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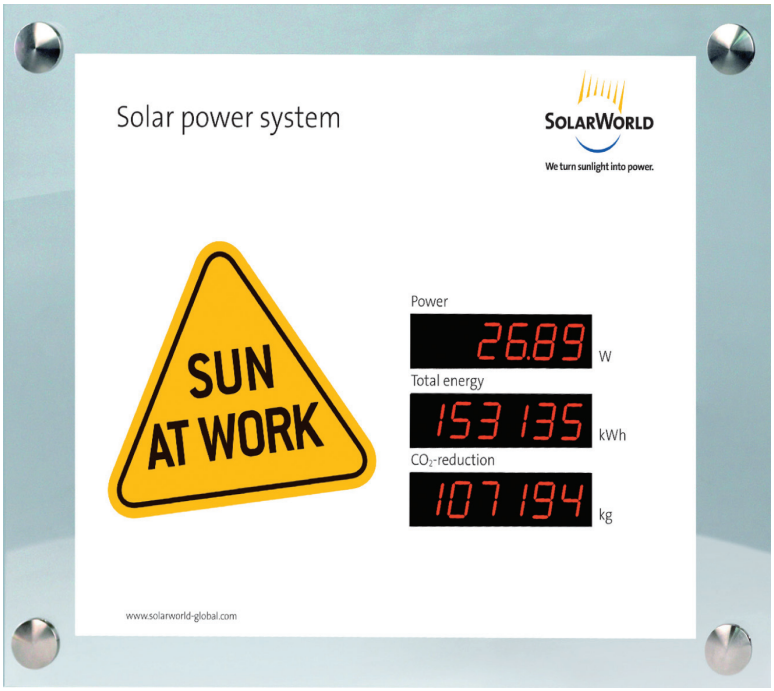
Installation Manual - Suntrol® STD500LED

Large Display Example



ATTENTION

WHILE MOUNTING THE DISPLAY DO NOT PULL ON THE FRONT GLASS!

DO *NOT* MOUNT THE DISPLAY OVER PASSAGEWAYS OR PERSONS!

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!!! Safety instructions for the Suntrol®-large displays !!!

Please make sure to read and follow all safety instructions listed below when you install and use a Suntrol®-large display! If you miss any important information from this safety instruction or the display manual, stop working and contact SolarWorld.

If any of these safety instructions or the instructions in the display manual are ignored, the installer will take full responsibility for the consequences.

INSTALLATION:

Mechanical parts:

Our displays are party based on safety glass-panes; this requires special precautions and the following rules to be observed:

!!! NEVER MOUNT THE DISPLAY OVER PASSAGEWAYS !!!

!!! NEVER MOUNT THE DISPLAY WHERE FALLING PARTS COULD HARM HUMANS OR VALUABLES !!!

- The glass pane can break when hit hard, or when the mounting screws have been over-tightened or are not mounted perpendicular to the glass pane of the display. In case of breaks, the safety-glass will shatter into small fragments, minimizing the risk to humans or valuables.
- Never mount the display where falling parts could damage humans or valuables. Always make sure that the bearing background is solid enough to carry the display.
- Never mount the display over passageways, and consider children who could, for example, hit their head on the edges of the display. Choose your place of installation very careful and avoid highly frequented areas.
- The glass front is de-burred by our supplier, however, the display may still cause injuries. Please ensure that all individuals working with our displays wear gloves able to protect the skin from cuts while ensuring a good grip on the glass. Wearing protective clothing and shoes is also strongly recommended.
- At least two people are needed to install each display: one to hold the display while the other secures the screws. Displays must always be mounted with all 4 screws. Be sure to use our supplied screws and fitting mounting material!
- Make sure to use the correct anchors which guarantee the screws have the best possible grip. When using the provided mounting material, use the fitting anchors with metric dimensions. Also use a drill with metric dimensions. Ensure that screws are perpendicular to the display's glass pane to avoid additional tension at its surface.
- Use the plastic flat washers directly in the front and back of the glass to prevent damage. Mount the stainless steel knobs with the correct fitting tool and hand-tighten only (do not torque higher than 3 Newton meters). Use a special adhesive to secure the screwed fastening.

