

# Suntrol<sup>®</sup> STD800LED

Large display panel for photovoltaic systems

Installation instructions



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# 1 Introduction

Congratulations on your decision to purchase our large display panel. The large-scale visualization of measurements or other numeric values makes it easy for you to demonstrate connections and effects to a large audience or to keep a close watch on display values.

Please read these installation instructions carefully all the way through before using the large display panel. We hope your presentations will find much success.

Our efforts in pursuit of complete customer satisfaction do not end with the sale of our products. We are also there for you during their use. If you have any questions, comments or suggestions, please do not hesitate to let us know.

# 2 Safety

## **Please read before using!**

- > Never connect the display to voltages higher than 12 V. Never connect to AC power.
- > This unit is made up of sensitive electronic components and must therefore be protected from shock and sudden temperature changes.
- > Handle the large display panel with care! Avoid impacts to the housing.
- > We have made every effort to ensure that the contents of these installation instructions are complete and correct. If any errors are found, please bring them to our attention.
- > All trademarks referenced in this document are the property of their respective owners.
- > Use only the original power supply. Disconnect power supply from power grid after use. The power supply is not for use in wet conditions!
- > These instructions are an important component of the product. They contain important information on the operation and handling of the product. Please keep this in mind, particularly if you transfer the display to a third party.

## **Proper use of the Suntrol® STD800LED**

- > The purpose of this device is to capture and visualize measured data.
- > The manufacturer is not responsible for improper or inappropriate use of the product and will not accept any resulting damages or warranty claims.
- > Please read these instructions all the way through before beginning the installation and initial operation of the large display panel.

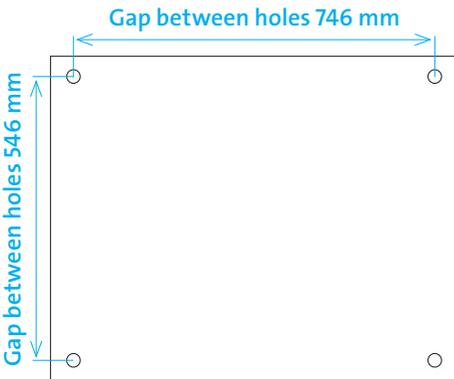
### 3 Installation of the large display panel

⚠ **Important Notice:** Improper installation of the large display panel can cause severe personal injury or damage to property.

The large display panel is intended for wall installation.

The large display panel is suitable only for indoor use.

⚠ **Important Notice:** Do not install the large display panel above passageways!



⚠ **Caution:** Do not tighten screws too firmly! Glass breakage is not covered under warranty!



The stainless steel washer must be positioned directly on the spacer. The washer sits somewhat loosely.

# 4 General connection information

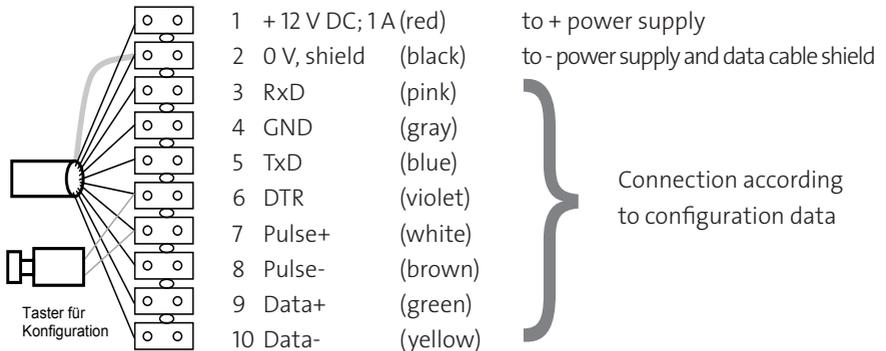
**⚠ Important Notice:** Improper connection of the large display panel can cause severe personal injury or damage to property. In particular, the large display panel must never be connected directly to the 230 V AC power grid!

After installation, the large display panel must be connected to the power supply and the data source used.

The large display panel has various inputs and interfaces: The most common connection options for the large display panel are described instructions. Please use only the connection information according to the required input!

## Connecting terminal assignment

A cable comes out of the back of the large display panel and is assigned as follows:



### **Power supply connection (plug-in power supply)**

The large display panel comes with a plug-in power supply.

It reduces the 230 V AC grid voltage to the lower voltage required by the large display panel.

The low voltage output (free cable ends) of the power supply is connected to terminal 1 pin 1 (+) and pin 2 (-) of the large display panel. Pay attention to the polarity here.

If the power supply cables need to be lengthened, the extension wires should have about a 0.75 mm<sup>2</sup> cross section.

After the installation to the large display panel is complete, the power supply is plugged into a 230 V AC outlet.

