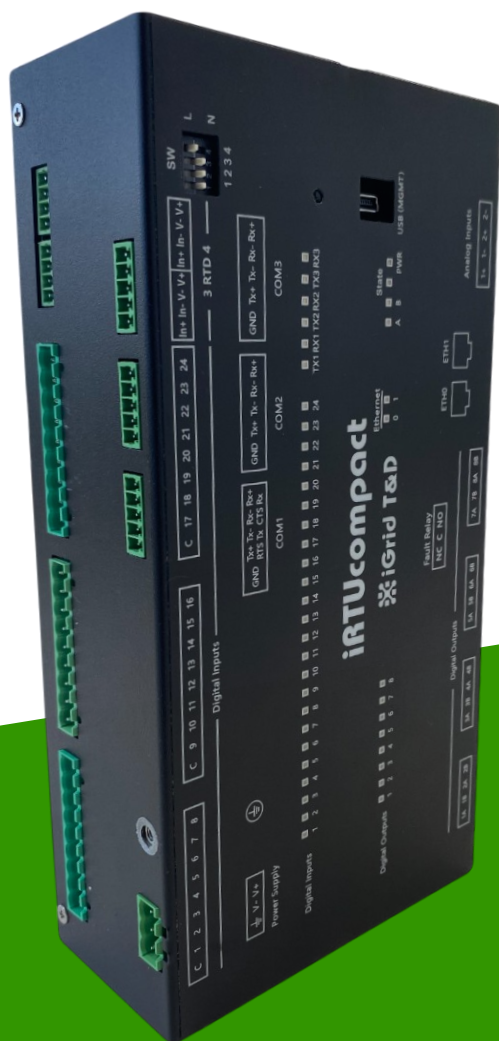




**Simple IEC 61850
Integration**

iRTU Compact

The most compact all-in-one RTU providing a full solution for MV applications at a competitive price.

- > Specially suited for **renewable plants** and **distribution feeder automation**
- > **All capabilities** required for the control of Photovoltaic plants
- > Multiple communication options incl. **internal Ethernet switches**, **I/Os** and multiple **serial ports**
- > Control any device through **any protocol common** in the industry.

The iRTUcompact is an all-in-one device with integrated I/O and numerous communication ports to collect data from any protection relay or switchgear controller, making it the ideal solution for MV and generation applications, specifically Feeder RTU (FRTU) and PV projects.

Our secure and scalable RTUs are equipped with an advanced communication core to manage, convert and transfer multiple protocols on serial, wireless and Ethernet networks at once. They are also capable of providing all required networking, redundancy and time synchronization functions, allowing to automate substations with fewer equipment, in a less complex and more affordable way.

The data collection from meters, protection relays, and other IEDs can be performed using any protocol, including IEC 60870-5, IEC 61850 (MMS/GOOSE), DNP3, DLMS, Modbus or Procome, with a microsecond timestamp resolution via NTP or PTP.

An architecture based on the iRTUcompact is open, efficient and scalable, as it allows to integrate coming generations of devices (IEDs, sensors, routers etc.) and adapt to any kind of network changes, saving you lots of time and money. With its integrated digital and analog I/Os, it can autonomously report a high number of data points from several devices to upstream masters and control centers.



COMMUNICATION PROTOCOLS & IP NETWORKING

The iRTUcompact is designed to support a wide range of protocols and communicate with multiple control centers simultaneously.

It features transparent TCP bridging and configurable IP routing, enabling any serial protocol (such as Modbus) to be tunneled over a TCP/IP connection, which simplifies the control of complex IP networks.

The iRTUcompact's IEC 61850 client capabilities have been Level A certified by DNV-KEMA.



COMMUNICATION PORTS

Despite its compact size, the iRTUcompact B model features two independent 10/100Base-TX Ethernet ports (each with a unique MAC address and RJ-45 connector) and three software-configurable serial ports: one RS232/RS485/RS422 port and two RS485/RS422 ports.

The S model adds three additional Ethernet ports by replacing one of the standard Ethernet interfaces with an embedded switch.

The devices also include two USB ports for configuration and other purposes.



IEC 61131-3 PLC AUTOMATION

Thanks to its internal PLC based on IEC 61131-3, the iRTUcompact can provide powerful automation and control functionalities.

