

STD32/35

User Manual

Revision 3.0



Important information

This technical description contains important information for the installation and use of the STD3X. Read it carefully before you start working with the STD3X.

The warranty will be void should damage occur due to non-compliance with these instructions. We cannot accept any responsibility for consequential loss.

We cannot be held responsible for material loss or personal injury that is due to non-compliance with the safety instructions. The warranty will be void in such circumstances.

Telic reserves the right to change the included information without notice and does not take responsibility for errors in the document and/or for any missing information.

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1 General Information

Thank you very much for purchasing our STD3X telemetry device!

The STD3X enables the user to remotely switch ON or OFF electronic devices and to receive alarm messages via (SMS). You can switch devices either with an SMS or using a simple voice call. Alarm messages (SMS) can be received with any mobile phone supporting SMS functionality. With the STD3X you can also receive alarm messages by E-Mail.

We wish you success in using your new STD3X!

This User Manual consists of the following chapters:

Chapter	Description
1	General Information provides basic information such as the conventions for the warning levels, applicable related documentations, used abbreviations, a revision history and contact information.
2	Product Description provides a brief overview about the mechanical specification of the product (including size and weight) as well as an overview of the functions and features of the device as well as the available accessories.
3	Safety and Product Care addresses the audience for this manual, the intended use of this device and safety-related information important to read before using the device.
4	Installation of the Device provides important instructions about how to install the device for the M2M application.
5	Updating the Firmware of the STD explains how to update the STD3X.
6	FAQ and Troubleshooting gives an answer to the most common problems.

1.1 Contact for Support

Please submit your request to TELIC AG customer support using the following online form:

www.telic.de

Information about Telic AG, products and accessories, including FAQs, are available from the following web site: www.telic.de

1.2 Conventions Used in this Manual

The following conventions for warning levels are used in this manual:

Warning



Warnings against hazards that may result directly in **serious injuries or death** in case of non-observance.

Caution



Warnings against hazards that may result in **injuries** in case of non-observance.

NOTICE

Warnings against hazards that may result in **material damage** in case of non-observance.

	Indicates that the device can be damaged by electrostatic discharge.
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	This note contains helpful suggestions or references to material not covered in the document.
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1.3 Related Documentation

Please consult the download zone of the Telic AG website for additional documents related to STD3X, such as the Configuration Manual. Note that such type of documents can be accessed online only after you have registered on our website and agreed with our terms of use. Please follow this link to register for a user account:

www.telic.de/en/nda-reg-form

or use the following link to login if you already have a valid user account:

www.telic.de/en/en-login

1.4 Abbreviations

Abbreviation	Explanations
CSD	Circuit Switched Data
DCE	Data Circuit Terminating Equipment
DTE	Data Terminal Equipment
GPRS	General Packet Radio Service
GSM	Global System for Mobile Communication
ME	Mobile Equipment
MO	Mobile Originated
MS	Mobile Station
PDU	Protocol Data Unit
RF	Radio Frequency
SIM	Subscriber Identity Module
SMS	Short Message Service
TA	Terminal Adapter
TE	Terminal Equipment
TS	Telecom Services

Table 1: Abbreviation

1.5 Revision History

Revision	Datum	Changes
Rev. 1.0	16 th Dec 2010	Original file
Rev.1.1	14 th Jan 2011	Update
Rev 1.2	23 rd Jan 2011	Added Configuration Tool
Rev 1.3	6 th June 2011	Minor Corrections
Rev 1.4	9 th June 2011	Corrected relay voltage mistake
Rev 1.5	10 th December 2013	Change from Telic to CEP, Complete Update
Rev. 2.0	15 th Jan 2015	Content adapted to new hardware
Rev 2.1	31 st March 2015	Several clarifications throughout the document.
Rev. 2.2	11 th June 2015	Update Status LEDs, E-Mail Commands, Section 4 , 6.2,7.1
Rev 2.3	12 th August 2015	Update Section 6.1 CLIP commands
Rev 3.0	22 th August 2017	Update of the Layout. Splitting the User Manual in Configuration Manual and User Manual.
Revision	Datum	Changes
Rev. 1.0	16 th Dec 2010	Original file
Rev.1.1	14 th Jan 2011	Update
Rev 1.2	23 rd Jan 2011	Added Configuration Tool

Rev 1.3	6 th June 2011	Minor Corrections
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Rev. 2.2	11 th June 2015	Update Status LEDs, E-Mail Commands, Section 4 , 6.2,7.1
Rev 2.3	12 th August 2015	Update Section 6.1 CLIP commands
Rev 3.0	24 th October 2017	Merged STD32 and STD35 User Manual

e
ntation Change Log

2 Product Description

2.1 Overview

The STD3X is a telemetry module which is easy to install and simple to use. It can be configured using any GSM mobile phone, SMS capable software.

With the STD35 you can control five relays and monitor the status of three digital and two analog inputs with one or several standard mobile phones.

With the STD32 you can control two 5A relays and monitor the status of two digital inputs with one or several standard mobile phones.

Apart from the STD3X you only need a valid SIM Card from any network provider (GSM850 / 900 / 1800 or 1900 MHz).

Please note: Only use standard [1.8V / 3V] SIM Cards!



Please note that the configuration tool does not support the STD3X anymore. The configuration should be done by a GSM mobile phone or SMS capable software.

2.1.1 Overview STD32

The pictures below show the mechanical design of the STD3X Terminal along with the positions of the different connectors and mounting holes. The STD3X Terminal case is made of durable PC/ABS plastic.

