

AIS SMART DISCONNECTOR

Real-time disconnecter monitoring

Redefining Digital for High Voltage Primary Equipment

Integrating digital intelligence on primary equipment as close as possible to where signals originate, our Digital-Native High Voltage Solutions portfolio is built with quality, precision, performance and reliability in mind. Our expertise in Digital Solutions for Power Transmission embedded in our latest hardware, software and security technologies is built to address the most demanding applications. With each individual Digital-Native Solutions being factory-tested as a complete integrated system, we are eliminating on-site troubleshooting operations and reducing commissioning time, delivering an asset ready to connect and operate from day one.

Our vision of AIS Disconnector monitoring

GE Vernova Grid Solutions' AIS Smart Disconnector is the next step in the digitalization of your High Voltage Substation. Integrating sensors in a smart, cybersecure solution, we are associating real-time monitoring of disconnector operational parameters with remote and local data recording and transfer to ease your maintenance decisions.

AIS Smart Disconnectors provide information of the switch position and characterizes your asset performance in real-time. The temperature of DSC live part (especially contacts), insulation towards ground, and the health status of the motor systems are among the features proposed in our solution. Reliable and consistent condition indicators monitoring is made possible by the integration of sensors into the disconnector and insulators during manufacturing on new equipment or retrofit on existing substations. The addition of digital communication with a web-based dashboard provide all the necessary comfort to field operators, enabling them to prioritize their maintenance operations.

Our objective is to provide real-time status of the equipment's health, thereby optimizing Asset Management and ensuring higher levels of availability of your high voltage equipment.

In summary, AIS Smart Disconnectors for air-insulated substations provides to owners and operators a transformative solution for modern power transmission challenges. By delivering cost savings, risk mitigation and enhanced performance, these devices empower organizations to achieve their operational objectives with confidence and efficiency.



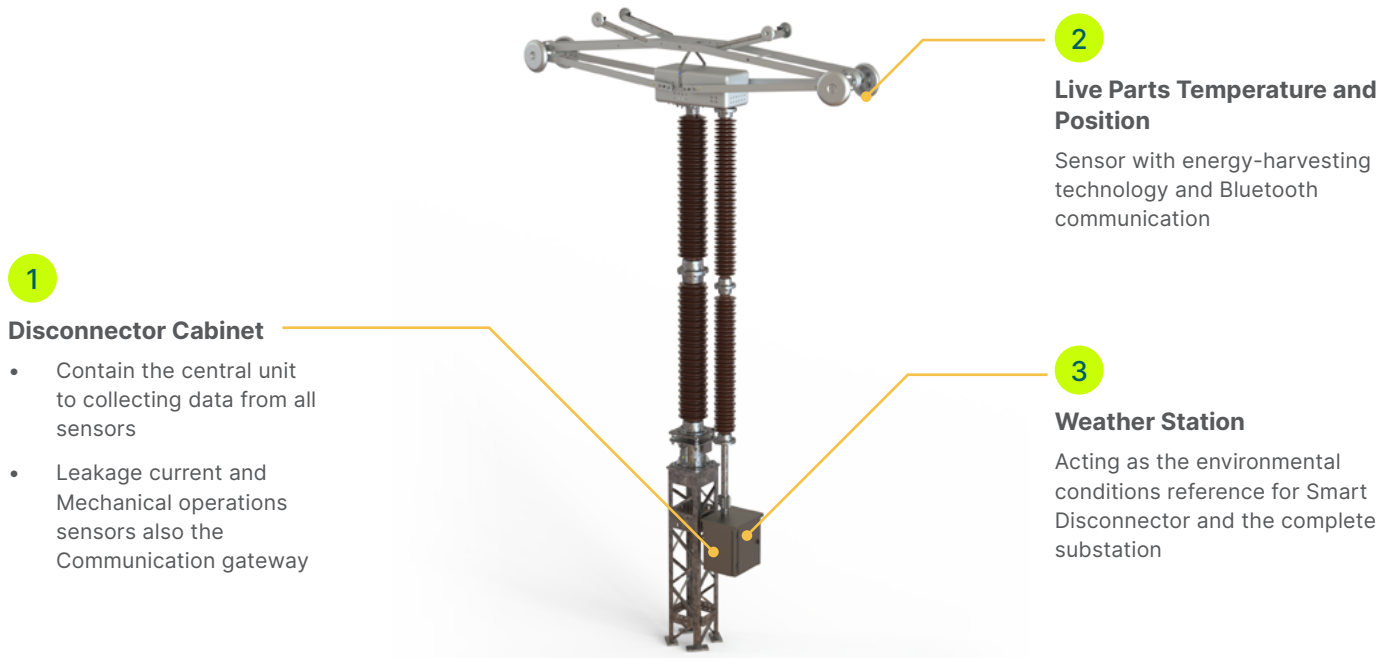
The advantages of Digital-Native Solutions

- Improved reliability and extended lifetime thanks to condition-based and predictive maintenance
- Continuous online monitoring of live part temperature and position, level of pollution on post insulators and motor parameters. With possibility to correlate with environmental phenomena
- Customizable and scalable Digital-Native plug and play Solutions with fast and cost-efficient on-site commissioning
- No possibility to control the device, pure monitoring.
- Includes the same warranty period of the disconnector
- Same delivery time of the disconnector itself
- The remote web-dashboard interface allow real-time monitoring of the device status
- On-site training by GE Vernova experts during commissioning and remote support
- Improved asset performance management and flexibility with IEC 61850 connectivity



GE VERNOVA

AIS Smart Disconnecter Architecture



1 Central Unit - SWatch-B

Collects data from the sensors and manages the entire system and its communication. It is equipped with 5 embedded relays contacts, MODBUS master and slave ports and Wi-Fi connection.

