPIT is based on Rogowski coil for current and capacitive divider for voltage measurement.

Hitachi Energy's high-voltage GIS were first equipped and delivered with LPITs in 1998. Since then, Hitachi Energy has delivered hundreds of LPITs to GIS substations worldwide, ranging from 52 kV up to 550 kV voltage levels.



Key advantages



Application

- One multi-purpose device for all applications
- Measurement values are available via IEC61850 bus communication
- Wide dynamic range and high precision
- High availability as the primary sensor is designed for the GIS lifetime
- Ready for eco-efficient EconiQ™ products



Operation and maintenance

- Software configurable and digital, no burden calculation required
- High product flexibility without hardware changes
- Ease of maintenance for secondary sensor electronics without requiring shutdowns or re-calibration during exchange
- Lower thermal and dielectric stress



Safety

- Configurable current and voltage ratings enable future adaptation of ratios without the need to replace cores or to open gas compartments
- No electrical circuits have to be opened for maintenance and repair, as all signals are fully digital available
- Stable against electro-magnetic disturbances



Savings

- No project specific dimensioning and manufacturing
- Reduces substation cabling between GIS and protection
- Reduced weight for CT and VT more than 75 percent
- Reduced amount of SF₆ gas due to removed VTs
- No disconnection during cable testing



CP04

for GIS up to 170 kV

- Three phase enclosure, 500 mm long
- Horizontal mounting
- Rated primary current: 100... 3150 A
- Rated primary voltage: 52... 170 kV/ $\sqrt{3}$
- Accuracy class ECT 5TPE/0.2 (0.2S)
- Accuracy class EVT 3P/0.2
- Protection, measurement and revenue metering
- Single and redundant type (option)
- IEC60044-7, -8, IEC61850-9-2LE, IEC61869-6

Merging unit

The CP-MU merging unit for all LPITs combines and synchronizes the current and voltage measurements from the sensors to IEC61850-9-2 process bus information.

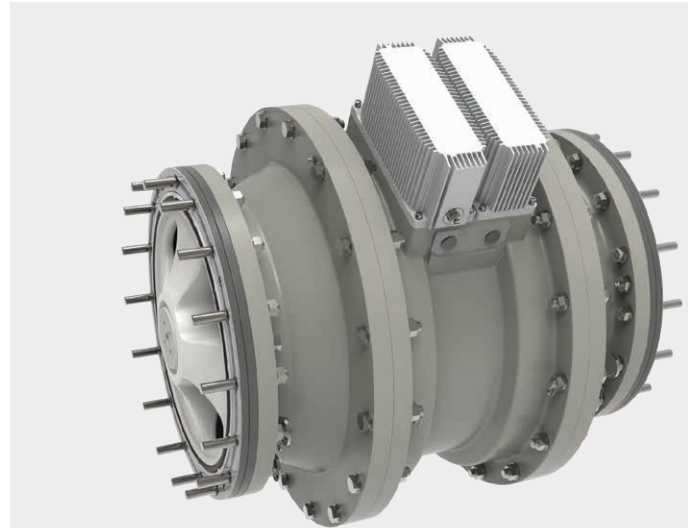
- World's first UCA-certified¹ IEC61850-9-2LE compliant merging unit
- Reads up to nine current and nine voltage LPIT measurements
- Integrated switch function for five IEC61850-9-2LE ports
- Sampling rate 80 samples per cycle (4 kHz/4.8 kHz)

¹UCA = International Users Group, implementation guideline for digital interface to instrument transformers using IEC61850-9-2

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Gas-insulated switchgear
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CP14 and CP3

for GIS from 170 kV up to 550 kV

- Single phase enclosure, 560 | 780 mm long
- Vertical and horizontal mounting
- Rated primary current: 100... 4000 A | 100...6300 A
- Rated primary voltage: 170... 300 kV/ $\sqrt{3}$ | 330...550 kV/ $\sqrt{3}$
- Accuracy class ECT 5P, 5TPE/0.2 (0.2S)
- Accuracy class EVT 3P/0.2
- Protection, measurement and revenue metering
- Redundant type
- IEC60044-7, -8, IEC61850-9-2LE



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