S560

Smart Meter Gateway S560

User Manual

DRAFT

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Revision history

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a	06. 11. 2017	First Edition

Table of contents

About this document

Range of validity

The present user manual applies to the Smart Meter Gateway S560.

Purpose

The user manual contains all the information required for metering applications for the intended purpose of the Smart Meter Gateway S560. This includes:

- Provision of knowledge concerning the characteristics, construction and function of the Smart Meter Gateway S560
- Information about potential dangers, their consequences and measures to prevent any danger
- Details about the performance of all activities throughout the service life of the Smart Meter Gateway S560 (parameterization, installation, commissioning, operation, maintenance, decommissioning and disposal)

Target group

The content of this user manual is intended for technically qualified personnel of energy supply companies or metering point operators, responsible for system planning, installation and commissioning, operation, maintenance, decommissioning and disposal of metering devices.

Reference documents

The following documents provide further information related to the subject of this document:

- D000059880 S560 Technical Data en
- D00008xxxx S560 Verwenderauflage de

Typographical conventions

The following typographical conventions are used in this document:

Font	Description
Bold	Font style used for menu items and buttons in the user interface and for keyboard keys.
Italics	Font style used for captions and new terminology.
`Courier`	Font for file names, paths and code examples.

Terms and abbreviations

A list of terms and abbreviations used in this document is available at the end of this document.

1 Safety

1.1 Safety information

The following symbols are used to draw your attention to the relevant danger level, i.e. the severity and probability of any danger, in the individual sections of this document.

Warning
Used to indicate a dangerous situation that could cause bodily injury or death.

Caution
Used to indicate a situation/ action that could result in material damage or loss of data.

Note
Used to indicate general guidelines and other useful information.

In addition to the danger level, safety information also describes the type and source of the danger, its possible consequences and measures for avoiding the danger.

1.2 Responsibilities

The owner of the Smart Meter Gateway – usually the metering point operator – is responsible for assuring that all persons engaged in working with metering devices:

- Have read and understood the relevant sections of the user manual.
- Are appropriately qualified for the work to be performed.
- Strictly observe the safety regulations (laid down in section 1.3) and the operating instructions as specified in the individual sections.

In particular, the owner of the Smart Meter Gateway bears responsibility for the protection of persons, prevention of material damage and the training of personnel.

For this purpose, Landis+Gyr provides training on a variety of products and solutions. Please contact your local Landis+Gyr representative if interested.

1.3 Safety regulations

The following safety regulations must be observed at all the times:

- The device connections must be disconnected from all voltage sources during installation.
- Contact with live parts can be fatal. The main fuses should, therefore, be removed and kept in a safe place until the work is completed so that other persons cannot replace them unnoticed.
- Local safety regulations must be observed. Only technically qualified and appropriately trained personnel are authorized to install the Smart Meter Gateway.
- Only appropriate tools shall be used for the job. This means, e.g. that the screwdriver must be of the correct size for the screws, and the handle of the screwdriver must be insulated.
- The device must be held securely during installation. They can cause injuries if dropped.
- Smart Meter Gateways that have been dropped must not be installed, even if no damage is apparent, but must be returned to the service and repair department (or the manufacturer) for testing. Internal damage may result in malfunctions or short-circuits.
- The Smart Meter Gateways must never be cleaned under running water or with compressed air. Water ingress can cause short-circuits.
- Use devices only as prescribed by this user manual. This may prevent from any unexpected electrical hazards.
- Read this user manual carefully and study the application rule VDE-AR-N 4101 thoughtful, bevor installing the Smart Meter Gateway. Both documents content important notes for installation, safety, usage and maintenance. You'll protect yourself and prevent damages on the device.
- External devices and supplementary accessories connected to the Smart Meter Gateway S560 shall fully comply with its product standard and with fire requirements.
- Never remove the red seal from the Smart Meter Gateway S560. Any Smart Meter Gateway with damaged or removed red seal is considered compromised and could be manipulated. The Smart Meter Gateway must be replaced and the appropriate Gateway Administrator must be informed.

2 Device description

2.1 General view

Figure 1. General view of the Smart Meter Gateway Modem Variant

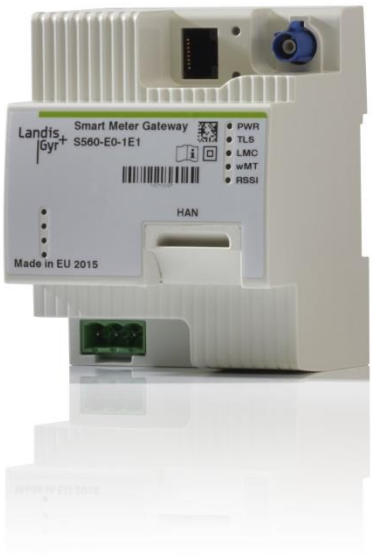


Figure 22. General view of the Smart Meter Gateway Ethernet Variant

2.2 Functional overview

2.2.1 Intelligent Metering System

As part of introducing smart grids, Smart Metering Systems are used in accordance with the new Energy Industry Act (EnWG) and the “Digitization of the Energy Turnaround Act” (GDEw) in Germany. Through the

application of these metering systems, which is stipulated by law and integrated in a communications system, the end consumer receives a greater transparency on its own energy consumption and the option to assess its own consumption pattern to appropriately reduce the energy costs. With the help of modern tariffs, which are mapped and facilitated through the metering system, end consumers can smartly plan their energy consumption.

Due to the capturing, time stamping and processing of meter values, the Smart Meter Gateway of the Smart Metering System is also subject to weights and measure regulations.

2.2.2 Smart Meter Gateways

Derived from the system architecture based on the requirements of the protection profile [GW_PP], a Smart Meter Gateway must provide at least three physical interfaces as displayed in the following figure.

