



THYTRONIC
GROUP



PHOTOVOLTAIC
PLANT
PROTECTION
& CONTROL
SOLUTIONS

PHOTOVOLTAIC PLANT PROTECTION & CONTROL SOLUTIONS

Ensures grid code & DSO requirements compliance

- ▼ Full on site and remote control and monitoring capabilities
- ▼ Wide range of protection relays functions
- ▼ Full range of protocols (DNP3.0, IEC 61850, IEC 60870-5...) for many kinds of electrical applications to communicate with all devices and control centers.

Thytronic group is a leading company in the field of energy automation solutions, and it is offering an integral solution of protection and control for photovoltaic (PV) plants including hardware, software and engineering part. The solution combines the latest protection relays with state-of-the-art supervisory control and data acquisition (SCADA) and remote terminal units (RTUs) designed by iGRID, to offer a comprehensive system for monitoring and controlling PVplants. The protection relays ensure the safety and reliability of the plant by detecting and isolating faults, while the SCADA and RTUs provide real-time data and control over the plant's operations.

This integrated approach to protection and control enables operators to quickly detect and respond to any issues that may arise, leading to improved efficiency, reduced downtime, and increased profitability for PV plant owners and operators. With Thytronic group's integral solution, PV plants can be managed and monitored with ease, ensuring the highest levels of safety and performance.



CONTROL AND MONITORING SYSTEM

SCADA (Supervisory Control and Data Acquisition) system, which enables real-time monitoring and control of PV plants from a central location. The SCADA system is designed to provide operators with a comprehensive view of the plant's performance and status, allowing for proactive maintenance and rapid response to any issues that arise.

In addition to SCADA system, Thytronic group can offer power plant controllers and gateways that provide advanced control and monitoring capabilities. These devices are designed to integrate seamlessly with other plant equipment, enabling remote control and management of key operational parameters. Whether it's monitoring power output, tracking weather conditions, or managing equipment performance, Thytronic group's suite of products and services provides businesses with the tools they need to optimize their PV plant operations.

AUTOMATION

- IEC 61131-3 PLC for customer defined automations
- Power plant controller (PPC) for power regulation
- Easy configuration with iConf tool
- Adapted to international grid codes, like the European regulation EU 2016/631

COMMUNICATIONS

- Modbus SunSpec for easy integration with inverters
- IEC 61850 certificated for protection relays
- DLMS and IEC 60870-5-102 for meters
- ICCP/TASE2, IEC 60870-5-104 and DNP3.0 to connect with SCADA or RTUs
- Local HMI for on-site operation
- Web and native application remote monitoring and control
- Third system integration (weather forecast services, corporate ERP, energy tendering, energy market)

PROTECTION SYSTEM

The XMORE platform is the latest Thytronic group's product line to protect power generation, transmission and distribution. Highly flexible and scalable in terms of performance, XMORE offers tailor-made solutions thanks to the modularity of the hardware and software components.

Basic solutions and more complex configurations can be engineered referring to the same product platform.

The XMORE platform is characterized by the high modularity and scalability of all its components:

Products are easy to customize by adding hardware modules and using the software packages needed for any specific protection application: feeder, power and distribution transformer, motor and generator.

XMORE design aims to the easiness of the use. The local HMI – full size touch panel and graphical display with 10 key control function – and THYVISOR IED manager software grant a quick and easier configuration and maintenance of the relays while embedded Web Server allows easy and fast IED's data monitoring and changes.

XMORE platform provides dependable and proven protection algorithm; accurate fault detection; comprehensive control monitoring and automation operation; greater connectivity with multiple redundant communication ports supporting the following protocols: IEC61850 ed2, IEC103, Modbus TCP/IP, DNP3.

The scalable hardware modularity grants up to 12 measuring analogue inputs, 53 BI, 31 BO, 16 configurable tri-color LEDs and a high speed I/O module performing arc flash protection. Short circuiting CT's connector and pluggable main cards allow quicker maintenance and recovery time.

The XMORE IEDs can cover protection needs of PV systems, assuring maximum protection against a range of electrical faults and anomalies that can occur.