For example, you can easily reuse programs on different projects, run multiple PLC instances simultaneously or use triggered variables for control commands and set points. It also allows to run hot program updates, stop PLC executions depending on the quality of selected PLC inputs and debug PLCs online, either cycle-by-cycle or step-by-step. The iRTUcompact has a high execution speed – a 2000 ST lines program takes less than 3ms.



iRTUcompact REDUNDANCY ARCHITECTURE

The iRTUcompact device supports both Hot-Standby and Hot-Hot redundancy architectures to ensure high system availability, fault tolerance, and uninterrupted operation. Automatic switchover logic can be customized depending on the system needs.

Hot-Hot mode enables parallel operation and ensures seamless failover with realtime synchronization, while Hot-Standby allows to implement redundancy in any kind of system.



TIME MANAGEMENT

The iRTUcompact manages a broad range of time synchronization methods with fault tolerant priority schemes (NTP, IEEE1588/PTP, IEC60870-5-101, DNP 3.0) to ensure that your network is synchronized and you can retrace any network failures.

The time stamp accuracy of the iRTUcompact is superior to one 1ms and has a 1 microsecond resolution. In case the time server fails, the iRTUcompact can rely on its high accuracy real time clock (1.5ppm) as a backup.



CYBER SECURITY – IEC 62443 & IEC 62551

iGrid enforces several layers of security measures guided by the propositions of the IEC 62443 and IEC 62531 standards to protect its devices from all kinds of threats.

The iRTUcompact is a hardened device featuring Role Based Access Control (RBAC) to avoid intrinsic risks such as security holes and unauthorized actions by authenticated users. Beyond encryptions via TLS/SSL, HTTPS, SSH and VPN support (e.g. OpenVPN), its communication can also be secured with network control methods such as firewalls, IP filters, ACL or TCP port blocks.