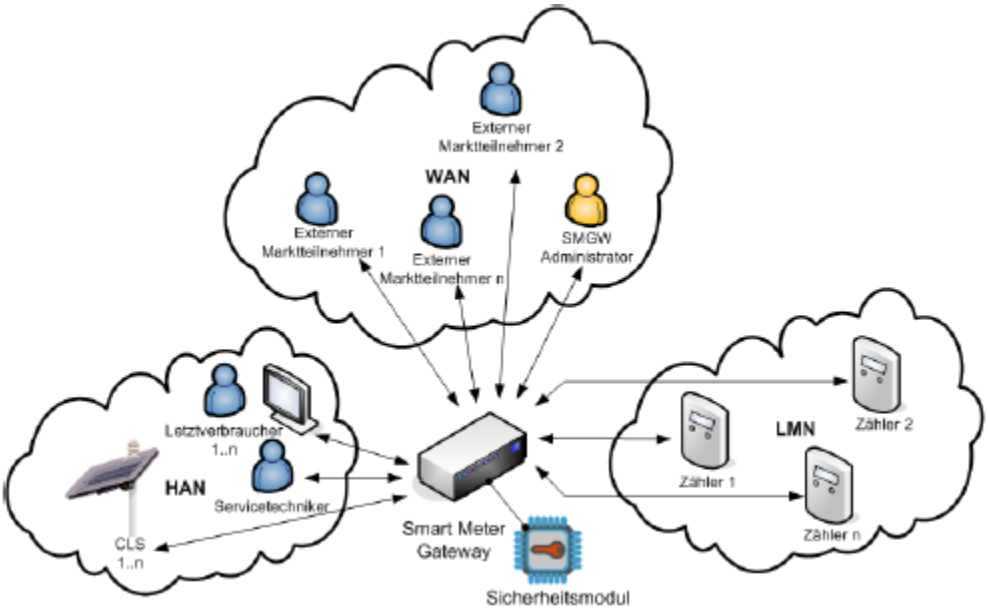


Figure 3 BSI System Architecture Smart Meter Gateway

The following communication areas are considered:

Local Metrological Network, LMN,

In the LMN, the SMGW communicates with the connected meters for material and energy quantities (power, gas, water, heat) of one or several end consumers. The meters communicate their meter values to the SMGW through the LMN.

Wide Area Network, WAN

In the WAN, the SMGW communicates with the external entities and especially with the SMGW Administrator.

Home Area Network, HAN

In the HAN of the end consumer, the SMGW communicates with the controllable energy end consumers or energy producers (Controllable Local Systems, CLS, e.g. smart household appliances, combined heat and power (CHP) or photovoltaic-systems, circuit breakers, etc.). In addition, the SMGW provides data for the end consumer and/or the service technician in the HAN.

The Smart Meter Gateway communicates internally with its protection module, which as Common Criteria certified sub-component providing cryptographic operations and a secure key- and certificate storage system.

The main functionality of SMGW is the storage of the meter values received from LMN, its processing according to configured processing rules, and the transfer of processed meter values to the authorized entities in the WAN. Meter values can be directly distributed radially to the respective addressees in WAN, but an indirect distribution through a specific market participant is also not excluded.

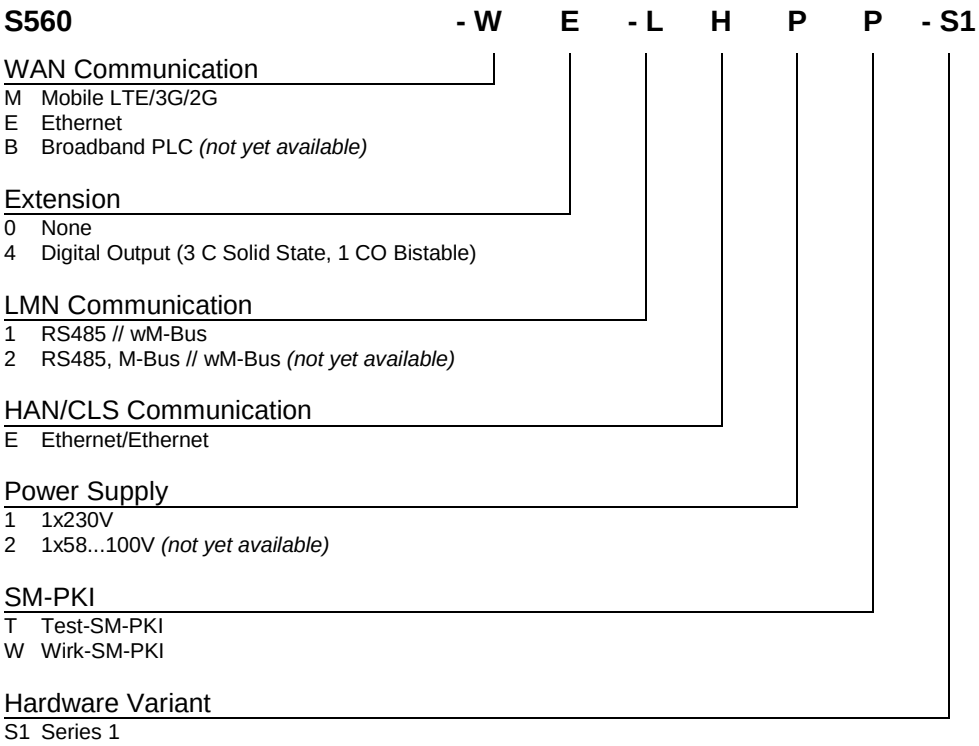
Apart from this, the SMGW offers functions for the end consumers or service technicians so that they can request read-authorized consumption data or system information on the HAN interface. For the controllable local systems (CLS) connected in HAN, the SMGW functions as a transparent proxy server. TLS-protected communication channels in the direction towards the CLS and external entities are terminated in the SMGW, and the SMGW takes care of the transparent forwarding of the received data.

