



Serial Piggybacks

**RS-422-Adapter, RS-485-Adapter,
TTY-Adapter**

Hardware Manual

to Product V.1930.02,
V.1930.04,
V.1930.06,
V.1930.08,
V.1930.10

NOTE

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This manual contains important information and instructions on safe and efficient handling of the module. Carefully read this manual before commencing any work and follow the instructions.
The manual is a product component, please retain it for future use.

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Document file:	I:\Texte\Doku\MANUALS\SONSTIGE\SER-PIGG.BCK\Englisch\Serial_Piggybacks_Manual_en_41.wpd
Date of print:	2016-10-24

PCB version:	TTY2_PLT RS422SM2 P-RS485-1
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Changes in the chapters

The changes in the user's manual listed below affect changes in the **hardware**, as well as changes in the **description** of the facts only.

Version	Chapter	Changes versus previous version
4.1	-	Warning Messages and Safety Instructions inserted, Classification inserted
	1.	Editorial changes
	2.	Figure of RS-422 schematic diagram changed
	3., 3.2	Description of RS485-Adapter Internal Termination inserted
	4.2	Description of TTY-Adapter active
	5.	Chapter moved and revised

Further technical changes are subject to change without notice.

Classification of Warning Messages and Safety Instructions

This manual contains noticeable descriptions, warning messages and safety instructions, which you must follow to avoid personal injuries or death and property damage.



This is the safety alert symbol.

It is used to alert you to potential personal injury hazards. Obey all safety messages and instructions that follow this symbol to avoid possible injury or death.

DANGER, WARNING, CAUTION

Depending on the hazard level the signal words DANGER, WARNING or CAUTION are used to highlight safety instructions and warning messages. These messages may also include a warning relating to property damage.



DANGER

Danger statements indicate a hazardous situation which, if not avoided, will result in death or serious injury.



WARNING

Warning statements indicate a hazardous situation that, if not avoided, could result in death or serious injury.



CAUTION

Caution statements indicate a hazardous situation that, if not avoided, could result in minor or moderate injury.

NOTICE

Notice statements are used to notify people on hazards that could result in things other than personal injury, like property damage.



NOTICE

This NOTICE statement indicates that the device contains components sensitive to electrostatic discharge.



Safety Instructions

- When working with Serial Piggybacks follow the instructions below and read the manual carefully to protect yourself and Serial Piggybacks from damage.
- The device is a built-in component. It is essential to ensure that the device is mounted in a way that cannot lead to endangering or injury of persons or damage to objects.
- In case of damages to the device, which might affect safety, appropriate and immediate measures must be taken, that exclude an endangerment of persons and domestic animals and property.
- Current circuits which are connected to the device have to be sufficiently protected against hazardous voltage (SELV according to EN 60950-1).
- The Serial Piggybacks may only be driven by power supply current circuits, that are contact protected. A power supply, that provides a safety extra-low voltage (SELV or PELV) according to EN 60950-1, complies with this conditions.

- The Serial Piggybacks have to be securely installed before commissioning.
- Protect the Serial Piggybacks from dust, moisture and steam.
- Protect the Serial Piggybacks from shocks and vibrations.
- The Serial Piggybacks may become warm during normal use. Always allow adequate ventilation around the Serial Piggybacks and use care when handling.
- Do not operate the Serial Piggybacks adjacent to heat sources and do not expose it to unnecessary thermal radiation. Ensure an ambient temperature as specified in the technical data.



DANGER

Hazardous Voltage - Risk of electric shock due to unintentional contact with uninsulated live parts with high voltages inside of the system into which the Serial Piggybacks is to be integrated.

- All current circuits which are connected to the device have to be sufficiently protected against hazardous voltage (SELV according to EN 60950-1).



NOTICE

Electrostatic discharges may cause damage to electronic components.

- To avoid this, please discharge the static electricity from your body before you touch the Serial Piggybacks.
- Furthermore, you should prevent your clothes from touching the Serial Piggybacks, because your clothes might be electrostatically charged as well.

Qualified Personal

This documentation is directed exclusively towards qualified personal in control and automation engineering.