  Notice: If you can't use the supplied mounting material, ask a local expert for equivalent mounting material. ***Using anything other than the original mounting material is not recommended and is done at the installers own risk!***

- Any parts of the display that are secured with silicon or an adhesive must not be removed or demounted.

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Electrical Parts:

!!! NEVER CONNECT AC-VOLTAGES TO THE DISPLAY !!!

!!! NEVER CONNECT HIGHER VOLTAGES THAN 12 V / DC TO THE DISPLAY !!!

!!! STUDY THE INSTALLATION MANUAL TO ENSURE A CORRECT ELECTRICAL CONNECTION !!!

!!! USE THE ORIGINAL POWERSUPPLY ONLY !!!

- The power supply must be connected by a qualified electrician.
- Use the original power supply only! Compare output voltage and current of the power supply with the values on the sticker at the back of the display and those in the installation manual. Compare input voltage of the power supply with the standard in your country. If you find any mismatch, or don't understand parts of the wiring-plan, please stop the installation and contact Solar World.
- All electrical connection to the display is done with system clamps only. Never use soldering material to establish a connection to any of the PCBs of the large display.
- Never replace any broken fuses.

Maintenance:

- Check the display for a solid mount from time-to-time.
- Check the screwed fastenings for a tight fit from time-to-time.
- Use glass-cleaner and soft tissue to clean any stains from the display.

Please read before use!

This unit contains sensitive electronic parts and must be protected from shock and sudden climate variations. Take care when handling the large display and don't press against the housing.

We have tried to make this manual complete and correct. If you find any mistakes please inform us.

To assure compatibility, see manual of connecting device.

Use only original-parts, especially for the power supply unit. Disconnect the power supply unit from the grid once you have finished work with the large display. Power supply is for indoor use only!

Protect from high humidity (condensation) and high temperature.

This manual accompanies the product. It contains important information how to install and handle the device.

Proper use of the Suntrol STD500LED: The large display is intended to show the measured values of different types of data sources which are listed in the manual.

The SolarWorld warranty is null and void if the large display is not used in the intended manner.

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Introduction

Congratulations on your decision to purchase this large display.

Please read this manual before use. We wish you success with your new display.

Please contact us if you have any questions or you don't know exactly how to use the display.

Contents

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1 Mounting the large display

Warning: Improper use and mounting of the large display can cause serious injuries to personnel and damage to the display.

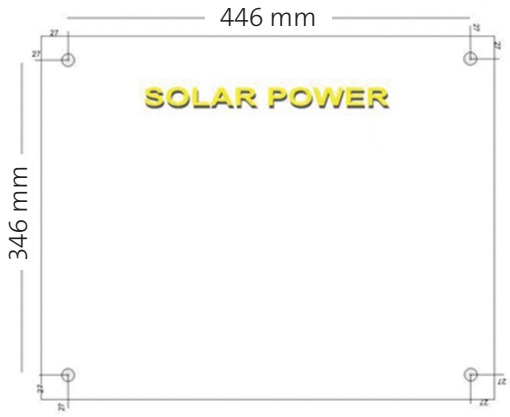
Warning: Do ***not*** mount the display over passageways or persons !!!

The large display is designed to be mounted on a wall or similar surface.

The large display is **waterproof after correct mounting** and is therefore for **outdoor use!**

