New

SAE-FW-5-GATE

MICRO-TELECONTROL STATION

SECURE CONNECTION WITH THE NEW TECHNOLOGY series5X

The SAE-FW-5-GATE telecontrol system specializes in communication-intensive telecontrol, station control and automation technology applications. It is based on the established SAE-FW-5, but has no integrated inputs/outputs in order to offer more communication options in an even smaller space. Of course, the FW-5-GATE can also be supplemented with expansion modules and interface modules. The series5X technology offers further improvements in terms of functionality, safety and future viability for telecontrol applications. Thanks to the established setIT parameterization software and fast commissioning via USB OTG or SD card, it sets new standards in the field device segment.

TYPICAL APPLICATIONS

- Intelligent local network station with Integration of power measurement terminals, earth/short-circuit indicators, grid analysis systems and protection devices
- Feed-in management in renewable energy plants
- Control box for direct marketing, balancing energy and Redispatch 2.0 applications
- Monitoring and control of pipe-bound media and infrastructure systems, such as street lighting
- Interconnection of virtual power plants
- Transparent protocol converter for conversion between IEC-101 and IEC-104

IMPORTANT FEATURES

SAE-FW-5-GATE Hardware

- 2 Ethernet LAN connections TCP/IP
- 2 RS-485 field interfaces or RS-232/V.24 interface
- Embedded temperature sensor

- Enables integration into our **device management system** (LXCONNECT)*

SAE-FW-5-GATE Software

set IT Version 8

- Complex integration of standard protocols for:
  - IEC 60870-5-104
  - IEC 60870-5-101/- 103
  - IEC 61850 client und server, GOOSE Messages (with time restrictions)
  - DNP3 outstation/master
- MQTT (publish & subscribe) for cloud-based communication; optionally with Sparkplug specification
- Meter coupling according to IEC 62056-21
- SNMPv3 protocol for status messages from network components
- SNMP agent for integration into asset management
- Selective archive query via IEC-101/-104
- Flexible archive exports
- Protocol converter mode for conversion without process data configuration

*in Preparation

THE TECHNOLOGY series5X

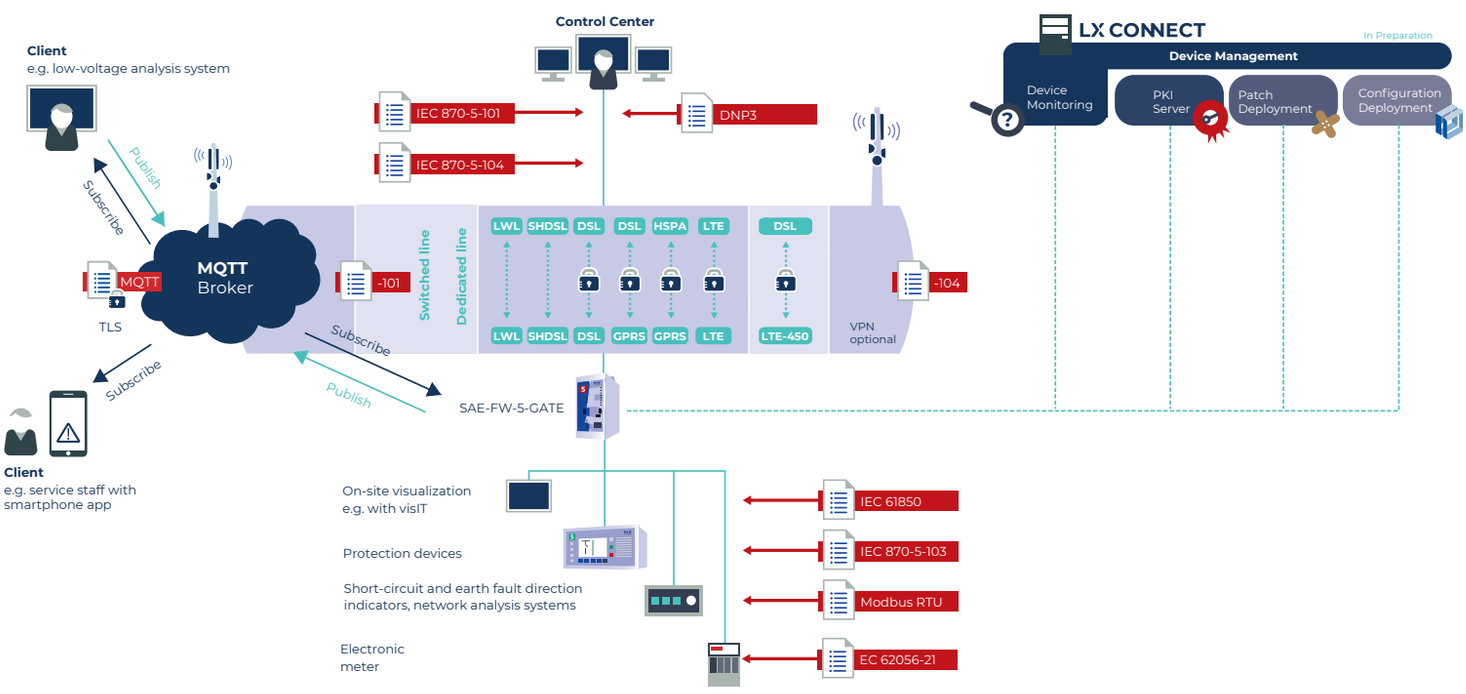
The communication requirements for a telecontrol/station control system in an intelligent network are constantly increasing. At the same time, greater demands are being placed on security in the networks, as increasing networking means that the risks of unauthorized access and manipulation are growing. Thanks to a more modern processor core, the updated operating system, secure boot and an encrypted file system for the configuration partition, series5X offers improved protection against cyber attacks.