According to Gateway Protection Profile, the SMGW fulfils the tasks of a Firewall and separates the connected grids from each other. As a decentralized storage system of personal meter values, which are transferred to authorized parties only based on contractually agreed regulations, the SMGW ensures the data privacy protection and data security for the end consumers

2.3 Type designation

The type definition of the Smart Meter Gateway S560 is printed on the front label:

S560 Type Designation



Hardware Variants

The following variants were deliverd out of the manufactory.

Type Designation	WAN-Communication	Remarks
S560 -M4 -1E1T -S1	LTE, (GSM, UMTS)	Integrated load switch box
S560 -M0 -1E1T -S1	LTE, (GSM, UMTS)	
S560 -M4 -1E1W -S1	LTE, (GSM, UMTS)	Integrated load switch box Produced with certificates out of Wirk-SM-PKI
S560 -M0 -1E1W -S1	LTE, (GSM, UMTS)	Produced with certificates out of Wirk-SM-PKI
S560 -E4 -1E1T -S1	Ethernet	Integrated load switch box
S560 -E0 -1E1T -S1	Ethernet	
S560 -E0 -1E1W -S1	Ethernet	Integrated load switch box Produced with certificates out of Wirk-SM-PKI
S560 -E0 -1E1W -S1	Ethernet	Produced with certificates out of Wirk-SM-PKI

2.4 Technical details

Note
See D000059880 S560 Technical Data en a for technical parameters.

2.4.1 Overview

Architecual Overview

A Smart Meter Gateway S560 is built according to the following block diagram.

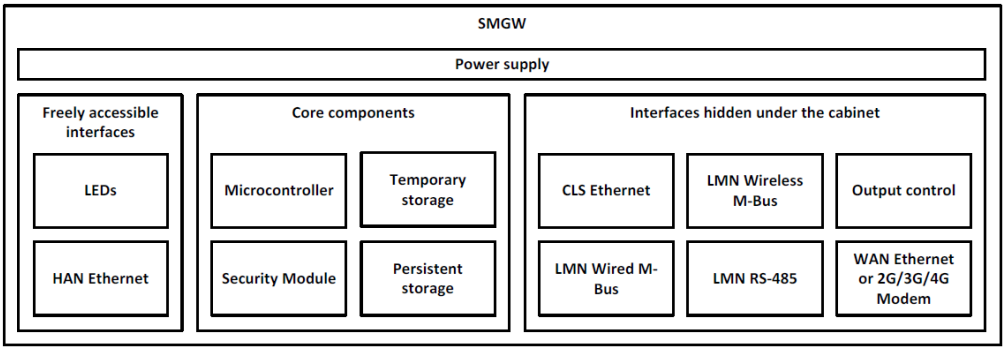


Figure 4 Block diagram S560

Power Supply

The power supply fits for 230V applications.

Embedded System

The S560 is designed as an embedded microcontroller system running with a Real Time Operating System. To highlight are high performance, short start-up time, low power consumption and a very small firmware size.

Due to the low power consumption the thermal radiation is very low, too. This ends in a high benefit regarding the use of the gateway behind the module cover.

Memory

The SMGW needs non-volatile memory to save data temporarily while the unit is unable to propagate through long haul communication channel. This temporary data is primarily backed up from volatile memory (DDR2) to the eMMC like during power failure.

Serial NOR flash may be used to store application firmware, configurations and bootstrap for basic boot up of the SMGW.

Because the software of the SMGW needs more RAM then the microcontroller has available internally we have to add an externally SDRAM DDR2. The Device has a 512Mbit (32M x 16bit) organized memory type.

Real Time Clock

The S560 includes a Real Time Clock device of high accuracy. The device has a maximum drift of less than 5ppm. This feature increases high robustness of the complete system.

HAN-Interface

The Smart Meter Gateway includes a web server. At the HAN interface, end consumer and service technician may connect using any web browser. End consumer needs username and password, service technician needs certificates, first configurator just uses a PIN.

