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The FP S-ENGuard W600 is an IIoT gateway in a compact wall mounted housing. There are 2 variants: W640 and W667.

Mobile wireless options

The FP S-ENGuard Gateways can be equipped with a mobile wireless module as an option. Suitable FME antennas are available as an option.

The mobile wireless options are coded via a suffix after the "W640" or "W667" model designation.

Suffix	Supported mobile wireless networks
NB	2G / 3G (discontinued model, minimum order quantity required)
BB	2G / 3G / 4G



1 Main functions

Main functions	
Alarm and fault indicator	Automatic generation and sending of fault messages from message templates and current values (from PLC or Gateway). Actions can trigger up to 100 definable events depending on the time requirements. Address book with up to 100 addresses. 100 message texts, 100 alarms
Acknowledgement	Acknowledgement option for alarms and triggering of alarm chains if the acknowledgement does not arrive within a set time. Acknowledgement via SMS or e-mail possible.
Alarm chain	Multiple levels of alarm actions and receivers if alarm messages are not acknowledged in time. Alarm actions can be sent by SMS, e-mail or switching actions.
Event	Event, e.g.: Error, PLC communication interrupted, acknowledgement of an alarm. All actions in the Gateway are triggered by events.
SMS	Sending and receiving of SMS
E-mail	Sending and receiving of e-mail (SMTP)
Remote switching	Remote switching of the variable values of the connected controller by sending switching commands as SMS or e-mail to the Gateway. Password protection
Remote maintenance	Configuration of the Gateway and the connected PLC via an existing IP connection.
Security	Local and remote configuration can be protected using access rights.
Web-server	Integrated web-server for local access to web applications (e.g. for commissioning)
PLC protocols	More than 30 integrated PLC and field bus protocols; direct access to PLC data points (read/write), e.g. Siemens, ABB, Mitsubishi, Moeller/Eaton, Allen-Bradley, Schneider, Crouzet, VIPA,
Counter protocols	Many integrated field bus protocols, e.g. Modbus, M-Bus, EN 61107, 1-Wire, Aurora, wMBus via optional FP wMBus adapter, …
EDGE functions	Extensive data handling functions (EGDE computing) integrated by users in a freely programmable way, e.g. logical links, thresholding
Data logging	Large integrated log memory (power failure fail-safe due to flash memory) Up to 100 MB of log memory available for user data; up to 100 log files definable
Cloud protocols	Cloud protocols integrated from notable Cloud providers incl. Cloud command channel -> Gateway e.g. Deutsche Telekom CoT, Cumulocity, AWS, Juconn, generic MQTT
Security Protocols	TLS 1.2, VPN, your own certificates and keys can be configured FTP, SFTP, SMTP, POP3, SMS, MQTT, http, https, telnet, and more

2 System architecture

System architecture		
CPU	400 MHz, ARM9, ATMEL SAM9-G25	
RAM	128 MB DDR2-RAM	
FLASH Memory	128 MB on-board	
System clock (Battery-backed)	For logging of events, e.g.: - Errors - incoming calls, - PLC or Cloud communication interrupted, - acknowledging an alarm All actions in the Gateway are triggered by events.	

3 Interfaces

Built-in inputs and outputs in the basic device

Connection type		W640	W667	Technical information	Accuracy
Inputs	Digital	2	2	230V AC / 3A	-
	Analogue	-	4	010 V DC, resolution: 11 Bit; switchable: 0 20 mA	0.2% ±5 mV
	Pt-1000	-	2	Resolution: 0.4K	± 1.2 °C
	Digital	-	5	24 V	-
	1-wire	1	1	5V, max. 30 1-wire sensors	Depending on the sensor
	M-Bus	1	1	Master for up to 100 counters; galvanically isolated	-
	Relay	2	2	Potential-free 230 V AC 5 A or 110 V DC 0.3 A, changeover	-
Outputs	Relay	-	3	Close contact max. 30 V DC 2A	-
	Analogue	-	3	010 V DC, resolution: 12 Bit; switchable: 0 20 mA	1 % ±6 mV
Connection terminals				Screw terminal (grid dimension: 3.81 mm), cross-section ma	x. 1.5 mm ²

Serial interfaces	
COM1 RS232	5-pin screw connection max. 230,400 bps, not galvanically isolated ITU-T V.24, V.28, hardware handshake. Signals: RTS, CTS, GND, Rx, Tx Transmission distance: 12 m
COM2 RS485	3-pin screw connection, DTE in accordance with EIA/TIA-485, max. 230,400 bps, not galvanically isolated, integrated termination, can be switched via DIP switch Transmission distance of max. 1200 m depending on the transmission rate, bus and cable type
COM3 M-Bus	Conformity: DIN EN 13757-2, DIN EN 13757-3 M-Bus master for up to 100 end devices (counter) short-circuit protection, galvanically isolated 1500 V M-Bus voltage: 36 V, bus length: max. 50 m 3 screw terminals, grid dimension 3.81 mm, cross-section max. 1.5 mm ² Data rate: 300 Baud – 19200 Baud Data formats: 8 data bits, 1 start bit, 1 stop bit and 1 parity bit (even parity)

USB 2.0 Host	
2x USB host	For USB devices such as USB memory sticks, WiFi sticks, etc.

