Strato Pi Touch Display User Guide

July 2016

Revision 002

a professional touch panel computer based on Raspberry Pi 3

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To avoid electrical shock or damage to the electronic components, always disconnect the power from Strato Pi Touch Display before you work on it. Don't touch any components on the Raspberry Pi card or other cards while the device is on.

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

Carefully and fully read this Strato Pi Touch Display user guide before installation.

Strato Pi Touch Display is not authorised for use in safety-critical applications where a failure of the product would reasonably be expected to cause personal injury or death. Safety-critical applications include, without limitation, life support devices and systems, equipment or systems for the operation of nuclear facilities and weapons systems. Strato is neither designed nor intended for use in critical military or aerospace applications or environments and for automotive applications or environment. Customer acknowledges and agrees that any such use of Strato Pi Touch Display is solely at Customer's risk, and that Customer is solely responsible for compliance with all legal and regulatory requirements in connection with such use.

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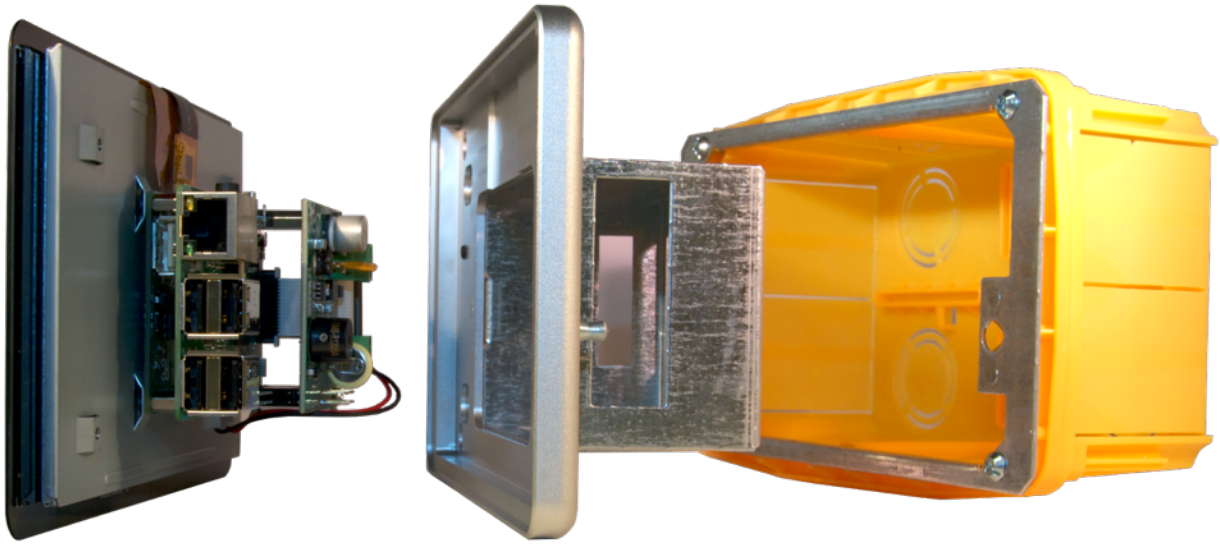
Introduction

Strato Pi Touch Display is a touch panel computer based on Raspberry Pi Model B version 3, the original Raspberry Pi 7” Touch Display and the Strato Pi board (Mini, Base or UPS version), assembled in a rugged, high-quality aluminium and steel chassis, that can be installed in-wall with its optional back-box mount.

Strato Pi Touch Display is compliant with the 2014/35/UE (Low Voltage) and 2014/30/UE (EMC) CE directives and harmonised standards for electromagnetic compatibility (EN61000-6-2:2005), electrical safety (EN60664-1:2007), emission (EN61000-6-3:2007) as well as the RoHS directive for hazardous substances (2011/65/UE).



