**Meter Connection Manual Version 2.18**
**Solar-Log™**

# The Solar-Log™ Manual Orientation

| Firmware 5 & 6 | Solar-Log Base Manual (FW 6.x) ↗ |
| --- | --- |
| | Solar-Log Base Manual (FW 5.x) ↗ |
| | Solar-Log Components Connection Manual (FW 6.x) ↗ |
| | Solar-Log Components Connection Manual (FW 5.x) ↗ |
| | Solar-Log Smart Energy Manual ↗ |
| | Solar-Log Meter Connection Manual |
| | Solar-Log Feed-In Management Control Manual (FW 6.x) ↗ |

Opened manual

Further manuals

# Table of Contents

# 1  External Power Meter

## 1.1  Recording Energy Flows with External Power Meters

External power meters can be connected to every Solar-Log™ model via the S0 input and/or the RS-485 bus. Solar-Log™ devices have a varying number of SO inputs:

S0 inputs

| Solar-Log™ | Number of S0 inputs |
|---|---|
| Solar-Log Base | 1 x S0-In |
| Solar-Log 300, 1200, 1900 and 2000 | 2 x S0-In and 1 x S0-Out |
| Solar-Log$^{1000, 500}$ | 1 x S0-In/Out |
| Solar-Log$^{200}$ | 1 x S0-In |
| Solar-Log 250 | 1 x S0-In |

List of solarLog™ devices to the manual and their compatibility with the meters*:

Solar-Log Base 15 (firmware 5.x or higher)

Solar-Log Base 100 (firmware 5.x or higher)

Solar-Log Base 2000 (firmware 5.x or higher)

Gateway Solar-Log 50 (firmware 4.x)

Solar-Log 250 (firmware 4.x)

Solar-Log 300 (firmware 4.x)

Solar-Log 1200 (firmware 4.x)

Solar-Log 1900 (firmware 4.x)

Solar-Log 2000 (firmware 4.x)

Solar-Log™ 200 (firmware 3.x)

Solar-Log™ 500 (firmware 3.x)

Solar_Log™ 1000 (firmware 3.x)

*Attention to the firmware of the solarLog™ devices and the implementation of the meters as well as their general compatibility with the solarLog™ devices.

**Note**

The Solar-Log™ requires a S0 pulse duration of 30-40 ms. That is why we recommend using SDS tested meters that we offer.
We cannot guarantee the functionality of other products.
In addition, the maximum length between the power meters and Solar-Log™ should not exceed 10 m.

**Note**

S0 meters transmit the measured energy (e.g. 1 kWh) using a fixed number of pulses. As a result, the pulse frequency decreases as the power decreases. For control tasks, the current power is required, which is only transmitted with low accuracy due to the system. Therefore, we **do not** recommend using S0 meters for implementing control tasks.

**Note**

Consumption meters can be assigned to plant groups.
It is only possible to assign a meter after a rule with the calculation of self-consumption has been activated in the power management configuration Configuration | Feed-in Management.

**Note**

With the Solar-Log™, the electricity fed into the power grid from a PV plant can be limited.
The actual reduction of output can be set as a fixed rate (kW or %) or dynamic with the local consumption of the generated electricity factored into the actual reduction rate.
Recording the current consumption plays a key role when the local consumption is taken into account for the reduction.
A consumption meter has to be installed to achieve an accuracy of +/- 2%.
It is not generally possible to achieve this accuracy with just a bidirectional meter at the grid connection point. The feed-in limits may be exceeded and there could be irregularities due to different measuring, reading and control intervals. That is why we strongly discourage such installation and the use of S0 meters.

**Note**

The Solar-Log™ offers the option of a "Fixed Regulation of X% with the Calculation of Self-Consumption."
A general requirement for the fixed regulation of X% is that the inverters used allow the Solar-Log™ to limit the output.
There is a major difference between Solar-Log™ compatible inverters when it comes to power reductions.
Some inverters cannot be limited to 0 watts or 0% of the generator output; they produce a certain amount of residual power even when the output is set to zero. This needs to considered when designing plants with 0% output reduction. For example, the base load always needs to be greater than the residual power output.
There is also a distinct difference between the reaction times of various inverters. The reaction time also depends on the number of devices installed. It is not recommended to use S0 meters for 0% reductions.

►     For these reasons, Solar-Log GmbH cannot guarantee an absolute 0% feed-in reduction.

►     It is always necessary to consult the grid operator about the reduction.

## External power meters/accumulating meters

With multiple phase meters, a basic distinction is made between phase-exact and accumulating meters.

Accumulating meters provide the total values from all three phases. The meter calculates the total output (to and from the grid) of the individual phases and provides this total as a single value.

In the example:

Phase 1 supplies 3 kW via an inverter (single phase).

Phase 2 refers to 2 kW (energy)

Phase 3 refers to 1 kW (energy)

With an accumulating meter, this results in a total of 0 kW.

An example of an accumulating meter is the Janitza UMG 104 or the Solar-Log™ Pro380.

# 2  Meter operating modes of the Solar-Log™

## 2.1  Explanation from the meter operating modes of the Solar-Log™

There are various setting options when configuring meters in Solar-Log™.  These are in particular:

- Deactivated: The recording of consumption has been or is deactivated.
- Generator: The meter values are considered inverter values.
- Consumption meter: Meter that only records the consumption.
- Consumption meter (bi-directional meter): Meter that records consumption and production collectively - the actual consumption is determined by monitoring the inverters.
- Sub-consumer: Meter to record the individual consumption from appliances that was already recorded with a consumption meter.
- Battery meter (bi-directional meter): Records the battery charges and discharges.
- Meter for the entire plant: The entire production from all of the inverters.
- Utility Meter (U+I) (with Solar-Log 1000, 1900, 2000 and Solar-Log Base devices): Meter for control and reduction functions - including current measurements if necessary with current transformers.
- Utility Meter (U) (with Solar-Log 1000, 1900, 2000 and Solar-Log Base devices): Meter for control and reduction functions - only voltage measurements.
- Utility Meter (U+I) + Consumption Meter (bi-directional) (with Solar-Log 1000, 1900, 2000 and Solar-Log Base devices): Meters that are used as Utility Meters (U+I) can also be used as consumption meters (bi-directional) in this mode.

**Note**

Please note that in the meter configuration under Configuration | Devices | Configuration | Configuration in the „Module field, power & description" area, the value entered in the „Maximum AC power" field determines the measuring range to be recorded and the scaling of the graph of consumption, in the Solar-Log™, as well as on the web.

# 3   General Information on Wiring

## 3.1  Wiring for S0 meter

The SO connection for external power meters is connected to a 6-pin S0A-In/Out connection (S0-IN A and S0-OUT) or to a 4-pin S0-IN B as follows:

SO meters in general

| S0 Solar-Log™ | | Solar-Log Base | | Power meter | |
|---|---|---|---|---|---|
| PIN | | | | Assignment | |
| ▶ | 1 | ▶ | 4 | ▶ | S0+ |
| ▶ | 2 | ▶ | 5 | ▶ | S0- |
| ▶ | 3 | | | | |
| ▶ | 4 | | | | |

Place a cable bridge between pin 3 and 4 on the Solar-Log™. No bridge at Solar-Log Base.

## 3.2  Wiring for RS485 meter

The meter's RS485 output can be connected to any RS485 interface (A, B and C) on the Solar-Log™.

Overview
- 2-pin wiring

Installation steps
- Switch off the meter and Solar-Log™.
- Connect the meter to the Solar-Log™.

## 3.3  Wiring meters to record self-consumption

There are two options to record self-consumption via the Solar-Log™:
- Measuring just the consumption.
- Measuring with bi-directional measurements (two-way measurements) at the grid connection point behind the utility company meter.

Fundamentally, a separate meter needs to be installed to record energy consumption.
The meters used by utility companies generally cannot be used to send data to the Solar-Log™.

## Meter connection options to record the total consumption via an RS485/S0 interface.

This meter has to measure the total consumption of the house.

The meters installed by grid operators, or two-way meters, cannot be used to implement this function.
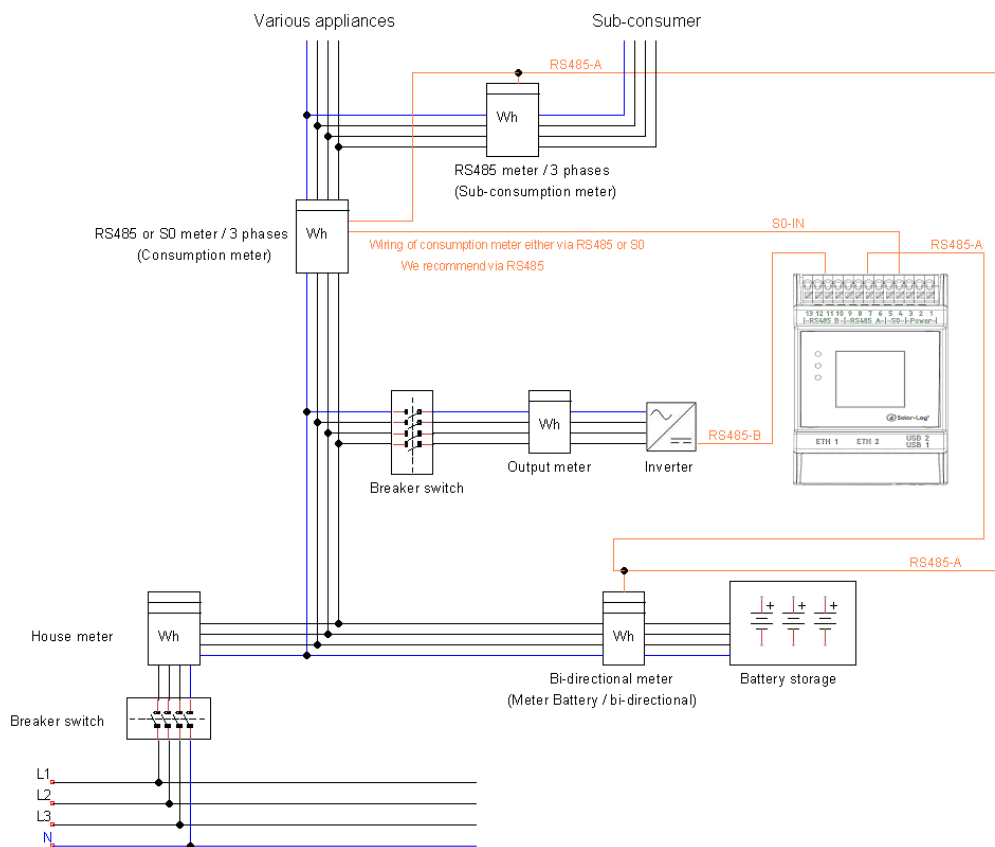


Fig.: Wiring diagram to record self-consumption. (optional with battery storage)

## Meter connection options for bi-directional recording of the total consumption via only an RS485 interface.

Feed-in and consumption can be logged by means of a bi-directional meter as long as no limitation is set for power generation (including self-consumption). The Solar-Log™ thereby calculates the total consumption in connection with the yield values.
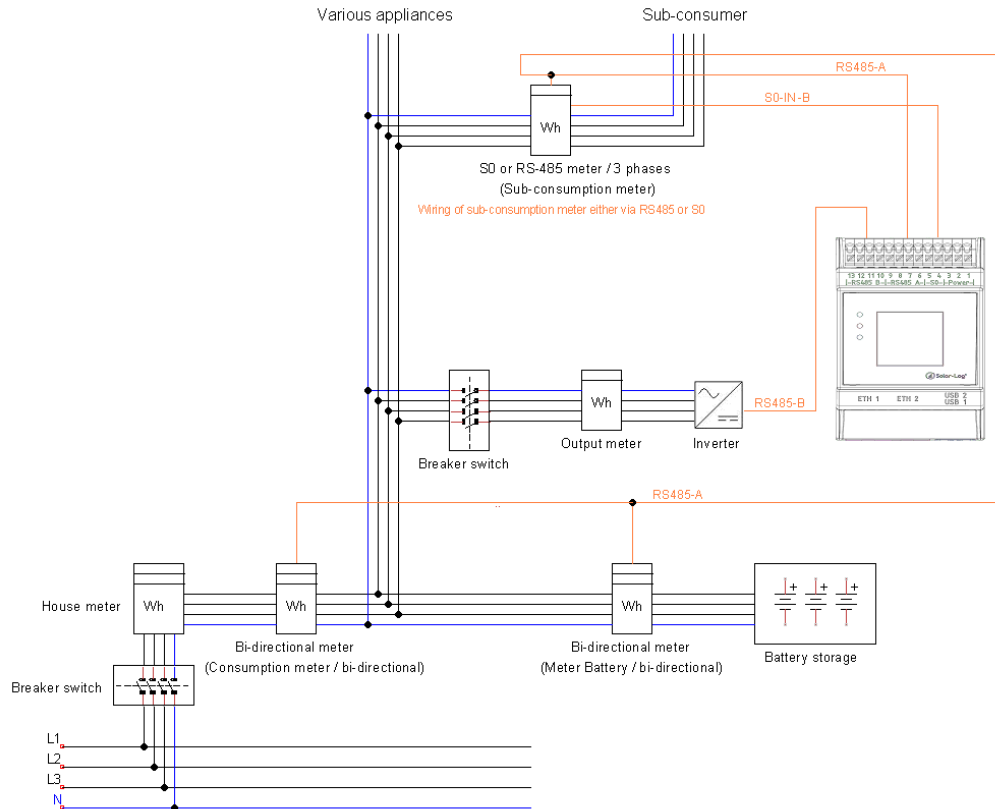


Fig.: Wiring diagram for recording self-consumption – bi-directional meter. (optional with battery storage)

### Important information on possible options when using meters for recording consumption:

- Bi-directional meters (only via RS485) in the operating mode "Consumption meter (bi-direction meter)":
  if a bi-directional meter is used as consumption meter, further consumption meters can only be configured in the "sub-consumption meter" mode.
- Uni-directional meters (RS485 or S0) in the operating mode „Consumption meter:"
  It is possible to have several meters connected to a single Solar-Log™ device as consumption meters – the consumption value is totaled together. Additional meters are also possible in the „Consumption meter" operating mode.
- Meters in the „Consumption meter" operating mode are used to display the consumption values from individual appliances. These consumption values have already been recorded in the total consumption values by the uni- and bi-directional meters.

### Note

For further examples of meter constellations in connection with production and consumption recording, see Appendix from page 49 ff.

**Note**

With the Solar-Log™, the electricity fed into the power grid from a PV plant can be limited.

The actual reduction of output can be set as a fixed rate (kW or %) or dynamic with the local consumption of the generated electricity factored into the actual reduction rate.