The installation and commissioning of the product may only be carried out by qualified personal, which is authorized to put devices, systems and electric circuits into operation according to the applicable national standards of safety engineering.

Intended Use

The intended use of the Serial Piggybacks is the operation as RS-422, RS-485 or TTY Adapter. The esd guarantee does not cover damages which result from improper use, usage not in accordance with regulations or disregard of safety instructions and warnings.

- The Serial Piggybacks are intended for installation on suitable esd boards only.
- The operation of the Serial Piggybacks in hazardous areas, or areas exposed to potentially explosive materials is not permitted.
- The operation of the Serial Piggybacks for medical purposes is prohibited.

Service Note

The Serial Piggybacks does not contain any parts that require maintenance by the user. The Serial Piggybacks do not require any manual configuration of the hardware. Unauthorized intervention in the device voids warranty claims.

Disposal

Devices which have become defective in the long run have to be disposed in an appropriate way or have to be returned to the manufacturer for proper disposal. Please, make a contribution to environmental protection.

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1. Overview

The serial piggybacks RS-422 Adapter, RS-485 Adapter, RS422-Adapter Internal Termination and TTY Adapter are add-on PCBs which carry the drivers and transceivers for serial interfaces. They define the interface between the serial controller and the peripheral bus.

The pin assignment and the dimensions of the piggybacks are designed to fit in a special plug socket that enables the user to realize a RS-422, RS-485, TTY or, using a RS-232 driver like e.g. the MAX232 a RS-232 interface.

The following figure shows the arrangement of the piggybacks and the RS-232 transceiver at the plug sockets.

