



net-line FW-5-GATE micro telecontrol station



The compact communication specialist

The net-line FW-5-GATE RTU is designed especially for communication-intensive applications in telecontrol, substation control and automation technology. It is based on the successful net-line FW-5. In order to offer more communication possibilities in an even smaller space, integrated inputs/outputs have been omitted. The FW-5-GATE can of course also be supplemented with expansion modules and interface units.

It offers cost-effective solutions for intelligent secondary distribution networks and smart metering through further interfaces with SML/SyM² meter integration, among others. An integrated temperature sensor measures the station temperature.

Typical applications

- Intelligent secondary unit substation with integration of power measurement terminal, earth fault/short circuit indicators and network analysis systems
- Smart meter integration in energy management systems and remote meter reading control centres
- Intelligent measurement for wide area tension control in distribution networks
- Bay unit in transformer substations with link to protective equipment
- Monitoring of infrastructure systems and pipe-bound media

net-line FW-5-GATE overview

Small maintenance-free field device in micro housing for DIN rail mounting with 2 independent Ethernet LAN 10/100BaseTx, 2 RS-485 field and meter interfaces and 1 RS-232/V.24. Integration with IEC 61850, DNP3, IEC 60870-5-101/-104, -103 protective equipment, Modbus. Meter link via IEC 62056-21, SML or S0 pulse. PLC programming via IEC 61131-3 Configuration via LAN, USB, memory stick or micro SD card. 24 V DC. Via expansion module PS-60: 24 V DC to 60 V DC

Expansion with external modem modules e.g. SWT-12/SWT-96, M2G-1/GPRS, TETRA or dial-up modem. Expansion with up to 12 I/O modules.

net-line FW-5-GATE hardware

The basic system can be expanded according to individual requirements and has impressive dielectric strength:

- 2 Ethernet LAN TCP/IP connections
- 2 RS-485 field interfaces
- CL/S0 meter interface in FW-5-GATE-cl
- RS-232/V.24 interface
- Temperature sensor, -20° to 100° C

net-line FW-5-GATE software

The net-line series supports impressively fast setup and high level of compatibility thanks to the innovative and well-established setIT parameterisation software.

The optional soft PLC codeIT offers additional flexibility and allows many kinds of PLC programs to be implemented.