Recording the current consumption plays a key role when the local consumption is taken into account for the reduction.

A consumption meter has to be installed to achieve an accuracy of +/- 2%.

It is not generally possible to achieve this accuracy with just a bidirectional meter at the grid connection point. The feed-in limits may be exceeded and there could be irregularities due to different measuring, reading and control intervals. That is why we strongly discourage such installation and the use of S0 meters.

**Note**

The Solar-Log™ offers the option of a „Fixed Regulation of X% with the Calculation of Self-Consumption."

A general requirement for the fixed regulation of X% is that the inverters used allow the Solar-Log™ to limit the output.

There is a major difference between Solar-Log™ compatible inverters when it comes to power reductions.

Some inverters cannot be limited to 0 watts or 0% of the generator output; they produce a certain amount of residual power even when the output is set to zero. This needs to considered when designing plants with 0% output reduction. For example, the base load always needs to be greater than the residual power output.

There is also a distinct difference between the reaction times of various inverters. The reaction time also depends on the number of devices installed. It is not recommended to use S0 meters for 0% reductions.

► For these reasons, Solar-Log GmbH cannot guarantee an absolute 0% feed-in reduction.

► It is always necessary to consult the grid operator about the reduction.

# 4   Solar-Log™ PRO

## 4.1  Solar-Log™ PRO1

Select „Solar-Log/Pro/RS485" during the device detection.

Overview

- The communication address has to be assigned.
- 2-pin wiring.
- Installation steps:
  - Switch off the meter and the Solar-Log™.
  - Connect the meter to the Solar-Log™.

**Note**

The communication address is set to 1 by default, but can be adjusted
 if several meters are connected to one RS485 bus.
Max. number of counters: approx. 60 counters on the bus.*#
Range: approx. 1000m
* Please note that the maximum number of counters can vary, depending on the installed level con-
verter, baud rate and other installation circumstances.
#Up to 11 counters can be visualized, but up to 60 counters can be evaluated by technical data.

Connect the meter to the Solar-Log™

The wiring is done using a

- self-made cable connection with a terminal block connector.

## Connection diagram

### According to circuit type 1000 (DIN 43856)

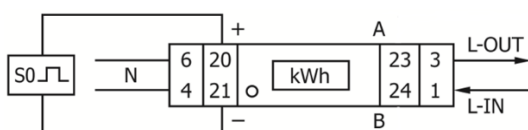| | |
|---|---|
| L-IN Terminal 1 | Supply line input phase „L1" |
| L-OUT Terminal 3 | Supply line output phase „L1" |
| Terminal 4 „N" | Neutral conductor connection „N" |
| Terminal 6 „N" | Neutral conductor connection „N" |
| Terminal 20, 21 | $S_0$ pulse output |
| Terminal 23,24 | ModBus connection terminal 23 -> A, 24 -> B |



Fig.: Pin assignment

## Technical data

| | |
|---|---|
| Nominal voltage | 230 V AC |
| Current | 0,25 - 5(45) A |
| Frequency | 50 Hz |
| Measurement | Active- and Reactive energy in forward and reverse direction |
| Accuracy class | B |
| Power consumption | ≤ 10VA/Phase - ≤ 2W/Phase |
| Width | 1 TE (17.5 mm) |
| Pulse Output LED | 10,000 Imp/kWh |
| $S_0$–pulse output: | 2,000 Imp/kWh, RA = 0,5 Wh/Imp |
| Pulse length | ≤ 5 625 W -> 32 ms<br>> 5 625 W -> 11,2 ms |
| Temperature range | -25°C to +55°C |
| Max. rel. humidity | 75% average, 95% short term |
| Registered harmonics: | 0.05 – 0.25 kHz |
| LED blinking red | Consumption >4W, pulsrate= consumption |
| Display | 4 + 2 Digits (9,999.11 kWh) |
| Max diameter | Mainclamps:       max. 8 mm$^2$<br>Additional clamps::       max. 2,5 mm$^2$ |
| Baud rate ModBus | 9600 baud |

## Connection diagram for different operating modes

The meter connections are labeled IN and OUT

### Solar-Log™ PRO1  (RS485 or S0) connection assignments

| | |
|---|---|
| ► As consumption or sub-consumer meter | Connection to the grid (IN) – connection for appliances (OUT) |
| ► As generator / production meter | Connection for the production (IN) – connection to the grid (OUT) |

### Solar-Log™ PRO1 connection assignments (only RS485)

| | |
|---|---|
| ► As a battery meter (bi-directional) | Connection to the production/grid (IN) – connection to the battery (OUT) |

Cable connection via RS485:

| Solar-Log™ terminal strip connector | Gateway Solar-Log 50 | Solar-Log Base RS485 (A) / (B) | Solar-Log™ PRO1 |
|---|---|---|---|
| Terminal | | | PIN |
| ► 1 (Data+) | ► 1 or 5 | ► (A) 6 or (B) 10 (Data+) | ► 23 (A) |
| ► 4 (Data-) | ► 4 or 6 | ► (A) 9 or (B) 13 (Data-) | ► 24 (B) |

**Note**

If the meter is the last device on the bus, it has to be terminated at connection block 23 and 24 with a resistor (120 ohm / 0.25W).

**Note**

The Solar-Log™ PRO1 cannot be connected to the inverters with a single bus.
For this reason, use one RS485 connection for the inverters and one RS485 connection for the Solar-Log™ PRO1.
► A combination with a M&T sensor as well as with the Solar-Log™ PRO380, Solar-Log™ PRO380-CT and Solar-Log™ PRO2 in the same bus is possible.

Possible meter operating modes for the Solar-Log™ PRO1 via RS485:
- Battery meter (bi-directional)
- Sub-consumer
- Consumption meter
- Generator

Cable connection via S0 (in):

| Solar-Log™ S$_0$ terminal block | Solar-Log Base | Solar-Log™ PRO1 |
|---|---|---|
| Pin assignment | | Pin assignment |
| ► 1 - S0+ | ► 4 - S0+ | ► 20 - S0+ |
| ► 2 - S0- | ► 5 - S0- | ► 21 - S0- |
| ► 3 | | |
| ► 4 | | |

Place a cable bridge between pin 3 and 4 on the Solar-Log™. No bridge at Solar-Log Base.

Possible meter operating modes for the Solar-Log™ PRO1 via SO connection:
- Total plant meter
- Sub-consumption meter
- Consumption meter
- Generator

Meter's impulse factor:
1000 p / kWh

**Note the SO pulse length for the Solar-Log™ PRO1**

The following values for the SO pulse length are known:
► ≤ 5625W = pulse length 32ms
► > 5625W = pulse length 11,2ms

The Solar-Log™ can process a SO pulse with at least a length of 30 ms. This means a maximum pulse length of 5625W can be defined for the S0 output of the Solar-Log™ PRO1.

**Note**

The meter is not compatible with the Solar-Log™ 200, 500 and 1000.

## 4.2  Solar-Log™ PRO2

Select „Solar-Log/Pro/RS485" during the device detection.

Overview

- The communication address has to be assigned.
- 2-pin wiring.
- Installation steps:
  - Switch off the meter and the Solar-Log™.
  - Connect the meter to the Solar-Log™.

> **Note**
>
> The communication address is set to 1 by default, but can be adjusted
> if several meters are connected to one RS485 bus.
> Max. number of counters: approx. 60 counters on the bus.*[#]
> Range: approx. 1000m.
> * Please note that the maximum number of counters can vary, depending on the installed level con-
> verter, baud rate and other installation circumstances.
> [#]Up to 11 counters can be visualized, but up to 60 counters can be evaluated by technical data.

Connect the meter to the Solar-Log™

The wiring is done using a

- self-made cable connection with a terminal block connector.

## Connection diagram

### According to circuit type 1000 (DIN 43856)

| | |
|---|---|
| L-IN Terminal 1 | Supply line input phase „L1" |
| L-OUT Terminal 3 | Supply line output phase „L1" |
| Terminal 4 „N" | Neutral conductor connection „N" |
| Terminal 6 „N" | Neutral conductor connection „N" |
| Terminal 18, 19 | $S_0$ pulse output „Forward" (terminal 18 = „+") |
| Terminal 20,21 | $S_0$ pulse output „Reverse" (terminal 20 = „+") |
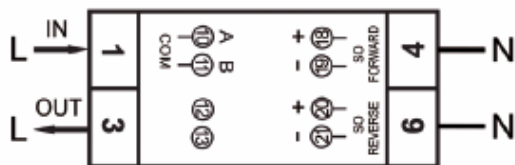


Fig.: Pin assignment

## Technical data

| | |
|---|---|
| Nominal voltage | 230 V AC |
| Current | 5 (100) A |
| Frequency | 50 Hz ± 10 % |
| Measurement | Active- and Reactive energy in forward and reverse direction |
| Accuracy class | B |
| Power consumption | ≤ 10VA/Phase - ≤ 2W/Phase |
| Width | 2 TE (35,8 mm) |
| Pulse Output LED | 10,000 Imp/kWh |
| $S_0$–pulse output: | 1 000 Imp/kWh, 31ms |
| Temperature range | -40°C to +70°C |
| Max. rel. humidity | 75% average, 95% short term |
| Registered harmonics: | 0.05 – 0.25 kHz |
| LED blinking red | Consumption >4W, pulsrate= consumption |
| Display | 4 + 2 Digits (9,999.11 kWh) |
| Max diameter | Mainclamps:        max. 8 mm$^2$<br>Additional clamps::        max. 2,5 mm$^2$ |
| Baud rate ModBus | 9600 baud |

## Connection diagram for different operating modes

The meter connections are labeled IN and OUT

### Solar-Log™ PRO2  (RS485 or S0) connection assignments

| | |
|---|---|
| ► As consumption or sub-consumer meter | Connection to the grid (IN) – connection for appliances (OUT) |
| ► As generator / production meter | Connection for the production (IN) – connection to the grid (OUT) |

### Solar-Log™ PRO2 connection assignments (only RS485)

| | |
|---|---|
| ► As a battery meter (bi-directional) | Connection to the production/grid (IN) – connection to the battery (OUT) |

Cable connection via RS485:

| Solar-Log™ terminal strip connector | Gateway Solar-Log 50 | Solar-Log Base RS485 (A) / (B) | Solar-Log™ PRO2 |
|---|---|---|---|
| Terminal | | | PIN |
| ► 1 (Data+) | ► 1 or 5 | ► (A) 6 or (B) 10 (Data+) | ► 10 (A) |
| ► 4 (Data-) | ► 4 or 6 | ► (A) 9 or (B) 13 (Data-) | ► 11 (B) |

**Note**

If the meter is the last device on the bus, it has to be terminated at connection block 10 and 11 with a resistor (120 ohm / 0.25W).

> **Note**
>
> The Solar-Log™ PRO2 cannot be connected to the inverters with a single bus.
> For this reason, use one RS485 connection for the inverters and one RS485 connection for the Solar-Log™ PRO2.
> ► A combination with a M&T sensor as well as with the Solar-Log™ PRO380, Solar-Log™ PRO380-CT and Solar-Log™ PRO1 in the same bus is possible.

Possible meter operating modes for the Solar-Log™ PRO2 via RS485:

- Battery meter (bi-directional)
- Sub-consumption meter
- Consumption meter
- Generator

Cable connection via S0 (in):

| Solar-Log™ S$_0$ terminal block | Solar-Log Base | Solar-Log™ PRO2 |
|---|---|---|
| Pin assignment | | Pin assignment |
| ► 1 - S0+ | ► 4 - S0+ | ► 18 - S0+ |
| ► 2 - S0- | ► 5 - S0- | ► 19 - S0- |
| ► 3 | | |
| ► 4 | | |

Place a cable bridge between pin 3 and 4 on the Solar-Log™. No bridge at Solar-Log Base.

Possible meter operating modes for the Solar-Log™ PRO2 via SO connection:

- Total plant meter
- Sub-consumption meter
- Consumption meter
- Generator

Meter's impulse factor:
1000 p / kWh

> **Note**
>
> The meter is not compatible with the Solar-Log™ 200, 500 and 1000.

## 4.3  Solar-Log™ PRO380

Select „Solar-Log/Pro/RS485" during the device detection.

### Overview

- The communication address has to be assigned.
- 2-pin wiring
- Installation steps
  - Switch off the meter and the Solar-Log™.
  - Connect the meter to the Solar-Log™.

---

**Note**

The communication address is set to 1 by default, but can be adjusted if several meters are connected to one RS485 bus.

Max. number of counters: approx. 60 counters on the bus.*#

Range: approx. 1000m.

* Please note that the maximum number of counters can vary, depending on the installed level converter, baud rate and other installation circumstances.

#Up to 11 counters can be visualized, but up to 60 counters can be evaluated by technical data.

---

### Connect the meter to the Solar-Log™

The wiring is done using a

- self-made cable connection with a terminal block connector.

## Connection diagram

### According to circuit type 1000 (DIN 43856)

| | |
|---|---|
| Input "L1, L2, L3" | Supply line input phase "L1, L2, L3" |
| Output "L1, L2, L3" | Supply line output phase "L1, L2, L3" |
| Terminal "N" | Neutral conductor connection "N" |
| Terminal 18, 19 | $S_o$ pulse output "consumption" (terminal 18 = "+") |
| Terminal 20, 21 | $S_o$ pulse output "supply" (terminal 20 = "+") |
| Terminal 22, 23 | ModBus connection terminal 22 -> A, 23 -> B |
| Terminal 24, 25 | External tariff switching (230V AC) |
| | The SO signal for the supply is not used when a meter is connected to the Solar-Log™. |
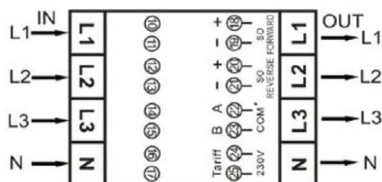


Fig.: Pin assignment

### Technical data

| | |
|---|---|
| Nominal voltage | 230 / 400 V AC |
| Current | 0.25 - 5(100) A |
| Frequency | 50 Hz |
| Measurement | Active and reactive energy in reference and delivery direction |
| Accuracy class | B |
| Power consumption | < 10 VA - < 2 W |
| Start-up current | 20 mA |
| Width | 4 TE (70 mm) |
| Pulse Output LED | 10,000 Imp/kWh, 30 ms |
| $S_0$–pulse output: | 1,000 Imp/kWh, 30 ms |
| Temperature range | -40°C to +70°C |
| Max. rel. humidity | 75 % average, 95 % short term |
| Registered harmonics: | 0.05 – 0.25 kHz |
| LED blinking red | Consumption >4W, pulsrate= consumption |
| Display | 6 + 2 Digits (999999,11 kWh) |
| Max diameter | Mainclamps:        Flexible cable up to max. 25 mm$^2$<br>                       Rigid cable up to max. 35 mm$^2$<br>Additional clamps:: max. 2.5 mm$^2$ |
| Baud rate ModBus | 9,600 baud |

## Connection diagram for different operating modes

The meter connections are labeled IN (bottom) and OUT (top).