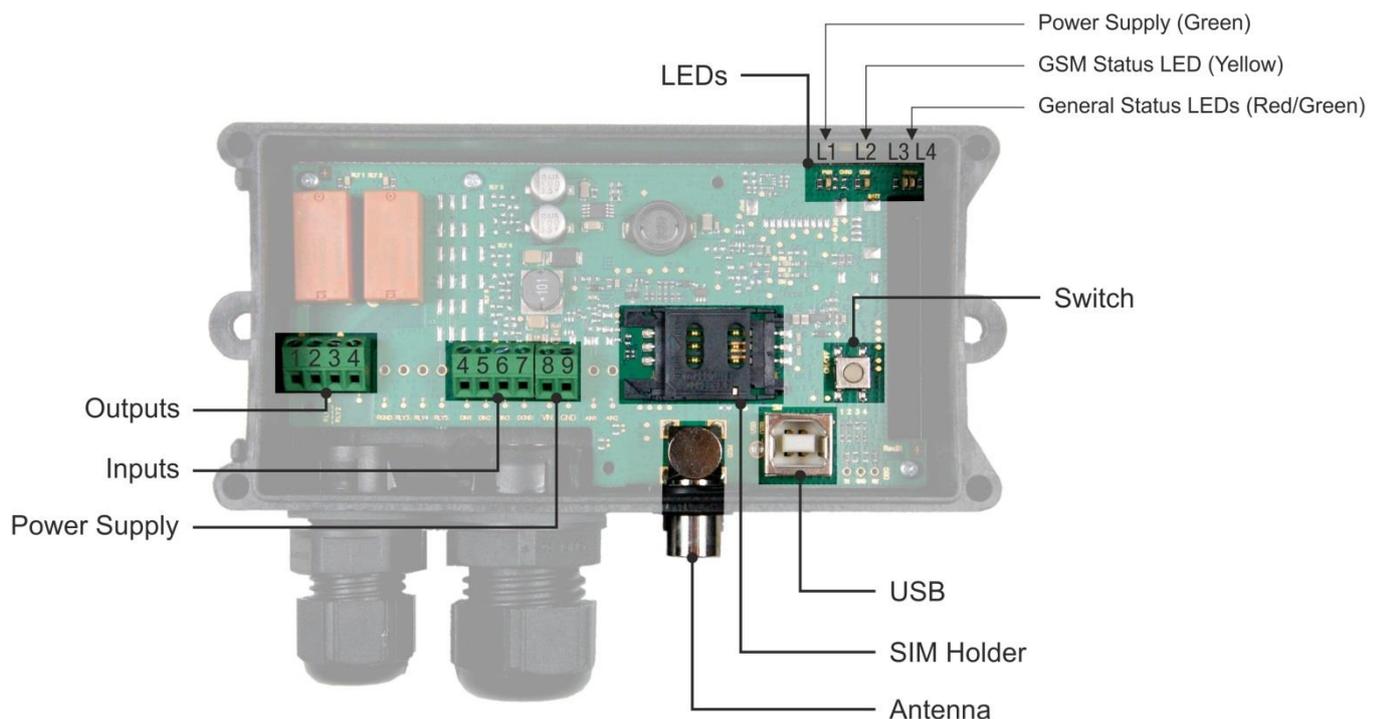


Figure 1: Positioning of the connectors on the STD32

Outputs	Inputs	Power Supply
Screw 1: RLY1 Contact 1	Screw 4: DIN1	Screw 8: VIN
Screw 2: RLY1 Contact 2	Screw 5: DIN2	Screw 9: GND
Screw 3: RLY2 Contact 1	Screw 6: Not used	
Screw 4: RLY2 Contact 2	Screw 7: Common ground for inputs 1 & 2 (GND)	

Table 3: Positioning of the connectors on the STD32

Please note the following instructions:

- **Screw terminal “Outputs”:** Here, electrical loads are connected to the respective relay. By activating an output, the respective relay RLY 1 or RLY 2 establishes an electrical connection between contact 1 and 2. Please consider the limit values for all RLY’s (see article 2.3 Product Features and Technical Data)
- **Screw terminal “Inputs”:** The inputs are activated as soon as a voltage is applied within the specified range between the terminals (e.g. DIN1 and GND refer to Section 2.3 Product Features and Technical Data). The analog inputs (terminals F & G) use the ground potential of the power supply (i.e., terminal E).
- **Screw terminal “Power Supply”:** Power supply is applied on screw D (VIN) and screw E (GND).
- The used terminal blocks are designed for cables with a cross-section of 0.08mm² to 1,3mm² (both single core and multistring).
- The (FME-Female) connector “Antenna” is used to connect the GSM antenna.



Please observe the maximum output voltage of the relays and the maximum input voltage of the inputs! (Refer to Section 2.3 Product Features and Technical Data)



A hardware reset of the device is performed if the “switch” is pressed for more than 7 seconds.