## 4.1 Connection to a current meter with pulsed output

The pulsed input of the large display panel is for connection to floating make-contacts of current meters with a pulsed output or similar. Connection to current-controlled pulsed outputs is not possible.

The pulsed input makes it easier to connect to any system, regardless of the component manufacturer. The pulse rate can be adjusted to the current meter used.

### 4.1.1 Connection information

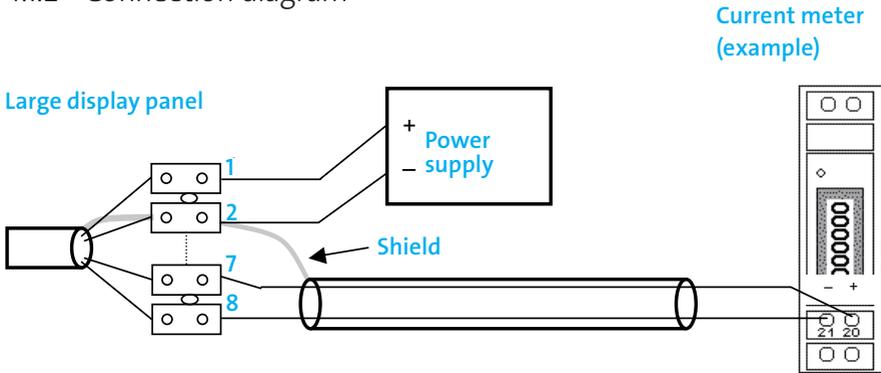
The included supply is connected with correct polarity to **terminals 1 and 2**. If the power supply cable needs to be lengthened, the wires should have about a 0.75 mm<sup>2</sup> cross section. Please note that the power supply must only be used in dry places! The pulsed output (floating make-contact) of the current meter is connected to **terminals 7 and 8** of the large display panel. A shielded cable must be used to connect to the current meter. The size of the cable is not important.

**Pulse+** (terminal 7) is connected to the positive pulsed output (+) of the current meter.

**Pulse-** (terminal 8) is connected to the negative pulsed output (-) of the current meter.

The shield is connected at one end to the large display panel 0V (terminal 2).

## 4.1.2 Connection diagram



## 4.1.3 Cable length

If you are using the current meter with the pulsed output sold by the manufacturer and a shielded cable (e.g., YSTY communication line or LIYCY control line), a distance of 100 m cable length from the current meter to the large display panel is possible. The cable must be laid away from strong current consumers and their feed and outgoing cables.

For cable lengths between 100 m and 600 m from the current meter to the large display panel, a separate signal amplifier set can be used. This is available on request.

## 4.2 Connection to a Sunny Boy Control (Standard, Plus) using RS-485

The RS-485 interface is intended to connect a correspondingly equipped Sunny Boy Control using an RS-485 connection for cable lengths up to 1000 m.

 **Important Notice:** The Sunny Boy Control must be configured for operation with the large display panel.  
Settings: Display type HvG, baud rate 2400

(for details, see Sunny Boy Control Operating Instructions, section 'Terminals', keyword 'large display panel' and keyword 'communication')

### 4.2.1 Connection information

The included supply is connected with correct polarity to **terminals 1 and 2**. If the power supply cable needs to be lengthened, the wires should have about a 0.75 mm<sup>2</sup> cross section. Please note that the power supply must only be used in dry places!

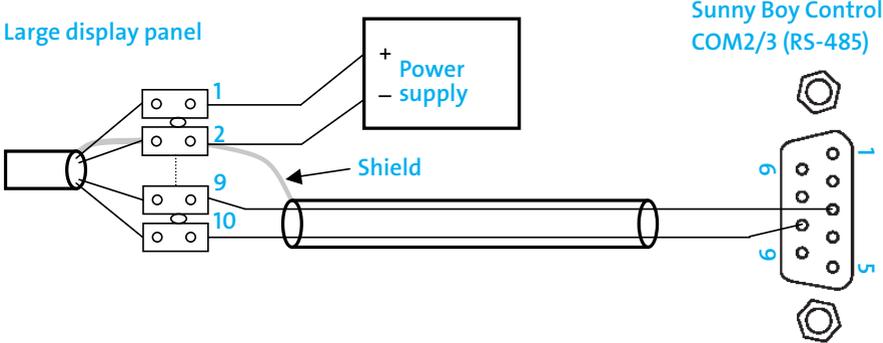
The RS-485 output (COM 2 or 9) of the Sunny Boy Control is connected to **terminals 3 and 10**. A shielded cable must be used to connect to the Sunny Boy Control. The size of the cable is not important.

