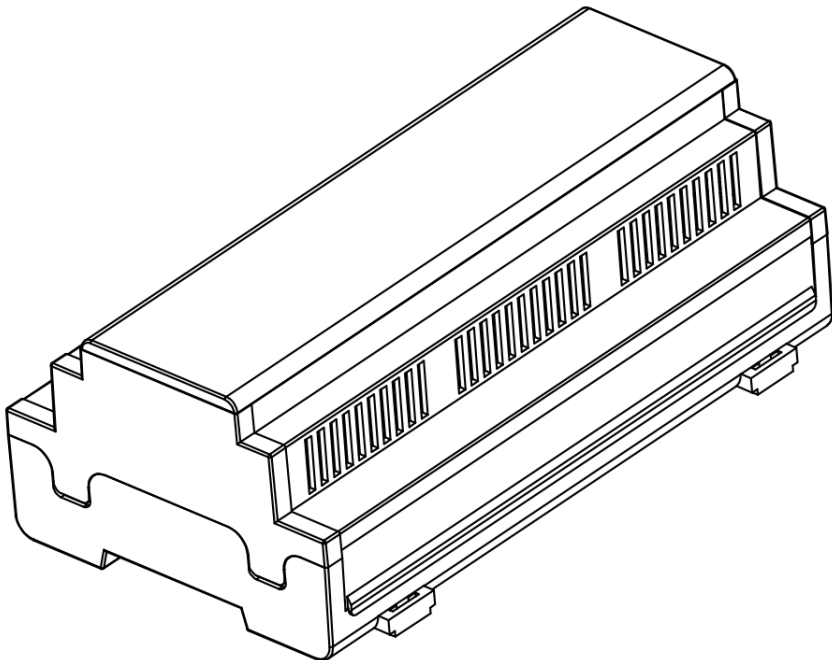


# Andino Gateway

## Raspberry-Pi Based WAN Routing with 4G Modem Instruction manual

These operating instructions are part of the product. It contains important information on commissioning and operation! Pay attention to this, even if you pass the product on to third parties! Therefore, keep these operating instructions for future reference!




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## Safety instructions

The applicable VDE regulations must be observed for all devices that require an electrical voltage for their operation. The VDE directives VDE 0100, VDE 0550/0551, VDE 0700, VDE 0711 and VDE 0860 are particularly relevant for this product. Please also observe the following safety instructions:

- Do not continue to use the Andino Gateway if it is damaged. 
- Assemblies and components do not belong in children's hands!
- Devices that are operated with a supply voltage greater than 24 V may only be connected by a qualified person. The 230 V version of the Andino gateway may only be connected to the mains voltage by a qualified electrician.
- Use only approved and suitable antennas.
- Never operate the device without an antenna. It will be damaged.
- The electromagnetic radiation emitted by this device complies with the legal requirements. However, avoid prolonged direct contact with the antenna while the device is in operation.
- When handling products that come into contact with electrical voltage, the applicable VDE regulations must be observed.
- In commercial facilities, the accident prevention regulations of the German Federation of Institutions for Statutory Accident Insurance and Prevention (Verband der gewerblichen Berufsgenossenschaften) for electrical systems and equipment must be observed.
- Components, assemblies or devices may only be put into operation if they have previously been installed in a housing in such a way that they are safe to touch. They must be disconnected from the power supply during installation.
- Do not drop the product or subject it to strong mechanical pressure, as the effects may damage it.
- The device must be protected from moisture, splash water and heat exposure.
- Ensure sufficient air circulation during operation and avoid ambient temperatures of more than 50°C.
- Do not operate the device in an environment where flammable gases, vapors or dust are present.
- In schools, training facilities, hobby and do-it-yourself workshops, the operation of assemblies must be responsibly supervised by trained personnel.
- If the unit needs to be repaired, only original spare parts may be used! The use of deviating spare parts can lead to serious damage to property and personal injury! Repair of the device may only be carried out by a qualified electrician!!
- This appliance is not intended to be used by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and/or knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety.

## Further information

More information, application examples, frequently asked questions (FAQ) can be found on the product page:

**<https://andino.systems/andino-gateway/andino-gateway-raspberry-pi-router-board>**

## Product description

Andino Gateway forms a connection between a local network and a 4G or LoraWan network. Data can be collected via a local Ethernet network, RS485 or USB.

