

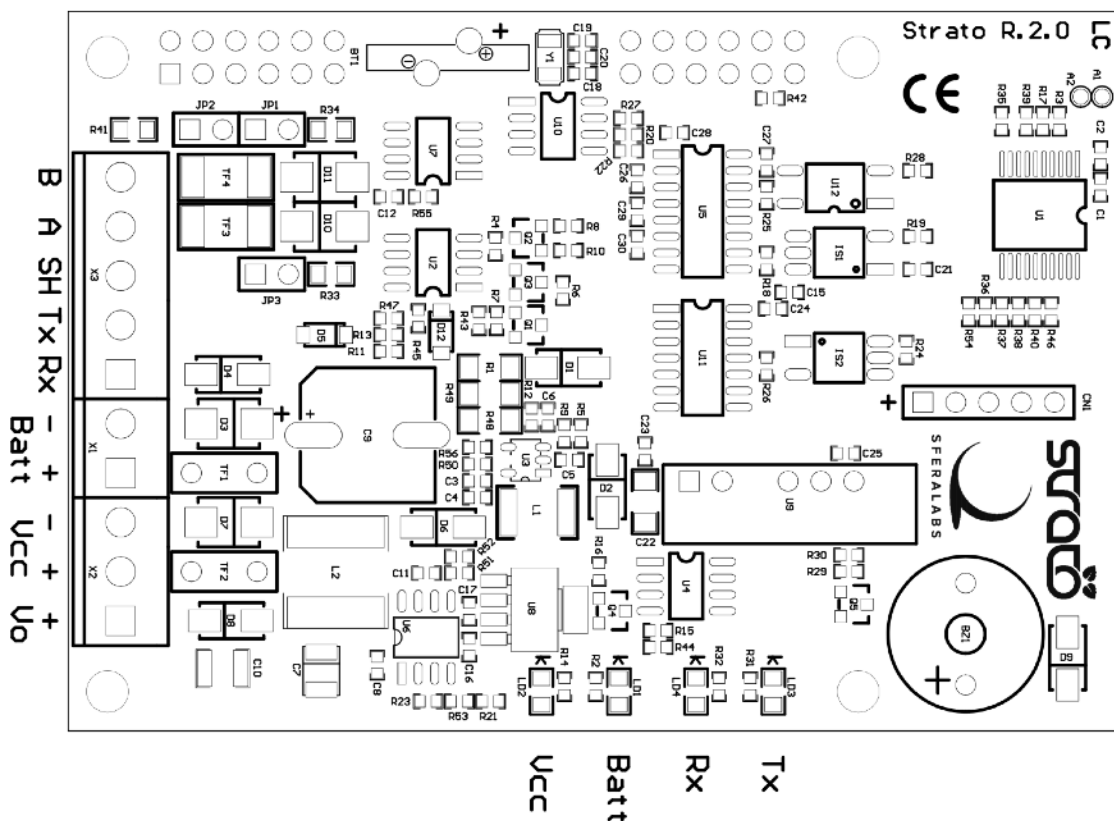


Strato Pi Board Quick Reference

January 2017

Revision 009

Board version 2.0



www.sferalabs.cc

Be sure to always remove the power supply before connecting or disconnecting the Strato Pi board and Raspberry Pi.

Follow all applicable electrical safety standards, guidelines, specifications and regulations for installation, wiring and operations of the Strato Pi boards.

Carefully read the complete Strato Pi User Guide before installation.

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SPECIFICATIONS

Power supply	9/28V \equiv (VDC) Reverse polarity protection with 1.1A resettable fuse. Surge protection up to $\pm 500V/20\Omega$ 1.2/50 μ s
Battery input (UPS version only)	12V lead acid battery (not provided). Suggested capacity: 1.2Ah. Reverse polarity protection with 1.1A resettable fuse. Surge protection up to $\pm 500V/20\Omega$ 1.2/50 μ s
Battery charge voltage (UPS version only)	15V
Battery charge current (UPS version only)	30mA at 12V battery voltage
Voltage threshold for switching to battery mode (UPS version only)	7.2V, 0.2V hysteresis
Current consumption at VS+=12V \equiv including Raspberry Pi 3 current, with low CPU/GPU load and no USB devices connected	150mA w/o Ethernet and battery 180mA with Ethernet, battery and RS485 Actual current consumption may vary based on working conditions
Current consumption at VS+=24V \equiv including Raspberry Pi 3 current, with low CPU/GPU load and no USB devices connected	85mA w/o Ethernet and battery 100mA with Ethernet, battery and RS485 Actual current consumption may vary based on working conditions
Raspberry platform compatibility	Pi 3 Model B Pi 2 Model B
Serial communication ports	RS-485 Half-Duplex with automatic data direction management RS-232 Full-Duplex
Baud Rates on COMM ports	1200 to 115200
ESD-Protection Voltage on RS-232 TX/RX	$\pm 15kV$ human body model $\pm 8kV$ contact discharge
ESD-Protection Voltage on RS-485 A/B	$\pm 15kV$ human body model $\pm 8kV$ contact discharge
Surge protection on RS-485 A/B	Surge protection up to $\pm 500V/20\Omega$ 1.2/50 μ s; 600W peak pulse power capability at 10/1000 μ s waveform
Fail safe feature on RS-485	Yes
Real time clock	Internal RTCC circuit with back-up Lithium battery Expected battery life without main power supply: ~3 years Expected battery life with main power supply: >10 years
Housing	standard 4M for DIN rail
Operating temperature	0...+50 °C
Storage temperature	-20...+70 °C
Protection degree	IP20

