Electrification

XMU EVOLUTION

Merging Unit

Overview

XMU Evolution is an advanced merging unit designed for low power current and voltage sensors embedded in GE Vernova's high voltage Gas Insulated Substations and Dead Tank Breakers digital-native equipment. Paired with state-of-the-art Rogowski coil and capacitive voltage sensors, our Low Power Instrument Transformers deliver high-accuracy and saturation-free measurements across all voltage levels from 72.5 kV to 800 kV.

XMU Evolution supports the acquisition of up to 12 current and/or voltage signals within a cyber secured platform and publishes sampled values over 100 MB and 1 GB redundant network architectures, supporting the core of digital substations.

Fully compliant with IEC 61869 standards, including IEC 61869-9, XMU Evolution supports all common sampled values variants, ensuring compatibility with the most advanced digital substations.

Key Benefits

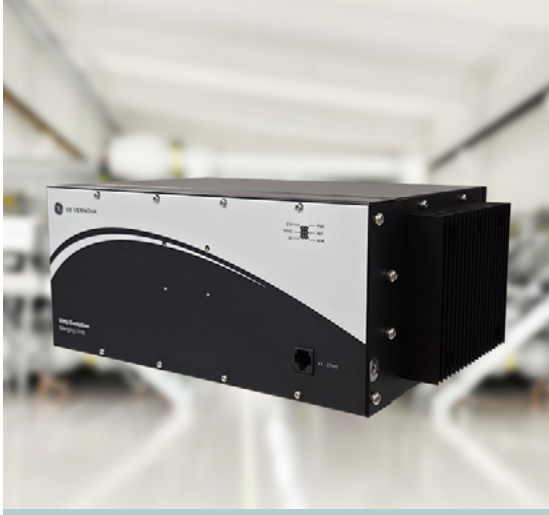
Safety: low-energy LPIT sensor outputs and galvanic isolation eliminate the risks usually associated with conventional high-voltage instrument transformers, improving safety for personnel and equipment operation.

Configuration: a single voltage sensor covers the full voltage range from 72.5 kV to 800 kV and a single current sensor can measure from 1 A to 140 kA without consideration of ratio, limiting engineering, procurement, and maintenance only to the configuration of XMU Evolution.

Digital-Native: as within our entire Digital-Native equipment portfolio, XMU Evolution is fully assembled and tested in our factories, reducing site activities and ensuring reliable, consistent performance from day one.

Redundancy: our LPIT solutions include sensor, merging unit, and network redundancy, ensuring continuous operation and maximizing substation availability.

Flexibility: as our design accommodates different sensor and redundancy configurations, it can be adapted to the specific needs of each substation.



Applications

- Protection
- Measuring/Metering
- Qualimetry

High accuracy, high dynamic range

- 12 LPIT channels
- 24 bits resolution
- Current (I) accuracy: cl. 0.2/5P/5TPE/5TPM for rated current ≥ 100 A
- Voltage (U) accuracy: cl. 0.2/3P for rated voltage ≥ 2 kV
- Excellent transient response

Advanced Communications

- Digital communication interface : SFP transceivers 10/100/1000BASE-T, 100BASE-FX, 1000BASE-SX
- Parallel Redundancy Protocol (PRP) and High-availability Seamless Redundancy (HSR) (IEC 62439-3)
- IEC61850 Sampled Values publisher (IEC 61869-9 and 9.2LE compatible) and MMS
- Time synchronization over PTP (IEC/IEEE 61850-9-3)

Cybersecurity

- IEC 62443-4-2 certified
- Authentication, RBAC
- Security events logging, Syslog
- Network segregation, VLAN
- Host hardening
- Software integrity

GE VERNOVA

General Ratings

Dimensions	19’ rack or local cubicle mounting Height: 3U, Depth: 250 mm
Weight	5.8 kg (12.8 lbs.)
Operation temperature	-40 °C to +70 °C
Enclosure class	IP5x
Product safety	IEC 61010-1; IEC 60255-27
EMC compliance	IEC 61000-6-5; IEC 60255-26; EN 55032
Eco-design compliance	RoHS directive and REACH regulation
LPIT Standards	Full compliance with new IEC 61869-1 Ed. 2 2023, IEC 61869-9, Future IEC 61869-7, -8
LPIT Input Isolation	820 V (M12 connector)
LPIT channels	12 Channels Current or Voltage
LPIT Measurement	Protection-Measuring (Dual rating) / Qualimetry WB1 (3 kHz)
SV measurement accuracy	MU accuracy < 0.05% / 3 mn
LPIT dynamic range measurement supported	24 bits digitalization Current: 1 A to 200 kA, Voltage: 10 V to 2 MV
LPIT accuracy class supported	Current: cl. 0.2/5P/5TPE/5TPM for Ir ≥ 100 A Voltage: cl. 0.2/3P for Ur ≥ 2 kV
Sampled Values protocol IEC 61869-9 Variants supported	F4800S2IxUy: Protection-Measuring F4000S1I4U4 / F4800S1I4U4: Protection-Measuring 9-2LE F14400S6IxUy: Qualimetry WB1 F12800S8I4U4 / F15360S8I4U4: Qualimetry WB1 9-2LE
Redundancy protocol	HSR or PRP (IEC 62439-3)
Time synchronization	Over PTP acc. IEC/IEEE 61850-9-3 (or through 1pps optical input)
Cybersecurity	IEC 62443-4-2 level 2
Digital inputs	8 digital inputs dedicated to any binary information transmission

For more information, visit
gevernova.com/electrification

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