Andino Gateway offers the following services:

- Mounting on a top-hat rail in an electrical distribution / 9 partial units (TE)
- Accepts a Raspberry Pi 3, Pi 4 or a CM4 via adapter.
- Can be operated with 24V DC or 85V - 230V AC.
- Provides an isolated RS485 interface.
- Internal Mini PCIe slot with adaptation to USB.
- SIM card slot accessible from the outside
- OLED display in the lid for status indication
- Internal RTC and internal I2C slot
- Internal temperature monitoring (DS1820)

## Intended use

The Andino gateway is designed for mounting in electrical distribution boards.

The device can be operated with 24V or 85V AC - 230V AC.



For operation with 24-volt DC voltage, the power supply must provide min. 15 watts.

When operating with 85V - 230V AC, the connection to the mains supply must be made by a qualified electrician. In this case, the power supply should be fused with 6A.

The device may only be operated vertically (wall mounting).



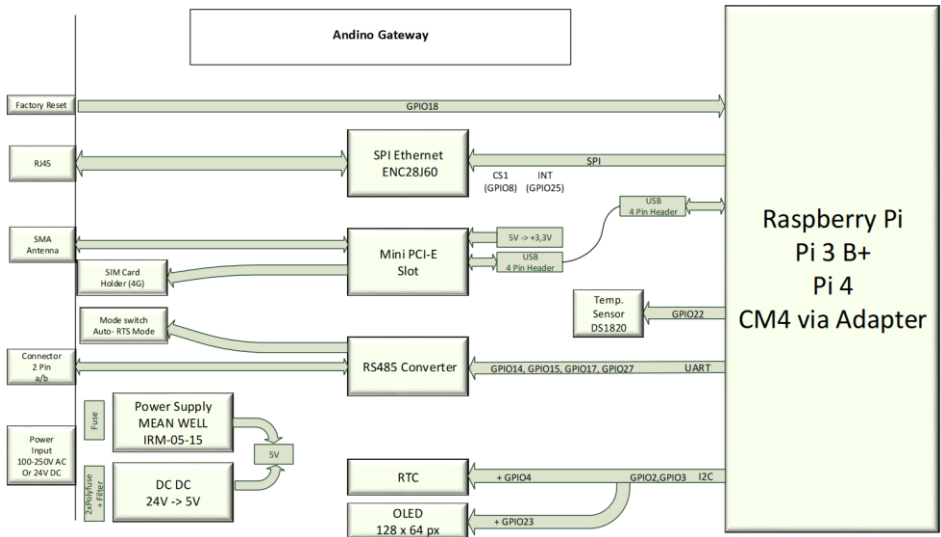
Any other use than specified is not permitted! Changes can be made to the damage to this product, moreover, this is associated with hazards, such as short circuit, fire, electric shock, etc..

The operator, not the manufacturer, is responsible for all personal injury and property damage resulting from improper use.

Please note that operating and/or connection errors are beyond our control.

Understandably, we cannot accept any liability for any damage arising from this

# Overview and schematic structure



- Power supply Voltage regulator with EMC protection circuit and polarity reversal protection. Power secondary +5 Volt max. 2.5 Amps!
- Digital inputs Galvanically isolated inputs for 24 volts. Isolated up to 5 kV.
- Digital outputs Relay outputs for 120VAC and 2 Ampere.
- RTC Real-time clock, temperature-compensated and battery-buffered.
- Raspberry Pi Contains a Raspberry Pi 3B+, Pi 4 oder Compute Module 4 (CM4) via Adapter.

## Technical data

Operating voltage:	+24V DC or 85V – 230V AC (depending on variant)
Current consumption:	at 24V max. 0,7A, at 230V AC max. 0,2A
Temperature range(operating):	+5...50°C, max. 80% rel. Humidity (Non condensing)
Dimensions (HxWxd):	151 mm x 107 mm x 95 mm
Weight:	ca. 180g

### Radio parameters - 4G Modem (SIMCOM 7600E)

Frequency Band(s):

GPS: 1559MHz - 1610 MHz(RX)

GSM900: 880-915MHz(TX), 925-960MHz(RX)

GSM1800: 1710-1785MHz(TX), 1805-1880MHz(RX)

WCDMA :