3 Mechanical construction

3.1 Case

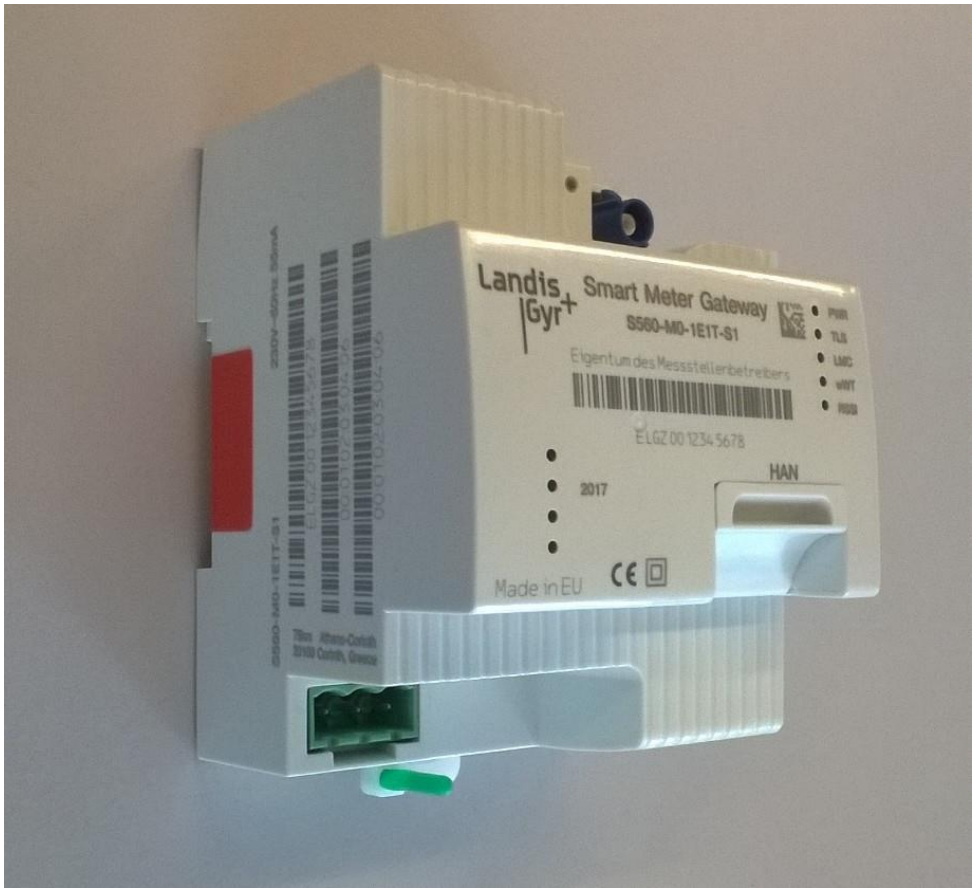


Figure 5 Smart Meter Gateway S560 device

1. *Front plate (details see chapter: Face Plate Marking)*
2. *Side marking*
3. *HAN-Interface Ethernet RJ-45*
4. *Power plug*
5. *CLS-Interface*
6. *LMN-Interface*
7. *WAN Communication Antenna*
8. *wM-Bus*
9. *BSI-Seal*

3.2 Face Plate Marking

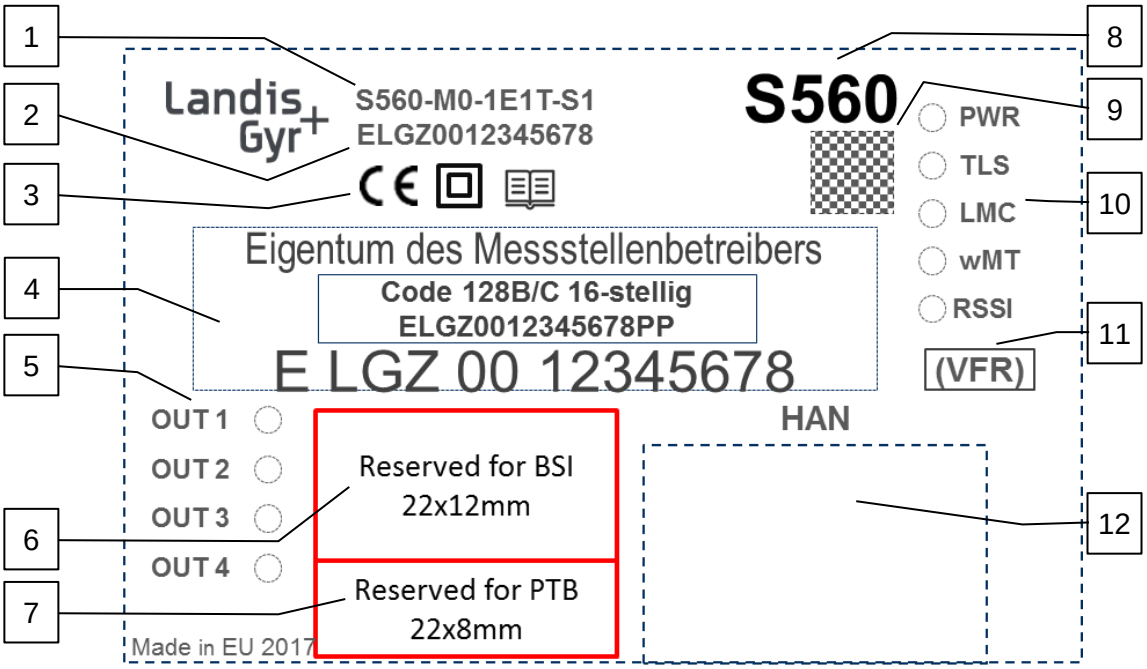
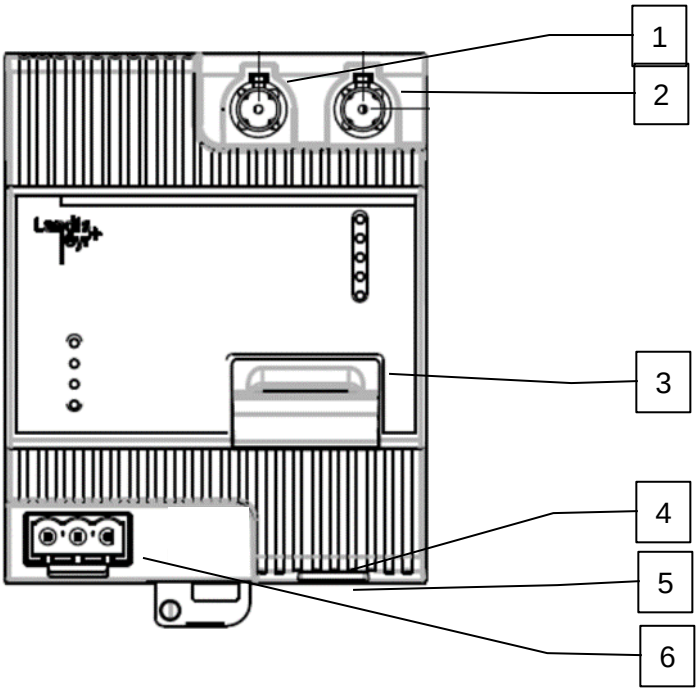