Installation and use restrictions



(Applicable in the European Union and other European countries with separate collection systems). This marking on the product, accessories or literature indicates that the product should not be disposed of with other household waste at the end of their working life. To prevent possible harm to the environment or human health from uncontrolled waste disposal, please separate these items from other types of waste and recycle them responsibly to promote the sustainable reuse of material resources. Household users should contact either the retailer where they purchased this product, or their local government office, for details of where and how they can take these items for environmentally safe recycling. This product and its electronic accessories should not be mixed with other commercial wastes for disposal.

Strato Pi contains a small non rechargeable manganese dioxide lithium coin battery. This cell battery contain so little lithium that it should not qualify as a reactive hazardous waste. If you need to follow specific disposal procedures for the battery, it can be easily separated from the circuit board by simply cutting its two terminals near the soldering points (paying attention not to pinch or fracture the battery body).

Standards and regulations

The design and the setting up of electrical systems must be performed according to the relevant standards, guidelines, specifications and regulations of the relevant country. The installation, configuration and programming of the devices must be carried out by trained personnel. The installation and wiring of connected devices must be performed according to the recommendations of the manufacturers (reported on the specific data sheet of the product) and according to the applicable standards. All the relevant safety regulations, e.g. accident prevention regulations, law on technical work equipment, must also be observed.

Safety instructions

Protect the unit against moisture, dirt and any kind of damage during transport, storage and operation. Do not operate the unit outside the specified technical data. Never open the housing. If not otherwise specified, install in closed housing (e.g. distribution cabinet). Earth the unit at the terminals provided, if existing, for this purpose. Do not obstruct cooling of the units. Keep out of the reach of children.

Set-up

For the first installation of the device proceed according to the following procedure:

- ✓ make sure all power supplies and the external battery are disconnected
- ✓ install and wire the device according to the schematic diagrams on the specific data sheet of the product
- ✓ after completing the previous steps, switch on the power supply and other circuits.

Standards

- ✓ 2014/35/UE (Low Voltage)
- ✓ 2014/30/UE (EMC)
- ✓ EN61000-6-2:2005 (EMC Immunity)
- ✓ EN60664-1:2007 (Electrical safety)
- ✓ EN61000-6-3:2007 (Emission)
- ✓ 2011/65/UE (RoHS).

Hardware Installation

The Strato Pi board is supplied with all connectors pre-installed. No soldering is required. You should connect Strato Pi to Raspberry Pi aligning the GPIO connector. Use appropriate turrets/spacers to firmly bolt the two boards together, ensuring that no conductive part of one board touches any part of the other board.

Be particularly careful to ensure there is enough clearance between the Ethernet and USB connectors and the bottom of Strato Pi's circuit board.

The Strato Pi board is compatible with Raspberry Pi 1 Model B+, Raspberry Pi 2 Model B and Raspberry Pi 3 Model B.

Installing boards that are not fully compatible, both mechanically or electrically, may and probably will damage both Strato Pi and any other component connected to it, and may create a safety risk.

The factory warranty does not cover any damage directly or indirectly caused by the installation and removal of the Strato Pi board and Raspberry Pi



STRATO PI UPS BOARD INSTALLED ON THE RASPBERRY PI

Terminal block

Strato Pi Base has a 9 positions terminal block, used for power and serial connections.

A 10 positions terminal block is used on Strato Pi UPS for power, battery, auxiliary power supply output and serial connections.

The maximum conductor cross section is 1.5 mm² (16 AWG), or 0.5 mm² when using ferrules (highly recommended). Recommended stripping length is 5 mm. Screw thread is M2. Never exceed 0.25 Nm torque when tightening the screws.

Power supply

Strato Pi can be powered with DC voltage only:

✓ DC: nominal voltage range 8.1V to 28.0V.

Respect the correct polarity shown in the schematic diagram (+ -). The power supply circuit implements reverse polarity protection using an auto resetting fuse and surge protection up to ±500V/2ohms 1.2/50µs.

A blue on-board LED, also visible through the front panel of the DIN-rail case is lit when power supply is available.

When a Strato Pi board is used, never connect the Raspberry Pi micro-USB power plug.

Read the Strato Pi User Guide for detailed installation and use information related to the external UPS battery and the auxiliary power supply output (VSOUT).

Dedicated GPIO pins

Strato Pi uses a few of the Raspberry Pi's GPIO pins. These pins should not be used for other functions.

GPIO pin	Direction	Description
GPIO2/SDA		I ² C SDA line for the real time clock
GPIO3/SCL		I ² C SCL line for the real time clock
GPIO14/TXD	out	serial TX line
GPIO15/RXD	in	serial RX line
GPIO5	out	cycle high/low for watchdog heartbeat
GPIO6	out	set to high to enable the watchdog
GPIO12	in	high on watchdog timeout
GPIO16	out	set to high to enable the shutdown cycle
GPIO20	out	set to high to sound the buzzer
GPIO26	in	high when on battery power (UPS board only)

Software Installation and usage

Read the Strato Pi User Guide for detailed software installation and use information.