- Secure boot and signed base system
- Encapsulation, hidden layer, BGA (tamper protection)
- Unique device certificate for station authentication
- LAN PHYs interfaces can be disabled
- Encrypted file system of the configuration partition
- Signed configuration
- VPN, IPsec, TLS encryption
- Integration into the central device management system (LX CONNECT)*
  - Update of the basic system
  - Ward software & configuration can be updated individually
  - Fallback (AB system) for base system and configuration
  - Certificate exchange via EST (Enrollment over Secure Transport)

*in Preparation

SAE - OUR VIEW OF THE BIG PICTURE

In combination with SAE's own expansion modules (EWB) or by connecting external devices, the SAE-FW-5-GATE-4G opens up numerous possibilities. A wide range of information can be exchanged with various back-end systems, such as control centers.



On request, SAE can take over the complete project management with its comprehensive know-how. This includes the selection of suitable components, the coordination of all project participants through to the actual integration of the systems into existing infrastructures.

Expansion modules

The SAE-FW-5-GATE can be extended with up to 12 expansion modules flexibly and as required via an internal bus system. If the power supply of the base station is not sufficient, the PWR-1 power booster can provide additional power. The TBUS extension also allows the integration of remote EWBs. The screw or spring clamp terminals of the base unit and the EWB modules are removable; the terminals of the PM-1 / PM-2 are fixed.

Displays and commands

- 8DI 8 Notifications
- 8DI2AI 8 displays + 2 measured values
- 8DO 8 commands

Measured values and setpoints

- 4AI 4 measured variables
- 2AO 2 analog setpoints
- 4AO 4 analog setpoints

Command termination

- DSO-1 6 command relays 1.5-pole with feedback display
- DSO-2 4 command relays 2-pole with feedback display

Units for special tasks

- 4DI4DO 4 Notifications
  4 mono/bistable changeover relays
- RES-1 4 S0 displays + 2 measured values
  4 command relays
- VPP-1 6 displays + 2 measured values
  5 command relays + 2 setpoints
- PM-1/PM-2 Power measurement card for LV/MV networks
- ISO-1/PIT-1 Leakage detection, monitoring of district heating networks and pipelines

SUPPLIES

- PWR-1 Current booster for larger large volume systems
- TBUS-T T-bus extension transmitter
- TBUS-R T-bus extension receiver