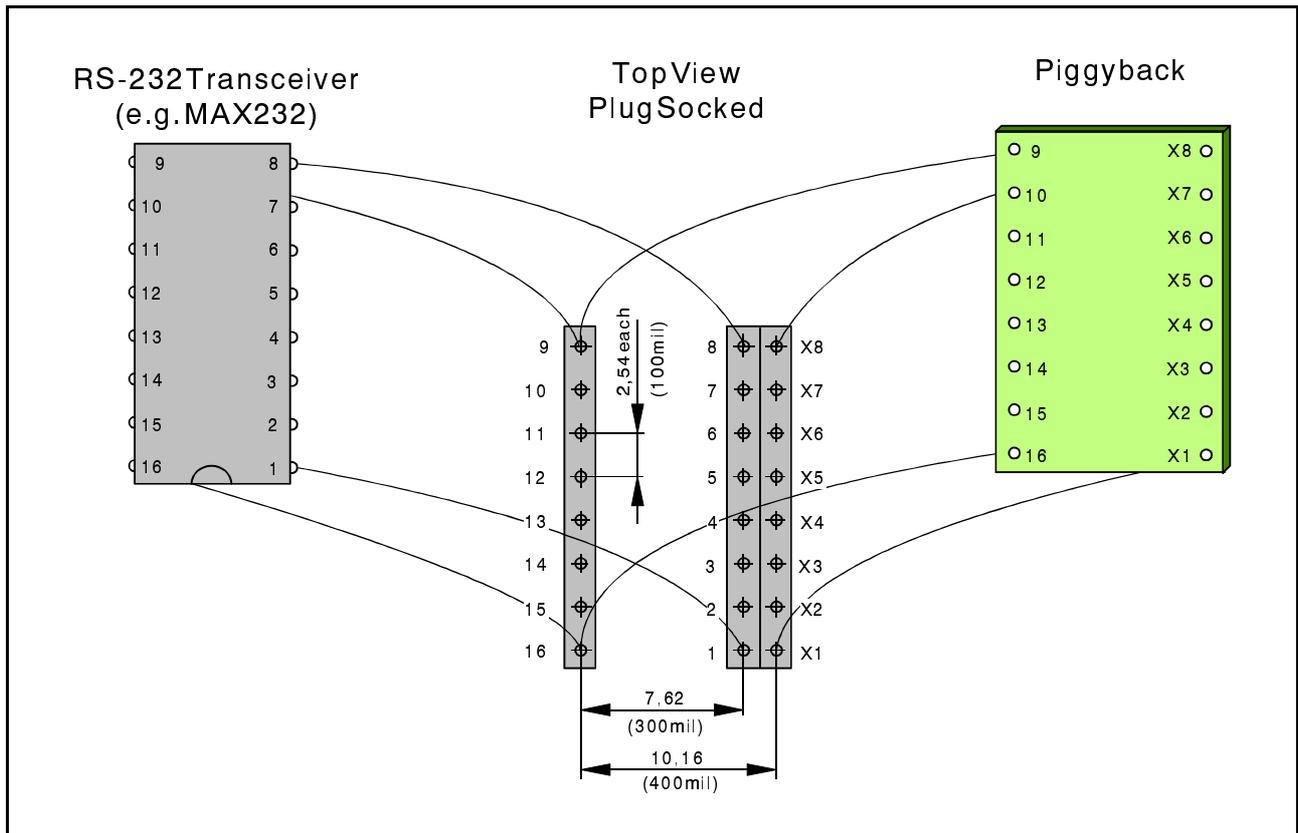


Figure 1: Plug-in socket dimensions and piggyback/RS-232 driver arrangement

Please read the manual of the carrier board for the resulting pin assignment of the serial interface connector (e.g. DSUB9) at the carrier board.

The plug sockets have to be able to carry pins with a diameter of 0.5 mm.