Installation details
500 & 300 glass

Hole center distance

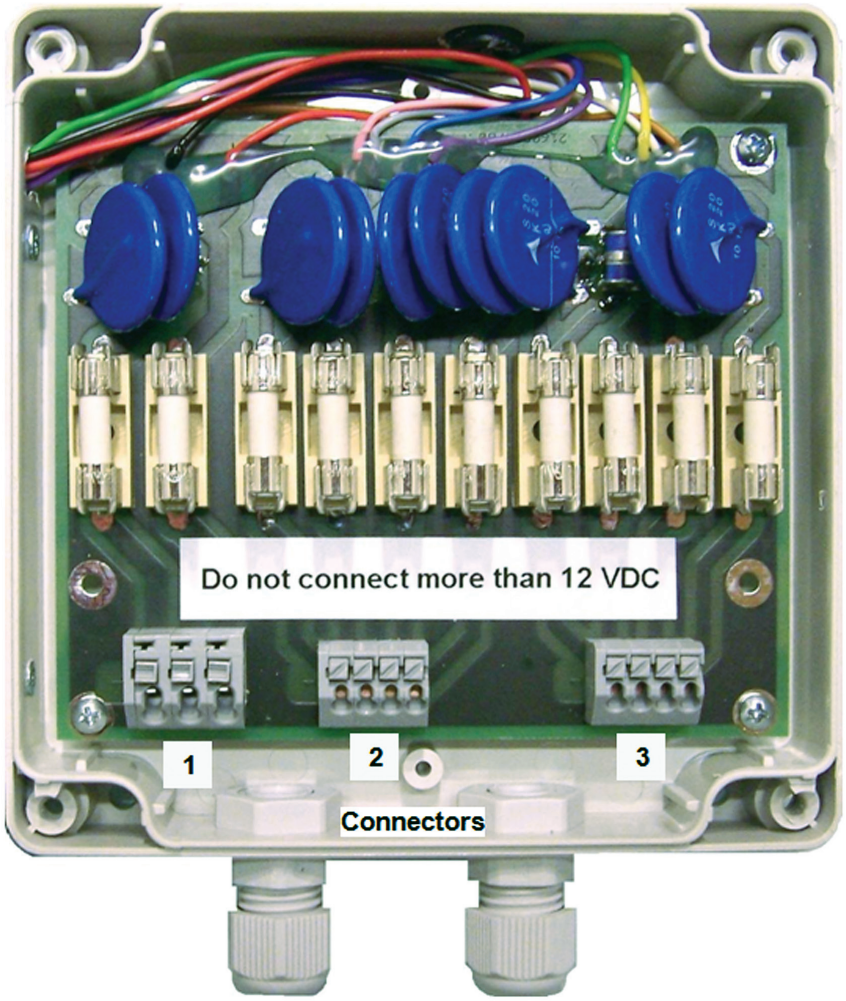


ATTENTION: DON'T SCREW IT TOO TIGHT!
Warranty void if glass is broken!

The stainless steel gommet have to be placed on the distance piece directly!

Remove the **small** housing cover by unscrewing the 4 housing screws.

View into the display with removed housing cover:



There is a push button between connector 2 pin 4 and connector 3 pin 3 mounted to configure the display; see chapter 3.

Connect the power supply wires and data lines as described in **section 2**, corresponding to the used data source. **Configure** the push button as described in **section 3**.

Remount the housing cover with 4 screws and close the nut from the cable fitting.

Take care that the housing screws and cable fitting nut are secure, in order to ensure a waterproof fit.

Finally, mount the large display with the 4 provided mounting screw sets, and distance parts at the wall.

2 General connection description

Warning: Incorrect connection of the large display can cause serious injuries to personnel and damage to the display. **Never connect the display directly to the 230/110 VAC grid!**

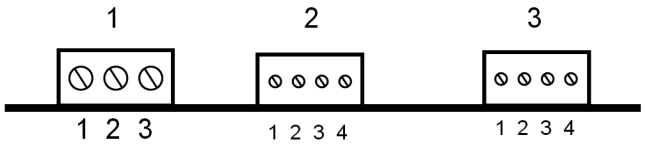
The display must be connected to the power supply unit and the device that provides data to the display (data source).

The large display provides different inputs:

- Impulse input for potential free close contacts of energy meters.
- RS-232 interface
- RS-485 interface

All connections are described below, but **only use the description for the data source you want to use!**

Connectors and pin definition



At the upper side of the electronic board (see picture page 6) are 3 clamp connectors with the following assignments:

Connector	Function	Definition
1	Power supply	Pin 1 : 0 V (-) Pin 2 : not used Pin 3 : + 9 VDC; 0.1 A
2	RS-232 interface	Pin 1 : RxD Pin 2 : GND Pin 3 : TxD Pin 4 : DTR
3	RS-484 interface Impulse input (potential free close contact)	Pin 1 : Data + Pin 2 : Data - Pin 3 : Impulse + Pin 4 : Impulse -

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Connecting the power supply unit

The **DC** output (open wires) of the delivered power supply unit is connected at **connector 1**. If you have to lengthen the cable, use a cable with a diameter of about 0.75 mm^2. **Please** take care of the polarity.

After connecting the power supply unit and the data source (see below) to the large display, the power supply unit must plugged into a 230/110 VAC outlet.