Features

Strato Pi Touch Display, common to all versions:

- ✓ 12-28Vdc power supply, with surge and reverse polarity protection
- ✓ real time clock with on-board lithium back-up battery
- ✓ on-board buzzer, connected to an I/O pin of the Raspberry Pi board, for acoustic feedback
- ✓ on-board power supply LED indicator
- ✓ power supply on a screw terminal block
- ✓ pre-assembled and tested Raspberry Pi 3 Model B with Strato Pi board (Mini, Base or UPS version), original Raspberry Pi Touch Display and a high-quality aluminium and steel chassis
- ✓ side access to HDMI and 3.5mm jack for audio and composite video
- ✓ access to all USB ports and Ethernet port (opposite to the power and serial terminal block)
- ✓ compliant with 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) and 2011/65/UE (RoHS)

Strato Pi Base Touch Display:

- ✓ standard RS-232 and RS-485 interfaces to the Raspberry Pi serial line, with opto-isolator and electrostatic discharge protection
- ✓ on-board LEDs for serial line activity
- ✓ serial connections on a screw terminal block
- ✓ hardware watchdog implemented in the Strato Pi board, fully independent from the Raspberry Pi, controlled via the I/O pins of the Raspberry Pi board

Strato Pi UPS Touch Display:

- ✓ all features of the Strato Pi Base Touch Display
- ✓ integrated uninterruptible power supply, with external lead-acid 12V battery
- ✓ simple UPS status and control via the I/O pins of the Raspberry Pi board
- ✓ on-board LED for battery operations status.

Usage and connections

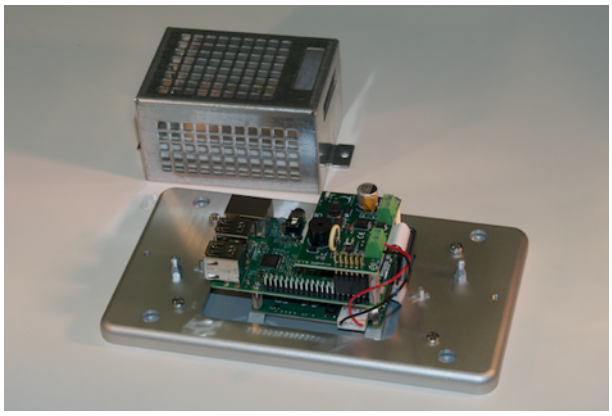
Hardware installation

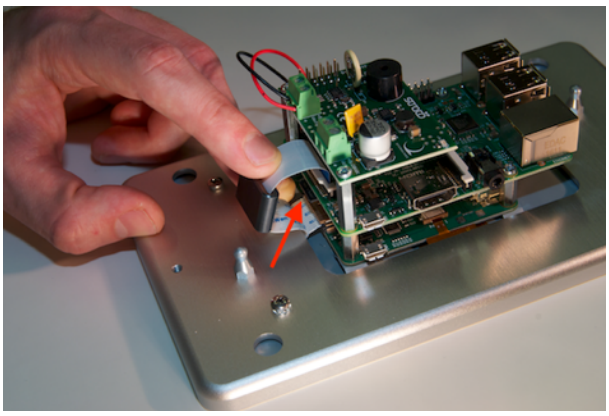
The Strato Pi Touch Display is shipped fully assembled. You will only have to access the Raspberry Pi board to install your microSD card, and connect the power and other optional cables.

Two M4 threaded holes in the back of the display panel are available to screw the display directly to a panel board. A optional back box is also available for in-wall installations.

µSD installation

As the µSD socket is behind the flat cable that connects the Pi board with the display control board, there is no direct access to the µSD socket when the Strato Pi UPS Touch Display is assembled. You will need to remove the back steel cradle to expose the electronic boards to insert and extract the µSD card.





1. Remove power and disconnect all other connections to the Strato Pi UPS Touch Display
2. Lay the Strato Pi UPS Touch Display face down on a soft surface to avoid scratching
3. Unscrew the two lock nuts to free the back cradle from the aluminium display frame
4. Gently lift the cradle; pay attention not to damage the boards and connectors

5. Locate the μSD card socket, on the Raspberry Pi board, directly behind the white flat cable. The flat cable has a large ferrite toroid around it. It is not a problem if the toroid slides up or down, but never remove the toroid
6. Gently move the cable to have enough room to insert the μSD card in its socket; the card should be inserted with its contacts facing up (toward the back of the unit)
7. Once the card is installed, check that the flat cable is still firmly connected on both sides; if not, gently lift the connector's locks, replace the cable and push the locks back in position
8. Ensure that the toroid is not directly in contact with the μSD card, to avoid damage to the card when the cradle is re-installed
9. Gently place the cradle back, aligning the mounting screws on the sides; pay attention not to damage the boards, connectors, and internal cables
10. Screw the two lock nuts.