2.1.2 Overview STD35

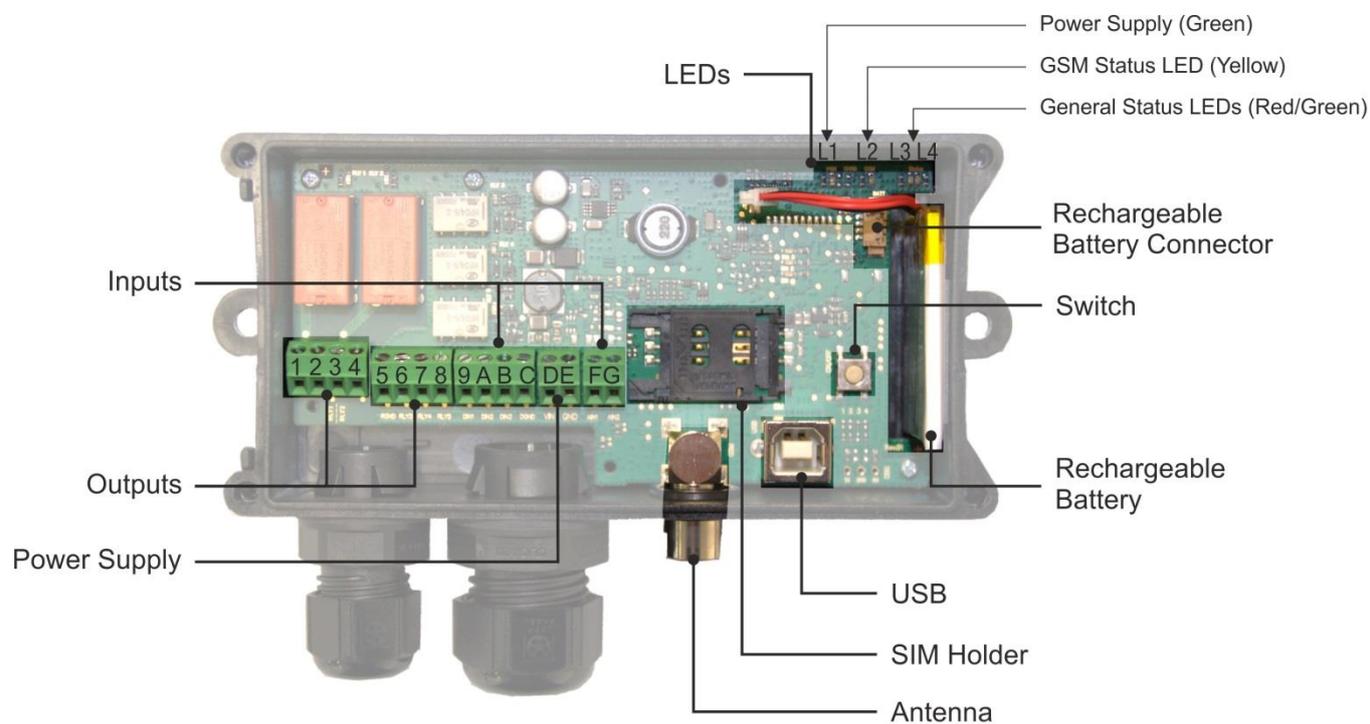


Figure 2: Positioning of the connectors on the STD35

Outputs	Inputs	Power Supply
Screw 1: RYL1 Contact 1	Screw 9: DIN1	Screw D: VIN
Screw 2: RLY1 Contact 2	Screw A: DIN2	Screw E: GND
Screw 3: RLY2 Contact 1	Screw B: DIN3	
Screw 4: RLY2 Contact 2	Screw C: DGND	
Screw 5: RGND	Screw F: AIN1	
Screw 6: RLY3	Screw G: AIN2	
Screw 7: RLY4		
Screw 8: RLY5		

Table 4: Available Connectors of the STD35

Please note the following instructions:

- **Screw terminal “Outputs”:** Here, electrical loads are connected to the respective relay.
- **Screw terminal “Inputs”:** The inputs are activated as soon as a voltage is applied within the specified range between the terminals (e.g. Input 1 and GND; refer to Section **Fehler! Verweisquelle konnte nicht gefunden werden.**, “**Fehler! Verweisquelle konnte nicht gefunden werden.**”). The analog inputs (terminals F & G) use the ground potential of the power supply (ie, terminal E).
- **Screw terminal “Power Supply”:** Power supply is applied on screw D (VIN +) and screw E (GND).
- The used terminal blocks are designed for cables with a cross-section of 0.08mm² to 1,3mm² (both single core and multistring).
- The (FME-Female) connector “Antenna” is used to connect the GSM antenna.

	<p>Please observe the maximum output voltage of the relays and the maximum input voltage of the inputs! (Refer to Section 2.3).</p>
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	<p>A hardware reset of the device is performed if the “switch” is pressed for more than 7 seconds.</p>
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2.2 Identification

2.2.1 STD32 Type Label

On the bottom of the device, you will find the type label.



Label	Description
S/N	Serial number ¹
	Serial number
IMEI	International Mobile Equipment Identity
FW	GSM firmware version
HW-Rev.	Hardware Revision Number + Production date
	CE conformity mark
	Disposal in accordance with European Directive 2002/96/CE
Input	Defines the minimum and maximum power supply
Output	Defines the maximum output

2.2.2 Physical Dimensions and Weight

STD32:

Overall dimensions: 150 x 65 x 45 mm

Weight: approx. 230g

2.2.3 STD35 Type Label

On the bottom of the device, you will find the type label.



Label	Description
S/N	Serial number ²
	Serial number
IMEI	International Mobile Equipment Identity
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	CE conformity mark
	Disposal in accordance with European Directive 2002/96/CE
Input	Defines the minimum and maximum power supply
Output	Defines the maximum output

2.2.4 Physical Dimensions and Weight

STD35:

Overall dimensions: 150 x 65 x 45 mm

Weight: approx. 230g

2.3 Product Features and Technical Data for STD3X

NOTICE

Telic AG may, at any time and without notice, make changes or improvements to the products and services offered and / or cease producing or commercializing them.

NOTICE

Optional Features are not assembled by default, please contact our Sales Team at <http://www.telic.de/en/contact-us> to clarify the details of ordering terminal variants.