2 Live Part Temperature & Position - SWatch-S

Placed on the live part, it is completely insulated from the ground. Communicates via Bluetooth 5 LE and is powered by solar energy harvesting and internal battery. Collects the temperature from three cabled thermocouples (contacts, connections, tube) and provides precise switch position from a 3-axis inclinometer.

1 Leakage Current - SWatch-LP

Cabled inside the cabinet, collects the leakage current from the surface of the disconnecter's ceramic and polymeric insulators through a captive collar placed on the last shed of the insulator.

1 Mechanical Operations - SWatch-M

Collects current, voltage, timing and counting of movements of the disconnecter's motor. Completely independent from the electrical diagrams already installed, it doesn't allow control of the disconnecter.

3 Weather Station - SWatch-WS

Environmental station which collects rain, wind, humidity, pressure, dew point and temperature to correlate weather with disconnecter condition in its lifespan.

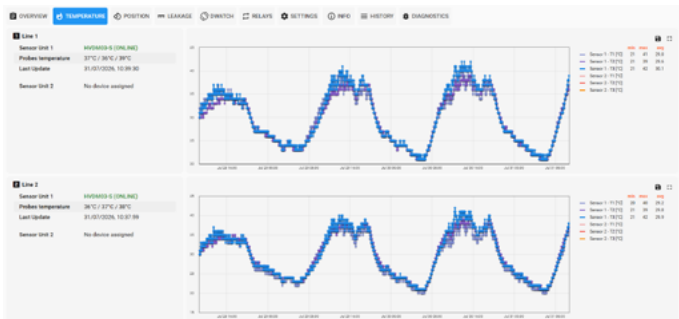
1 Communication - SWatch-C

Large variety of communication protocols to fit with any SCADA system or data retrieval policy: independent GSM, IEC-61850, DNP3, Modbus, Wi-Fi.

Efficient commissioning

All the system is 24 V powered with a very low global consumption. It is placed inside the classic cubicle in a locked section to prevent external tampering. The bundle is pre-commissioned on factory to reduce as much as possible the on-site installation timing. It is also easy to install in retrofit configurations.

User Interface Switch-UI

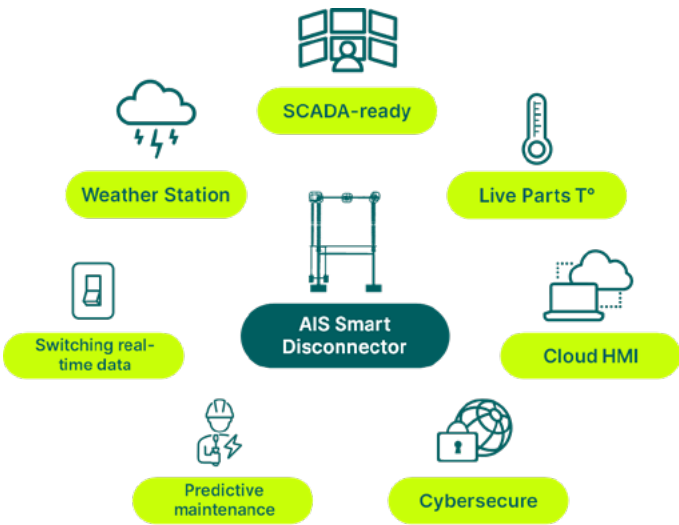


Intuitive and user-friendly web dashboard for data collection and review in real time when e wherever you want.

Secure data storage with the possibility to visualize, analyze and download the measurement collected on site. With a user-based login access the user can configure and check the status of all the system remotely.

Secure and reliable server hosting regularly updated to guarantee high level of safety and be in line with cybersecurity requirements.

Summary



Technical Specifications

SPECIFICATIONS	
Voltage input	100 ... 240 V AC 50/60 Hz, -15% ... +10% 110 ... 250 V DC, -20% ... +40%
Equipment reliability	35 years (MTBF MIL-217F-2)
Radio protocol	Bluetooth LE 5.0 with AES-COM 128 encryption – up to 20 meters Wi-Fi 802.11 bgn 2,4 GHz
Embedded I/Os	5 relays NC-NO (configurable) MODBUS RTU on RS-485 Master/Slave
Temperature measuring range	-50/+200 °C with 2 °C of accuracy
Leakage current measuring	0/1 A with 1 mA of accuracy Peak and true RMS (EN50160-4-309) computation
Position measuring	plane x,y,z -90°/+90° with 0.1 degree of accuracy
Power consumption	~32W for the complete solution
Live parts temperature measurement	2 days without energy harvesting

For more information, visit
governova.com/electrification