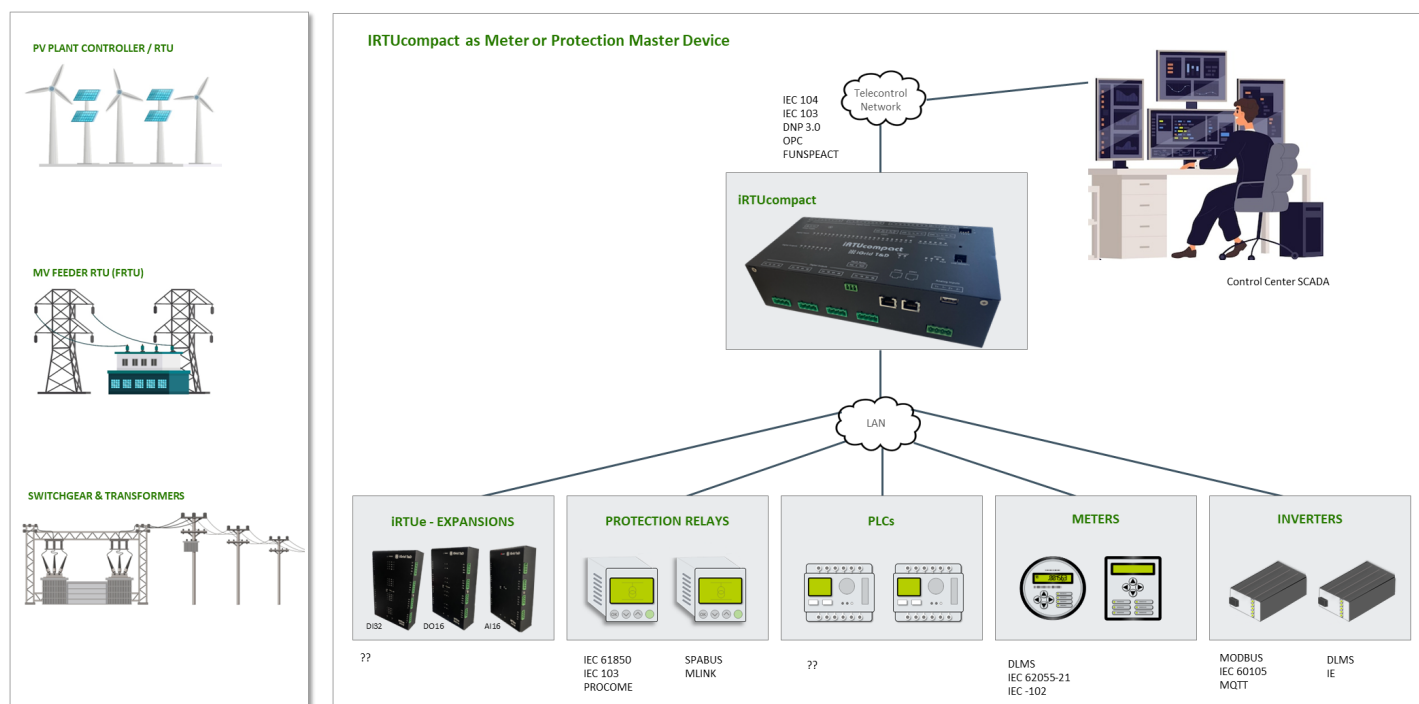
INPUTS AND OUTPUTS

The iRTUcompact provides 24 digital inputs (available in four voltage levels) with 2.5kVrms isolation and 1ms timestamp accuracy, as well as four high-accuracy (0.15%) software-selectable analog inputs ($\pm 20\text{mA}$ or $2/10\text{V}$), two of which can be replaced with PT100 temperature sensors.

Each input can be configured as either a standard input or a counter and includes a configurable debounce filter. On the output side, the device offers eight dry-contact electromechanical relay outputs with 6kV isolation.

CONFIGURATION WITH iCONF

The **iRTUcompact** features **iConf**, a powerful configuration tool tailored for electrical automation systems. It simplifies setup and maintenance, reducing engineering time, costs, and project risk. **iConf** supports uploading/downloading configurations, importing or scanning SCL (IEC 61850) files, and creating reusable templates—enabling faster deployments while ensuring consistency and reliability across multiple installations or projects.

SUBSTATION SCHEMA WITH **IRTUcompact****IRTUcompact (B, S) SERIES** COMMON FEATURES

CAPABILITIES

GENERAL

(3) **Software configurable** serial ports with LEDs:

- (1) serial RS232/RS485/RS422 port
- (2) Basic RS485/RS422 ports
- (1) **USB port** to connect peripheral devices
- (1) **MGMT port** (MiniUSB connector) for local maintenance
- (1) **internal MicroSD** slot for up to 16 Gb of data storage

*for IRTUe connection

INTERNAL I/O CONFIGURATIONS

K1 – 24 digital inputs + 8 relays + 4 4-20mA/2-10V DC analog inputs

K2 – 24 digital inputs + 8 relays

K3 – 24 digital inputs + 8 relays + 2 4-20mA/2-10V DC analog inputs + 2 PT100/RTD analog inputs

IRTUcompact B#01 SERIES

(2) **10/100BaseTX Ethernet** ports (RJ45 connector)

(1) **Serial port**, software-configurable among RS232, RS422, and RS485.

(2) **Serial ports**, software-configurable among RS422 and RS485.

IRTUcompact S#31 SERIES

The **S3 Series** features B0 ports, replacing one of the two independent Ethernet ports with an embedded Ethernet switch, which provides:

(2) **10/100Base-TX RJ-45** connectors, and

(2) **100FX ports** with RSTP redundancy, supporting SC, ST, or SFP connectors.



PROTOCOL STACK

Master DLMS	Master Spabus	Slave OPC UA Client
Master IEC 60870-5-102	Master/Slave IEC 60870-5-101	SNMP Agent/Manager
Master IEC 60870-5-103	Master/Slave IEC 60870-5-104	TASE2.0/ICCP
Master IEC 62056-21	Master/Slave ModbusRTU	IEC 61850 MMS Client/Server
Master Procome	Master/Slave OPC UA	Master/Slave MQTT*
Master/Slave DNP3.0 (serial, UDP, TCP)	IEC 61850 GOOSE Publisher/Subscriber	Master/Slave Modbus TCP/UDP and JBUS (master)

*Implementation of non standard packaged data payload under quotation

IGCOMMS SOFTWARE APPLICATION

Redundancy deployable on a Hot-Standby and Hot-Hot configuration.

Security IEC 62443-4-1, IEC 62443-4-2, IEC 62351-3, IEC 62351-8 and IEC 62351-5 support, including TLS/SSL, SSH and VPN connections.