STD32		
Category	Features	Details
Air Interface	2G Frequency Band	GSM / GPRS Quad Band; EGSM 850/900/1800/1900 MHz
	GPRS Class	Class 10
	GPRS Features	E-mail
	Output Power	Class 4 (2W @ 850/900 MHz) Class 1 (1W @ 1800/1900 MHz)
Hardware Features	Memory	
	SIM Card Holder	1x (1,8/3 Volt)
	LEDs	4x (Power / GSM / 2x IO Status)
	Type Approvals	CE
Interfaces / Connectors	Antenna	1x FME Male
	1-Wire	Optional (Instead of 1 AIN)
	USB 2.0	1x (USB-B connector; internal)
	Analog Inputs	2x (12 bit; max. 32V)
	Outputs	Max. output current Output 1&2: 5A Max. output voltage Output 1&2: 30V DC; 250V AC Max. output current Output 3&4 and 5: 30V DC Max. output voltage Output 3&4 and 5: 30V DC
	Switching Capacity (Relays)	2x (5A/250V AC, 5A/30V DC, resistive load)
Software	SW Update	DOTA / USB
	Device Configuration	SMS
	Status / Event Reporting	SMS / SMTP E-Mail
	SMTP E-Mail	Transmission of Event Data
Power Management	Voltage Range	5V - 32V DC
	Power Consumption (Typical)	~14 mA
Hardware Characteristics	Operating Temperature	-30°C to +75°C
	Recharging Temperature	0°C to +45°C
	Dimensions	150x65x45 mm
	Weight	230g

Table 5: STD32 Feature Overview

STD35		
Category	Features	Details
Air Interface	2G Frequency Band	GSM / GPRS Quad Band; EGSM 850/900/1800/1900 MHz
	GPRS Class	Class 10
	GPRS Features	E-mail
	Output Power	Class 4 (2W @ 850/900 MHz) Class 1 (1W @ 1800/1900 MHz)
Hardware Features	Memory	
	SIM Card Holder	1x (1,8/3 Volt)
	LEDs	4x (Power / GSM / 3x IO Status)
	Type Approvals	CE
Interfaces / Connectors	Antenna	1x FME Male
	1-Wire	Optional (Instead of 1 AIN)
	USB 2.0	1x (USB-B connector; internal, for configuration)
	Analog Inputs	2x (12 bit; max. 32V)
	Outputs	Max. output current Output 1&2: 5A Max. output voltage Output 1&2: 30V DC; 250V AC Max. output current Output 3&4 and 5: 30V DC Max. output voltage Output 3&4 and 5: 30V DC
	Digital Inputs	3x (galvanically isolated; common external ground) Input voltage (digital inputs) logic 1 (threshold >7V): max 30V logic 0 (threshold <1,5V): min 0V Input voltage (analog inputs) Max (30V) Min (0V)
	Switching Capacity (Relays)	2x (5A/250V AC, 5A/30V DC, resistive load) 3x (1A / 30 V DC)
Software	SW Update	DOTA / USB
	Device Configuration	SMS
	Status / Event Reporting	SMS / SMTP E-Mail
	SMTP E-Mail	Transmission of Event Data
Power Management	Voltage Range	5V - 32V DC
	Power Consumption (Typical)	~11 mA
	Internal Battery	660 mAh (LiPo; backup)
Hardware Characteristics	Operating Temperature	-30°C to +75°C
	Recharging Temperature	0°C to +45°C
	Dimensions	150x65x45 mm
	Weight	230g

Table 6: STD35 Feature Overview

2.4 Telic Certified Accessories

Art-Nr.	Description	
Antennas		Picture
12020	Patch Antenna; FME female connector, self-adhesive, waterproof, GSM: 900, 1800, 1900 MHz; UMTS: 2100 MHz	
12021	Magnetic Antenna; FME female connector, GSM: 900, 1800 MHz, UMTS: 2100 MHz	
12019	Stub Antenna; FME female, GSM: 900/1800 MHz; UMTS 2100 MHz	
12016	Rectangular Antenna; FME female, GSM: 900 / 1800 MHz; UMTS: 2100 MHz (Terminal is shipped by default with a rectangular antenna)	
12006	Roof-mount antenna; FME female waterproof, 900 / 1800 / 1900 / 2100 / 2400 MHz	
Others		Picture
14001	Power supply 230V for STD3X (EU-plug)	

Table 7: Accessories List

Please contact your distributor or Telic AG for availability or check Telic's webpage www.telic.de.

3 Safety and Product Care

This device has been designed in accordance with state-of-the-art standards, manufactured with utmost care using high-quality materials, and tested. Nevertheless, its use may constitute a risk to persons or cause material damage.

The following safety instructions must be followed in order to ensure the safety of users and the device.

NOTICE

If these instructions are ignored, Telic AG will not assume responsibility for any damages that are incurred. Telic AG may refuse warranty claims where evidence of product misuse is found.

Please read the information in this section and the information in Section 4 Installation of the before starting your integration work!

3.1 Audience and Intended Use

The device is designed for the remote switching of devices via the GSM network as well as the remote retrieval of status information of the inputs and the generation of SMS messages or E-Mails after status has changed at the inputs. A different utilization of the device other than the ones described here is not allowed.

3.2 Safety instructions

PLEASE READ THESE SAFETY INSTRUCTIONS AND KEEP A COPY OF THEM.

The STD3X contains highly integrated components which can be damaged by electrostatic discharge if the user would open the housing.



Therefore only touch the STD3X on the housing or connectors and avoid touching the components on the board.



When using products which are exposed to electric voltage the valid VDE-regulations have to be observed. Especially VDE 0100, VDE 0550/0551, VDE 0700, VDE 0711 and VDE 0860 are applicable.

- All wiring work has to be done in a voltage free state only.
- All cables and wires which are energized and connected to the device, the module, or components have to be checked regularly for any damage to the isolation shielding or fractures in the cables. If the supply cables are visibly damaged the device has to be taken out of operation immediately until the faulty cable has been exchanged.
- Before putting a device into operation, it has to be clarified, whether this device or module is appropriate for the field of application. In case of doubt ask a specialists or the manufacturer of the device.
- Please note that we are not responsible for any errors in usage or connection. Therefore we cannot accept any responsibility for consequential loss.
- Before opening the device always disconnect the mains adapter or make sure that the device is disconnected from the power supply.