Please note that the **power supply unit** is for **indoor use only**.

2.1 Connecting the display to an energy meter with impulse output

At **connector 3** the impulse output (potential free close contact) of the energy meter is connected by using a shielded cable.

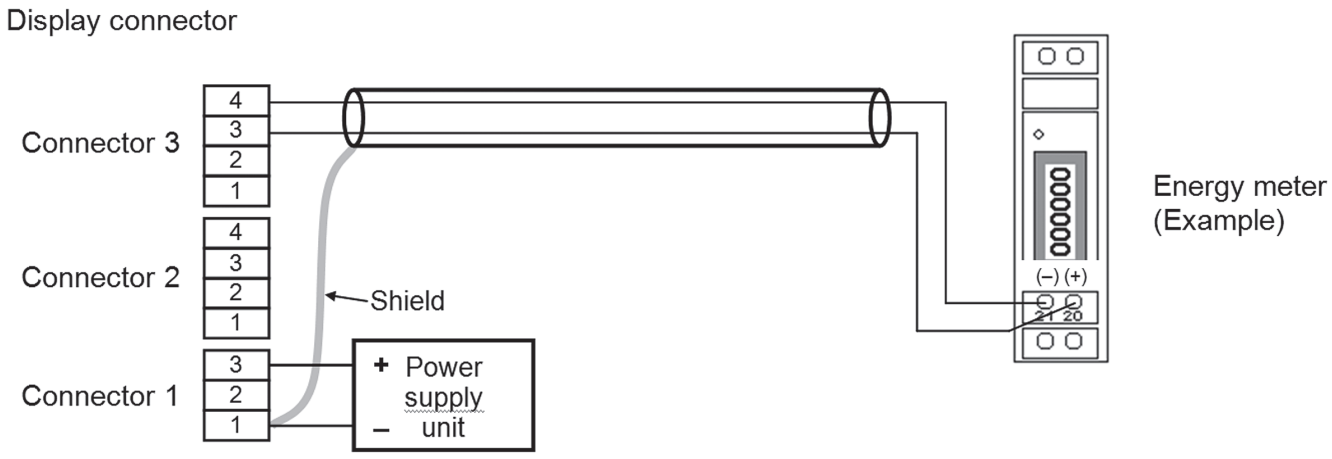
Pin 3 (Impulse +) of the display is connected to **Impulse +** of the energy meter.

Pin 4 (Impulse –) of the display is connected to **Impulse –** of the energy meter.

The shield of the cable must be connected to 0 V (connector 1 pin 1) of the large display only. At the side of the energy meter the shield must be unconnected.

The maximum possible cable length is about 328 ft.

2.1.1 Connection scheme



2.2 Connecting the display to a Sunny Boy Control via RS-232

At **connector 2** the Sunny Boy Control is connected via a shielded data cable.

Pin 1 (RxD) of the display is connected to **Pin 3 (TxD)** of COM 2/3 of the Sunny Boy Control.

Pin 2 (GND) of the display is connected to **Pin 5 (GND)** of COM 2/3 of the Sunny Boy Control.

The shield of the cable must be connected to 0 V (socket 1 pin 1) of the display only.

The maximum possible cable length is 50 ft.