IEC 61131-3 automation logic and PLC programming, with LD, IL, FBD, ST and SFC editor.

LUA language can be used to create simple and complex logic and mathematical expressions.

COMMUNICATION PORTS & CPU

Serial 3 software configurable ports with RS-422 /RS-485.

Ethernet (B Series) (2) 10/100BaseTX ports with two independent MAC addresses.

Ethernet switch (S Series) up to (4) 10/100BaseTX ports with RJ45 connection and (2) FX100 with ST, SC connectors or SFP interface, and supporting RSTP, HSR and PRP redundancy.

CPU ARM Cortex-A7 @ 528MHz, with 128 MBytes Flash and 256MBytes RAM.

RELAY OUTPUTS

Isolation 5 KVRms (between contact and coil)

Contact Dry

Connectors MVSTBR 2.5, 4-pin connectors for grouping 2 outputs blocks

Breaking Capacity 8A @ 220Vac – 8/8/1/0.4A @ 24/48/125/220Vdc

CONFIGURATION & MAINTENANCE

Easy configuration with iConf tool

Internal web server, allowing real time monitoring of the system and all its internal parameters

Command console with full information on packet exchanges, with all available protocols

Local or remote maintenance via USB or Ethernet port

Fault relay to indicate device operational status.

GENERAL CHARACTERISTICS

Power supply 24 : 19.5-60 Vdc (2.5kVrms isolation)

Power supply W : wide range, 32 - 250 Vdc (2.5kVrms isolation) / 80-230 Vac

MTBF 177,000h (one hundred seventy-seven thousand hours)

Physical External dimensions: 120 x 240 x 50 mm (HxWxD)

Operating temperature : -25°C to +70°C

EMC STANDARDS

- IEC 61000-4-2
- IEC 61000-4-5
- IEC 61000-4-16
- IEC 61000-4-3
- IEC 61000-4-6
- IEC 61000-4-17
- IEC 61000-4-4
- IEC 61000-4-8
- IEC 61000-4-18

ENVIRONMENTAL STANDARDS

- IEC 60068-2-1
- IEC 60068-2-30
- IEC 60068-2-2
- IEC 60068-2-38
- IEC 60068-2-14
- IEC 60068-2-78

VIBRATION & SHOCK TEST STANDARDS

- IEC 60068-2-6
- EN 60255-21-1
- EN 60068-2-27
- EN 60255-21-2
- EN 60068-2-64

SAFETY STANDARDS

- IEC 60255-27

RTC & TIME SYNCHRONIZATION

Real-time Clock (RTC) with 1.5 ppm drift and microsecond resolution timestamp

Client IEEE 1588(PTP), SNTP, IEC 60870-5-101, IEC 60870-5-104, DNP3.0

Server IEEE 1588(PTP), NTP, IEC 60870-5-101, IEC 60870-5-102, IEC 60870-5-103, IEC 60870-5-104 DNP3.0, DLMS, Spabus and Procome

ORDERING INFORMATION

iRTUcompact-x#bbccvvwwwz0

MAIN BOARD & COMMUNICATIONS

B#01 (2) 10/100BaseTX RJ45 Ethernet + (1) serial RS232/RS485/RS422 port + (2) serial RS485/RS422 ports

S#31 RSTP switching, (3) 10/100BaseTX, (2) FX100 Ethernet, (1) serial RS232/RS485/RS422 port + (2) serial RS485/RS422 ports

I/O BOARD

K1 24 digital inputs + 8 relays + 4 (4-20mA/2-10V) DC analog inputs

K2 24 digital inputs + 8 relays

K3 24 digital inputs + 8 relays + 2 4-20mA/2-10V DC analog inputs + 2 PT100/RTD analog inputs

POWER SUPPLY

24 19.2-60 Vdc

WV 32-250 Vdc / 80-230 Vac

SD CARD

0 No SD memory

S Internal industrial grade 16GB microSD card (32GB on demand)

ETH CONNECTOR FOR S#31

0 No fiber optic connectors

T ST connectors

C SC connectors

F SFP interface

DIGITAL INPUTS VOLTAGE

024 24 Vdc digital inputs

048 48 Vdc digital inputs

125 110-132 Vdc digital inputs

220 220 Vdc digital inputs