### Solar-Log™ PRO380 (RS485 or S0) connection assignments

| | |
|---|---|
| ► As consumption or sub-consumer meter | Connection to the grid (IN) – connection for appliances (OUT) |
| ► As inverter / production meter | Connection for the production (IN) – connection to the grid (OUT) |

### Solar-Log™ Pro380 connection assignments (only RS485)

| | |
|---|---|
| ► As a consumption meter (bi-directional) | Connection for grid (OUT)  –  connection to the house/plant (IN)<br>(installation position according to the arrow system)<br>-----------------------------------------------------------<br>(From firmware 3.4.2, the counting directions (evaluation) can be changed in the Solar-Log™ of consumption meters in bi-directional mode in the device configuration.) |
| ► As battery meter (bi-directional) | Connection to the production/grid (IN) – connection to the battery (OUT) |

### Cable connection via RS485:

| Solar-Log™ terminal strip connector | Gateway Solar-Log 50 | Solar-Log Base RS485 (A) / (B) | Solar-Log™ PRO380 |
|---|---|---|---|
| Terminal | | | PIN |
| ► 1 (Data+) | ► 1 or 5 | ► (A) 6 or (B) 10 (Data+) | ► 22 (A) |
| ► 4 (Data-) | ► 4 or 6 | ► (A) 9 or (B) 13 (Data-) | ► 23 (B) |

**Note**

If the meter is the last device on the bus, it has to be terminated at connection block 22 and 23 with a resistor (120 ohm / 0.25W).

**Note**

The Solar-Log™ PRO380 cannot be connected to the inverters with a single bus.
For this reason, use one RS485 connection for the inverters and one RS485 connection for the Solar-Log™ PRO380.

► A combination with a M&T sensor as well as with the Solar-Log™ PRO380-CT, Solar-Log™ PRO1 and Solar-Log™ PRO2 in the same bus is possible.

Possible meter operating modes for the Solar-Log™ PRO380 via RS485:

- Battery meter (bi-directional)
- Total plant meter
- Sub-consumer
- Consumption meter
- Consumption meter (bi-directional)
- Generator

Cable connection via S0 (IN):

| Solar-Log™ $S_0$ terminal block | Solar-Log Base | Solar-Log™ PRO380 |
|---|---|---|
| Pin assignment | | Pin assignment |
| ► 1 - S0+ | ► 4 - S0+ | ► 18 - S0+ |
| ► 2 - S0- | ► 5 - S0- | ► 19 - S0- |
| ► 3 | | |
| ► 4 | | |

Place a cable bridge between pin 3 and 4 on the Solar-Log™. No bridge at Solar-Log Base.

Possible meter operating modes for the Solar-Log™ PRO380 via SO connection (consumption):

- Total plant meter
- Sub-consumer
- Consumption meter
- Generator

Impulse factor of the meter:
1000 p / kWh

## 4.4 Solar-Log™ PRO380-CT

Select „Solar-Log/Pro/RS485" during the device detection.

**Important!**

The converter ratio can only be set once with this transformer-connected meter.

► It is essential to clarify which converter ratio is to be set for the meter before the initial installation.

When the meter is connected to power, the display alternates between „Set CT" and „CT5 0005.".
If one of the arrow keys is pressed, the first number from the left blinks. Using the arrow keys, define the secondary power between /1A and /5A and confirm the selection by pressing both of the arrow keys at the same time for 3 seconds. After that, define the primary power by selecting the 4 numbers from left to right with the arrow keys.  The primary power can be freely set between 0005 and 9995. The first three digits can be between 0 and 9 and the last digit between 0 and 5. Confirm every number by pressing both arrow keys for 3 seconds.
The converter ratio has now been set and cannot be modified.

Overview
- The communication address has to be assigned.
- 2-pin wiring.
- Installation steps
  - Switch off the meter and the Solar-Log™.
  - Connect the meter to the Solar-Log™.

**Note**

The communication address is set to 1 by default, but can be adjusted if several meters are connected to one RS485 bus.
Max. number of counters: approx. 60 counters on the bus.*#
Range: approx. 1000m.
* Please note that the maximum number of counters can vary, depending on the installed level converter, baud rate and other installation circumstances.
#Up to 11 counters can be visualized, but up to 60 counters can be evaluated by technical data.

Connect the meter to the Solar-Log™

The wiring is done using a
- self-made cable connection with a terminal block connector.

## Connection diagram

### According to circuit type 1000 (DIN 43856)

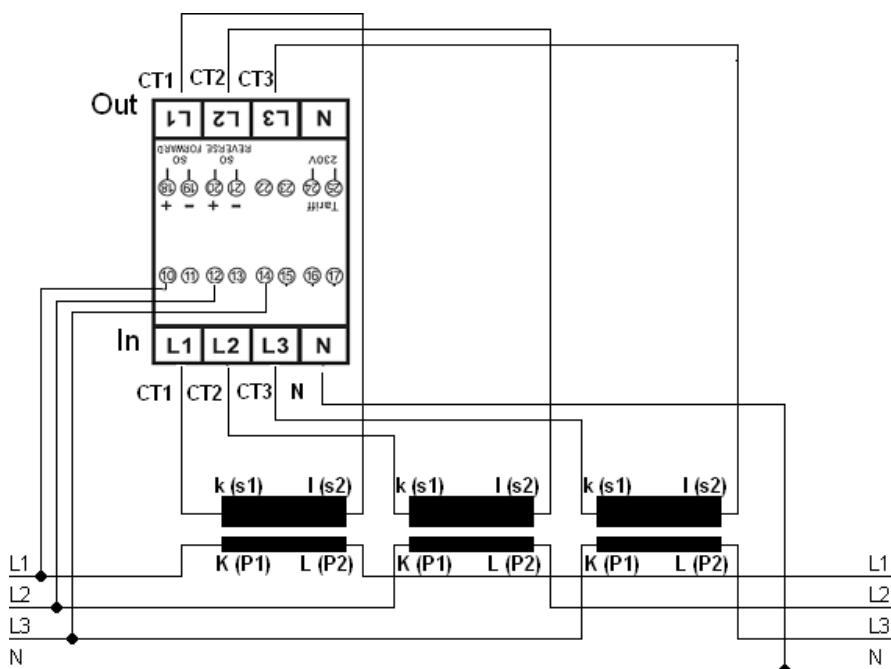| | |
|---|---|
| CT 1 (in) terminal k (s1) / (out) terminal l (s2) | 10 Volts Phase 1 (10/11 internally bridged) |
| CT 2 (in) terminal k (s1) / (out) terminal l (s2) | 12 Volts Phase 2 (12/13 internally bridged) |
| CT 3 (in) terminal k (s1) / (out) terminal l (s2) | 14 volts phase 3 (14/15 internally bridged) |
| Terminal "N" | Neutral conductor connection "N" |
| Terminal 18, 19 | $S_o$ pulse output "consumption" (terminal 18 = "+") |
| Terminal 20, 21 | $S_o$ pulse output "supply" (terminal 20 = "+") |
| Terminal 22, 23 | ModBus connection terminal 22 -> A, 23 -> B |
| Terminal 24, 25 | External tariff switching (230V AC) |
| | The SO signal for the supply is not used when a meter is connected to the Solar-Log™. |



Fig.: Pin assignment

**Note**

We recommend using a fuse to safeguard the connection lines for the voltage measurement in accordance with the local laws and regulations and with appropriate isolating switches and overload protection devices.

## Technical Data

| | |
|---|---|
| Nominal voltage | 230 / 400 V AC |
| Current | 0.015 - 1.5 (6) A |
| Frequency | 50 Hz |
| Measured value | Active and reactive energy in reference and delivery direction |
| Accuracy class | B |
| Self-consumption | < 10 VA - < 2 W |
| Start-up current | 3 mA |
| Width | 4 TE (70 mm) |
| Pulse output LED | 10,000 Imp/kWh, 2.5 ms |
| $S_0$ Pulse output | 10,000 Imp/kWh, 30 ms |
| Operating temperature | -25°C to +70°C |
| Max. relative humidity | 75 % on average, temporary 95 % |
| Registered harmonic | 0.05 – 0.25 kHz |
| LED blinking red | Supply > 4 W, pulse rate = consumption |
| Display | 5 + 3 Digits (99999,111 kWh) |
| Maximum cable cross-section | Main terminal blocks: max. 10 mm$^2$<br>Additional terminals: max. 2.5 mm$^2$ |
| Baud rate ModBus | 9,600 baud |

## Connection diagram for different operating modes

The pin assignments refer to the figure on page 17

### Solar-Log™ PRO380-CT (RS485 or S0) connection assignments

| | | |
|---|---|---|
| ► | As consumption or sub-consumer meter | Access to the grid on converter K(P1) - outgoing line to appliance on converter L(P2) |
| ► | As generator / meter for the entire plant | Access to production on converter K(P1) - outgoing line to the grid on converter L(P2) |

### Solar-Log™ PRO380-CT connection assignments (only RS485)

| | | |
|---|---|---|
| ► | As a consumption meter (bi-directional) | Access to the grid on converter L(P2) - outgoing line to house/plant on converter K(P1) (installation position according to the arrow system)<br>---------------------------------------------------------------<br>(From firmware 3.4.2, the counting directions (evaluation) can be changed in the Solar-Log™ of consumption meters in bi-directional mode in the device configuration.) |
| ► | As a battery meter (bi-directional) | Access to production/grid on converter K(P1) - outgoing line to the battery on converter L(P2) |

### Cable connection via RS485:

| Solar-Log™<br>terminal strip connector | Gateway<br>Solar-Log 50 | Solar-Log Base<br>RS485 (A) / (B) | Solar-Log™ PRO380-CT<br>(COM) |
|---|---|---|---|
| Terminal | | | PIN |
| ► 1 (Data+) | ► 1 or 5 | ► (A) 6 or (B) 10 (Data+) | ► 22 (A) |
| ► 4 (Data-) | ► 4 or 6 | ► (A) 9 or (B) 13 (Data-) | ► 23 (B) |

**Note**

If the meter is the last device on the bus, it has to be terminated at connection block 22 and 23 with a resistor (120 ohm / 0.25W).

**Note**

The Solar-Log™ PRO380-CT cannot be connected to the inverters with a single bus.
For this reason, use one RS485 connection for the inverters and one RS485 connection for the Solar-Log™ PRO380-CT.
► A combination with a M&T sensor as well as with the Solar-Log™ PRO380, Solar-Log™ PRO1 and Solar-Log™ PRO2 in the same bus is possible.

Possible meter operating modes for the Solar-Log™ PRO380-CT via RS485:
- Battery meter (bi-directional)
- Total plant meter
- Sub-consumer
- Consumption meter
- Consumption meter (bi-directional)
- Generator

Cable connection via S0 (IN):

| Solar-Log™ $S_0$ terminal block | Solar-Log Base | Solar-Log™ PRO380-CT |
|---|---|---|
| Pin assignment | | Pin assignment |
| ► 1 - S0+ | ► 4 - S0+ | ► 18 - S0+ |
| ► 2 - S0- | ► 5 - S0- | ► 19 - S0- |
| ► 3 | | |
| ► 4 | | |

Place a cable bridge between pin 3 and 4 on the Solar-Log™. No bridge at Solar-Log Base.

Possible meter operating modes for the Solar-Log™ PRO380-CT via SO connection (consumption):
- Total plant meter
- Sub-consumer
- Consumption meter
- Generator

Meter's impulse factor:
10000 p / kWh

# 5 Elkor - WattsOn

## 5.1 Elkor - WattsOn-1100 (3-phase)

Select „WattsOn" during the device detection.

Overview
- Communication address must be assigned, is set to „1" by default.
- 2-pin wiring.
- Installation steps:
  - Switch off the meter and the Solar-Log™.
  - Connect the meter to the Solar-Log™.

Connect the meter to the Solar-Log™.

The wiring is done using a
- self-made cable connection.

Wire connection via RS485:

| Solar-Log™ RS485 terminal block | Gateway Solar-Log 50 | Solar-Log Base RS485 (A) / (B) | WattsOn-1100 (RS485) |
|---|---|---|---|
| Pin assignment | | | Pin assignment |
| ► 1 (Data+) | ► 1 or 5 | ► (A) 6 or (B) 10 (Data+) | ► + |
| ► 4 (Data-) | ► 4 or 6 | ► (A) 9 or (B) 13 (Data-) | ► - |

Terminate the last meter with a 120 Ohm resistor.

Possible meter operating modes of the WattsOn-1100:
- Battery meter (bi-directional)
- Total plant meter
- Sub-consumer
- Utility Meter (U)
- Utility Meter (U+I)
- Utility Meter (U+I) + Consumption Meter (bi-directional)
- Consumption meter
- Consumption meter (bi-directional)
- Generator

**Note!**

Please observe the explanations and instructions in the manufacturer's manual regarding the installation, wiring and configuration of the device.

**Note**

Configuration is carried out via the Elkor WattsOn Console software.
Addressing can be adjusted via dip switches and is set to „1" by default.
The baud rate is set to „9600" as standard.

**Note**

The maximum number of devices per interface is 32.

## 5.2 Elkor - WattsOn-Mark II (3-phase)

Select „WattsOn" during the device detection.

Overview
- Communication address must be assigned, is set to „1" by default.
- 2-pin wiring.
- Installation steps:
  - Switch off the meter and the Solar-Log™.
  - Connect the meter to the Solar-Log™.

Connect the meter to the Solar-Log™.
The wiring is done using a
- self-made cable connection.

Wire connection via RS485:

| Solar-Log™ RS485 terminal block | Gateway Solar-Log 50 | Solar-Log Base RS485 (A) / (B) | WattsOn-Mark II (RS485) |
|---|---|---|---|
| Pin assignment | | | Pin assignment |
| ► 1 (Data+) | ► 1 or 5 | ► (A) 6 or (B) 10 (Data+) | ► D+ |
| ► 4 (Data-) | ► 4 or 6 | ► (A) 9 or (B) 13 (Data-) | ► D- |

Terminate the last meter with a 120 Ohm resistor.