- Components, modules or devices have to be built into a housing before they are put into operation. During installation they should not be connected to any power supply.
- You should only use tools on components, modules, or devices if they are disconnected from the power supply, and residual electric charge (which may still be stored in some components inside the device) has been discharged.
- When using components or modules it is necessary to strictly observe the specification given in the corresponding description of these components.
- If a description for a private end-customer does not clearly state which electric data is valid for a component or a module, how to wire the device, which external components, or additional devices can be connected or which parameters these components are allowed to have, a specialist must be contacted.
- Devices which operate with greater than 35 Volts have to be connected by a specialist.
- Before putting the device into operation it should be checked that there is no current leakage on the housing.
- In case measurements need to be performed with an opened housing, an isolating-transformer has to be integrated for safety reasons. Alternatively the voltage can be supplied by an appropriate power supply which complies with the safety regulations. All wiring work has to be done in a voltage free state only.

Warning



When using products which are exposed to electric voltage the valid regulations have to be observed.

3.3 General precautions

Operate the STD3X only with a supply voltage between 7-32V DC and have in mind the polarity! (see Figure 2) Use a stabilized power supply with minimum 1A output current. (We recommend using only the original Telic power supply). If you use a mains adapter for power supply it has to conform to the VDE regulations.



Devices operating at a voltage level > 35V and which are connected to relays must be installed only by professional technicians according to the local regulatory requirements for safety!

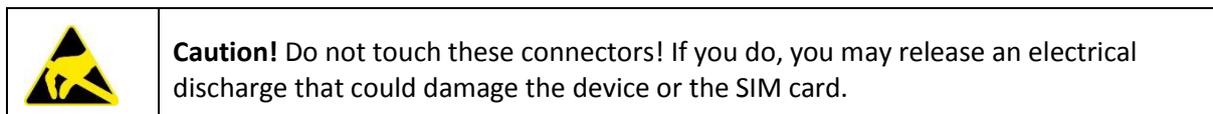
- Loads connected to the device are not allowed to exceed 30 W per relay.
- STD32: The maximum output voltage is 250 V AC for output 1 and 2 and 30V DC for outputs 3-4
- STD35: The maximum output voltage is 250 V AC for output 1 and 2 and 30V DC for outputs 3-5
- STD32: The maximum switching current for output 1 and 2 is 5A
- STD35: The maximum switching current for output 1 and 2 is 5A and for outputs 3-5 it is 1A
- When installing the device make sure that the supply cable has a sufficient diameter
- During operation the temperature must be in the range -30° to +75° Celsius.
- Protect the PCB (board) of the device from humidity, spray water and heat.
- In case of condensation allow a period of about 2 hours for acclimatisation.
- Do not operate the device in areas where inflammable gas, vapours, or dust are or could be present.
- Do not expose the device to heavy vibrations.

- The unit may only be repaired by a specialist.
- Only original parts have to be used when repairing the unit. The use of differing spare parts can cause serious material loss or personal injury.
- No special positioning is required to operate the device.

3.4 SIM card precautions

Before handling the SIM card in your application, ensure that you are not charged with static electricity. Use proper precautions to avoid electrostatic discharges.

When the SIM card hatch is opened, the SIM card connectors lie exposed under the SIM card holder.



When designing your application, the SIM card's accessibility should be taken into account. We always recommend that you have the SIM card protected by a PIN code. This will ensure that the SIM card cannot be used by an unauthorized person.

3.5 Antenna precautions

Consider the risk of lightning in case the antenna is to be mounted outside. Follow the instructions provided by the antenna manufacturer.

- Never connect more than one device to a single antenna. The device can be damaged by radio frequency energy from the transmitter of another device.
- Like any mobile station, the antenna of the device emits radio frequency energy. To avoid EMI (electromagnetic interference), you must determine whether the application itself, or equipment in the application's proximity, needs further protection against radio emission and the disturbances it might cause. Protection is secured either by shielding the surrounding electronics or by moving the antenna away from the electronics and the external signals cable.
- The device and antenna may be damaged if either come into contact with ground potentials other than the one in your application. Beware, ground potential are not always what they appear to be.

3.6 Storage Conditions

The following environmental limits must be maintained in order to safely store the terminal and ensure that it remains functional after a maximum of 12 months:

- Storage temperature STD32: -40°C to +85 °C
- Storage temperature STD35: -20°C to +45 °C

3.7 Power Connector

How to connect the Connector:

Take the cables of the Power Connector and lay them through the cable openings. Open the screws of the terminal block "VIN" and "GND". Then connect the black/white cable into the adapter terminal block input "GND" and tighten the screw. Insert the black cable into the adapter terminal block input "VIN" and tighten the screw.

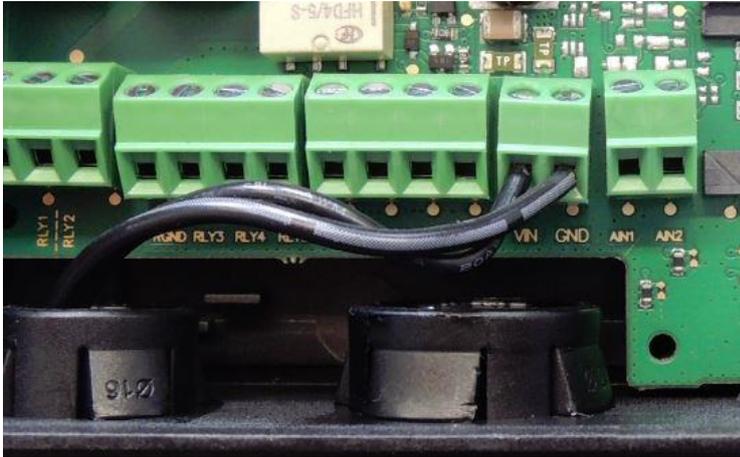


Figure 2: Connected *Power supply 230V* at the STD35 (EU-plug)



Figure 3: Connected *Power supply 230V* at the STD32 (EU-plug)

3.8 Antenna Connector

The antenna connector allows transmission of radio frequency (RF) signals between the modem and an external customer-supplied antenna. The modem is assembled with a 50 Ohms, FME male coaxial jack.