Figure 6 Smart Meter Gateway S560 faceplate

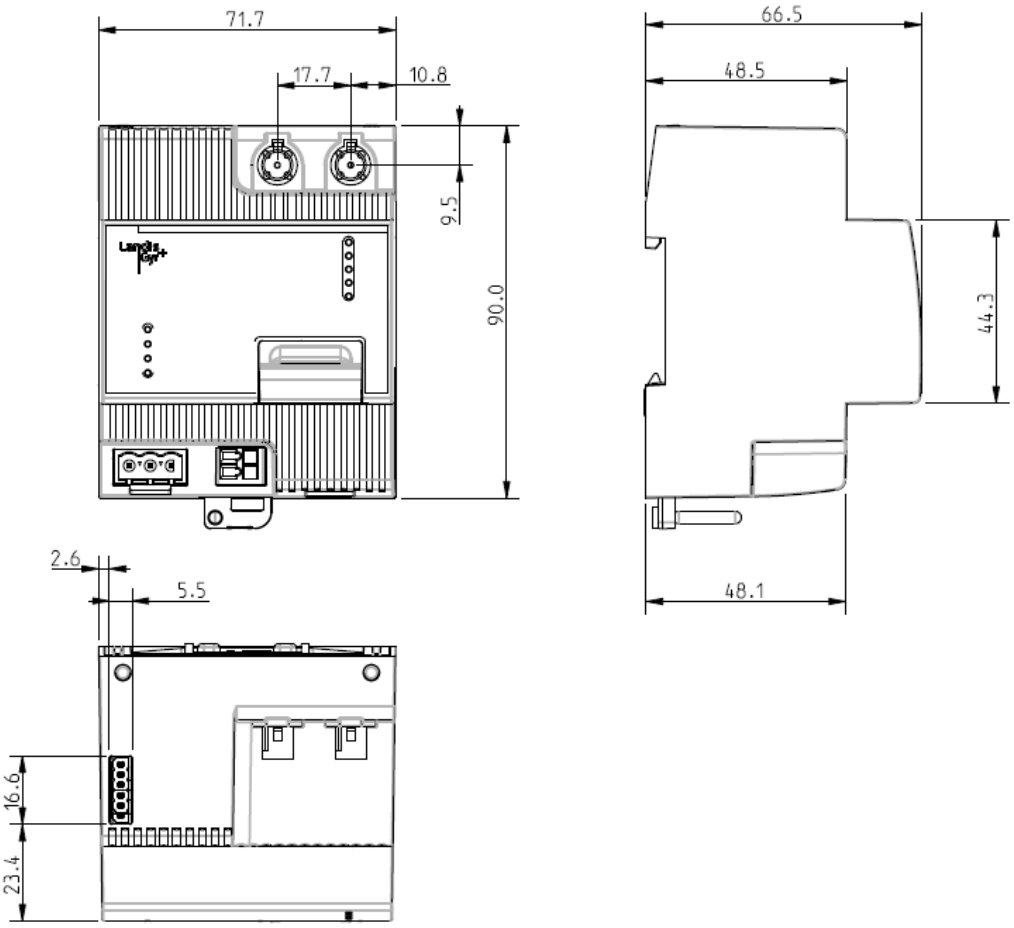
1. *Smart Meter Gateway Type Designation*
2. *Unique Device-ID Manufacturer serial number (14 character) according DIN 43863-5*
3. *CE-Conformity, Signs*
4. *Space for Property Plate 50x12mm*
5. *LED for Option Output*
6. *Reserved for BSI Markings*
7. *Reserved for PTB Markings*
8. *Product Name*
9. *2D Bar Code including Device-ID, Server-ID, Public Key, Manufacturer Serial Number*
10. *Status LEDs (see Functionality in chapter: Installation)*
11. *Shortage for inserted SIM Provider*
12. *HAN-Interface*

3.3 Connectors



1. *Antenna WAN-Communication, violet*
2. *Antenna wM-Bus-Communication, blue*
3. *HAN-Interface, Ethernet, RJ45*
4. *CLS-Interface, Ethernet, RJ45*
5. *LMN-1 Connector, RS-485, RJ12*
6. *Power-Connector, Phoenix IC 2,5/ 3-G-5,08*

3.4 Dimensions



3.5 Antennas

Conforming to RTT&E safety aspects

In order to comply with Specific Absorption Rate (SAR) specified as part the RED directive, the Smart Meter Gateway S560 communication module must only be operated with the antennas specified below (when operated with other than the specified antennas, Landis+Gyr cannot guarantee the proper operation nor compliance to RED and safety aspects).

Communication	Supplier	Antenna Type No.
LTE	Fa. Antennentechnik Germany	LTE-Antenne 4938.05
wM-Bus	Fa. Antennentechnik Germany	Antenne 4466.01

4 Installation

Do not touch live parts
Dangers can arise from live electrical installations to which the gateways are connected. Touching live parts is dangerous to life. All safety information should therefore be strictly observed.

Intended environmental conditions for gateway installations:

- The gateway is intended to be installed in a mechanical environment “M1”, with shock and vibrations of low significance, as per directive 2014/32/EU.
- The gateway is intended to be installed in electromagnetic environment “E2”, as per directive 2014/32/EU.
- The gateway is intended to be installed indoors in non-condensing humidity conditions.
- The gateway should be installed with copper conductors. The use of aluminums conductors may result in corrosion. Seek advice from Landis+Gyr before using this meter with aluminums conductors.
- The installation site must meet the requirements of:
  - The gateways ingress protection rating (IP30) and
  - The operating temperature range (-25°C … +55°C).
- Avoid installing the gateway on south-facing walls and in direct sunlight. If necessary, use an additional shield or visor to protect the installation from direct sunlight (shield not provided by Landis+Gyr).

The gateway S560 is intended for indoor use only
In cases where an outdoor installation is unavoidable, care must be taken to ensure the meter is installed within a suitable enclosure to maintain the operating environment in accordance with the gateway specification. Such enclosures must be securely sealed to avoid the risk of gateway damage as a consequence of exposure to the external environment including (but not limited to) extreme temperatures, humidity and insect ingress.

4.1 Introduction

The following conditions must be met for installation and commissioning of the gateway:

- The work described below must only be conducted by technically qualified and suitably trained persons.
- These persons must be familiar with and observe the local safety regulations.
- Strict observance of the details contained in section ***Error! Reference source not found.*** *“**Error! Reference source not found.**”*, in particular the safety regulations, as well as safe operation.