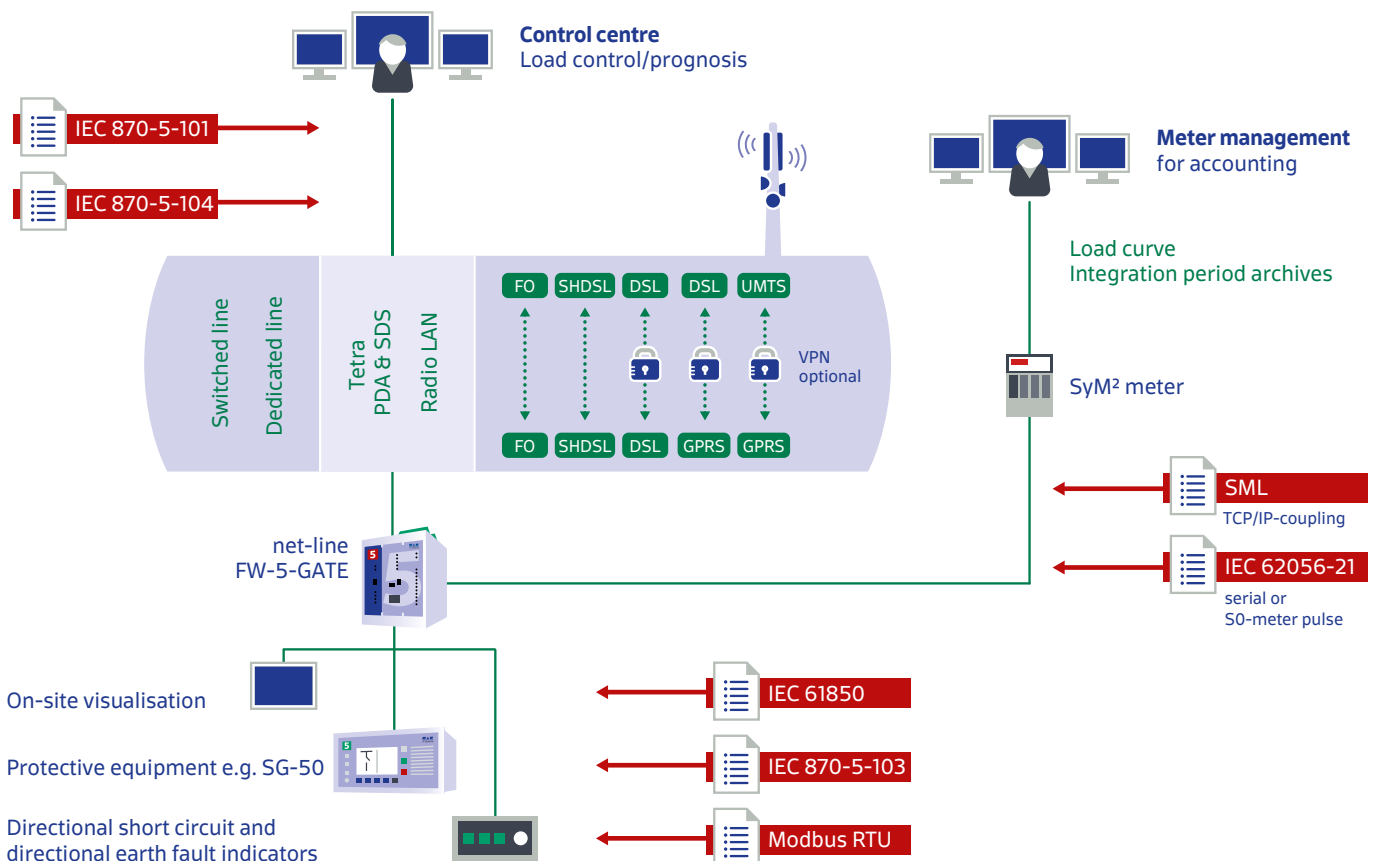
From the network to the Smart Grid

The FW-5-GATE is equipped with additional interfaces for coupling of external components to form intelligent networks. As with all the devices of the series5 range of products, the connection to the control centre can be made by many communication routes and protocols directly or with a shell of a telecontrol master station, backed up with redundant systems if required.

Local meter integration is made via a second LAN link with SML protocol or via the additional serial interface with IEC 62056-21 protocol. In the CL variant, S0 meter pulse detection can also be used.

Example integration of intelligent meters

As well as 15-minute load profiles being provided for billing in the meter control centre, the data required for load control and forecast calculations can also be supplied to power system management e.g. in 1-minute measurement periods. Addressing using the OBIS data model and identification by means of the device-specific server ID allow a very quick mapping of extensive information of the four quadrant meters, including the voltages, currents and powers in setIT. Conversion factors and overflow thresholds can be stored here to display the values in a suitable manner. setIT also performs standard mathematical procedures e.g. to calculate an average MV level for LV wide area control.