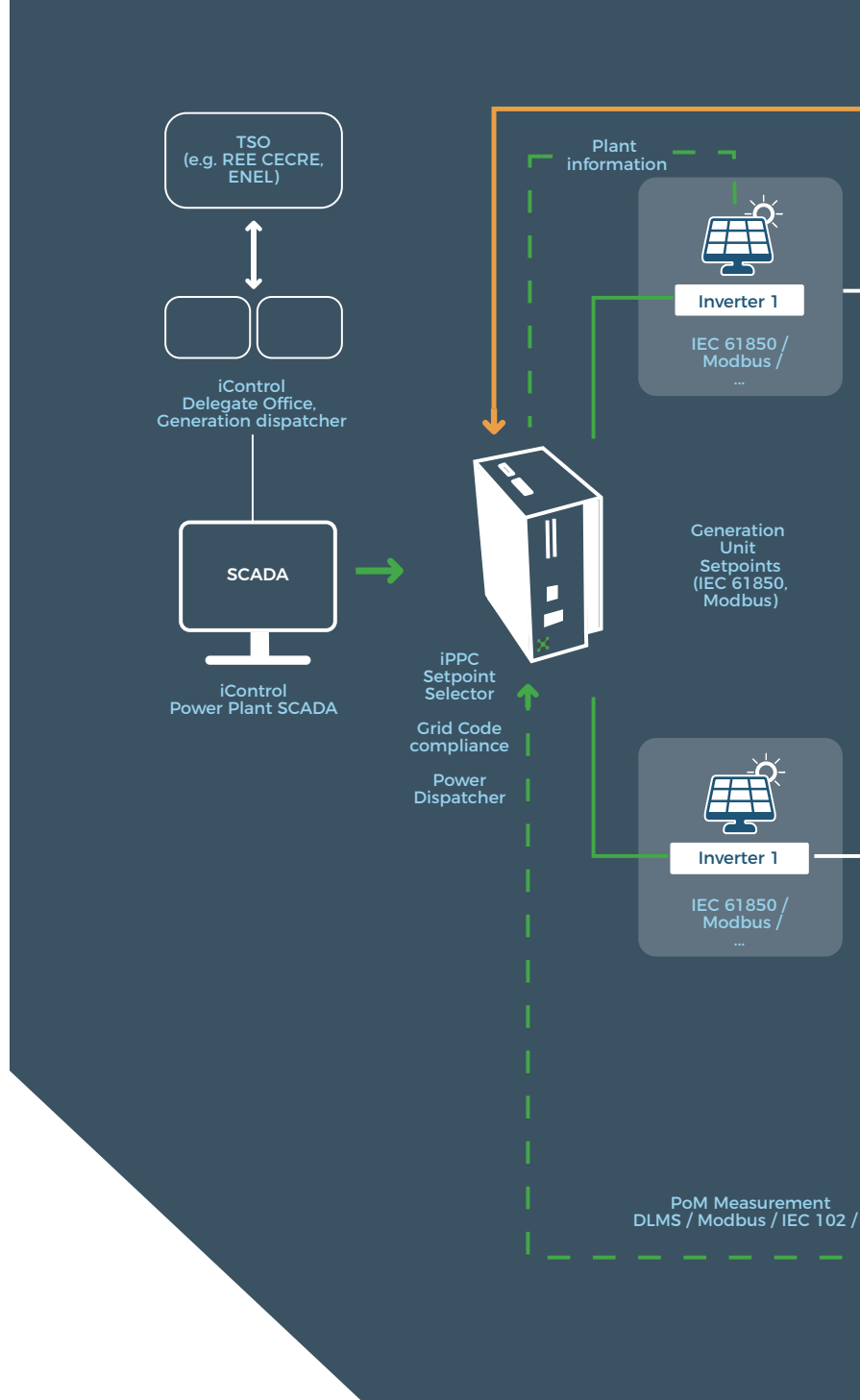
iCONTROL DELEGATE OFFICE

Generation Control and Regulation with AGC (Automatic Generation Control). ICCP/TASE2.0 to communicate with System Operators (TSO and DSO). Generation schedule for day ahead regulation. Can be shared among different generation plants.