Possible meter operating modes of the WattsOn-Mark II:
- Battery meter (bi-directional)
- Total plant meter
- Sub-consumer
- Utility Meter (U)
- Utility Meter (U+I)
- Utility Meter (U+I) + Consumption Meter (bi-directional)
- Consumption meter
- Consumption meter (bi-directional)
- Generator

> **Note!**
>
> Please observe the explanations and instructions in the manufacturer's manual regarding the installation, wiring and configuration of the device.

> **Note**
>
> The maximum number of devices per interface is 32.

**Note**

The default RS485 communication parameters of the WattsOn-Mark II (Model 1) are:

Baud rate: 9600

Data bits: 8

Parity: None

Stop bits: 1

Device address 1

▶ For settings, configuration and adjustment of the communication address and termination, see the manufacturer's manual.

# 6 Inepro

## 6.1 Inepro 75D

Select „Inepro / DMM" during the device detection.

Overview

- The communication address cannot be freely assigned.
- 2-pin wiring
- Installation steps
  - Switch off the meter and the Solar-Log™.
  - Connect the meter to the Solar-Log™.

Connect the meter to the Solar-Log™

The wiring is done using a

- self-made cable connection with a terminal block connector.

Cable connection via RS485:

| Solar-Log™ RS485 terminal block | Gateway Solar-Log 50 | Solar-Log Base RS485 (A) / (B) | Inepro 75D |
|---|---|---|---|
| Pin assignment | | | Pin assignment |
| ▶ 1 (Data+) | ▶ 1 or 5 | ▶ (A) 6 or (B) 10 (Data+) | ▶ 8 - RS485A |
| ▶ 4 (Data-) | ▶ 4 or 6 | ▶ (A) 9 or (B) 13 (Data-) | ▶ 7 - RS485B |

Possible meter operating modes for the Inepro 75D meter via RS485:

- Meter for the entire plant
- Sub-consumption meter
- Consumption meter
- Generator

Cable connection via S0:

| Solar-Log™ S$_0$ terminal block | Solar-Log Base | Inepro 75D |
|---|---|---|
| Pin assignment | | Pin assignment |
| ▶ 1 - S0+ | ▶ 4 - S0+ | ▶ 6 - S0+ |
| ▶ 2 - S0- | ▶ 5 - S0- | ▶ 5 - S0- |
| ▶ 3 | | |
| ▶ 4 | | |

Place a cable bridge between pin 3 and 4 on the Solar-Log™. No bridge at Solar-Log Base.

Possible meter operating modes for the Inepro 75D meter via S0:

- Total plant meter
- Sub-consumer
- Consumption meter
- Generator

**Note**

Only one Inepro RS485 meter per RS485 interface can be used.

**Note**

The Inepro 75D cannot be used on the same bus input with RS422 connected inverters.

**Note**

The Inepro 75D meters are automatically assigned the mod bus address 234 by Solar-Log™ during the detection process.
This address is therefore not allowed to be used for other devices.
After the configuration, the display on the Inepro meter alternates between the meter status and the address display (ID=EA). This can be used to check if Solar-Log™ has correctly detected the meter.

All RS485 meters have to be terminated with a 120Ω resistor between the two pins used.

## 6.2  Inepro 1250D

Select „Inepro / DMM" during the device detection.

Overview

- The communication address cannot be freely assigned.
- 2-pin wiring
- Installation steps
  - Switch off the meter and the Solar-Log™.
  - Connect the meter to the Solar-Log™.

Connect the meter to the Solar-Log™

The wiring is done using a

- self-made cable connection with a terminal block connector.

Cable connection via RS485:

| Solar-Log™ RS485 terminal block | Gateway Solar-Log 50 | Solar-Log Base RS485 (A) / (B) | Inepro 1250D |
|---|---|---|---|
| Pin assignment | | | Pin assignment |
| ► 1 (Data+) | ► 1 or 5 | ► (A) 6 or (B) 10 (Data+) | ► 11 - RS485A |
| ► 4 (Data-) | ► 4 or 6 | ► (A) 9 or (B) 13 (Data-) | ► 10 - RS485B |

Possible meter operating modes for the Inepro meter 1250D via RS485:

- Total plant meter
- Sub-consumer
- Consumption meter
- Generator

Cable connection via S0:

| Solar-Log™ S$_0$ terminal block | Solar-Log Base | Inepro 1250D |
|---|---|---|
| Pin assignment | | Pin assignment |
| ► 1 - S0+ | ► 4 - S0+ | ► 9 - S0+ |
| ► 2 - S0- | ► 5 - S0- | ► 8 - S0- |
| ► 3 | | |
| ► 4 | | |

Place a cable bridge between pin 3 and 4 on the Solar-Log™. No bridge at Solar-Log Base.

Possible meter operating modes for the Inepro 1250D meter via S0:

- Total plant meter
- Sub-consumer
- Consumption meter
- Generator

## Connection diagram for different operating modes

**Solar-Log™ Inepro 1250D (RS485 or S0) connection assignments**

| ► | As consumption or sub-consumer meter | Connection to the grid (IN) – connection for appliances (OUT) |
|---|---|---|
| ► | As inverter / production meter | Connection for the production (IN) – connection to the grid (OUT) |

**Note**

Only one Inepro RS485 meter per RS485 interface can be used.

**Note**

The Inepro 1250D cannot be used on the same bus input with RS422 connected inverters.

**Note**

All three phases have to be connected for the Solar-Log™ to accurately detect the meter.

If an Inepro 1250D is used, the PRG button on the meter must be pressed and held down during entire detection process.

If it is not possible to hold down the PRG button during the whole process, we recommend provisionally connecting the meter to the Solar-Log™ with a short cable after the installation in order to be able to press and hold down
the PRG button during entire detection process.

In a second detection attempt with the inverter, the meter is then detected by the Solar-Log™ even if the PRG button is not pressed.

The detection of an Inepro 1250D in an existing installation can take up to 15 minutes. After the detection, a restructuring of the data takes places which can take up to 45 minutes depending on the amount of data on the devices.

**Note**

The Inepro 1250D meters are automatically assigned the mod bus address 234 by Solar-Log™ during the detection process.
This address is therefore not allowed to be used for other devices.
After the configuration, the display on the Inepro meter alternates between the meter status and the address display (ID=EA). This can be used to check if Solar-Log™ has correctly detected the meter.

► All RS485 meters have to be terminated with a 120Ω resistor between the two pins used.

# 7  Iskra

## 7.1  Iskra WS0021

Overview

- 2-pin wiring
- Installation steps
    - Switch off the meter and the Solar-Log™.
    - Connect the meter to the Solar-Log™.

Connect the meter to the Solar-Log™

The wiring is done using a

- self-made cable connection with a terminal block connector.

Cable connection via S0:

| Solar-Log™ $S_0$ terminal block | Solar-Log Base | Iskra WS0021 |
|---|---|---|
| Pin assignment | | Pin assignment |
| ► 1 - S0+ | ► 4 - S0+ | ► 9 - S0- |
| ► 2 - S0- | ► 5 - S0- | ► 8 - S0+ |
| ► 3 | | |
| ► 4 | | |

Place a cable bridge between pin 3 and 4 on the Solar-Log™. No bridge at Solar-Log Base.

Possible meter operating modes for the Iskra WS0021 meter via S0:

- Meter for the entire plant
- Sub-consumption meter
- Consumption meter
- Generator

## 7.2  Iskra WS0031

Overview

- 2-pin wiring
- Installation steps
  - Switch off the meter and the Solar-Log™.
  - Connect the meter to the Solar-Log™.

Connect the meter to the Solar-Log™

The wiring is done using a

- self-made cable connection with a terminal block connector.

Cable connection via S0:

| Solar-Log™ S$_0$ terminal block | Solar-Log Base | Iskra WS0031 |
|---|---|---|
| Pin assignment | | Pin assignment |
| ► 1 - S0+ | ► 4 - S0+ | ► S0+ |
| ► 2 - S0- | ► 5 - S0- | ► S0- |
| ► 3 | | |
| ► 4 | | |

Place a cable bridge between pin 3 and 4 on the Solar-Log™. No bridge at Solar-Log Base.

Possible meter operating modes for the Iskra WS0031 meter via S0:

- Meter for the entire plant
- Sub-consumption meter
- Consumption meter
- Generator

## 7.3  Iskra WS1102

Select „Iskra" during the device detection.

Overview

- 2-pin wiring
- Installation steps
  - Switch off the meter and the Solar-Log™.
  - Connect the meter to the Solar-Log™.

Connect the meter to the Solar-Log™

The wiring is done using a

- self-made cable connection with a terminal block connector.

Cable connection via RS485:

| Solar-Log™ RS485 terminal block | Gateway Solar-Log 50 | Solar-Log Base RS485 (A) / (B) | Iskra WS1102 |
|---|---|---|---|
| Pin assignment | | | Pin assignment |
| ► 1 (Data+) | ► 1 or 5 | ► (A) 6 or (B) 10 (Data+) | ► A+ (23) |
| ► 4 (Data-) | ► 4 or 6 | ► (A) 9 or (B) 13 (Data-) | ► B- (24) |

Possible meter operating modes for the Iskra WS1102 meter via RS485:

- Meter for the entire plant
- Sub-consumption meter
- Consumption meter
- Generator

**Note**

If the meter is the last device on the bus, it has to be terminated at connection block A (23) and B (24) with a resistor (120 ohm).

**Note**

A maximum of 32 devices can be connected per bus.

# 8 Janitza "Utility Meter"

## 8.1 Janitza UMG 104 / UMG 604 / UMG 604-PRO (12V / 24V)

Select „Janitza" during the device detection.

> **Note**
>
> All information and values are taken from the Janitza manual. No guarantee is given. Please check the manufacturer's documents.

The Solar-Log™ Utility Meter is a universal metering device. It can be integrated in both low- and medium-voltage networks (via a transformer) and is needed for various functions:

- controlling voltage-dependent reactive power via the Q(U) function
- controlling reactive power at the feeding point
- recording the measurement data needed for the response signals sent to the grid operator

Only voltage measurements are required for voltage-dependent reactive power reduction Q(U). However, we still recommend using both current and voltage measurements to be able to check that the reduction function is operating properly. Current and voltage measurements are needed for the other functions.
Utility Meter supply voltage:

- 95-240Vac, 45-65Hz or 135-340Vdc

The Utility Meter's measuring inputs have the following limits:

- Voltage line conductor AC (without a voltage transformer): 10...300 V AC
- Voltage phase AC (without a voltage transformer): 17...520 V AC
- Current (without a current transformer) 0.005, 7.5 A
- Frequency of the fundamental component: 45 ..65 Hz

The limit may not be exceeded. For this reason, a measuring transformer needs to be installed for most applications.
We recommend the following transformer ratio:

- Voltage: Secondary 100V
  e.g. at 20kV grid converter 20000:100V
- Current: Secondary 5A
  e.g. 100:5A

> **Note**
>
> The Utility Meter that we use is produced by the company Janitza.
> Refer to the Janitza UMG 104 / UMG 604 / UMG 604-PRO manual for further technical details.
> ► The operating modes Utility Meter (U / U+I) is only possible with the Solar-Log 1000, 1900, 2000 and Solar-Log Base.

> **Note**
>
> The Utility Meter cannot be connected to the inverters with a single bus.
> For this reason, use one RS485 connection for the inverters and one RS485 connection for the Utility Meter.
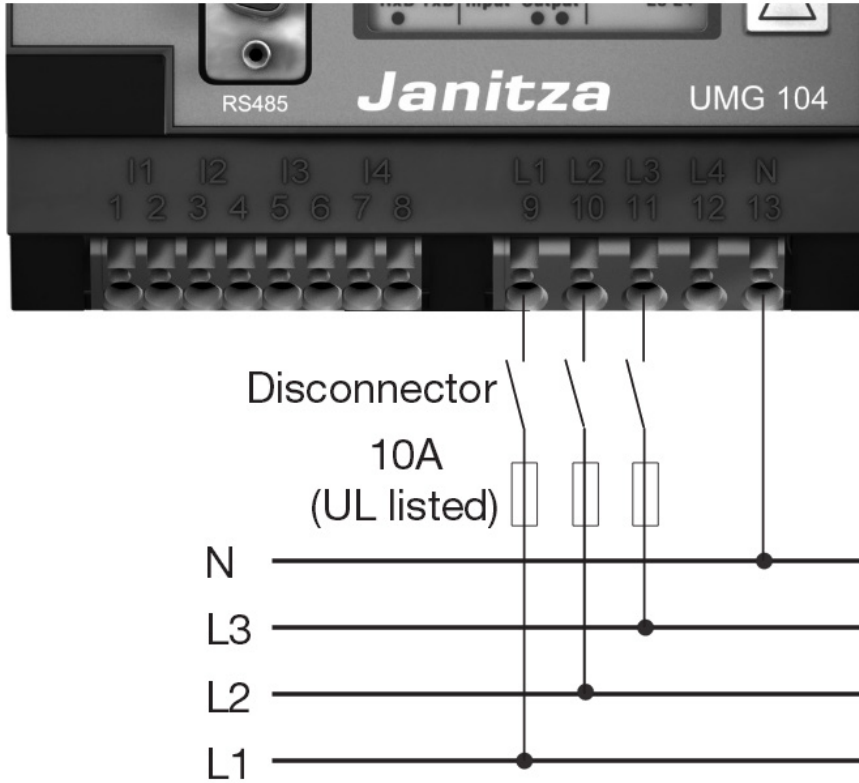
## Connecting the Utility Meter to the power grid



Fig.: Example - UMG 104 Utility Meter connection diagram for voltage measurements in low-voltage power grids
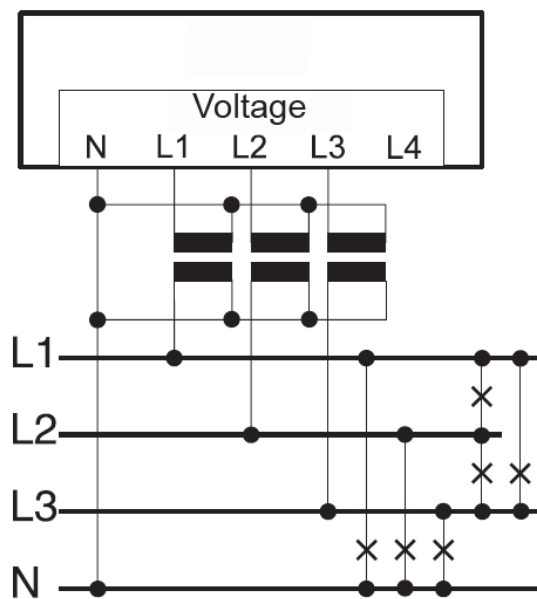