2. RS-422 Piggyback

2.1 Schematic Diagram RS-422 Adapter

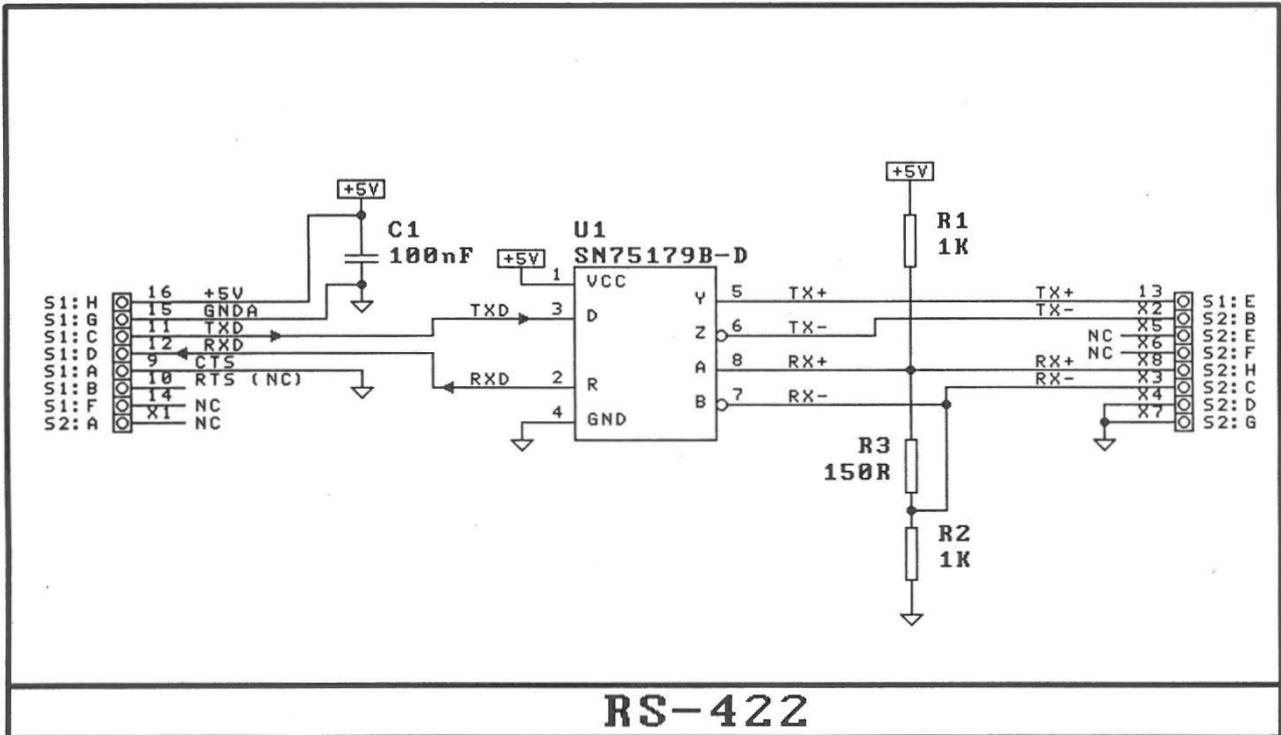


Figure 2: Schematic diagram of the RS-422 Adapter

3.2 Schematic Diagram of RS-485-Adapter Internal Termination

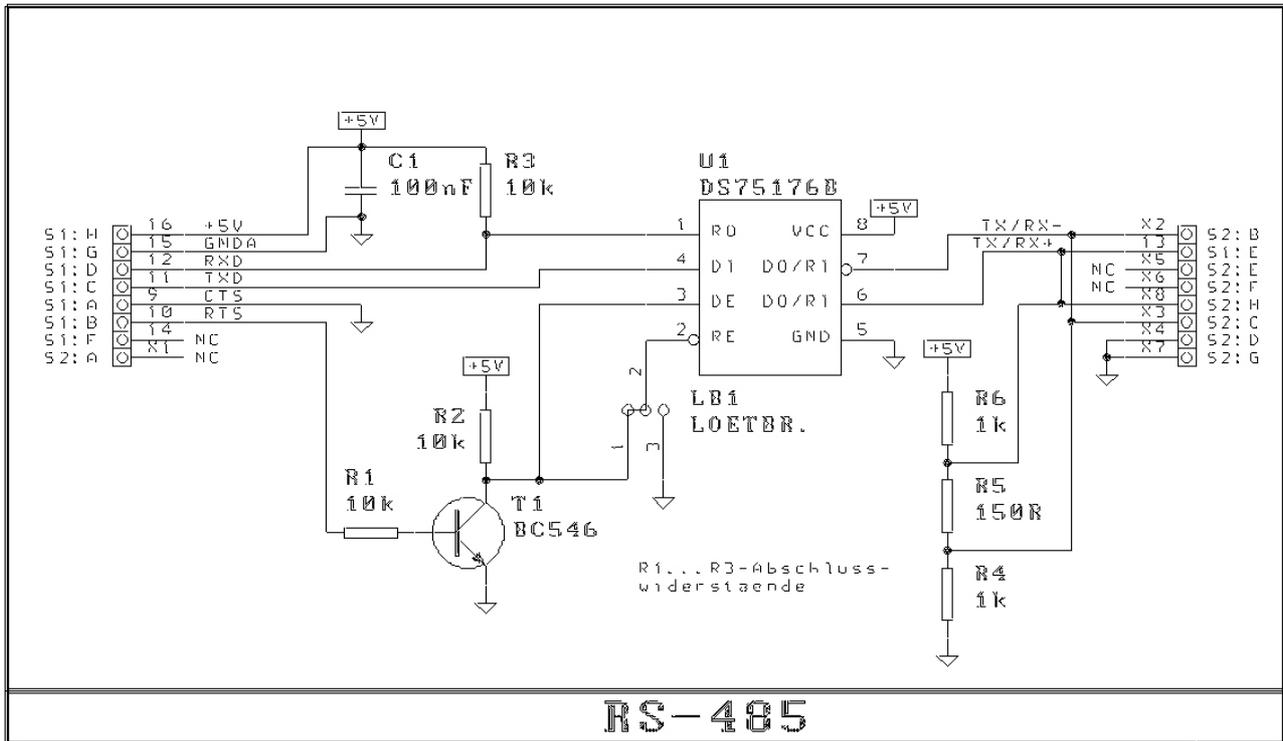


Figure 5: Schematic diagram of the RS-485 Adapter Internal Termination

In the version RS-485-Adapter Internal Termination (V.1930.10) the termination resistors on the adapter are internally connected to the CAN bus signals.