- Before starting work, ensure that the materials and tools required are all present.

4.2 Before installation

Dangerous voltage on conductors
The connecting wires at the place of installation must not be live when fitting the gateway. Touching live parts is dangerous to life. The main fuse should be removed and kept in a safe place until work is completed, so that it cannot be replaced by anyone unnoticed.

No overcurrent protection or automatic disconnection
As the gateway has no internal overcurrent protection and no method of disconnection from the mains, this must be provided by the end installation.

4.3 Mounting

Observe safety instructions
Prior to starting the mounting of the gateway, read and strictly observe the general safety instructions given in section *4.2 "Before installation"*.

Observe E VDE-AR-N 4101:2014-03
Requirements for metering points in electrical installations in the low voltage network.

The gateway must be mounted on a DIN-rail (Type TH35-7,5). It should be placed as follows on the meter's module space or in similar protected environment (see also section ***Error! Reference source not found.*** *"**Error! Reference source not found.**"*):

1. Find the correct position for the gateway.
2. The meter's module cover must have an opening at the same position where the gateway is mounted.

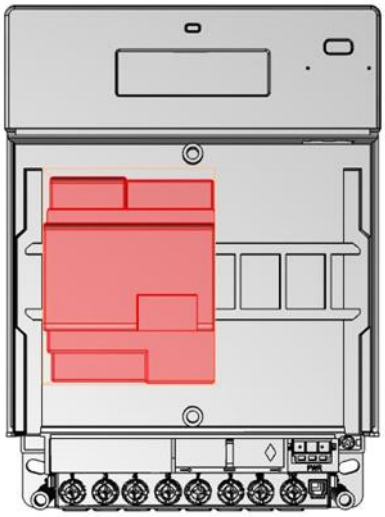


Figure 4. Gateway's mounting position on meter

4.4 Connect Smart Meter Gateway S560 to Environment

The DIN rail is used to mount the Smart Meter Gateway. The gateway may be powered through the power connector located near the terminal block of the meter. The gateway must also be connected to the LMN connector.

Check before connecting

Before connecting the gateway to devices in the measuring system, check the following item and corrected, if necessary:

1. Has the correct gateway (with correct Type Designation) been installed at the measuring point?
2. Check if the correct SIM provider is installed.

Insert SIM Card

If a gateway with modem (Mobile Network) is installed:

1. Check if already a SIM card is inserted and if it corresponds with the preselected provider.
2. If no SIM is inserted, insert the SIM card recommended by your Metering Point Operator.
3. In case you have to adjust Gateway Administrator connection point, don't insert the SIM card yet. Proceed after this Chapter as recommended in chapter 4.5 Commissioning.

Connecting the gateway to the power connector

Use the specified power cable to connect the gateway to the power connector of the meter. To lead the cable from the terminal block to the gateway, an opening must be made in the terminal cover of the meter.

Connecting the gateway to the LMN-1, RS-485

Use prefabricated cables, only. The cable duct on the right side of the DIN- rail mounting area of the meter. Use LMN-1 connector on the meter.

Connecting antennas to the gateway

If a gateway with modem (Mobile Network) is installed connect a mobile network antenna.

1. Use the violet FAKRA connector
2. Use an antenna with the appropriate frequency range.
3. The cable duct on the right side of the DIN rail mounting area of the meter.
4. When not using DIN rail antenna make an opening in the terminal cover accordingly.
5. Fix the antenna at its position.

If meters with wM-Bus must communicate with the gateway, install a wM- Bus antenna as well.

1. Use the blue FAKRA connector
2. Use an antenna with the appropriate frequency range (868.95 MHz).

3. The cable duct on the right side of the DIN rail mounting area of the meter.
4. When not using DIN rail antenna make an opening in the terminal cover accordingly.
5. Fix the antenna at its position.