1-wire interface	
1x 1-wire	For the connection of 1-wire temperature sensors 5 V power supply for max. 30 sensors, 3-pin terminal connection

4 Ethernet connection

Ethernet connection		
Connection	10/100 Base-T IE	EE 802.3, RJ45 connector (8P8C with 2 LEDs), shielded
Operating mode	Auto negotiation,	Auto MDI-X (crossover cable not required)
Status LEDs	Flashing green Yellow off Yellow on	Data is being transferred 10 Base-T 100 Base-T
Galvanic isolation	1500 V (V _{ms} min.)	

5 S1 expansion modules (optional)

S1 expansion module

Number of free expansion slots for S1 plug-in modules: model W640 = 5, model W667 = 2				
	S1-D50	5x digital inputs, max. 24 V	-	
	S1-D30G	3x digital inputs, galvanically isolated (0 +/- 60 V; input current 2.2 3.1 mA)	-	
Inputs	S1-AE3	3x analogue inputs 0 10 V / 0 20 mA (can be adjusted using jumpers)	0.2 % +/- 5 mV	
mputo	S1-PT3	3x Pt-1000 inputs	+/- 1.2 °C	
	S1-PT3C	3x Pt-100 inputs	+/- 1.2 °C	
	S1-S03	3x pulse inputs S0 for read contacts; cable length max. 30 m	-	
	S1-D05	5x digital outputs, max. 48 V, 120 mA	-	
Outputs	S1-D03G	3x digital outputs, galvanically isolated	-	
	S1-AA2	2x analogue outputs 0 10 V / 0 20 mA (can be adjusted using jumpers)	1 % +/- 6 mV	
	S1-WL2	2x changeover relay, max. 48 V / 3 A	-	

6 WiFi stick (optional)

WiFi stick	
WiFi	USB stick model "90.0072.8100.00"
Wireless type	IEEE 802.11b/g/n; WPS (WiFi Protected Setup)
Frequency	1T1R 2.4 GHz
Data rates	IEEE 802.11b: 11 MBit/s max. IEEE 802.11g: 54 MBit/s max. IEEE 802.11n: 150 MBit/s max.
Network modes	Ad-hoc, infrastructure
Encryption	WEP-64, WEP-128, TKIP, WPA2
Antenna connection	Internal
Temperature range	0 40 °C

7 Operating elements

Operating elements			
Service buttons	Can be freely configured by the user via TiXML programming		
Signal LED	Can be configured via TiXML (red/green flashing function, 32 patterns), e.g. "red = error" and "green = functioning properly"		
Speakers	Mini speakers for audio signals; can be controlled using TiXML, e.g. continuous sound for alarm		
System LEDs	Power, Process/Data out, LAN, Mode		
WiFi buttons	For switching the WiFi subsystem on and off or for unloading (unmounting) a USB memory stick		

8 Mobile wireless modem (optional)

UMTS/HSPA+: (20	G, 3G) NB model		
Frequencies	Dual-mode UMTS (WCDMA) / HSDPA / EDGE / GPRS operation Dual Band 900 / 1800 MHz; UMTS Band 1 (2100 MHz), Band 8 (900 MHz)		
EDGE features	Multi-Slot Class 12, E-GPRS Mobile Station Class B, Coding Schemes MCS 1-9; up to 236.8 kbps DL		
GPRS features	Multi-Slot Class 12, GPRS Mobile Station Class B, Coding Schemes CS 1-4; up to 85.6 kbps DL/UL		
UMTS features	UMTS Terrestrial Radio Access (UTRA) HSDPA category 8		
GSM features	Call Forwarding, Call Barring, Multiparty, Call Waiting, Call Hold, Calling Line Identity Advice Of Charge, USSD, Closed User Group		
Antenna	FME socket (male), coaxial, impedance 50 Ω		
Data transmission	GSM:CSD up to 9.6 kbps DL/ULGPRS:max. Downlink: 85.6 kbps, max. Uplink: 85.6 kbpsEDGE:max. Downlink: 236.8 kbps, max. Uplink: 70.4 kbpsUMTS:max. Downlink: 384 kbps, max. Uplink: 384 kbpsHSDPA:category 8: max. 7.2 Mbps DL (peak rate)HSUPAcategory 6: 5.76 Mbps ULTransmission power:22 WGPRS/GSM/E-GSM @ 900 MHz1 W GPRS/GSM/E-GSM @ 1800 MHz0.5 WEDGE/GSM/E-GSM @ 900 MHz0.4 W EDGE/GSM/E-GSM @ 900 MHz0.25 WWCDMA/HSDPA/HSUPA @ 800/850/1900/2100 MHz		