iCONTROL POWER PLANT SCADA

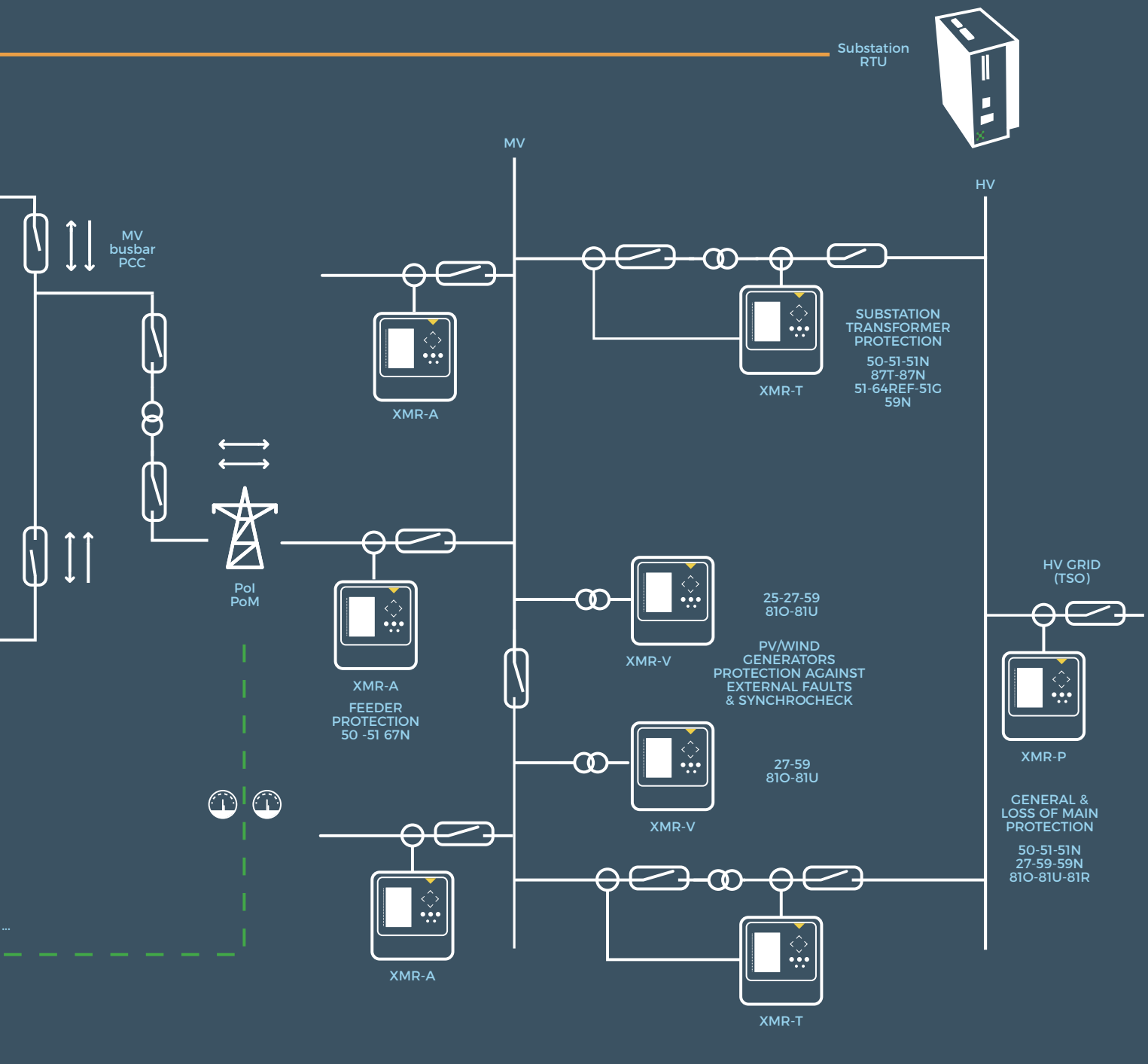
Single framework for all use cases, from HMI to grid automation and generation automation. Supports multiple architectures. Complete solution for Generation Plant Automation with PPC (Power Plant Controller). Plant KPIs, Performance Ratio (PR), integration of weather and radiation forecast services, direct connection to meters via DLMS.



iRTUcompact

All-in-one RTU providing a full solution for MV applications. Specially suited for renewable plants and distribution feeder automation. All capabilities required for the control of Photovoltaic plants, including PPC (Power Plant Controller) and I/O circuits. Multiple communication options, internal Ethernet switches and multiple serial ports. Supports the most common communications protocols in the industry, like Modbus and Sunspec mapping.





iRTU/iGW RTU & PROTOCOL CONVERTER

Adaptable and modular Remote Telecontrol Units suitable for all environments. Full range of protocols (DNP3.0, IEC 61850, IEC 60870-5...) to communicate with all devices and control centers. Protocol conversion. Four serial ports and embedded Ethernet switch with (2) 10/100 BaseTx and (2) FX100 fiber optics.



XMR PROTECTION RELAY

IEDS multifunction and comprehensive Feeder, Transformer, Motor and Generator protection which includes an accurate and complete measurement, including Energy and Power. Greater connectivity with multiple redundant communication ports supporting the following protocols: IEC61850 ed2, IEC103, Modbus TCP/IP, DNP3

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