Please take a look at our accessories (chapter 2.4 Telic Certified Accessories), to find an antenna that fits to your application scenario.

For a specific description of the antenna requirements please go to chapter 4.3 Antenna.

3.9 SIM card reader

The Terminal is fitted with a SIM card reader designed for 1.8V and for 3V SIM cards. It is the flip-up type which is lockable in the horizontal position and is accessed through a removable panel.

3.10 Status LEDs (one green, one yellow, one red)

Status LEDs:

The STD3X has several LEDs that indicate the operating status:

- L1 (Green): status of the power supply. It flashes in green when the external power is applied to the device.
- L2 (Yellow): GSM status. This LED flashes once every 2 seconds for a short moment when the device is logged into the GSM network.
- L3 (Yellow): GSM status: The LED flashes faster during a DOTA Update.
- L3 (Red): General Status LED. Cyclic flashing 1x every 2 seconds: the device is ready for use. L4 (Green): General Status LED. This indicates whether an administrative telephone number is configured or not.

An alternate flashing of the LEDs L3 and L4 indicates that the device has not yet been configured.

3.11 Power consumption during Regular Operation

The following table shows you the power consumption of the Terminal.

@ 12V	
STD32	15mA
STD35	31mA

Table 8: Power consumption for STD32 and STD35 at 12V.

4 Installation of the device

This chapter gives you advice and helpful hints on how to integrate the STD3X Terminal into your application from a hardware perspective. Please read the information given in Section 2 Product Description and then read the information in this section before starting your integration work.

4.1 Where to install the device

There are several conditions which need to be taken into consideration when designing your application as they might affect the device and its function. They are:

4.1.1 Environmental conditions

The modem must be installed so that the environmental conditions stated in Section 2.3 Product Features and Technical Data for STD3X, such as temperature, humidity and vibration are satisfied. Additionally, the electrical specifications in Section 2.3 Product Features and Technical Data for STD3X must not be exceeded.

4.1.2 GSM Signal strength

The device has to be placed in a way that ensures sufficient GSM signal strength. To improve signal strength, the antenna can be moved to another position. Signal strength may depend on how close the device is to a radio base station. You must ensure that the location at which you intend to use the device is within the network coverage area. Degradation in signal strength can be the result of a disturbance from another source, for example an electronic device in the immediate vicinity.

When an application is completed, you can verify signal strength by issuing the AT command AT+CSQ. See “AT + CSQ Signal Strength”.



Before installing the modem, use an ordinary mobile telephone to check a possible location for it. In determining the location for the modem and antenna, you should consider signal strength as well as cable length.

4.1.3 Connection of components to the STD3X Terminal

The integrator is responsible for the final integrated system. Incorrectly designed or installed external components may cause radiation limits to be exceeded. For instance, improperly made connections or improperly installed antennas can disturb the network and lead to malfunctions in the device or equipment.

4.1.4 Network and Subscription

Before your application is used, you must ensure that your chosen network provides the necessary telecommunication services. Contact your service provider to obtain the necessary information.

- If you intend to use SMS in the application, ensure this is included in your (voice) subscription.
- Consider the choice of the supplementary services

4.2 How to install the device

The following section provides step by step instructions to get the STD3X up-and-running without extensive setup.

4.2.1 General preparations

You need an activated SIM card of a GSM network provider. The PIN of this card has to be set to “0000” (4 times zero). As an alternative, you could use the PIN “2468”. To change the PIN you can use a regular mobile phone. Please refer to your mobile phone manufacturer’s user manual for instructions on how to change the PIN.



If you use a SIM card with a PIN different from “0000” or “2468” in the STD3X, the STD3X will use a “wrong” PIN. After the second attempt to power up the device your SIM card will be blocked. In this case you need to use the “Super-PIN” or “PUK” to assign a new PIN to your card. Please look into the user guide of your mobile phone. There you find how to use the PUK to de-block the SIM card.

You can also use a SIM card without a configured PIN.

In the following we refer to the “Master Mobile” as the mobile telephone which you want to use to switch the outputs and to configure the STD3X via calls.

The “incognito” or “private call” function of the mobile must be deactivated in order to be able to administer the STD3X. In other words, the Master Mobile has to transmit the mobile phone number with every call. Please refer to the user guide of your mobile telephone to change this setting.

To test the setting you can call a different mobile phone; there your phone number or name should be displayed.

4.2.2 Preparing the Device

Please insert the SIM card into the SIM card holder on the PCB prior to connecting the supply voltage and switching on the STD3X. To open the SIM card holder move it sideways and flip it open; insert the card (mind the proper orientation of the card) and close it again. Move the top sideways in the opposite direction to lock the SIM card in place.

Now please connect the GSM antenna which is part of the delivery to the proper antenna connector on the STD3X board.

After this step, connect the external power supply using the appropriate screw terminal.

Please always observe the proper polarity of the power supply (see Figure 3/Figure 4).

4.2.3 Connecting the battery (STD35 only)



Figure 4: Connecting the battery (STD35 only)

When delivered, the internal battery is not connected to the board (see). Please connect it to the board with the battery connection cable to the appropriate connector as shown in Figure 4.

4.2.4 Call-based Configuration

After having connected the power supply and turned on the device for the first time, the General Status LEDs (L3 & L4, see Figure 2) will start blinking alternately. This indicates that the device is in its original factory settings. Shortly after that the GSM LED will be activated. Now the STD3X will automatically attempt to connect to the GSM network. As soon as this is completed, the GSM LED will flash once every 2 seconds.