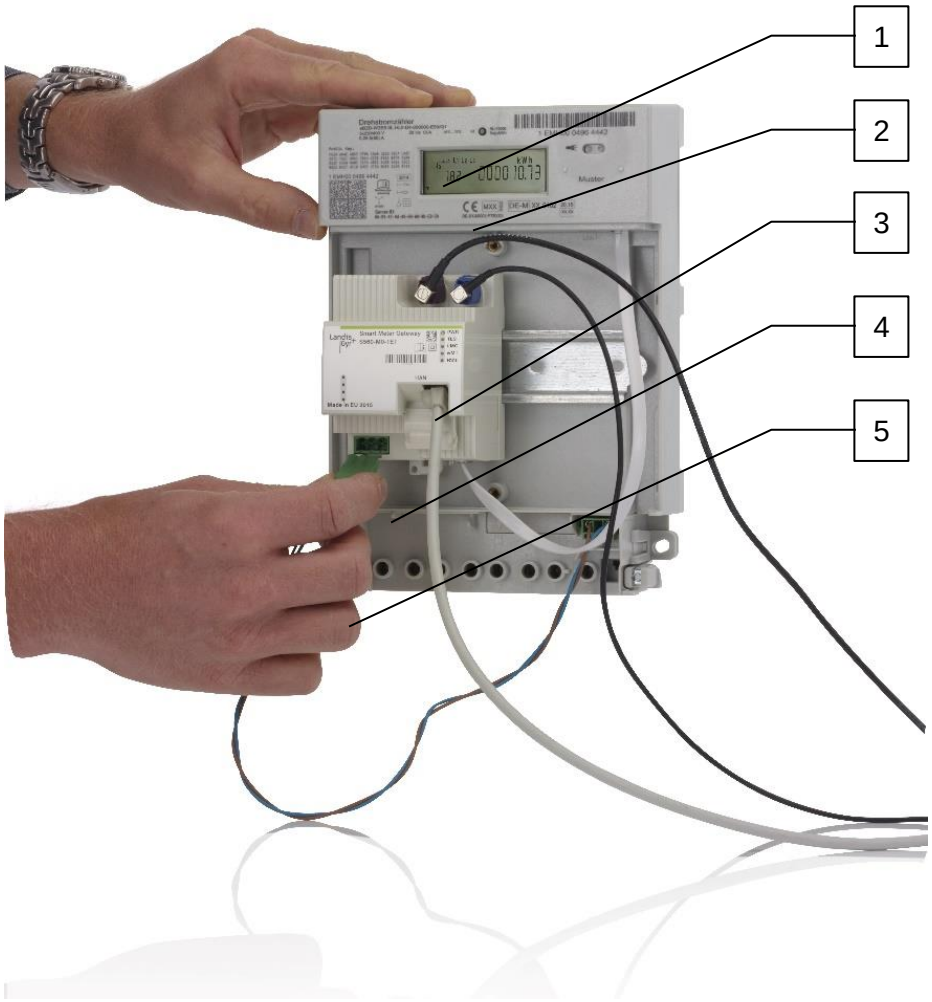


Figure 5. Auxiliary connectors

1 Antenna Cable for Mobile Network Antenna

2 Antenna Cable for wM-Bus Antenna

3 LMN Connector cable

4 Ethernet Cable for HAN-Access

5 Power Connector Cable

Observe safety instructions
After installing the Smart Meter Gateway, move in place the terminal cover and the module cover before switching on the power to the meter.

Before putting the gateway into operation, the following items must be checked and corrected, if necessary:

1. Is the neutral conductor connected to terminal 10?
2. Attach the terminal cover and close it with screws.
3. Attach the module cover and close it with screws.
4. Check the installation as described in section *4.5 "Commissioning and functional check"*.

4.5 Commissioning and functional check

Upon power on the goal is to test the connectivity to the Gateway Administrator.

- Test WKS2 – TLS channel of type ADMIN-SERVICE
- Test WKS1 – TLS channel of type MANAGEMENT
- Test reception of WakeUp message

All three tests musts be successfully completed before the S560 gateway proceeds its life cycle to the state "Personalization".

4.5.1 General description of the LEDs

LED Marking/ Color	LED Status	Indication
PWR Green/Red	Green ON Red Flashing	Powered, Operational State Critical Error
TLS Green	Off 4 Hz flashing, for duration of 3s 2 Hz flashing On	No TLS session established Reception of an incoming valid Wake-up packet, after that the LED changes to its actual state. Trying to establish a TLS session of type management, or a TLS session established with "Gütesiegelzertifikate" Active TLS session of type management to GW Admin, established with "Wirkzertifikate"
LMC Green (LMC= Local Meter Connect)	off 2 Hz flashing on	LMC=Local Meter Connect interface. One (or more) meters are lost (HDLC communication error) At least one meter subscribed (HDLC address is assigned) to a RS 485 interface
wMT Blue	Blue Off On, 500ms	No wireless M-Bus communication If a meter is already known to the stack and the encryption keys is correct

(wMT= wireless M°-Bus Traffic)	On, 2s 3 times on/off 500ms	If a meter is already known to the stack but the encryption keys is incorrect If a new meter is discovered
RSSI Yellow	Off 5 Hz flashing 1 Hz flashing on	Received Signal Strength < -100dBm Received Signal Strength < -90dBm Received Signal Strength < -80dBm Received Signal Strength > -80dBm
OUTx Green	Green	Output control Not defined yet.

4.5.2 Installation Check

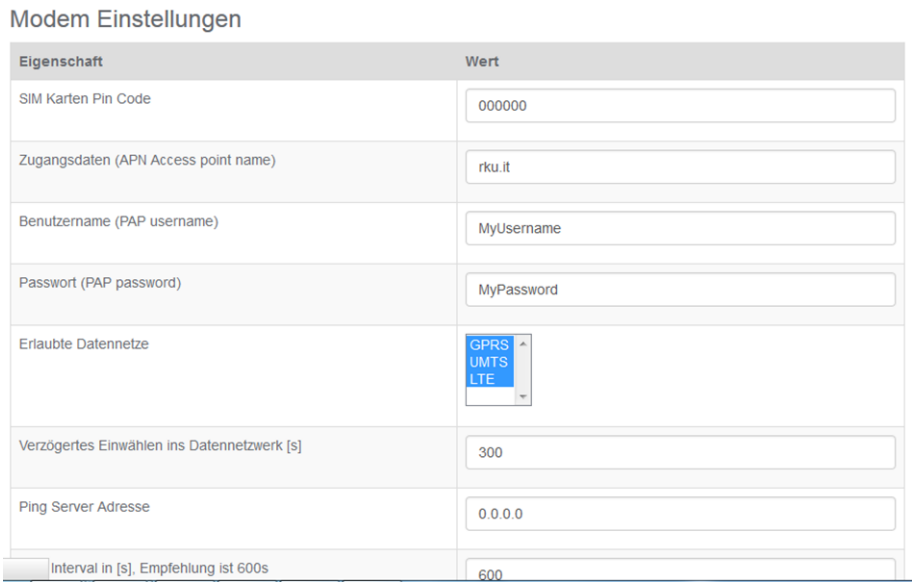
The installed gateway should be checked and put into service as follows:

1. Has the correct gateway (with correct Type Designation) been installed at the measuring point?
2. Check if the correct SIM provider is installed.
3. Check if already a SIM card is inserted and if it corresponds with the preselected provider. Otherwise insert the SIM card recommended by your Metering Point Operator.
4. In case you have to adjust Gateway Administrator connection point, don't insert the SIM card yet. Proceed according Chapter 4.5.3. Update Communication Parameters by First Configurator
5. If the Communication Parameter were set correct, proceed according Chapter 4.5.4 Commissioning.