Terminal block

The Strato Pi Mini Touch Display has a 2-way terminal block, used for the input voltage connection.

The maximum conductor cross section is 2.08 mm^2 (14 AWG). Recommended stripping length is 6 mm. Screw thread is M3. Never exceed 0.5 Nm torque when tightening the screws. The label attached directly below the terminal block shows where to connect the positive and negative terminals of the power supply cord.

The Strato Pi Base Touch Display and Strato Pi UPS Touch Display versions have a 9 positions terminal block, used for power, battery, and serial connections.

The maximum conductor cross section is 1.5 mm^2 (16 AWG), or 0.5 mm^2 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.

Refer to the appropriate Strato Pi board user guide for detailed connection instructions.

Power supply

Strato Pi Touch Display can be powered with DC voltage only:

✓ DC: nominal voltage range 12V 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 is lit when power supply is available.

Never connect the Raspberry Pi micro-USB power plug.

Dedicated GPIO pins

The Strato Pi board embedded in Strato Pi Touch Display uses some of the Raspberry Pi's GPIO pins which should not be used for other functions.

Strato Pi Mini Board		
GPIO pin	**Direction**	**Description**
GPIO17	out	set to high to sound the buzzer

Strato Pi Base and UPS Board		
GPIO pin	**Direction**	**Description**
GPIO2/SDA		I2c SDA line for the real time clock
GPIO3/SCL		I2c 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

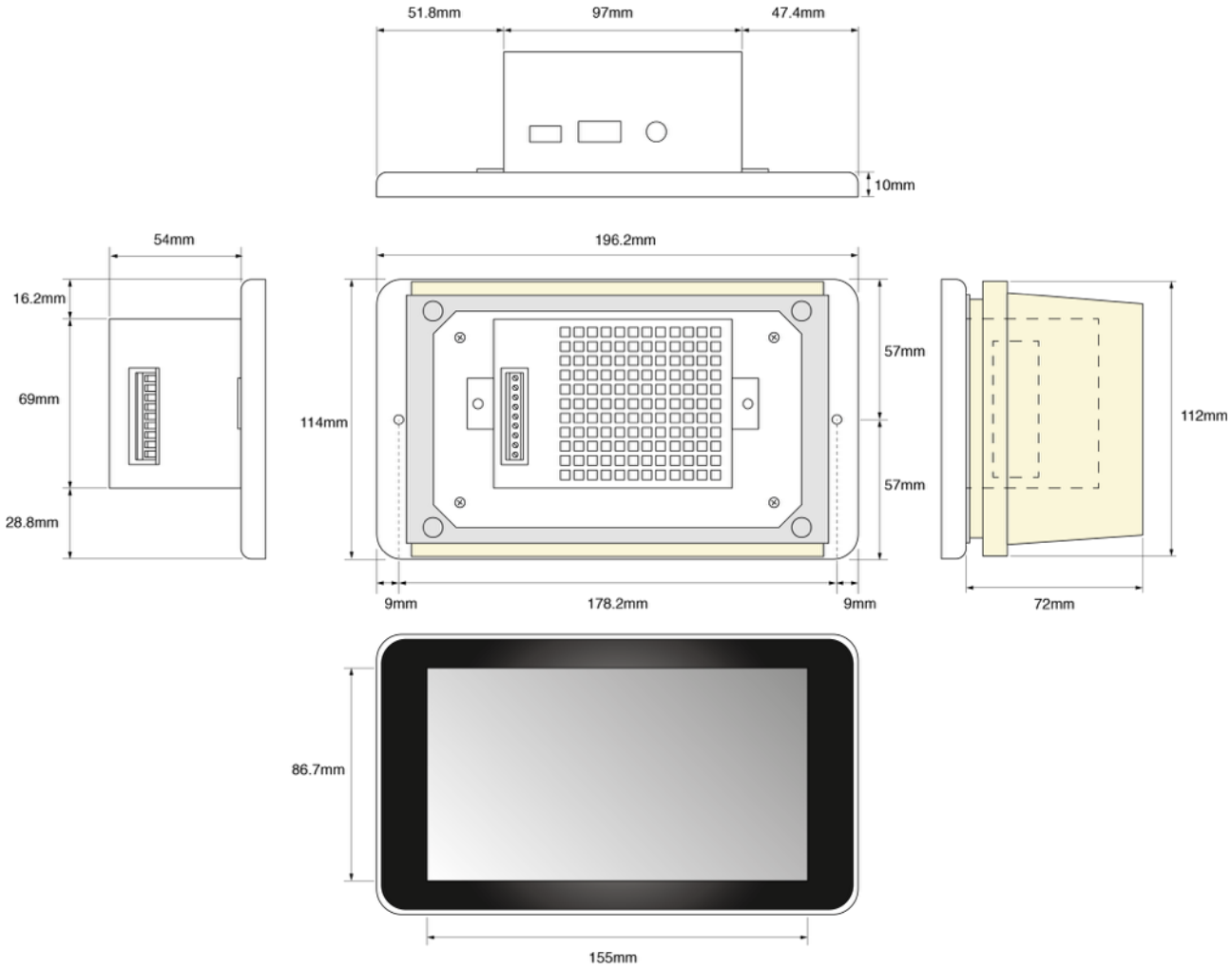
Refer to the software installation section of the Strato Pi or Strato Pi Mini user guide for detailed software installation and troubleshooting instructions.