Fig.: Utility Meter connection diagram for voltage measurements with current transformers (medium voltage)
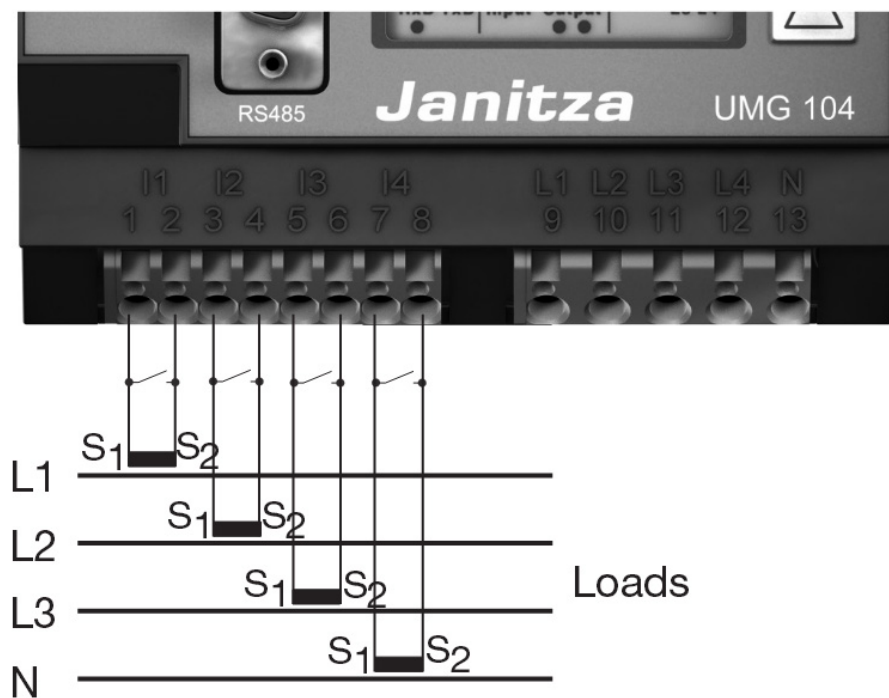
Fig.: Example - UMG 104 Utility Meter connection diagram for current measurements with current transformers

## Procedure

- Apply supply voltage to the Utility Meter

**Note**

We recommend using a fuse to safeguard the connection lines for the supply voltage. Please follow the instructions in the Janitza UMG 104 / UMG 604 / UMG 604-PRO manual.

**Note**

Supply voltages that do not correspond to the specifications on the rating plate can cause malfunctions and damage the device.

**Caution**

The inputs for the supply voltage are dangerous to touch.

**Note**

The measurement voltage must in effect be at least 10V or an exact measurement is not possible.

Cable connection via RS485:

1. Connect the wires as shown in the following diagram:

| Solar-Log™ terminal strip connector | Gateway Solar-Log 50 | Solar-Log Base RS485 (A) / (B) | Utility meter terminal strip |
|---|---|---|---|
| Terminal | | | PIN |
| ► 1 (Data+) | ► 1 or 5 | ► (A) 6 or (B) 10 (Data+) | ► 22 |
| ► 4 (Data-) | ► 4 or 6 | ► (A) 9 or (B) 13 (Data-) | ► 23 |

2. Insert the terminal block connector into the Solar-Log™ RS485 socket.

● The RS485 bus must be terminated.
   Install a 120 Ohm, 0.25 W resistor between pin 22 and 23 of the Utility Meter to terminate.
● Configuring the Utility Meter from the display
   Setting MODBUS Address (PRG 200 = 1)
   Setting Baud rate RS485 (PRG 202 = 2)
   Setting Mode (PRG 203 =  0)
   Setting Current converter primary (PRG 000)
   Setting Current converter secondary (PRG 001)
   Setting Voltage converter primary (PRG 002)
   Setting Voltage converter secondary (PRG 003)
   Refer to the accompanying manual of the device for the UMG 104 / UMG 604 / UMG 604-PRO configuration procedure.

> **Note**
>
> The parameter settings need to be adjusted before device detection.
> If the parameters differ, the Utility Meter will not be detected by the Solar-Log™.

> **Note**
>
> If there are several meters in one bus, different MODBUS addresses (PRG 200) must be assigned.

● Perform an inverter detection
   See Solar-Log™ manual chapter "Device detection".
● Configure the Utility-Meter under Configuration | Devices | Configuration, select the corresponding Operating mode and click on Save.

Check

● Does the Utility Meter display a positive value for inverters feeding power, the current output (kW)?
   If this is not the case, the current measurements are incorrectly connected.
   If necessary, switch the polarity of measuring inputs.

> **Note**
>
> When replacing the polarity, the cable must not be energized, since the converter can be destroyed otherwise.

Possible meter operating modes for the Janitza UMG 104 / UMG 604 / UMG 604-PRO via RS485:

- Battery (Bi-directional meter)
- Meter for the entire plant
- Sub-consumer
- Utility Meter (U) (with Solar-Log 1000, 1900, 2000 and Solar-Log Base)
- Utility Meter (U+I) (with Solar-Log 1000, 1900, 2000 and Solar-Log Base)
- Utility Meter (U+I) + Consumption Meter (bi-directional) (with Solar-Log 1000, 1900, 2000 and Solar-Log Base)
- Consumption meter
- Battery (Bi-directional meter)
- Generator

## Connection assignments / installation position of the Janitza UMG 104 / UMG 604 / UMG 604-PRO (12V / 24V) (Utility Meter) in connection with the Solar-Log™

> **Note**
>
> Check the installation position of the current transformers for the different operating modes of the Janitza UMG 104 / UMG 604 / UMG 604-PRO.

> **Note**
>
> Check that the phase assignment of the voltage measurements for the current measurements is correct.

The following output values are recorded in the various operating modes when the installation position is correct.

| Operating mode | Output value |
| --- | --- |
| ► As a Utility Meter (U+I) | with positive output value (kW) for feed-in |
| ► As total plant meter | with positive output value (kW) for feed-in |
| ► As an inverter | with positive output value (kW) for feed-in |
| ► As a consumption or sub-consumer meter: | with positive output value (kW) for consumption |
| ► As a consumption meter (bi-directional) | When the production is greater than the consumption, positive output values (kW) (installation position according to the arrow system) |
| | (From firmware 3.4.2, the counting directions (evaluation) can be changed in the Solar-Log™ of consumption meters in bi-directional mode in the device configuration.) |
| ► As a battery meter (bi-directional) | ► When the battery storage is being charged, positive output values (kW). <br> ► When the battery storage is being discharged, negative output values (kW). |

## 8.2  Janitza UMG 604 / UMG 604-PRO (12V / 24V) via Ethernet

| Termination | Addressing | Interface |
|---|---|---|
| No | Yes | LAN |

Select „Janitza" during the device detection.

### Overview
- Integrated interface
- Connect using network cable (patch cable) and Ethernet router or switch
- A static IP address must be assigned
- Installation steps
  - Switch off the Janitza device and the Solar-Log™
  - Connect the Janitza device to the Solar-Log™

### Connect Janitza to the Solar-Log™
The wiring is done using a
- network cable (patch cable/crossover cable) and the
- Ethernet router or switch.

### Assign the IP address for detection and communication:
IP addresses assignment according to manufacturer's instructions. Both devices need to be in the same subnet mask.

### Detection via the Solar-Log™ WEB Interface
- For detection on the Solar-Log™ , select the device class under the menu Configuration | Device | Definition | Interface  with the plus symbol and then select Janitza as the manufacturer. Confirm your selection with OK.
- Save your selections and then start the Device Detection under Configuration | Device | Detection.

### Detection from the Solar-Log 1200
- When using the Solar-Log 1200, the detection can also be started from the display. Select the settings Start ► Initial Configuration ► Page 2 „Device" ► Add and select the manufacturer Janitza from there. Save and start the Device Detection.

**Note**

A fixed IP address must be assigned for successful device detection via Ethernet. In addition, registers 200 to 204, which relate to RS232 and RS485, must remain at the factory default setting.

**Note**

The meter operating modes via Ethernet are identical to those of the RS485 version.

## 8.3  Janitza UMG 96-PA-/-MID/-MID+ via RS485 (only with firmware 5.x / 6.x)

Select „Janitza" during the device detection.

> **Note**
>
> All information and values are taken from the Janitza manual. No guarantee is given. Please check the manufacturer's documents.

Supply voltage Janitza UMG 96-PA-/-MID/-MID+:

Option 230 V:

Nominal range:

- AC 90 V - 277 V (50/60 Hz) or DC 90 V - 250 V, 300 V CATIII

Power consumption:

- max. 4,5 VA / 2 W

Option 24 V:

Nominal range:

- AC 24 V - 90 V (50/60Hz) or DC 24 V - 90 V, 150 V CATIII

Power consumption:

- max. 4,5 VA / 2 W

The measuring inputs of the Janitza UMG 96-PA-/-MID/-MID+ have the following limit values:

- Voltage N-L: 0[1]) .. 600 Vrms (max. overvoltage 800 Vrms)
- Voltage L-L:  0[1]) .. 1040 Vrms (max. overvoltage 1350 Vrms )
- Current: 0,005 .. 6 Arms
- Frequency of the fundamental component: 45 Hz .. 65 Hz

[1]) The device only determines measured values if a voltage L1-N of greater than 20 Vrms (4-wire measurement) or a voltage L1-L2 of greater than 34 Vrms (3-wire measurement) is present at the voltage measurement input V1.

The limit may not be exceeded. For this reason, a measuring transformer needs to be installed for most applications.

We recommend the following transformer ratio:

- Voltage: Secondary 100V
  e.g. at 20kV grid converter 20000:100V
- Current: Secondary 5A
  e.g. 100:5A

> **Note**
>
> The Utility Meter that we use is produced by the company Janitza.
>
> Further technical details can be found in the manual of the Janitza UMG 96-PA-/-MID/-MID+.
>
> ► The Utility Meter (U / U+I) operating modes are only possible with the Solar-Log Base.

---

**Note**

The Utility Meter cannot be connected to the inverters with a single bus.
For this reason, use one RS485 connection for the inverters and one RS485 connection for the Utility Meter.

---

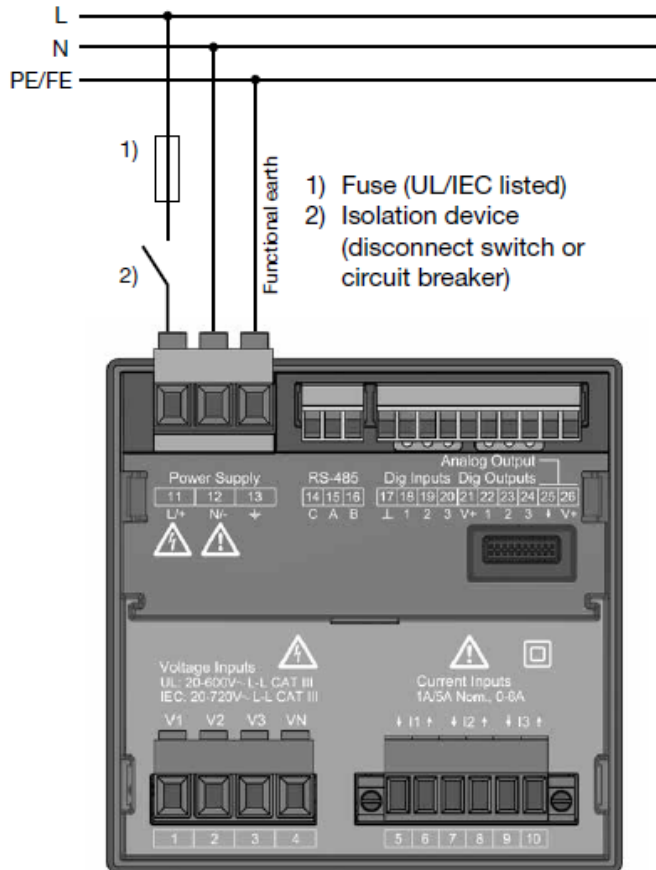## Connection of Janitza UMG 96-PA-/-MID/-MID+ to the power supply grid
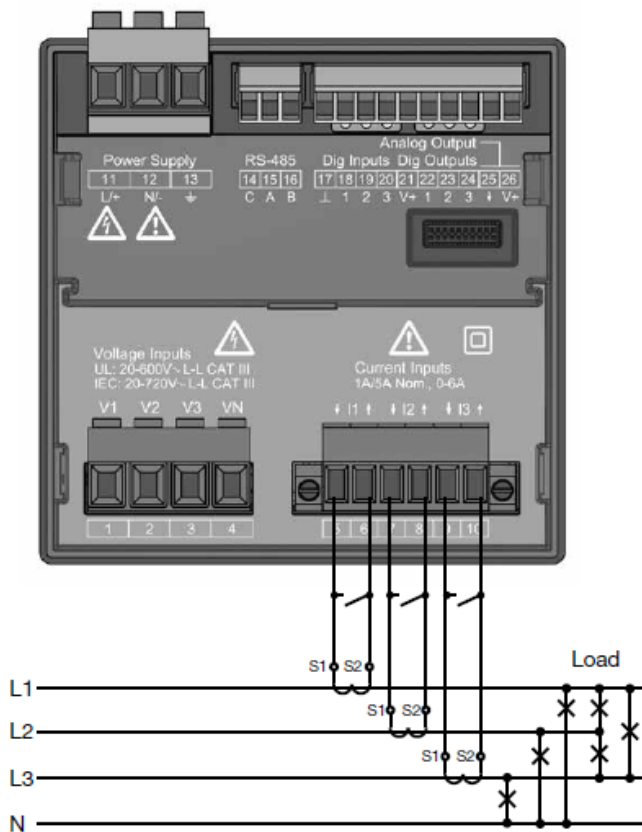
L
N
PE/FE

1) Fuse (UL/IEC listed)
2) Isolation device (disconnect switch or circuit breaker)

Functional earth

Power Supply
11   12   13
L/+  N/-   ⏚

RS-485
14  15  16
C   A   B

Dig Inputs
17  18  19  20
⊥   1   2   3   V+

Analog Output
Dig Outputs
21  22  23  24  25  26
1   2   3   ⏚   V+

Voltage Inputs
UL: 20-600V~ L-L CAT III
IEC: 20-720V~ L-L CAT III

V1   V2   V3   VN

1    2    3    4

Current Inputs
1A/5A Nom., 0-6A

↓I1↑  ↓I2↑  ↓I3↑

5   6   7   8   9   10

Fig.: Connection example „Supply voltage"

Fig.: Connection example „Current measurement via current transformer"
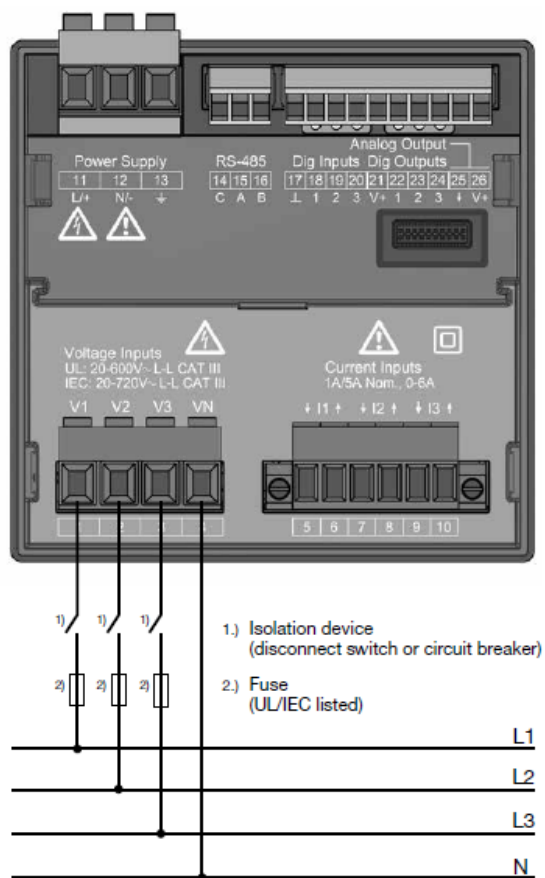


Fig.: Connection example for voltage measurement.