Technical data: net-line FW-5-GATE

Construction	Substation/bay control, telecontrol and automation system in plastic housing, expandable with I/O and communication modules for DIN rail mounting
Communication	2 Ethernet LAN TCP/IP, 10/100BaseTx, auto-MDIX, auto-negotiation 1 EIA/RS-485 interface, galvanically isolated 1 EIA/RS-485 meter interface or CS/SO interface, galvanically isolated 1 EIA/RS-232/V.24 interface
Inputs/outputs	Sensor for ambient temperature, -20° to 100° C ±2° C, up to 12 expansion modules for operation of single-/double-point, transformer tap and alarm signals, measurands, metered values, single, double and transformer tap commands, set points, metered value pulse outputs
Protocols	IEC 61850 · IED and protective equipment IEC 60870-5-101 · telecontrol technology, station control technology IEC 60870-5-103 · protective equipment IEC 60870-5-104 · TCP/IP link to control centre DNP3 · server serial/IP IEC 62056-21 · smart meter link (former IEC 1107) SML · SyM ² smart meter link via Ethernet DSfG · interface for natural gas equipment Modbus RTU/TCP · master/slave Profibus-DP slave, MPI/3964R/RK512 · field bus SNMP · network management NTP/SNTP/DCF · clock synchronisation VPN-Tunnel · IPsec IKEv1/IKEv2
PLC programming	IEC 61131-3 compatible via codeIT, 128 kb program memory
CPU-5E series5e	RISC processor Cortex-A8, 1200 MIPS@800MHz, FPU, watchdog, real-time clock 1GB memory (512 MB SDRAM, 512 MB SLC Flash)
Memory expansion	optional microSD card up to 8 GB, 1 GB up to setIT V5
Real-time clock	Errors max. ±20 ppm over entire temperature range, maintenance-free buffer, daylight saving time changeover, leap year correction
Status displays	LED in front panel for system, communication and binary process values detailed diagnostics via integrated web server
Operational controls	PLC switch in front panel RUN/STOP USB pushbutton for configuration/backup/recovery functions
Programming interface	Ethernet LAN 10/100BaseTx, auto-MDIX, USB 2.0 device 12 Mbit/s, USB 2.0 host 12 Mbit/s (configuration/archive synchronisation via stick)
Fault signal output	to be configured to relay output, parameterisable sys-LED
Power supply	24 V DC (-15%/+20%) max. 5 W, (24 V DC 0.2 A/60 V DC 0.1 A) without expansion Power failure management with power failure buffering With additional expansion module PS-60: 24 V DC to 60 V DC (-15%/+20%), max. 6 W, (24 V DC 0.25 A/60 V DC 0.1 A) without expansion
Dielectric strength	5 kV surge supply & process I/O to PE, according to class VW3 2.5 kV surge, supply to measurands, EIA/RS-232, USB
Standards	EMC: IEC 60870-2-1, EN 61000-4-x, EN 55022, Insulation: IEC 60870-2-1, IEC 60255-5 NSRL: DIN EN 60950
Housing	Micro, polyamide V0, IP20, weight: 240 g, FW-5-GATE-230 300 g dimensions W×H×D: 45×105×115 mm; FW-5-GATE-230 68×105×115 mm expansion: 22.5×105×115 mm
Installation	DIN rail mounting, DIN-EN 60715 TH35
Terminals	MSTB removable screw-type or spring terminal, 0.2 bis 2.5 mm ²
Ambience	-20° to +70°C, from 24 V DC: +60 °C, in the value range from 48 V DC: +60 °C, from 5 EUs: +60 °C Relative humidity < 95%, without condensation

Overview of the expansion modules

The net-line FW-5-GATE can be extended with up to 12 expansion modules. Various modules with different capacities at inputs/outputs allow flexible process integration which meets your requirements. With the TBUS-T and TBUS-R accessories, the EUs can also be placed remotely from the base system. For higher power supply requirements, above the capacities of the basic unit, the power supply module PWR-1 can be added. All modules have the dimensions of 22.5 × 105 × 115 mm (W×H×D).

Signals and commands

8DO 8 commands
8DI 8 signals
8DI2AI 8 signals, 2 measurands

Measurands and set points

4AI 4 measurands
2AO 2 set points
4AO 4 set points

Modules for special tasks

4DI4DO 4 signals, 4 measurands
RES-1 4 SO pulse inputs, 2 measurands, 4 commands
VPP-1* 6 signals, 2 measurands, 5 commands, 2 set points
PM-1 Power measurement terminal
ISO-1* Leakage detection

Command termination

DSO-1 6 commands, 6 check-back signals
DSO-2 4 commands, 2 check-back signals

Online

PDPS-1 Profibus-DP slave
M2G-1 GPRS/EDGE Modem

Other accessories

PWR-1 Power booster with larger capacities
TBUS-T T-BUS extension transmitter
TBUS-R T-BUS extension receiver

Product variants & accessories

FW-5-GATE

2 Ethernet/LAN interfaces,
2 RS-485 field & meter link,
1 RS-232/V.24 interface

FW-5-GATE cl

2 Ethernet/LAN interfaces,
1 RS-485 field interface,
1 CL/SO meter interface/pulse inp.
1 RS-232/V.24 interface

FW-5-GATE-4G

Variant without integrated I/O on the base unit with 2nd Ethernet interface and additional interface for smart meter read out
4G/LTE mobile router

FW-5-GATE-450

Variant without integrated I/O on the base unit with 2nd Ethernet interface and additional interface for smart meter read out
450 MHz CDMA radio module

PS-60

Power supply module,
24 to 60V DC

* from FW-5-GATE with series5e technology



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