The STD3X is now ready and can be configured.

For configuring the Master Phone please see 6.2.4 Set Master ID via Phone Call

4.3 Antenna

4.3.1 General

The antenna is the component in your system that maintains the radio link between the network and the device. Since the antenna transmits and receives electromagnetic energy, its efficient function will depend on:

- the type of antenna (for example, circular or directional);
- the placement of the antenna;
- Communication disturbances in the vicinity of the antenna.

The following sections address issues concerning antenna type, antenna placement, antenna cable, and possible communication disturbances. In any event, you should contact your antenna manufacturer for additional information concerning antenna type, cables, connectors, antenna placement, and the surrounding area. You should also determine whether the antenna needs to be grounded or not. Your antenna manufacturer might be able to design a special antenna suitable for the application.

4.3.2 Antenna placement

The antenna should be placed away from electronic devices or other antennas. The recommended minimum distance between adjacent antennas, operating in a similar radio frequency band, is at least 50cm. If signal strength is weak, it is useful to face a directional antenna at the closest radio base station. This can increase the strength of the signal received by the device. The device's peak output power can reach 2W. RF field strength varies with antenna type and distance. At 10cm from the antenna the field strength may be up to 70V/m and at 1m it will have reduced to 7V/m. In general, CE-marked products for residential and commercial areas, and light industry can withstand a minimum of 3V/m.

4.3.3 The antenna cable

Use 50Ω impedance low-loss cable and high-quality 50Ω impedance connectors (frequency range up to 2GHz) to avoid RF losses. Ensure that the antenna cable is as short as possible. The Voltage Standing-Wave Ratio (VSWR) may depend on the effectiveness of the antenna, cable and connectors. In addition, if you use an adapter between the antenna cable and the antenna connector, it is crucial that the antenna cable is a high-quality, low-loss cable. Minimize the use of extension cables, connectors and adapters. Each additional cable, connector or adapter causes a loss of signal power.

4.3.4 Possible communications disturbances

Possible communication disturbances include the following:

- **Noise** can be caused by electronic devices and radio transmitters.
- **Path-loss** occurs as the strength of the received signal steadily decreases in proportion to the distance from the transmitter.
- **Shadowing** is a form of environmental attenuation of radio signals caused by hills, buildings, trees or even vehicles. This can be a particular problem inside buildings, especially if the walls are thick and reinforced.
- **Multi-path fading** is a sudden decrease or increase in the signal strength. This is the result of interference caused when direct and reflected signals reach the antenna simultaneously. Surfaces such as buildings, streets, vehicles, etc., can reflect signals.
- **Hand-over** occurs as you move from one cell to another in the GSM network. Your mobile application call is transferred from one cell to the next. Hand-over can briefly interfere with communication and may cause a delay, or at worst, a disruption.

5 Updating the Firmware of the STD3X

NOTICE

Please note that the following DOTA-commands need to be send with the configured Master-Phone as a sms.

NOTICE

Please note that for Firmware-Versions below V1.1.15 the APN settings need to be send as follows:
DOTAAPN:"internet.eplus.de".DOTAAPNUSR:"blau".DOTAAPNPWD:"blau"

- A DOTA (Download Over the Air) update requires a GPRS enabled standard SIM Card
- Please contact our Support team for a list of required DOTA commands
- Example for DOTA with Blau SIM Card, Cetec FTP Server and a random file from the server. IMEI(last 4 Numbers of the Device)
- Command 1: IMEI(Then press space and then continue the command without space like in the following example)
DOTAUSR:"P361832f3".DOTAPWD:"azEwagob_511".DOTASERVER:"www.cetec.cc".DOTAFILE:"std3_V1.1.15.tki".
- Command 2: IMEI(Then press space and then continue the command without space like in the following example) APN:"internet.eplus.de".APNUSR:"blau".APNPWD:"blau".

Set up of the APN please replace here the in the red field APN settings from your provider if not blau like here in the example (you find the settings on the homepage of your provider).

- Command 3: IMEI(Then press space and then continue the command without space like in the following example) DOTAREQ.
- Command 4: IMEI(Then press space and then continue the command without space like in the following example) VERSION?.
- All Commands have to be send by the configured Master mobile Phone.
- After Command3 you have to wait 10 minutes because in this time the device is updating. After that Command4 can be send.

NOTICE

Please note that you need to insert the latest version of the Firmware in the DOTA-command (quotation marks).

DOTAFILE "std3_V1.1.15" is just an example.

We recommend to always take the latest version of the Firmware.

6 FAQ and Troubleshooting

6.1 Some troubleshooting hints

Problem	Possible Reason	Solution
Power LED (L1) stays switched off	No supply voltage-	Connect power supply
GSM LED (L2) blinks three times cyclically	PIN is not "0000" or "2468"	Change SIM card's PIN to "0000" or "2468"
GSM LED (L2) constantly on	No GSM network available / no antenna connected	Connect antenna / Change antenna position
STD3X does not react on configuration call (not accepting the call)	Device is already configured	Set back to factory settings or set new administration number
STD3X does not react to an SMS, or call, although booked to the network	The mobile phone does not transmit the phone number ("Incognito")	Activate the transmission of the phone number in your mobile phone
System LEDs toggle	No configuration call received by STD3X	Make configuration call

Table 9: Troubleshooting

6.2 FAQs

6.2.1 How do I know the version of my STD32/35 V4 and STD32/35 V5

- Please check the version of your product using the serial number / IMEI, which is printed on the rear panel.
- The serial number is in each case followed by the IMEI (International Mobile Equipment Identity) of the device using a four-digit product ID.