### Procedure

- Apply supply voltage to the UMG 96-PA-/-MID/-MID+.

---

**Note**

We recommend using a fuse to safeguard the connection lines for the supply voltage. Please follow the instructions in the Janitza UMG 96-PA-/-MID/-MID+ manual.

---

**Note**

Supply voltages that do not correspond to the specifications on the rating plate can cause malfunctions and damage the device.

---

**Caution**

The inputs for the supply voltage are dangerous to touch.

---

**Note**

The measurement voltage must in effect be at least 10V or an exact measurement is not possible.

### Cable connection via RS485:

- Connect the wires as shown in the following diagram:

| Solar-Log Base RS485 (A) / (B) | Terminal strip Janitza UMG 96-PA-/-MID/-MID+ |
|---|---|
| Pin | Pin |
| ► (A) 6 or (B) 10 (Data+) | ► 15 A |
| ► (A) 9 or (B) 13 (Data-) | ► 16 B |

- The RS485 bus must be terminated.
  For termination, install a 120 Ohm, 0.25 W resistor between pin 15 and 16 of the Janitza UMG 96-PA-/-MID/-MID+.
- Configuration on the Janitza UMG 96-PA-/-MID/-MID+ display:
  Setting MODBUS address (1 = default setting).
  Setting baud rate RS485 (38400 kbps)
  Setting data frame (2 stopbit)
  The procedure for configuring the UMG 96-PA-/-MID+ can be found in the instructions supplied with the device.

**Note**

The settings of these parameters must be made before device detection.
With deviating parameters, the Janitza UMG 96-PA-/-MID/-MID+ is not detected by the Solar-Log™.

**Note**

If there are several meters in one bus, different MODBUS addresses must be assigned.

- Perform an inverter detection
  See Solar-Log™ manual chapter "Device detection".
- Configure the Janitza under Configuration | Devices | Configuration, select the corresponding Operating mode and click on Save.

## Control

- You can check the values for plausibility under Diagnosis | Feed-in management | Utility meter.

**Note**

When replacing the polarity, the cable must not be energized, since the converter can be destroyed otherwise.

## Possible meter operating modes of the Janitza UMG 96-PA-/-MID/-MID+:

- Battery (Bi-directional meter)
- Meter for the entire plant
- Sub-consumer
- Utility Meter (U)
- Utility Meter (U+I)
- Utility Meter (U+I) + Consumption Meter (bi-directional)
- Consumption meter
- Battery (Bi-directional meter)
- Generator

## Connection assignment / installation position of the Janitza UMG 96-PA-/-MID/ -MID+ in connection with Solar-Log™.

**Note**

Check the installation position of the current transformers for the different operating modes of the Janitza UMG 96-PA-/-MID/-MID+.

**Note**

Auf richtige Phasenzuordnung der Spannungsmessung zur Strommessung ist zu achten.

**Note**

Check that the phase assignment of the voltage measurements for the current measurements is correct.

The following output values are recorded in the various operating modes when the installation position is correct.

| Operating mode | Output value |
|---|---|
| ► As a Utility Meter (U+I) | with positive output value (kW) for feed-in |
| ► As total plant meter | with positive output value (kW) for feed-in |
| ► As an inverter | with positive output value (kW) for feed-in |
| ► As a consumption or sub-consumer meter: | with positive output value (kW) for consumption |
| ► As a consumption meter (bi-directional) | When the production is greater than the consumption, positive output values (kW) |
| ► As a battery meter (bi-directional) | ► When the battery storage is being charged, positive output values (kW). ► When the battery storage is being discharged, negative output values (kW). |

## 8.4 Janitza UMG 96 RM-E über RS485 (only with firmware 6.x)

Select „Janitza" during the device detection.

**Note**

All information and values are taken from the Janitza manual. No guarantee is given. Please check the manufacturer's documents.

Supply voltage Janitza UMG 96 RM-E:

Option 230 V:

Nominal range:

- AC 90 V - 277 V (50/60 Hz) or DC 90 V - 250 V, 300 V CATIII

Power consumption:

- max.  7,5 VA / 4 W

Option 24 V:

Nominal range:

- AC 24 V - 90 V or DC 24 V - 90 V, 150 V CATIII

Power consumption:

- max. 7,5 VA / 5 W

The measuring inputs of the Janitza UMG 96 RM-E have the following limit values:

- Voltage L-N: 0[1] .. 300 Vrms (max. overvoltage 520 Vrms)
- Voltage L-L:  0[1] .. 520 Vrms (max. overvoltage 900 Vrms )
- Current: 0 .. 6 Arms
- Frequency of the fundamental component: 45 Hz .. 65 Hz

[1]) The device only determines measured values if a voltage L1-N of greater than 20 Vrms (4-wire measurement) or a voltage L1-L2 of greater than 34 Vrms (3-wire measurement) is present at the voltage measurement input V1.

The limit may not be exceeded. For this reason, a measuring transformer needs to be installed for most applications.

We recommend the following transformer ratio:

- Voltage: Secondary 100V

  e.g. at 20kV grid converter 20000:100V
- Current: Secondary 5A

  e.g. 100:5A

**Note**

The Utility Meter that we use is produced by the company Janitza.

Further technical details can be found in the manual of the Janitza UMG 96 RM-E.

► The Utility Meter (U / U+I) operating modes are only possible with the Solar-Log Base.

**Note**

The Utility Meter cannot be connected to the inverters with a single bus.

For this reason, use one RS485 connection for the inverters and one RS485 connection for the Utility Meter.

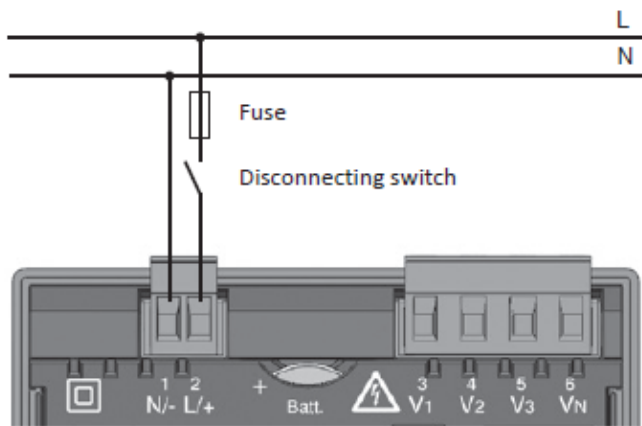## Connection of Janitza UMG 96 RM-E to the power supply grid
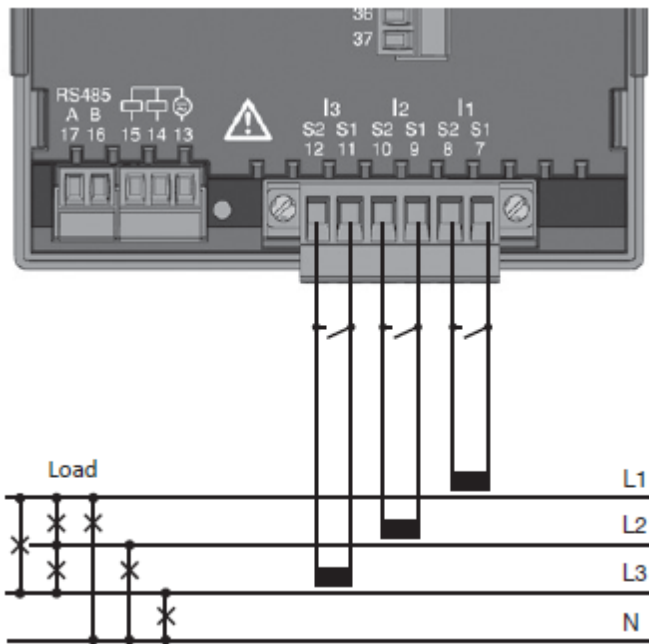


Fig.: Connection example „Supply voltage"



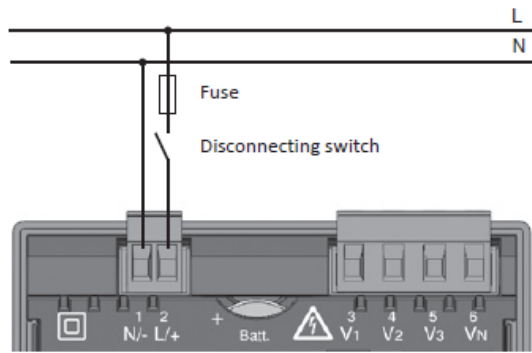Fig.: Connection example „Current measurement via current transformer"

Fig.: Connection example for voltage measurement.

## Procedure

● Apply supply voltage to the UMG 96 RM-E.

**Note**

We recommend using a fuse to safeguard the connection lines for the supply voltage. Please follow the instructions in the Janitza UMG 96 RM-E manual.

**Note**

Supply voltages that do not correspond to the specifications on the rating plate can cause malfunctions and damage the device.

**Caution**

The inputs for the supply voltage are dangerous to touch.

**Note**

The measurement voltage must in effect be at least 10V or an exact measurement is not possible.

## Cable connection via RS485:

1. Connect the wires as shown in the following diagram:

| Solar-Log Base RS485 (A) / (B) | Terminal strip Janitza UMG 96 RM-E |
|---|---|
| Terminal | Pin |
| ► (A) 6 or (B) 10 (Data+) | ► 17 A |
| ► (A) 9 or (B) 13 (Data-) | ► 16 B |

2. The RS485 bus must be terminated.
   For termination, install a 120 Ohm, 0.25 W resistor between pin 16 and 17 of the Janitza UMG 96 RM-E

3.  Configuration on the Janitza UMG 96 RM-E display:

    Setting MODBUS address (1 = default setting).

    Setting baud rate RS485 (38400 kbps)

    Setting data frame (2 stopbit)

    The procedure for configuring the UMG 96 RM-E can be found in the instructions supplied with the device.

> **Note**
>
> If there are several meters in one bus, different MODBUS addresses must be assigned.

> **Note**
>
> The settings of these parameters must be made before device detection.
> With deviating parameters, the Janitza UMG 96 RM-E is not detected by the Solar-Log™.

- Perform an inverter detection
  See Solar-Log™ manual chapter "Device detection".
- Configure the Janitza under Configuration | Devices | Configuration, select the corresponding Operating mode and click on Save.

### Control
- You can check the values for plausibility under Diagnosis | Feed-in management | Utility meter.

> **Note**
>
> When replacing the polarity, the cable must not be energized, since the converter can be destroyed otherwise.

### Possible meter operating modes of the Janitza UMG 96 RM-E:
- Battery (Bi-directional meter)
- Meter for the entire plant
- Sub-consumer
- Utility Meter (U)
- Utility Meter (U+I)
- Utility Meter (U+I) + Consumption Meter (bi-directional)
- Consumption meter
- Battery (Bi-directional meter)
- Generator

## Connection assignment / installation position of the Janitza UMG 96 RM-E in connection with Solar-Log™.

**Note**

Check the installation position of the current transformers for the different operating modes of the Janitza UMG 96 RM-E.

**Note**

Auf richtige Phasenzuordnung der Spannungsmessung zur Strommessung ist zu achten.

**Note**

Check that the phase assignment of the voltage measurements for the current measurements is correct.

The following output values are recorded in the various operating modes when the installation position is correct.

| Operating mode | Output value |
|---|---|
| ► As a Utility Meter (U+I) | with positive output value (kW) for feed-in |
| ► As total plant meter | with positive output value (kW) for feed-in |
| ► As an inverter | with positive output value (kW) for feed-in |
| ► As a consumption or sub-consumer meter: | with positive output value (kW) for consumption |
| ► As a consumption meter (bi-directional) | When the production is greater than the consumption, positive output values (kW) |
| ► As a battery meter (bi-directional) | ► When the battery storage is being charged, positive output values (kW). <br> ► When the battery storage is being discharged, negative output values (kW). |

## 8.5  Janitza UMG 96 RM-E via Ethernet (only with firmware 6.x)

| Termination | Addressing | Interface |
|:---:|:---:|:---:|
| No | Yes | LAN |

Select „Janitza" during the device detection.

### Overview
- Integrated interface.
- Connect using network cable (patch cable) and Ethernet router or switch.
- A static IP address must be assigned.
- Installation steps:
    - Switch off the Janitza device and the Solar-Log™.
    - Connect the Janitza device to the Solar-Log™.

### Connect Janitza to the Solar-Log™
The wiring is done using a
- network cable (patch cable/crossover cable) and the
- Ethernet router or switch.

### Assign the IP address for detection and communication:
IP addresses assignment according to manufacturer's instructions. Both devices need to be in the same subnet mask.

### Detection via the Solar-Log™ WEB Interface
- For detection on the Solar-Log™ , select the device class under the menu Configuration | Device | Definition | Interface  with the plus symbol and then select Janitza as the manufacturer. Confirm your selection with OK.
- Save your selections and then start the Device Detection under Configuration | Device | Detection.

**Note**

A fixed IP address must be assigned for successful device detection via Ethernet. In addition, registers 200 to 204, which relate to RS232 and RS485, must remain at the factory default setting.

**Note**

The meter operating modes via Ethernet are identical to those of the RS485 version.