Frequencies	8-Band LTE (B1, B2, B3, B5, B7, B8, B20; all bands with diversity) Quad Band 3G (850, 900 1800, 1900 MHz) Quad Band 2G (850, 900 1800, 1900 MHz)
Antenna	FME socket (male), coaxial, impedance 50 Ω
Data transmission	WCDMA CS:Downlink: 64 kbps, Uplink: 64 kbpsGPRS:Downlink: 85.6 kbps, Uplink: 85.6 kbpsEDGE:Downlink: 236.8 kbps, Uplink: 236.8 kbpsWCDMA PS:Downlink: 384 kbps, Uplink: 384 kbpsHSPA+:Downlink: 21.6 Mbps, Uplink: 5.76 MbpsDC-HSPA+:Downlink: 43.2 Mbps, Uplink: 5.76 MbpsLTE FDD:Downlink: 150 Mbps, Uplink: 50 Mbps @ 20M BW cat4Transmission power:22 WGSM-GPRS @ 850/900 MHz1 W GSM-GPRS @ 1800/1900 MHz0.5 WEGPRS @ 850/900 MHz0.4 W EGPRS @ 1800/1900 MHz0.25 WUMTS @ 850/900/1900/1950 MHz0.2 WLTE @ 800/850/900/1700/1800/1900/1950/2100 MHz0.2 W

9 Firmware

Firmware		
TECom	Tixi Embedded Com munication System TECom TECom provides all basic functions which are required for close communication with controllers and remote communication in telephone networks, mobile wireless networks, LAN, Wi-Fi and IP based networks.	
Operating system	Embedded Linux	
File system	UBIFS: Log data and process variables (in RAM) remain in flash memory in the event of a power failure	
OEM functions	The firmware can be expanded for OEM customers, e.g. for: new control protocols, calculating or processing functions or web server functions.	
Data security	Use of the industry standard libraries Open SSL and OpenVPN (TLS 1.2)	

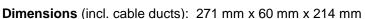
10 General data

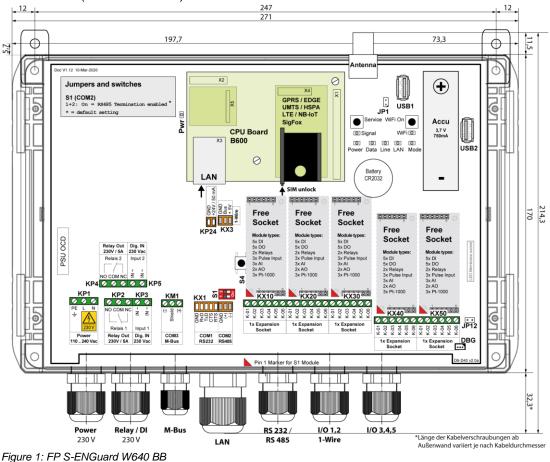
Power supply		
Standard device	110 240 V AC, 50 60 Hz PTC overcurrent protective device (Polyswitch); triggers at 2 A	
	Typical power consumption W640 LAN: 17 W, W640 NB: 21 W, W640 BB: 21 W W667 LAN: 20 W, W667 NB: 23 W, W667 BB: 24 W 3 screw terminals; cable cross section max. 1.5 mm ²	
	Fuse protection with a circuit breaker of type max. 10A, characteristic B, switching capacity 6kA required in the electrical system of the building - Fuse protection must be carried out in phase (L)	
	A two-pole (L, N) disconnecting device with a minimum contact distance of 3mm is required in the electrical system of the building - Disconnecting device must be easy to access for service personnel	
RTC Backup battery	CR2032 backup battery for RTC (real time clock), service life >= 10 years	
System backup battery (optional)	Slot for optional re-chargeable system backup battery. Running time 30 90 minutes. Battery type: 3,7V / 750 mAh	
Housing		
Installation	Wall mounting with screws (screws not included in scope of delivery)	
Туре	FP S-ENGuard W600	
OEM housing	OEM wall mounted housing	
Dimensions LxHxW	271 mm x 60 mm x 214 mm (incl. cable gland)	
Weight	approx. 1.3 kg	

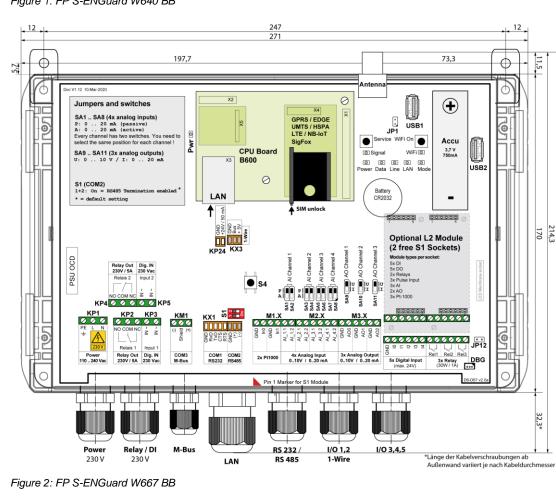
11 Conformity

Conformity and use	
Conformity	2014/53/EU Radio Equipment Directive RED 2011/65/EU RoHS 2012/19/EU WEEE
Temperature range	Operation: -25 °C +55 °C Storage: -25 °C +85 °C
Permitted humidity	595% relative humidity, non-condensing
Protection class	IP65 (LAN variants); IP44 (mobile wireless variants)

12 Dimensions







Contact

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Disclaimer

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