4.5.3 Update Communication Parameters by First Configurator

Proceed as followed:

1. Remove meter's module cover.
2. Remove the SIM card.
3. Insert the main fuses removed before installation. The meter and the gateway are switched on.
4. Connect an Ethernet cable between HAN-interface and your PC.
5. Start up your browser and insert the address: https://192.168.200.20:8443
6. You receive the following page
7. According the electronic order note or as info from your Gateway Administrator you get username and PIN-code.
8. Switch to sub-menu "Installation" and change according the recommendations.



9. After done the changes press ”Werte übernehmen”. Logout.
10. Switch off mains power.
11. Insert SIM card.
12. Install meter’s module cover.

Update communication parameters by First Configurator
A power cycle is required to take over the set communication parameters.

4.5.4 Commissioning of a S560 Smart Meter Gateway

Insert the main fuses removed before installation. The meter and the gateway are switched on.

LED Test and Power-up procedure

Within 2s after a power-up all LEDs at the SMGW front start flashing for 3s with period of 500ms. This state is terminated by switching off all LEDs. At the end of the power-up procedure the LEDs show the operating state. See LED status in Capture 4.5.1.

Error State Indications
PWR LED flashing red: Critical error: In case of a critical error, all other LEDs have no meaning for the user and must be ignored.

RSSI LED off: Missing WAN communication: There is either no signal available or no access to a mobile network – no cell available.

TLS LED off: No TLS session established: There is either:

- Administrator certificate wrong or invalid
- Administrator IP-Address wrong
- WAN communication not ready

4.6 Uninstalling the gateway

Remove main fuse before disconnecting
The connecting wires at the place of installation must not be live when removing the gateway. Touching live parts is dangerous to life. The corresponding main fuse must be removed and kept in a safe place until work is completed, so that it cannot be replaced by anyone unnoticed.

Remove the gateway from the mains network as follows:

1. Switch off the voltage by detaching the main fuse. The PWR LED goes off.
2. Remove the seals from module cover screws and release and remove the module cover.
3. Remove the connecting cables for Power, LMN-interface and antennas.
4. Remove the gateway from the DIN rail.
5. Inform your MPO and send him the device-ID of the gateway.
6. Fix a replacement gateway on the DIN rail.

Connect the replacement gateway as described in section ***Error! Reference source not found.*** *"****Error! Reference source not found.****"* and the following sections

5 Operation

5.1 Service Technician HAN interface

Access for Service Technician must be predefined by the Gateway Administrator. The Gateway Administrator has to download the HAN root certificate to the gateway S560.

The Service Technician uses its client certificate which is verified by the root certificate to give access to the HAN webpage.

Use any browser, but preferred Mozilla Firefox Release 56.0

Import the certificate given by the Gateway Administrator to the browser

1. Settings
2. HTTPS/SSL [Administrate Certificates]
3. Import Certificate => Select File with Certificate
4. Insert IP-Address and Port (e.g. https://192.168.200.20:7443

5.2 End Consumer HAN interface

Access for End Consumer must be predefined by the Gateway Administrator. The Gateway Administrator has to download the HAN credentials for the End Consumer to the gateway S560.

The End Consumer gets IP-Address and port, Username and Password from his MPO.

Use any browser, but preferred Mozilla Firefox Release 56.0

1. Insert IP-Address and Port (e.g. https://192.168.200.20:7443
2. Insert username and password

6 Maintenance

Maintenance to the gateway is done by the MPO respective via gateway administrator.

7 Decommissioning and disposal

Electronic waste treatment
This product must not be disposed of in regular waste. Use a professional electronic waste treatment process.

The components used to manufacture the device can, in the main, be broken down into constituent parts and sent to an appropriate recycling or disposal facility. When the product is removed from use, the whole product must be sent to a professional electronic waste treatment process. The waste treatment and disposal plants must be approved by local regulatory authorities.

The end processing of the product and recycling of its components must always be carried out in accordance with the rules and regulations of the country where the end processing and recycling are done.

On request, Landis+Gyr will provide more information about the environmental impact of the product.

Disposal and environmental protection regulations
The following are general guidelines and should not take priority over local disposal and environmental policies, which should be adhered to without compromise.

Components	Disposal
Printed circuit boards	Delivered to recycling plants
Metal components	Sorted and delivered to metal recycling plants
Plastic components	Sorted and delivered to re-granulation if at all possible
Batteries	No batteries are included in the device

8 Terms and abbreviations

The following terms and abbreviations are used in this document.

Term	Description
AMM	Advanced Metering Management. AMM systems provide automated bi-directional communication between the energy meter and the utility. The communication is not limited to meter data but can include information about consumption, tariffs, alerts and complementary services.
COSEM	Companion Specification for Energy Metering. COSEM is an interface model of communicating energy metering equipment, providing a view of the functionality available through the communication interfaces.
CSD	Circuit-Switched Data. A method of communicating whereby a dedicated line is set up between two end-points. An example of a CSD network is the Public Switched Telephone Network (PSTN). Cf. PSD (Packet-Switched Data).
DNS	Domain Name Server. The IP address used for querying hostnames.
GPRS	General Packet Radio Service. A packet-based wireless communication service that provides data rates up to 114 Kbps. It also offers a continuous connection to the Internet for mobile phone and computer users.
HTTP	Hypertext Transport Protocol. The communication protocol used by the World Wide Web.
MID	Directive 2004/22/EC of the European Parliament and the Council of 31 March 2004 on measuring instruments.
OBIS	Object Identification System. OBIS provides standard identifiers for all data within the metering equipment, both measurement values and abstract values.
ODEP	Outside Data Exchange Protocol.
OTA	Over-The-Air (Provisioning). OTA is a standard for the transmission and reception of application-related information in a wireless communications system.
SMS	Short Message Service. A pager-like service for GSM mobile phones that allows the sending and receiving of alphanumeric messages.
TCP/IP	Transmission Control Protocol / Internet Protocol. The suite of protocols used to connect hosts on the Internet.
UDP	User Datagram Protocol. A basic communications protocol sometimes used as an alternative to TCP for very small amounts of data.

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