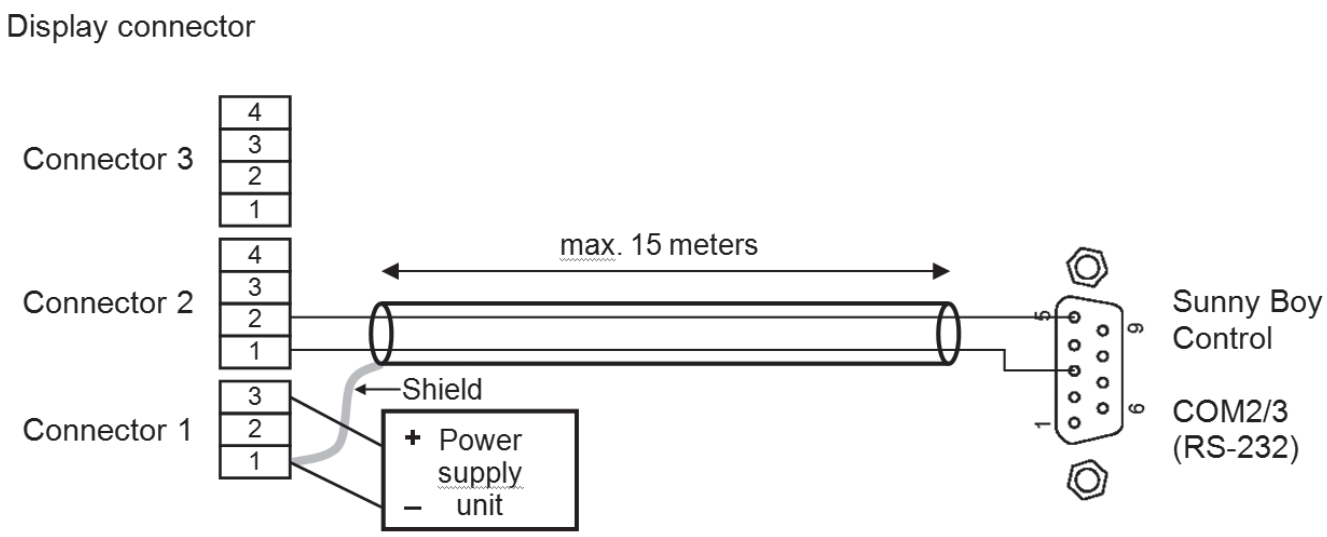
Important note:

The Sunny Boy Control must be configured for using with the large display:

→[Setup]
→[Interfaces]
→[ext. Display]
→Interface: COM2 or COM3
→Type: HvG

(Details see user manual Sunny Boy Control; if there are any questions how to configure the Sunny Boy Control please call the SMA hotline).

2.2.1 Connection scheme



2.3 Connecting the display to a Sunny Boy Control via RS-485

At connector 2 the Sunny Boy Control is connected via a shielded data cable.

Pin 1 (Data+) of the display is connected to **Pin 3 (Data+)** of COM 2/3 of the Sunny Boy Control.

Pin 2 (Data–) of the display is connected to **Pin 8 (Data–)** of COM 2/3 of the Sunny Boy Control.

The shield of the cable must be connected to 0 V (socket 1 pin 1) of the display only.

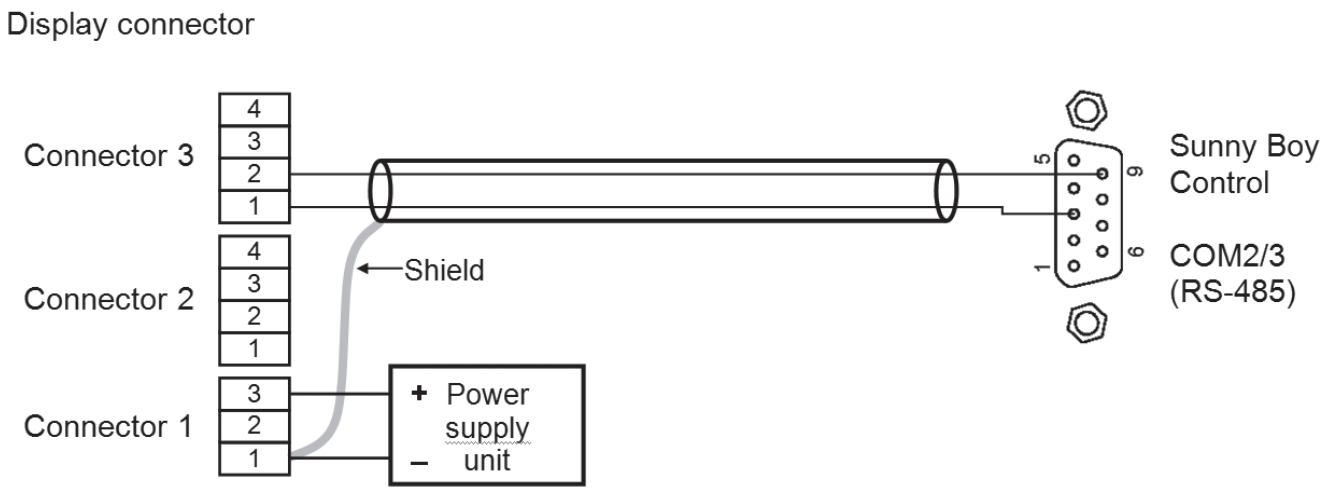
Important note:

The Sunny Boy Control must be configured for using with the large display:

→[Setup]
→[Interfaces]
→[ext. Display]
→Interface: COM2 or COM3
→Type: HvG

(Details see user manual Sunny Boy Control; if there are any questions how to configure the Sunny Boy Control please call the SMA hotline)

2.3.1 Connection scheme



2.4 Connecting the display to a SolarWorld Suntrol STL via RS-485

Important hint:

The baud rate configured in the large display must be the same as the baud rate of the inverters. This can be selected at the configuration of the display with the button (see chapter 3 of the installation manual).

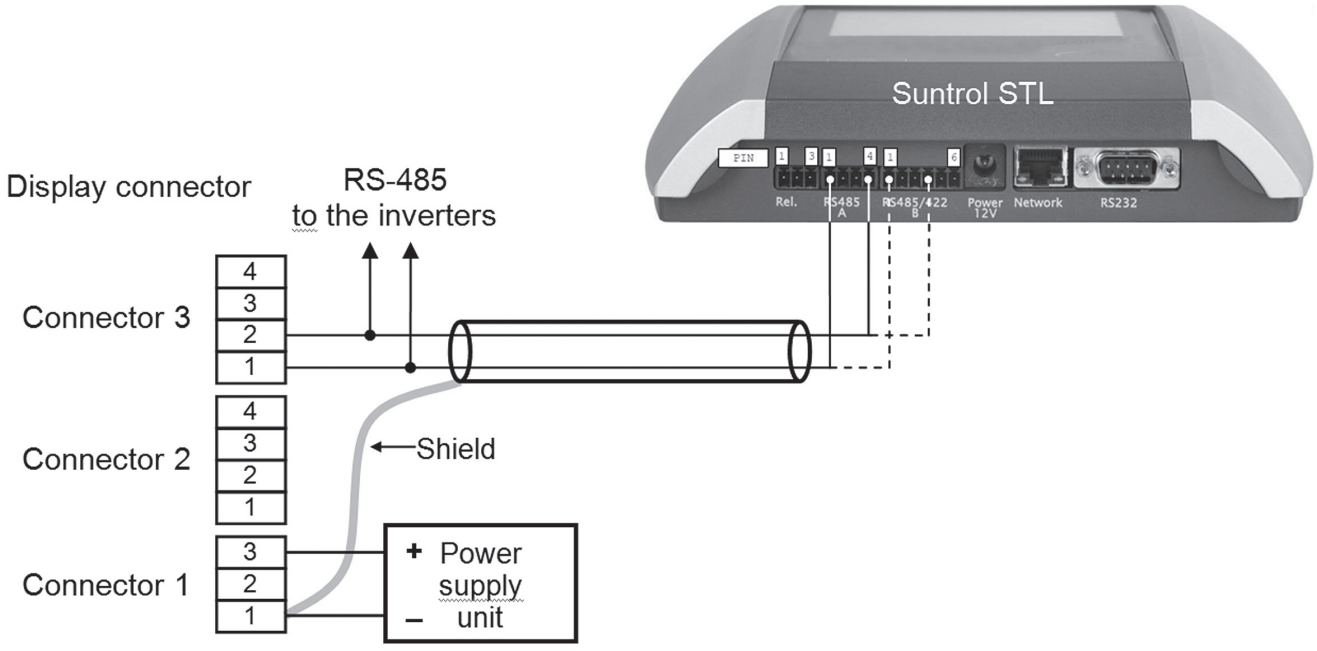
At **connector 2** the Suntrol STL is connected via a shielded data cable in series with the inverters.

Data+ (Pin 1) of the display is connected to **RS485 Pin 1** of the Suntrol STL.

Data– (Pin 2) of the display is connected to **RS485 Pin 4** of the Suntrol STL.

At Suntrol STL 800 RS485 A or B can be used.

2.4.1 Connection scheme



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3 Configure the display with the push button

Before finally closing the display housing the display must be configured. The display is preconfigured but it may be necessary to make some adjustments to fit to the local situation.