# 9 Larsen & Toubro

## 9.1 Larsen & Toubro (WDM313CDNC)

Select „L&T:Vega" during the device detection.

Overview

● The communication address has to be assigned.
● 2-pin wiring.
● Installation steps
 • Switch off the meter and the Solar-Log™.
 • Connect the meter to the Solar-Log™.

Connect the meter to the Solar-Log™

The wiring is done using a

● self-made cable connection with a terminal block connector.

Cable connection via RS485:

| Solar-Log™ RS485 terminal block | Gateway Solar-Log 50 | Solar-Log Base RS485 (A) / (B) | L&T WDM313CDNC |
|---|---|---|---|
| Pin assignment | | | Pin assignment |
| ▶ 1 (Data+) | ▶ 1 or 5 | ▶ (A) 6 or (B) 10 (Data+) | ▶ 9 D+ |
| ▶ 4 (Data-) | ▶ 4 or 6 | ▶ (A) 9 or (B) 13 (Data-) | ▶ 10 D- |
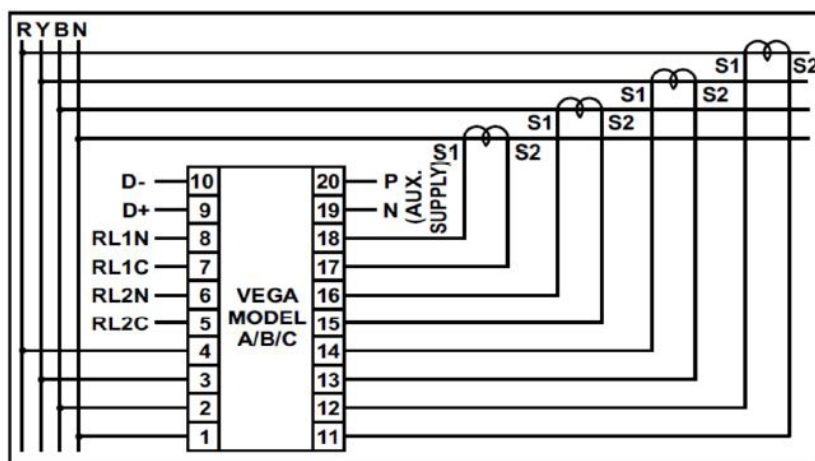


Fig.: Pin assignment

**Note**

The following parameters need to be checked before the device detection to ensure that the meter is detected.

Assign the communication address (start with 1).

Baud rate: 9600 bps

Data bits: 8

Stop bits: 1

Parity: even

► The settings are adjusted via the device's display. (Please refer to the notes and instructions in the manufacture's manual for instructions.)

Possible meter operating modes for the L&T WDM313CDNC via RS485:

- Battery (bi-directional meter)
- Meter for the entire plant
- Sub-consumer
- Utility Meter (U) (with Solar-Log 1000, 1900, 2000 and Solar-Log Base)
- Utility Meter (U+I) (with Solar-Log 1000, 1900, 2000 and Solar-Log Base)
- Utility Meter (U+I) + Consumption Meter (bi-directional) (with Solar-Log 1000, 1900, 2000 and Solar-Log Base)
- Consumption meter
- Battery (bi-directional meter)
- Generator

**Note**

The meter cannot be connected to the inverters with a single bus.

For this reason, use one RS485 connection for the inverters and one RS485 connection for the meter.

**Note**

A maximum of 32 devices can be connected per bus.

**Note**

Please refer to manufacturer's manual for information on the installation, wiring and configuration of the device.

# 10 Mikro PowerMeter

## 10.1 Mikro PowerMeter DPM680

Select „Mikro:DPM680" during the device detection.

### Overview

- The communication address has to be assigned.
- 3-pin wiring.
- Installation steps
  - Switch off the meter and the Solar-Log™.
  - Connect the meter to the Solar-Log™.

### Connect the meter to the Solar-Log™

The wiring is done using a

- self-made cable connection with a terminal block connector.

### Cable connection via RS485:

| Solar-Log™ RS485 terminal block | Gateway Solar-Log 50 | Solar-Log Base RS485 (A) / (B) | Mikro PowerMeter DPM680 |
|---|---|---|---|
| Pin assignment | | | Pin assignment |
| ▶ 1 (Data+) | ▶ 1 oder 5 | ▶ (A) 6 or (B) 10 (Data+) | ▶ + |
| ▶ 3 GND | ▶ 3 GND | ▶ (A) 8 or (B) 12 GND | ▶ GND |
| ▶ 4 (Data-) | ▶ 4 oder 6 | ▶ (A) 9 or (B) 13 (Data-) | ▶ - |

> **Note**
>
> The default RS485 communication parameters for the meter are:
> Baud: 38400
> Data bits: 8
> Parity: None
> Stop bits: 1
>
> The Solar-Log™ can only communicate with the meter when it has these settings.  It is important to check the settings before performing the device detection.

▶ Assign the communication address (according to the manufacturer's manual).

▶ The settings are adjusted via the device's display. (Please refer to the notes and instructions in the manufacture's manual for instructions.)

Possible meter operating modes for the Mikro PowerMeter DPM680 via RS485:

- Battery (bi-directional meter)
- Meter for the entire plant
- Sub-consumer
- Utility Meter (U) (with Solar-Log 1000, 1900, 2000 and Solar-Log Base)
- Utility Meter (U+I) (with Solar-Log 1000, 1900, 2000 and Solar-Log Base)
- Utility Meter (U+I) + Consumption Meter (bi-directional) (with Solar-Log 1000, 1900, 2000 and Solar-Log Base)
- Consumption meter
- Battery (bi-directional meter)
- Generator

**Note**

A maximum of 32 devices can be connected per bus.

**Note**

Please refer to manufacturer's manual for information on the installation, wiring and configuration of the device.

# 11 Real Energy Systems - Prisma Meter
## (only with firmware 6.x)

## 11.1 Prisma Meter via Ethernet

In device detection, select manufacturer "Real Energy Systems" and then type "Prisma".

Supported models:
- Prisma 310A
- Prisma 310A-Lite

Overview
- Integrated interface.
- Connect using network cable (patch cable) and Ethernet router or switch.
- A static IP address must be assigned.
- Installation steps:
  - Switch off the meter and the Solar-Log™.
  - Wire the Prisma meter to the router or switch and configure according to the manufacturer's instructions.
  - Wire the Solar-Log™ to a router or switch. Make sure that both devices are in the same network. (Follow the manufacturer's instructions).

The wiring is done using a
- network cable (patch cable/crossover cable) and the
- Ethernet router or switch.

Assign the IP address for detection and communication:
IP addresses assignment according to manufacturer's instructions. Both devices need to be in the same subnet mask.

Detection via the Solar-Log™ WEB Interface
- For detection on the Solar-Log™ , select the device class under the menu Configuration | Device | Definition | Interface  with the plus symbol, select the manufacturer „Real Energy Systems" and then the type „Prisma". Confirm your selection by clicking OK.
- Save your selections and then start the Device Detection under Configuration | Device | Detection.

Possible meter operating modes of the Prisma meter:
- Consumption meter (bi-directional)

> **Note**
>
> For successful device detection via Ethernet, port 502 must be open between the IPs of the two devices to ensure communication via Modbus TCP/IP.

**Note**

Only compatible with the bidirectional meter operating mode.

# 12 Schneider Electric

## 12.1 Schneider EM6400NG (3-phase)

Select „Schneider Electric/EM6400NG" during the device detection.

Overview

- The communication address has to be assigned.
- 2-pin wiring.
- Installation steps:
  - Switch off the meter and the Solar-Log™.
  - Connect the meter to the Solar-Log™.

Connect the meter to the Solar-Log™

The wiring is done using a

- self-made cable connection with a terminal block connector.

Cable connection via RS485:

| Solar-Log™ RS485 terminal block | Gateway Solar-Log 50 | Solar-Log Base RS485 (A) / (B) | Schneider EM4600S |
|---|---|---|---|
| Pin assignment | | | Pin assignment |
| ► 1 (Data+) | ► 1 or 5 | ► (A) 6 or (B) 10 (Data+) | ► 7 (D1) |
| ► 4 (Data-) | ► 4 or 6 | ► (A) 9 or (B) 13 (Data-) | ► 14 (D0) |

Termination: 120-ohm resistor at connection pin 7 and 14 on the meter

**Note**

The following parameters need to be checked before the device detection to ensure that the meter is detected.
Baud rate: 19200 bps
Data bits: 8
Stop bits: 1
Parity: even

- ► The settings are adjusted via the device's display. (Please refer to the notes and instructions in the meter's manual for instructions.)

Possible meter operating modes for the Schneider EM6400NG via RS485:

- Battery meter (bi-directional)
- Total plant meter
- Sub-consumer
- Consumption meter
- Consumption meter (bi-directional)
- Generator

**Note**

The meter cannot be connected to the inverters with a single bus.
For this reason, use one RS485 connection for the inverters and one RS485 connection for the meter.

**Note**

Different model series from the same manufacturer cannot be used with the same bus.

**Note**

A maximum of 32 devices can be connected per bus.
The maximum cable length is 900 meters.

**Note**

Follow the instructions in the manufacturer's manual for installation, wiring and configuration of the device.

**Note**

The meter is not compatible with the Solar-Log™ 200, 500 and 1000.

# 12.2 Schneider EM6400S (3-phase)

Select „Schneider Electric/EM6400S" during the device detection.

Overview
- Communication address must be allocated.
- 2-pin wiring
- Installation steps
  - Switch off the meter and the Solar-Log™.
  - Connect the meter to the Solar-Log™.

Connect the meter to the Solar-Log™

The wiring is done using a
- self-made cable connection with a terminal block connector.

Cable connection via RS485:

| Solar-Log™ RS485 terminal block | Gateway Solar-Log 50 | Solar-Log Base RS485 (A) / (B) | Schneider EM4600NG |
|---|---|---|---|
| Pin assignment | | | Pin assignment |
| ► 1 (Data+) | ► 1 or 5 | ► (A) 6 or (B) 10 (Data+) | ► 7 (D1 +) |
| ► 4 (Data-) | ► 4 or 6 | ► (A) 9 or (B) 13 (Data-) | ► 14 (D0 -) |

Termination: 120-ohm resistor at connection pin 7 and 14 on the meter

**Note**

The following parameters need to be checked before the device detection to ensure that the meter is detected.
Baud rate: 9600 bps
Data bits: 8
Stop bits: 1
Parity: even

► The settings are adjusted via the device's display. (Please refer to the notes and instructions in the meter's manual for instructions.)

Possible meter operating modes for the Schneider EM6400S via RS485:
- Battery (bi-directional meter)
- Meter for the entire plant
- Sub-consumer
- Consumption meter
- Battery (bi-directional meter)
- Generator

**Note**

The meter cannot be connected to the inverters with a single bus.
For this reason, use one RS485 connection for the inverters and one RS485 connection for the meter.

**Note**

A maximum of 32 devices can be connected per bus.

**Note**

Please refer to manufacturer's manual for information on the installation, wiring and configuration of the device.

**Note**

The meter is not compatible with the Solar-Log™ 200, 500 and 1000.

# 12.3 Schneider iEM3000 Serie (3-phasig) (only with firmware 5.x / 6.x)

Select „Schneider Electric: iEM3000 series" during the device detection.

## Supported models:
● 3150, 3155, 3250, 3255, 3350, 3355, 3455, 3555

## Overview
● Communication address must be allocated (Address range 1-247).
● 2-pin wiring.
● Installation steps:
  • Switch off the meter and the Solar-Log™.
  • Connect the meter to the Solar-Log™.

## Connect the meter to the Solar-Log™

The wiring is done using a
● self-made cable connection with a terminal block connector.

## Wiring connection via RS485:

| Solar-Log Base RS485 (A) / (B) | Schneider iEM3000 Series |
|---|---|
| PIN | PIN |
| ► (A) 6 or (B) 10 (Data+) | ► D1/+ |
| ► (A) 8 or (B) 12 (GND) | ► 0V |
| ► (A) 9 or (B) 13 (Data-) | ► D0/- |

> **Note**
>
> The following parameters need to be checked before the device detection to ensure that the meter is detected:
> Baud rate: 19200 bps
> Data bits: 8
> Stop bits: 1
> Parity: even
>
> ► The settings are adjusted via the device's display. (Please refer to the notes and instructions in the meter's manual for instructions.)

## Possible meter operating modes for the Schneider iEM3000 Series via RS485:
● Battery meter (bi-directional)
● Total plant meter
● Sub-consumer
● Consumption meter
● Consumption meter (bi-directional)
● Generator

**Note**

The meter cannot be connected to the inverters with a single bus.
For this reason, use one RS485 connection for the inverters and one RS485 connection for the meter.

**Note**

A maximum of 32 devices can be connected per bus.

**Note!**

Please refer to manufacturer's manual for information on the installation, wiring and configuration of the device.

**Note**

The meter is not compatible with the Solar-Log™ 200, 500 and 1000.

# 13 Secure Meters

## 13.1 Secure Meters (3-phasig)

Select „Secure" during the device detection.

Supported Series/Models:
- Series Elite 440:
- Models:
  - 445, 446, 447, 448

Overview
- The communication address has to be assigned.
- 2-pin wiring.
- Installation steps:
  - Switch off the meter and the Solar-Log™.
  - Connect the meter to the Solar-Log™.

Connect the meter to the Solar-Log™

The wiring is done using a
- self-made cable connection with a terminal block connector.

Cable connection via RS485:

| Solar-Log™ RS485 terminal block | Gateway Solar-Log 50 | Solar-Log Base RS485 (A) / (B) | Secure Meter (RS485) |
|---|---|---|---|
| Pin assignment | | | Pin assignment |
| ► 1 (Data+) | ► 1 or 5 | ► (A) 6 or (B) 10 (Data+) | ► + |
| ► 4 (Data-) | ► 4 or 6 | ► (A) 9 or (B) 13 (Data-) | ► - |

**Note**

The following parameters need to be checked before the device detection to ensure that the meter is detected:
Baud rate: 9600 bps
Data bits: 8
Stop bits: 1
Parity: Non

► The settings are adjusted via the device's display. (Please refer to the notes and instructions in the meter's manual for instructions.)

Possible meter operating modes for the Secure Meters:

- Battery meter (bi-directional)
- Total plant meter
- Sub-consumer
- Consumption meter
- Consumption meter (bi-directional)
- Generator

**Note!**

Follow the instructions in the manufacturer's manual for installation, wiring and configuration of the device.

**Note**

The meter is not compatible with the Solar-Log™ 200, 500 and 1000.