3.3 Dimension

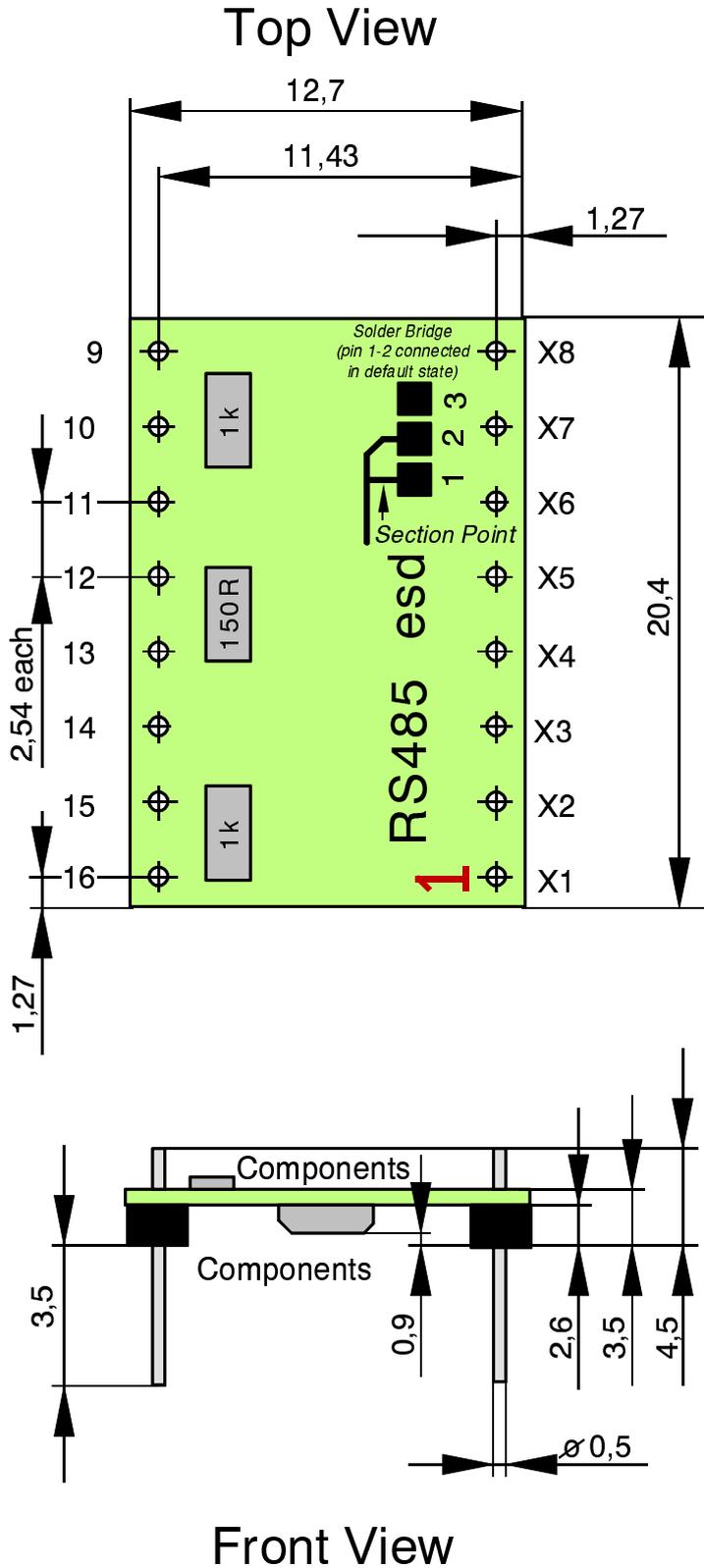


Figure 6: Pin assignment and dimensions of the RS-485Adapters

4.3 Dimensions

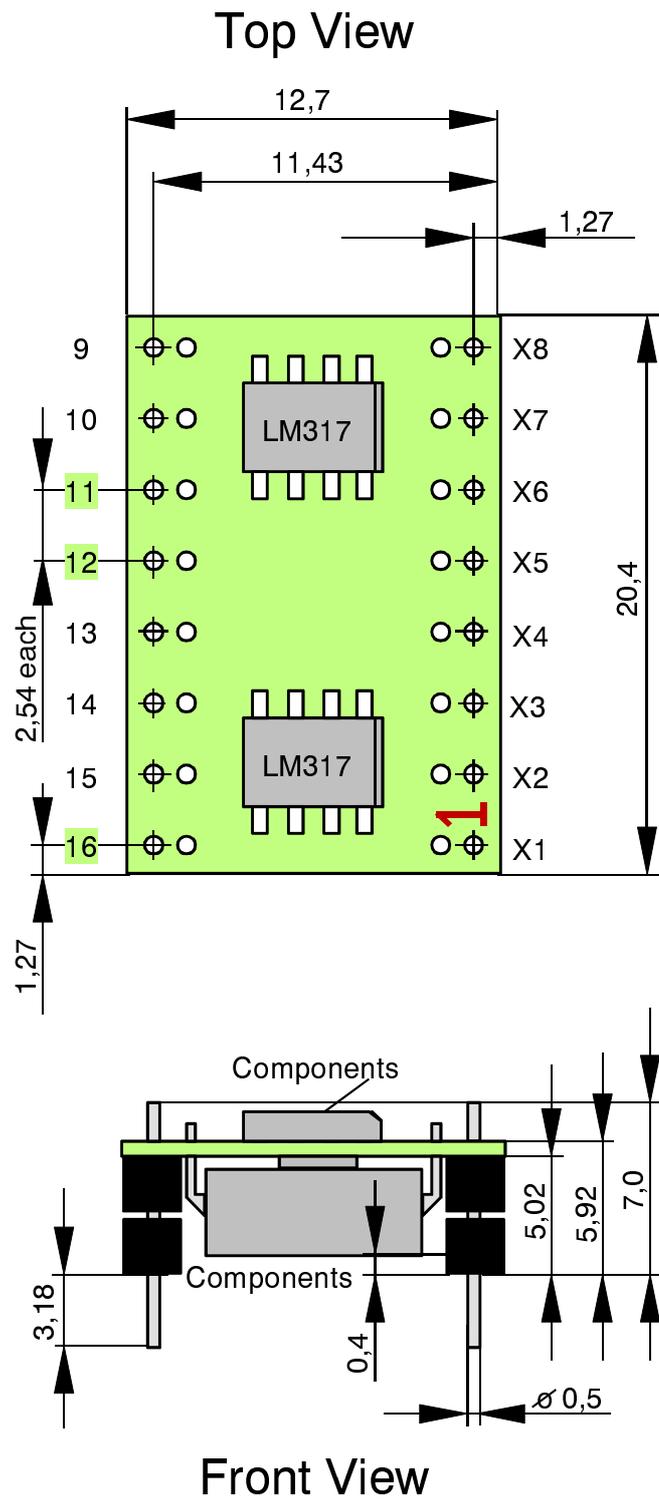


Figure 9: Pin assignment and dimensions of the TTY Adapter

5. Order Information

Type	Designation	Order no.
RS422-Adapter	RS-422 Add on	V.1930.02
RS485-Adapter	RS-485 Add on	V.1930.04
RS485-Adapter internal termination	RS-485 Add on with internal termination	V.1930.10
TTY-Adapter passive	TTY Add on for passive TTY interfaces	V.1930.06
TTY-Adapter active	TTY Add on for active TTY interfaces (TTY-Adapter as V.1930.06 but configured as an active TTY interface), for usage with carrier boards that support ± 12 V only (see page 14)	V.1930.08

Table 1: Order information

PDF Manuals

Manuals are available in English and usually in German as well. For availability of English manuals see the following table. Please download the manuals as PDF documents from our esd website www.esd.eu for free.

Manuals		Order No.
Serial Piggybacks ME	Manual in English	V.1930.21

Table 2: Available manuals

Printed Manuals

If you need a printout of the manual additionally, please contact our sales team: sales@esd.eu for a quotation. Printed manuals may be ordered for a fee.