The display and touch sensor unit used in Strato Pi Touch Display is the original 7" touch display developed by the Raspberry Pi Foundation. Refer to the raspberrypi.org website for additional software installation instructions.

Technical specifications

Power supply	12/28V⎓ (VDC) Reverse polarity protection with auto resetting fuse. Surge protection up to ±500V/2ohms 1.2/50µs
5Vcc maximum output current (Ta 22 °C)	1.8 A @ 12V PS 2.0 A @ 24V PS
Battery input (UPS version only)	12V lead acid battery (not provided). Suggested capacity: 1.2Ah. Reverse polarity protection with auto resetting fuse. Surge protection up to ±500V/2ohms 1.2/50µs
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
Typical current consumption at VS+=12V⎓ including Raspberry Pi 3 current, with low CPU/GPU load and no USB devices connected	430mA w/o Ethernet and battery 450mA with Ethernet and battery Actual current consumption may vary based on working conditions
Typical current consumption at VS+=24V⎓ including Raspberry Pi 2 current, with low CPU/GPU load and no USB devices connected	240mA w/o Ethernet and battery 250mA with Ethernet and battery Actual current consumption may vary based on working conditions
Raspberry platform compatibility	Pi 3 Model B
Raspberry Touch Display	display size: 7” diagonal resolution: 800 x 400 touch panel: 10-finger multi-touch
Serial communication ports (Base and UPS versions only)	RS485 Half-Duplex with automatic data direction management RS232 Full-Duplex
Baud Rates on COMM ports	1200 to 115200
ESD-Protection Voltage on RS232 TX/RX	±15kV human body model ±8kV contact discharge
ESD-Protection Voltage on RS485 A/B	±15kV human body model ±8kV contact discharge
Surge protection on RS485 A/B	Surge protection up to ±500V/2ohms 1.2/50µs; 600W peak pulse power capability at 10/1000µs waveform
Fail safe feature on RS485	Yes

Dimensions


51.8mm
97mm
47.4mm
10mm
54mm
196.2mm
16.2mm
69mm
28.8mm
114mm
57mm
57mm
112mm
9mm
178.2mm
9mm
72mm
86.7mm
155mm

Disposal

(Waste Electrical & Electronic Equipment)

(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 Touch Display 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).

Installation and use restrictions

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 related circuits.

Standards

This device complies with the essential requirements of the following directives and harmonised 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).

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- Поставка более 17-ти миллионов наименований электронных компонентов;
- Поставка сложных, дефицитных, либо снятых с производства позиций;
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
- Экспресс доставка в любую точку России;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- Лицензия ФСБ на осуществление работ с использованием сведений, составляющих государственную тайну;
- Поставка специализированных компонентов (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Aeroflex, Peregrine, Syfer, Eurofarad, Texas Instrument, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits,General Dynamics и др.);

Помимо этого, одним из направлений компании «ЭлектроПласт» является направление «Источники питания». Мы предлагаем Вам помощь Конструкторского отдела:

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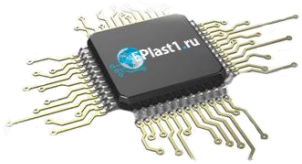
- Подбор аналогов;
- Консультации по применению компонента;
- Поставка образцов и прототипов;
- Техническая поддержка проекта;
- Защита от снятия компонента с производства.



Как с нами связаться

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