Band1 1920-1980MHz(TX), 2110-2170MHz(RX)

Band8 880-915MHz(TX), 925-960MHz(RX)

LTE :

Band1 1920-1980MHz(TX), 2110-2170MHz(RX)

Band3 1710-1785MHz(TX), 1805-1880MHz(RX)

Band7 2500-2570MHz(TX), 2620-2690MHz(RX)

Band8 880-915MHz(TX), 925-960MHz(RX)

Band20 832-862MHz(TX), 791-821MHz(RX)

Band38 2570-2620MHz(TX), 2570-2620MHz(RX)

Band40 2300-2400MHz(TX), 2300-2400MHz(RX)

Transmit Power Range(s):

GSM900 : 31.74dBm

GSM1800 : 27.95dBm

WCDMA :

Band1 23.8dBm

Band8 23.6dBm

LTE :

Band1 22.2dBm

Band3 22.5dBm

Band7 23.1dBm

Band8 22.3dBm

Band20 21.8dBm

Band38 23.3dBm

Band40 23.0dBm

Modulation Type(s): GPRS: GMSK; EGPRS: 8PSK; WCDMA: QPSK, 16QAM; LTE: QPSK, 16QAM; GPS: BPSK

## Tested according to standards

### Andino Gateway - Base

*Radiated field strength / conducted emissions*

**DIN EN 55022:** 2011 according to **VDE 0875 part 22** of 12.2011

*Interference emission: Class B (residential) (stricter limits)*

*Interference immunity: Class A (industrial area) referred to. (higher irradiation)*

<b>EMC</b>	<i>Immunity ESD</i>	<b>DIN EN 61000-4-2:</b> 2009 according to <b>VDE 0847 part 4-2</b> of 12.2009
	<i>Immunity radiated electromagnetic field</i>	<b>DIN EN 61000-4-3:</b> 2006+A1:2008+ A2: 2010 according to <b>VDE 0847 part 4-3</b> of 04.2011
	<i>Immunity Burst</i>	<b>DIN EN 61000-4-4:</b> 2012 according to <b>VDE 0847 part 4-4</b> of 04.2013
	<i>Immunity Surge</i>	<b>DIN EN 61000-4-5:</b> 1995 +A1: 2014 according to <b>VDE 0847 part 4-5</b> of 03.2015
	<i>Immunity magnetic fields</i>	<b>DIN EN 61000-4-8:</b> 2010 according to <b>VDE 0847 part 4-8</b> of 11.2010

### SIMCom 7600E

<b>Safety</b>	EN/IEC 62368-1:2020
<b>Health</b>	EN IEC 62311:2020
<b>EMC</b>	ETSI EN 301 489-1 V2.2.3 (2019-11) Draft ETSI EN 301 489-19 V2.2.0 (2020-09) Draft ETSI EN 301 489-52 V1.1.2 (2020-12) EN 55032 2015 EN 55035 2017
<b>Radio</b>	ETSI EN 303 413 v1.1.1 ETSI EN 301 908-1 V13.1.1 ETSI EN 301 511 V12.5.1 (2017-03) ETSI EN 301 908-13 V13.1.1 ETSI EN 301 908-2 V13.1.1

## Simplified EU Declaration of conformity

Hereby, "Clear Systems GmbH" declares that the radio equipment type "Andino Gateway - 4G - V2.2" is in compliance with Directive 2014/53/EU. The full text of the EU Declaration of Conformity is available at the following internet address:

<https://andino.systems/andino-gateway/emc>

## Scope of delivery

- Andino Gateway
- Instruction

## Explanation of symbols



The symbol with the exclamation mark in the triangle indicates important instructions in this operating manual that must be followed. Furthermore, if there is danger to your health, e.g. due to electric shock.

## Disposal

Electrical and electronic equipment that falls under the "ElektroG" law is marked with the adjacent label and may no longer be disposed of with the residual waste, but can be handed in free of charge at the municipal collection points, e.g. recycling centers.

As the end user, you are required by law (Battery Ordinance) to return used batteries and rechargeable batteries. Batteries/rechargeable batteries containing harmful substances are marked with the adjacent label. Disposal with household waste is prohibited. Used batteries / rechargeable batteries can be returned free of charge to the municipal collection points, e.g. recycling centers or anywhere where batteries / rechargeable batteries are sold!