PRODUCT VARIANTS & SUPPLIES

FW-5
Base unit FW-5

FW-5-GATE 4G
2 Ethernet/LAN interfaces
2 RS-485 field & meter connections
1 RS-232/V.24 interface
LTE module

FW-5-GATE-LTE450
2 Ethernet/LAN interfaces
2 RS-485 field & meter connections
1 RS-232/V.24 interface
450 MHz LTE module

TECHNICAL DATA

Main functions	Details
CPU	series5x ARM processor core, Cortex® A7@800 MHz, FPU, watchdog, real-time clock, secure element **1 GB memory:** 512 MB SDRAM, 512 MB SLC NAND Flash, 1 MB NOR Flash 1.8 GB pSLC eMMC flash, 128 kB SRAM buffered 60 days
Interfaces	2 Ethernet LAN TCP/IP, 10/100BaseTx, 100 MBit/s auto-MDIX, auto-negotiation 1 V.24/RS-232, RJ-45, up to 115 kBit/s, max. 20 m, galvanically isolated from power supply and I/O 2 RS-485, terminal, up to 115 kbit/s, max. 31 participants, end termination, electrically isolated USB-OTG device/host USB 2.0 480 MBit/s, mini type B socket
Protocols	**IEC 60870-5-101** Telecontrol technology, station control technology **IEC 60870-5-103** Protective device coupling **IEC 60870-5-104** TCP / IP control center coupling **IEC 61850 ed2** Stationsbus client / server (optional) **DNP3** master / outstation, seriel / TCP **Modbus** RTU / TCP Master / Slave **MQTTv3** Dataserver publisher / subscriber **IEC 62056-21** Meter interface (formerly IEC 1107) **DSfG** Interface for gas **LACBUS-RTU** Gateway SOFREL Data logger **Profibus** DP slave **3964R/RK512 S7** Coupling **SNMPv3** Status messages via master/agent **https** Secure communication **IPsec IKEv1, IKEv2** Encryption / VPN tunnel **OpenVPN** TLS encryptions **SYSLOG** Central message server **LDAP / Radius** Central user administration **DHCP/DNS** dynamic IP address **NTP- /DCF-** Clock synchronization **IEC 61131-3** compatible via straton, program memory 128 kB, PLC programming
Input/output	Modular expansion via max. 12 I/O modules
Memory expansion	1 GB SD-Card
Real-time clock	Deviation max. ±10 ppm in operation maintenance-free buffer ±20 ppm 60 days @25°C daylight saving time changeover, leap year correction
Status displays	LED for power, process status of the PLC, system, communication Diagnostics via integrated web server, visIT system visualization (optional)
Service interface	Ethernet-LAN 10/100BaseTx, auto-MDIX, USB-OTG device/host USB 2.0 480 MBit/s, mini type B socket
Control element	service button for configuration/backup/recovery function
Fault signal output	Parameterizable on relays of an expansion module
Power Supply	24 V DC (-15%/+20%), no galvanic isolation Power failure management with power fail buffering With additional expansion module PS-60: 24 to 60 V DC (-15% + 20%), insulation 1500 V
Dielectric strength	5 kV surge supply & process I/O to PE, according to class VW3 2.5 kV surge supply to measurands, RS-232, USB
Standards	**Health&Safety:** EN 62368-1 & EN 62311 **EMC:** EN 55032/A11 (Class B), EN 61326-1 (Industrial environment) **RoHS:** DIN EN IEC 63000 **MTBF:** 74a @ 40°C according to SN 29500
Housing	Polyamide V0, IP20, weight: 280 g Dimensions: 68×105×115 mm (W×H×D) Extension modules: 22.5×105×115 mm (W×H×D)
Assembly	**DIN-top-hat rail** DIN EN 60715 TH35 horizontal
Clamps	MSTBT screw terminal, 0.2 to 2.5 mm2 or FKCT spring terminal, 0.2 to 2.5 mm2
Ambience	-25 to +70° C, max. 3000 m above sea level, relative humidity <95%, without condensation

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