**Data+** of the large display panel is connected to Data+ (COM2/3 pin 3) of the Sunny Boy Control.

**Data-** of the large display panel is connected to Data- (COM2/3 pin 8) of the Sunny Boy Control.

The shield is connected only to 0V (terminal 2) of the large display panel and remains open on the Sunny Boy Control side.

### 4.2.2 Connection diagram



## 4.3 Connection to a Sunny Boy Control (Light, Standard, Plus) using RS-232

The RS-232 interface is intended to connect a correspondingly equipped Sunny Boy Control using an RS-232 connection for cable lengths up to 15 m max.

 **Important Notice:** The Sunny Boy Control must be configured for operation with the large display panel.  
Settings: Display type HvG, baud rate 2400

(for details, see Sunny Boy Control Operating Instructions, section 'Terminals', keyword 'large display panel' and keyword 'communication')

### 4.3.1 Connection information

The included supply is connected with correct polarity to **terminals 1 and 2**. If the power supply cable needs to be lengthened, the wires should have about a 0.75 mm<sup>2</sup> cross section. Please note that the power supply must only be used in dry places!

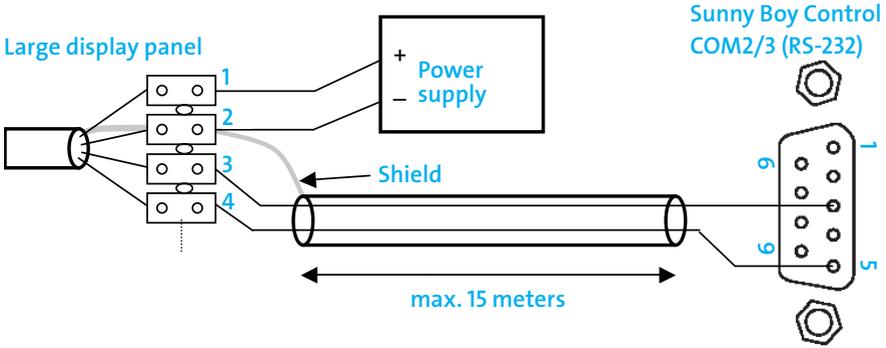
The RS-232 output (COM 2 or 3) of the Sunny Boy Control is connected to **terminals 3 and 4**. A shielded cable must be used to connect to the Sunny Boy Control. The size of the cable is not important.

**RxD** of the large display panel (terminal 3) is connected to TxD (COM2/3 pin 3) of the Sunny Boy Control.

**GND** of the large display panel (terminal 4) is connected to TxD (COM2/3 pin 5) of the Sunny Boy Control.

The shield is connected only to 0V (terminal 2) of the large display panel and remains open on the Sunny Boy Control side.

### 4.3.2 Connection diagram



## 4.4 Connection to a SolarWorld Suntutrol using RS-485

The RS-485 interface is intended to connect to a SolarWorld Suntutrol datalogger using an RS-485 connection for (total) cable lengths up to 1000 m.

**⚠ Important Notice:** The baud rate set in the large display panel must agree with the baud rate of the inverter. This must be coordinated with the manufacturer prior to delivery (factory setting: 9600 baud).

### Operation of the large display panel on the Suntutrol with Fronius inverters

The inverters must be operated according to the instructions for the STL800 on the RS-422/485-B interface. The large display panel is operated on the RS-485-A interface. The baud rate in the large display panel is set to 9600 baud.

## 4.4.1 Connection information

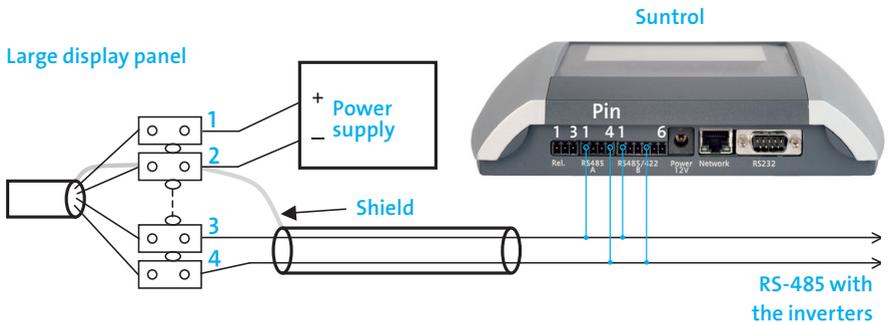
The large display panel is connected to the RS-485 terminal of the Suntrol on **terminals 9 and 10**, in series with the inverters. A shielded cable must be used to connect to the Suntrol. The size of the cable is not important.

**Data+** of the large display panel (terminal 9) is connected to RS-485 pin 1 of the Suntrol.  
**Data-** of the large display panel (terminal 10) is connected to RS-485 pin 4 of the Suntrol.