The following settings can be done:

- **data source** (from where the display gets the data to show)

If the data source is an energy meter with impulse output there are two additional settings:

- **Starting value of the total energy (kWh)**
- **Impulse rate of the energy meter (Impulse per kWh)**

The configuration is done with the push button between connector 2 pin 4 and connector 3 pin 3.

The **duration of pressing the button** decides the reaction of the display:

	Duration	Reaction	Remark
Short button press	< 1 second	Value of the changeable position is incremented by 1	The increment appears **after releasing** the button
Long button press	> 1.5 second	The changeable position jumps to the next left position or save settings	Press button until the decimal point jumps to the next left position or display jumps to the next value

Configuration

a) While powering up the display press the button for configuration (see picture on page 5): 'CFG' appears in the upper display line.

b) After releasing the button, 'SrC' appears in the upper display line.

c) In the second display line the number of the current configured **data source** appears. Now the needed data source can be configured: (Assignment of number to data source see table below)

- Short button press → the displayed number increases by 1

Important: The value of the number changes **after releasing** the button!

Hint: After 14, the value jumps back to 0.

- Long button press → the selected data source will be saved

Important: Press button until the display makes a display test in all display lines **or** 'Strt' appears in the upper display line! The **numbers** in the second display line are assigned to the following data sources:

0 : Energy meter with impulse output
1 : Sunny Boy Control RS-232
2 : Sunny Boy Control RS-485
3 : MaxComm Basic/MaxWeb RS-485
4 : Fronius DisplayCard/Box RS-232
5 : RiCo RS-232
6 : RiCo RS-485
7 : CV 485
8 : Power One Aurora inverter RS-485
9 : Solutronic inverter RS-232
10: SolarWorld Suntrol STL RS-485
11: steca Tarcom RS-232

d) If energy meter with impulse output is selected as data source, the starting value of the total energy (kWh) can be configured.

At Sunny Boy Control as data sources the configuration is finished now.

The **SolarWorld Suntrol baud rate** must be configured as the data source. After configuring the data source, **'bAud'** appears in the upper display line. In the middle display line the actual baud rate appears. With **short button presses** the **baud rate** can be **changed** in fixed values. If the necessary baud rate appears in the middle display line, **press and hold the button** until the display makes a segment test in all display lines.

e) At energy meter with impulse output as data source now 'Strt' appears in the upper display line. Now the starting value of the total energy can be adjusted:

- Short button press → the value of the changeable position increases by 1 (starting with the right position)

Important: The value of the number changes **after releasing** the button!

Hint: The value jumps after 9 back to 0.

- Long button press → the decimal point jumps to the next left position and the next position can be adjusted. **Exception**: At the first right position no decimal point appears.

Important: Press button until decimal point jumps to the next left position!

All **6** positions of the value must be adjusted, otherwise the value will not be saved.

f) After adjusting all positions of the starting value, press and hold the button again until 'PULS' appears in the upper display line. Now the adjustment of the impulses per kWh can be done.

The adjustment of the impulses per kWh is similar to the starting value of the total energy.

All **5** positions of the value must be adjusted, otherwise the value will not be saved.

g) After another long button press the adjustments will be saved and the display starts the normal measuring mode recognizable by a segment test in all display lines.

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4 Technical data

Number of values	3
Display type	7-segment LCD display with 25 mm digits reflective
Shown values	Watt 6 digits kWh 6 digits kg 6 digits
Dimension	ca. 500 x 400 x 45 mm
Material	Safety glass, ABS plastic
Business temp	- 10 ... + 50 °C (14 ... 122°F)
Storage and transport. temp.	- 20 ... + 60 °C (-4 ... 140°F)
Data sources	- Energy meters with impulse output (potential free close contact) - SMA-Control, Control Light and Control Plus - SolarWorld Suntrol STL - Others on request
Power supply	External power supply unit: Input: 230/110 VAC Output to large display: 9 VDC Never connect more than 12 VDC direct to the large display!
Warranty	2 years
Norm	CE, EN 61326-1

Changes in every kind possible, printing mistakes possible.

Manufactor:

RiCo Electronic Design GbR
Tel. 0049 (0)7651 5848
Germany

Glasbergweg 7
info@rico-electronic.de

D – 79822 Titisee-Neustadt
www.rico-electronic.de