# 14 WattNode (CCS) (only with firmware 6.x)

## 14.1 WattNode (CCS) (3-phase / 1-phase)

Select „WattNode" during the device detection.

Supported models:

- WND-WR-MB

Overview

- The communication address has to be assigned.
- 2-pin wiring.
- Installation steps:
  - Switch off the meter and the Solar-Log™.
  - Connect the meter to the Solar-Log™.

Connect the meter to the Solar-Log™

The wiring is done using a

- self-made cable connection.

Cable connection via RS485:

| Solar-Log Base RS485 (A) / (B) | WattNode (RS485) |
|---|---|
| Terminal | Pin assignment |
| ► (A) 6 or (B) 10 (Data+) | ► B+ |
| ► (A) 8 or (B) 12 (GND) | ► C |
| ► (A) 9 or (B) 13 (Data-) | ► A- |

Termination: Via dip switch 7 (see manufacturer's meter manual).

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**Note**

The following parameters need to be checked before the device detection to ensure that the meter is detected:
Baud rate: 115200 bps
Data bits: 8
Stop bits: 1
Parity: No

► The settings are adjusted via the device's display. (Please refer to the notes and instructions in the meter's manual for instructions.)

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Possible meter operating modes for the WattNode (CCS):

- Battery meter (bi-directional)
- Total plant meter
- Sub-consumer
- Consumption meter
- Consumption meter (bi-directional)
- Generator

**Note!**

Follow the instructions in the manufacturer's manual for installation, wiring and configuration of the device.

# 15 Attachment Wiring diagrams

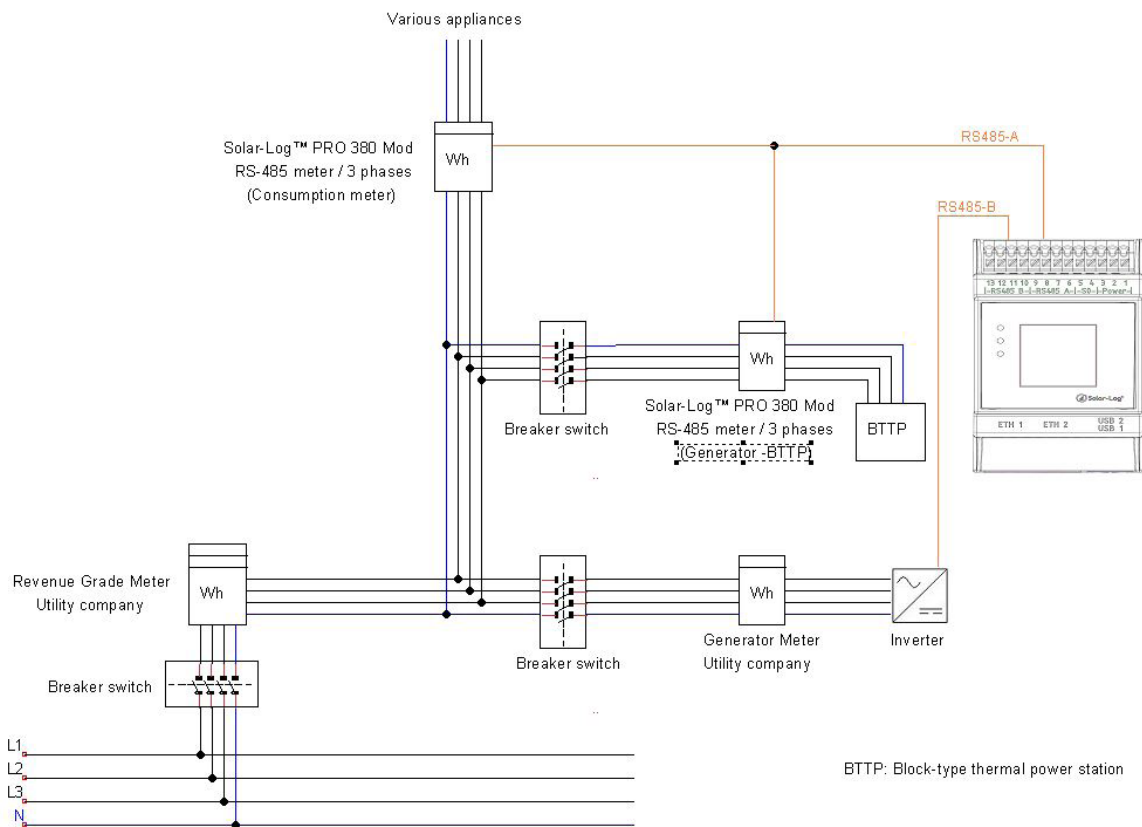## 15.1 Example plans for recording production and consumption
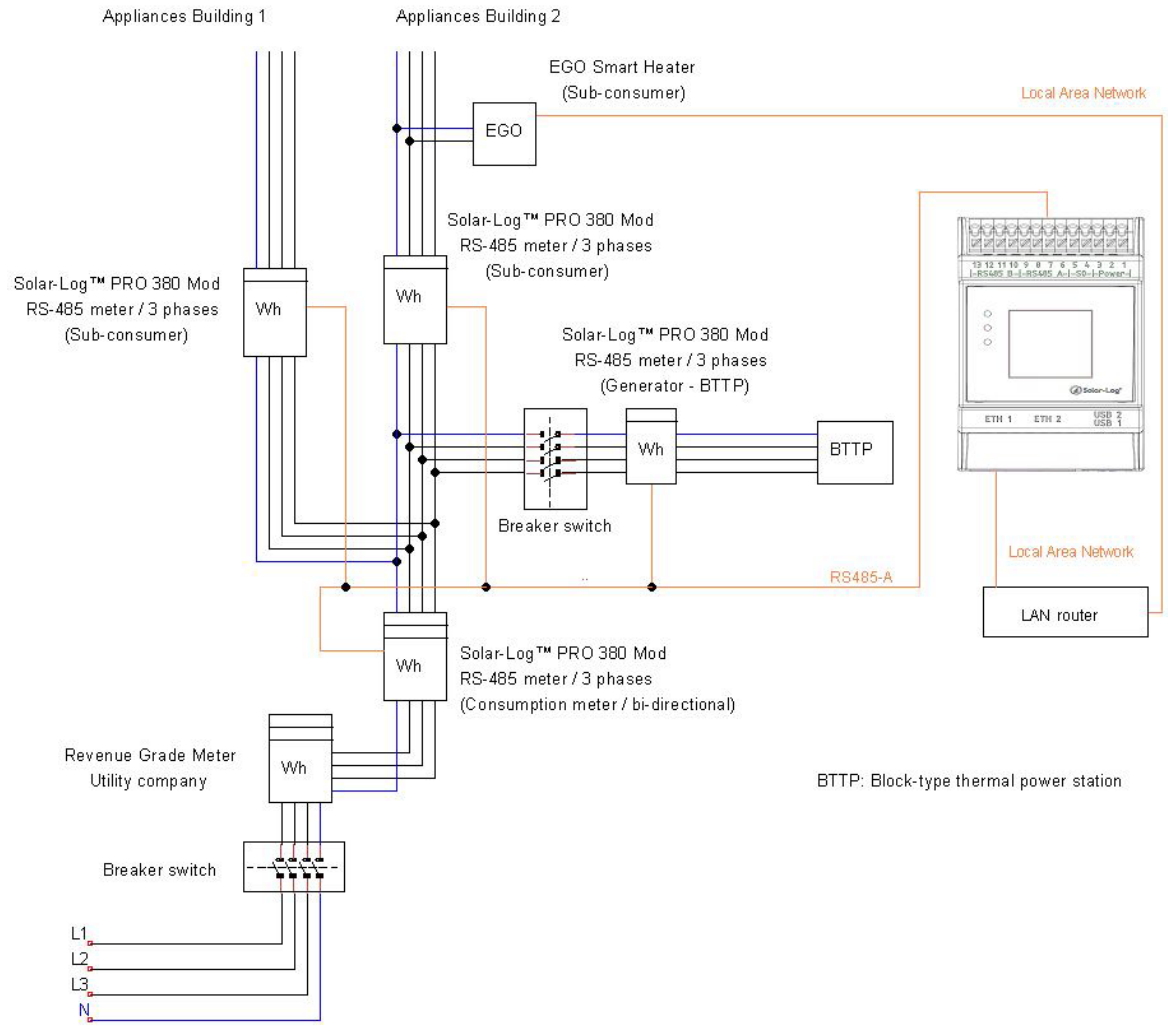


Fig.: Direct consumption measurement with PV and BHKW

Fig.: Consumption meter bi-directional with BHKW and various sub-consumers.
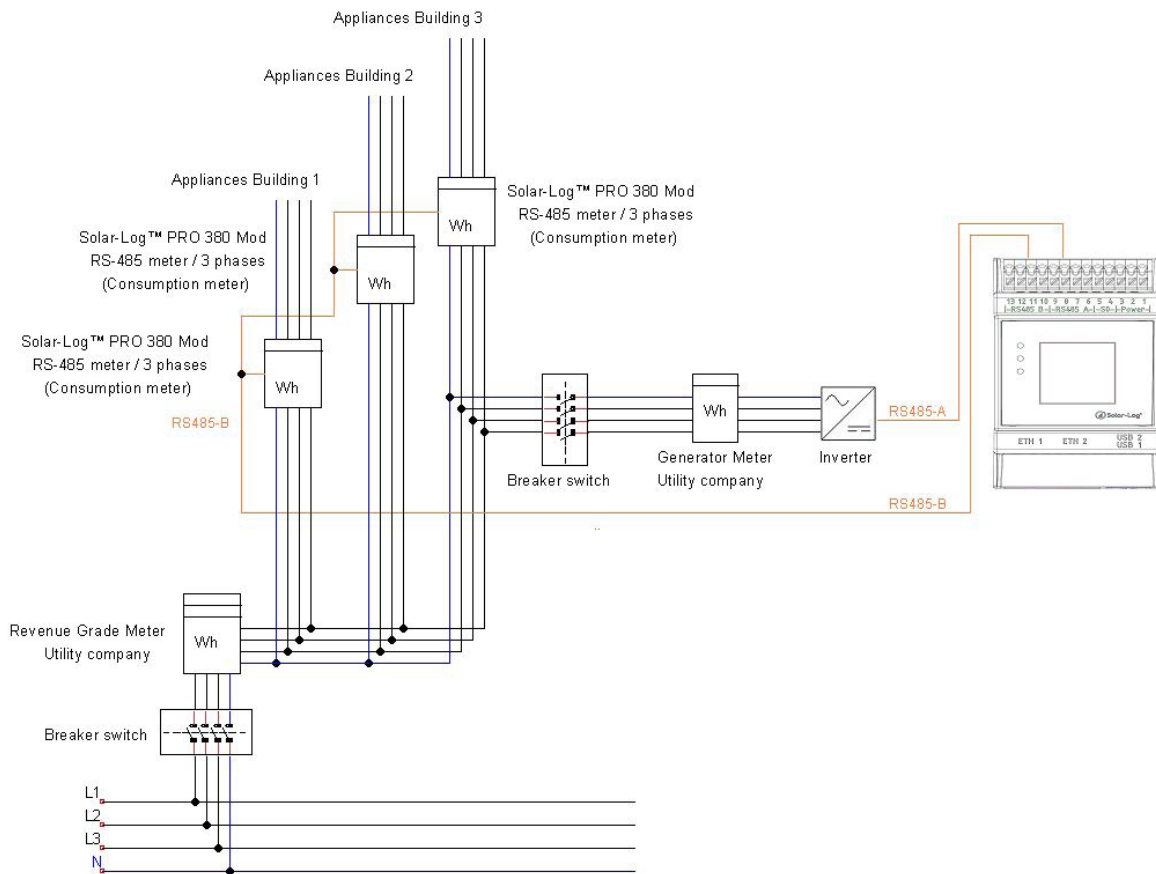
Fig.: Direct consumption measurement with several meters

**Notice in circuit diagram:**

When using multiple meters in "Consumption meter" operating mode, the values are added up by the Solar-Log™.

**Note**

If there are any open questions regarding your planning, please feel free to contact our technical support.

## 15.2 Example plan for consumption measurement on hybrid systems
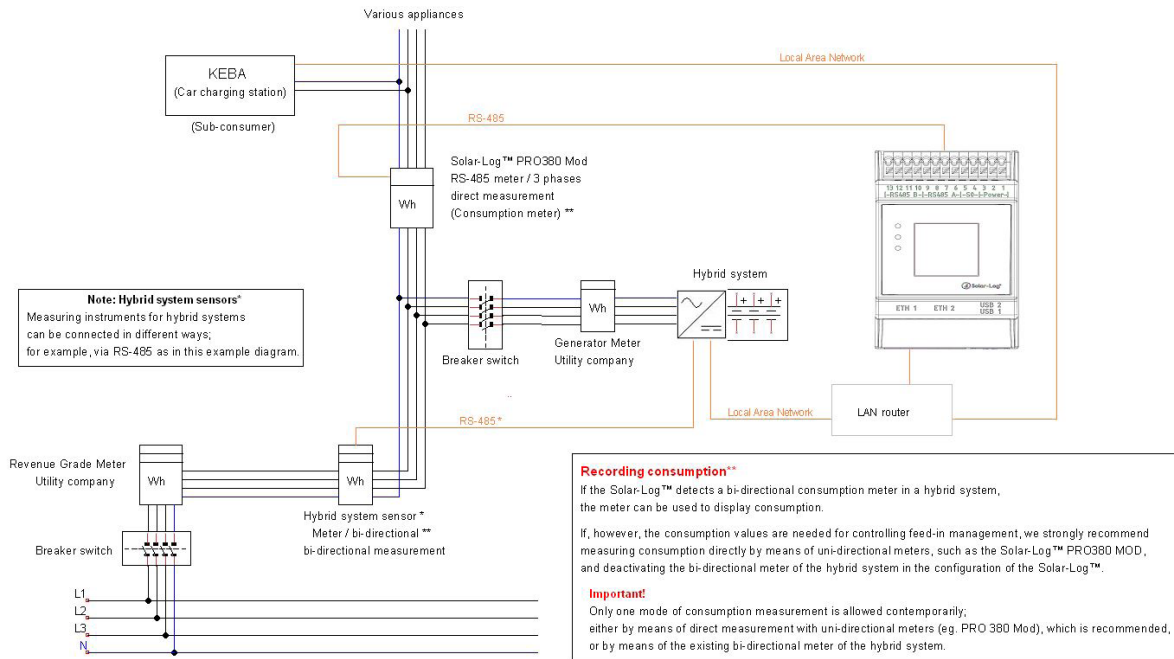


Fig.: Consumption measurement on hybrid system with KEBA charging statio

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