With the STL800, RS-485 A or B can be used (except Fronius, see above).

The shield is connected only to 0V (terminal 2) of the large display panel and remains open on the Suntrol side.

## 4.4.2 Connection diagram



# 5 Configuration of the large display panel

After installation and assembly, the large display panel must be configured.

The large display panel comes preconfigured from the factory but may need to be adjusted depending on the conditions on site.

The following can be set:

- > Data source (from which the large display panel receives the data to display)

If the data source is a current meter with pulsed output:

- > Starting value for total output (kWh)
- > Pulse rate (pulses/kWh)

The settings are made using the button between terminals 6 and 7.

How long the button is pressed determines the result:

	<b>Duration</b>	<b>Result</b>	<b>Note</b>
Short press	< 1 second	The value of the number to be changed is increased by 1	The value is increased when the button is released.
Long press	> 1.5 seconds	The number place to be changed is moved one position to the left or the setting is saved	Hold the button down until the decimal point moves to the left or to the next setting value

## 5.1 Settings

- a) Hold the button down while pressing the power supply button: 'CFG' appears in the top field.
- b) After the button is released, 'SrC' appears in the top field (data source).
- c) The second field shows the number of the data source now set in the display panel. Now the data source (for the number assignments of the data sources, see list below) can be set:

> Short press: The number shown is increased by one.

**Important:** The number changes only once the button is released!

**Note:** After 9, the number goes back to 0. If you accidentally miss the desired number you can get back to it by pressing the button briefly several more times.

> Long press: The selected data source is saved.

**Important:** Hold the button down until the display runs a segment test or 'StArt' appears in the top field!

The data sources in the second field are numbered as follows:

- 0: Current meter with pulsed output
- 1: Sunny Boy Control RS-232
- 2: Sunny Boy Control RS-485
- 3: MaxComm Basic RS-485
- 4: Fronius DisplayCard 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: Solar Data Systems SolarLog 800/400 e RS-485 (standard: baud rate 9600)

d) Once the desired data source is set, the starting value for the total output (kWh) can be set for data source 'Current meter with pulsed output'.

**For all other data sources, the configuration is finished at this point.**

e) If the data source is a current meter with pulsed output, the top field now reads 'Strt'. The starting value can now be set:

> Short press: The value of the place is increased by one (beginning with the far right place).

**Important:** The value of the place changes only once the button is released!

**Note:** After 9, the number goes back to 0. If you accidentally miss the desired number you can get back to it by pressing the button briefly several more times.

> Long press: The decimal point moves one place to the left.(Exception: the far right place--the decimal point does not appear here.)

**Important:** Hold the button down until the decimal point moves to the next place!

It must go through all 6 places for the value to be stored.

f) Once all of the places in the starting value have been changed as desired, another long press of the button takes you to the pulse rate setting. 'PULSE' appears in the top field. The procedure for setting the pulses/kWh is similar to that for the starting value. It must go through all 5 places for the value to be stored.

Another long press of the button saves the settings and the display goes into its normal measuring mode, indicated by performing a segment test.

# 6 Factory settings

<b>Terminal:</b>	Standard: Pulse 1000 l/kWh
<b>Top display value:</b>	Current power in watts
<b>Middle display value:</b>	Total energy in kWh
<b>Bottom display value:</b>	CO <sub>2</sub> savings in kg
<b>Factor CO<sub>2</sub> savings:</b>	0.70 kg/kWh

# 7 Technical data

Number of measured values that can be shown	3
Display elements	7-segment LED fields with 45 mm high characters, Color: red
Resolution per measured value	watts, 5 places, up to 99999 max. kWh, 6 places, up to 999999 max. kg, 6 places, up to 999999 max.
Housing dimensions	W x H x D: 800 x 600 x 50 mm
Housing material	Front plate: Single-pane safety glass, 5 mm Housing: aluminum, plastic
Operating temperature	0 to + 40 °C, with "outdoor" option - 15 to + 50 °C
Storage and transport temperature	- 20 to + 60 °C
Supported data sources (depending on configuration, data source must be indicated with order!)	- Pulse generator (floating make-contact) - SMA Sunny Boy Control Standard, Light and Plus - Suntrol 200/400 and 800 - various other systems on request
Inputs, interfaces	- Pulse (for floating make-contact, minimum pulse length: 2 ms) - RS-232 - RS-485
Power supply	External power supply: Input: 230 V AC, Output: 12 V DC, 1 A <b>Never connect display directly to the 230-V AC grid or voltages greater than 12 V DC: may cause danger, damage or fire!</b>
Warranty	2 years
Standards	CE

Subject to change, technical or otherwise

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