Example:

- The <IMEI> apply from 0834 for the STD32 V5 to <IMEI> 0833 and the STD32 V4 devices.
- The <IMEI> apply from 0824 for the STD35 V5 to <IMEI> 0823 and the STD3X V4 devices.

6.2.2 Can a camera be connected to the STD3X?

No, the STD3X does not support a camera function.

6.2.3 Set or change Master ID?

xxxx are the last 4 Numbers of the serial number/IMEI which is printed on the backside of the device for example: IMEI=12345678901**2345** so the Numbers 2345 are the password of the device.

- Enter the Master ID Phone: **xxxx M1: +49123456789**.
- **To change the Master ID on a new phone number, you use the same commando: xxxx M1: +49123456789.**

But you can also set the Master Phone otherwise.

6.2.4 Set Master ID via Phone Call

Test steps	Description	Expected result
1.	Connection of the battery and the external power supply with the Device	When the Module is booked into the network the status LED's red/green are blinking and the GSM LED starts blinking yellow in a 2 second Time period.
2.	Call the device with the test mobile phone	The call will be automatically accepted and you hear 4 short sounds. After the sounds the call will be automatically cancelled
3.	Disconnect and reconnect of VCC	You will receive a SMS with the content: "START-UP ALARM". Your test mobile phone is now the admin phone
4.	Connection of the trace cable(USB cable) with the device	The traces will start and the number of the test mobile phone will be appear. On C:MAIN [POHONE_NO_MASTER<s>=<01516 1713220>]
5.	Call the Device again with your test mobile phone	The call will be declined from te device and the relay 1 will be switched on for 1 second(The relay LED will light up)The default configuration was successfully.

Now the basic configuration is done which means that all future events will be sent to the Master Phone and that Relay 1 can be switched from that mobile phone.

To use the additional functions of the STD3X please continue reading the [Configuration Manual](#).

Free Download at: www.telic.de

6.2.5 Clip-List - Add and delete phone number

- Add a new phone number to the Clip-List: **xxxx CL:+49123456789.**
- Delete an existing phone number from the Clip-List: **xxxx CD:+49123456789.**
- Add several phone numbers in one command: **xxxx CL:+49123456789";"CL:+49123456789.**
(max. 160 Symbols)

Attention:

- If you enter following command to the expanded clip list **CL:***. Then its possible for everyone to switch relay 1.

- You can add up to 1000 mobile phone numbers at a STD3x V4.
- You can add up to 194 mobile phone numbers at a STD3x V5.

6.2.6 Usage of the SIM card and general preparation

What must be considered by using the SIM card:

- We recommend that all devices have a valid and activated standard SIM card of any GSM network provider (GSM 850/900/1800 or 1900 MHz).
- When using pre-paid cards must be ensured that the balance always is sufficient to send a message in the event of an alarm.
- We recommend for all devices a standard [1.8V / 3V] SIM Cards.
- You can also use an adapter for Nano and Micro SIM cards.

Attention:

- The PIN of this card has to be set to "0000" (4 times zero). As an alternative, you could use the PIN "2468". To change the PIN you can use a regular mobile phone. Please refer to your mobile phone manufacture's user manual for instruction on how to change the PIN.
- If you use a SIM card with a PIN different from "0000" or "2468" in the STD3X, the device will use a "wrong" PIN. After the second attempt to power up the device your SIM card will be blocked. In this case you need to use the "Super-PIN" or "PUK" to assign new PIN to your card. Please look into the user guide of your mobile phone. There you find how to use the PUK to un-block the SIM card.
- You can also use a SIM card without a configured PIN. In this case the "incognito" or "private call" function of the mobile must be deactivated in order to be able to administer the STD3X device. In other words, the aster mobile has to transmit the mobile phone number with every call. Please refer to the user guide of your mobile phone to change this settings.
- (To test the settings you can call a different mobile phone there your phone number or name should be displayed.

6.2.7 What are the differences between STD32 & STD35?

STD3x V4

- STD32 V4 has 2 In- and Outputs
- STD35 V4 has 5 In- and Outputs where 3 of them are Digital and 2 are analog
- STD35 V4 has an integrated Battery to compensate Power failure
- STD3x V4 has a Clip list storage place of 1000
- STD3x V4 has an integrated Motion sensor

STD3x V5

- STD32 V5 has 2 In- and Outputs
- STD35 V5 has 5 In- and Outputs where 3 of them are Digital and 2 are analog
- STD35 V5 has an integrated Battery to compensate Power failure
- STD3x V5 has a Clip list storage place of 194
- STD3x V5 has no integrated motion sensor

6.2.8 Which temperature sensor I can connect to the analogue inputs of the STD3X?

There are no firm recommendations, because the application scenarios are varied and differ from each other. The following specifications must be observed:

- The output voltage of the sensor must be in the range 0-32V.
- The analog inputs of the STD3X have a resolution of 12 bit.

6.2.9 Which Software is installed on my STD Device?

To ask for the Software Version please send following command: xxxx **VERSION?**.

6.2.10 The device doesn't send any SMS, but it is accessible on the mobile network

- Please check if you still have available budget if you are using a prepaid SIM card. For example you can do this by inserting a SIM card in your mobile phone and trying to send an SMS or to make a call.
- Check your SMS functionality with your mobile network provider.

6.2.11 Sending E-Mails doesn't work

- Please check whether the APN Settings are configured correctly. You can find the APN settings e.g. on the homepage of your mobile network provider.
- By default our SMTP Server is preset. We advise you to use it.
- Please contact our Support Team if you have configured a different SMTP Server and you want to use our standard server.

6.2.12 Why does my device have no GSM reception?

Please check the following items:

- Is the antenna correctly screwed onto the device?
- Is the SIM card inserted in the device?
- Check the SMS & Voice Call functionality with your mobile provider
- Is a GSM network available at the device's location?