



Solar Monitor

Installation manual SM2-AD v. 2.0

Package content

Inputs and outputs module

Solar Monitor SM2-AD

Installation manual

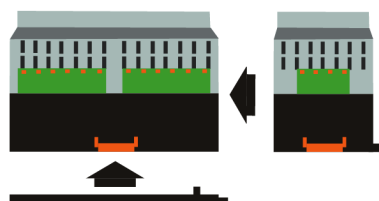
Configuration list

HBUS

- the part for connection to the SM2-MU

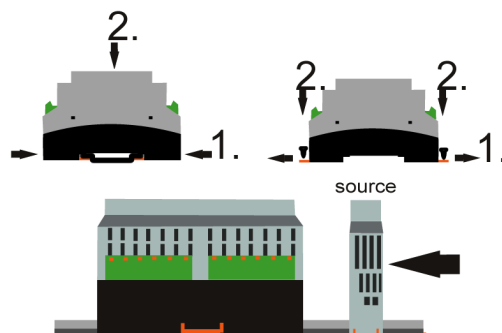
1. Step Connection to SM2-MU

Connect HBUS to the SM2-MU. Connect the SM2-AD module with SM2-MU according to this picture.



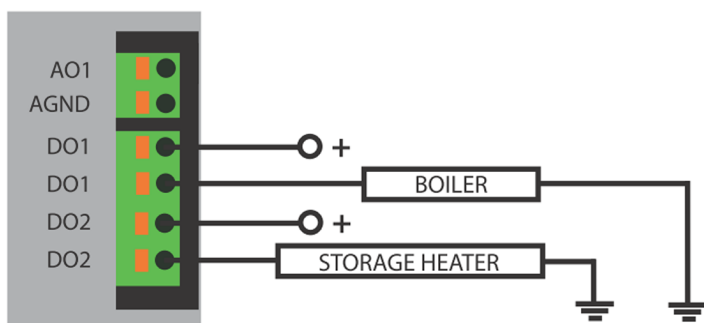
2. Step Mechanical fastening

Solar Monitor incl. attached modules and source can be fixed to the wall or DIN rail according to these pictures.

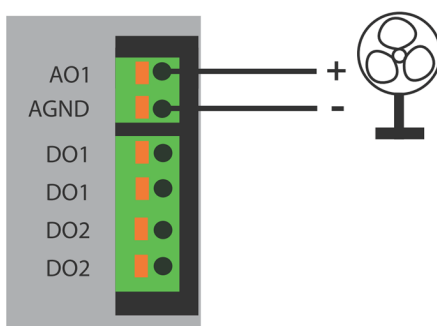


3. Step Inputs and outputs connection

We connect digital (relay) DO outputs similarly as SM2-MU. E.g. to the boiler or storage heater according to the picture.



We connect the analog output A0 similarly. There is a voltage 0-10V on output terminals depending on e.g. actual power plant output or actual temperature. It can be used for fluent regulation of appliances (e.g. fan speed).

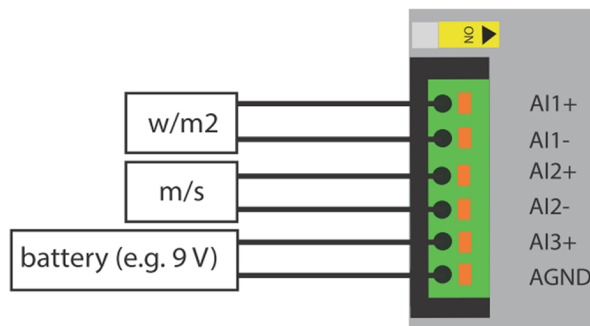


For analog inputs AI1 and AI2 it is possible to use range 0 - 20 mA and 0 - 10 V for voltage or current measurement.

For analog input A3 it is possible to use range: 0 - 20 mA, 0 - 10 V, 0 - 20mV, 0 - 100 mV for voltage or current measurement.

Analog inputs are calibrated. Measuring accuracy of inputs has tolerance 0,1.

Measuring ranges are set before the module delivery! So it is necessary to write them correctly when SM2-AD module ordering. Pyranometer can be connected to inputs (for exact measuring of sunlight intensity), anemometer (wind speed measuring), or e.g. the battery to know the information about its state.

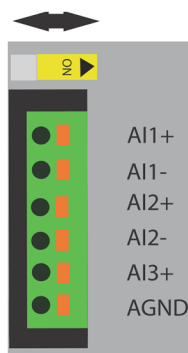


Connection of more SM2-AD modules at the same time

Up to 8 SM2-AD devices can be connected to the SM2-MU.

If 2 SM2-AD modules are connected to one Solar Monitor, it is necessary to have different addresses for communication with SM2-MU.

This can be found by switching the yellow sliding switch. If more than 2 SM2-AD modules are connected to the SM2-MU, then it is necessary to tell this information when ordering (then the sliding switch switches between addresses 2-3, 4-5, 6-7, 8-9).



Continues to the page 2.



4. Step Starting up and configuration



Home > Settings > Binary Inputs & Counters Setup

Counter 3

Name:

Type:

Energy Correction: kWh

Pay-off Price: EUR/MWh

Currency:

Binary Inputs Setup

ID	Function	Name	State	Allowed State	Email	SMS
1	Input	empty	🔴	Opened	<input type="checkbox"/> NO	<input type="checkbox"/> NO
2	Input	empty	🔴	Opened	<input type="checkbox"/> NO	<input type="checkbox"/> NO
3	Input & Counter	PV Production Counte	🔴	Opened	<input type="checkbox"/> NO	<input type="checkbox"/> NO

Analog Inputs

ID	Name	Range	Unit	Value
65542	Temperature	-20.0 120.0	°C	37.3 °C
65543	AI 8 (reserv)	0.0 1.0	B	0.0 B
65544	Irradiation	0.0 1200.0	W/m2	568.4 W/m2

If modules are connected and the source is connected to Solar Monitor, green LED diode Status must light. In the opposite case check the module connection with the SM2-MU. Open the menu "Settings / Inputs & Counters" in your browser.

Digital outputs

Digital outputs setting is the same as for DO1 output in the SM2-MU. Outputs have to be allowed and then we choose conditions of outputs switching (e.g. from certain power value of PVE).

Binary Outputs Setup

Binary Outputs Enabled:

Switching Delay: seconds

Switching Setup

ID	Name	Is Switched By	Operator	Value	State
1	Vystup 1	Alert	lower	2	🔴
6	Bojler	Inverter Output Power	greater	8000	🔴
7	Ohrivač	Inverter Output Power	lower	6500	🔴

Analog output

Settings of analog output can be done similarly as with digitals. We choose factors of output setting (e.g. the temperature of room with inverters, current power).

Example: regulation of ventilation speed. We choose a temperature range having 0 - 10 V on the output, using for regulation of the ventilation speed. I.e.:

y = how many volts from range 0 (V) to 10 (V) will give the output with entered temperature range
 entered temperature range: x1 = lower limit (°C) till x2 = upper range (°C), e.g. 15 - 40 °C
 x = current room temperature (°C), e.g. 28 °C
 $y = [10 / (x2 - x1)] * (x - x1)$
 $y = [10 / (40 - 15)] * (28 - 15)$
 y = 5,2 V

Analog Outputs

ID	Name	Dependant on	Range	State
3	Analog Output 2	Analog Input 7 [V]	0.0 1000.0	0.0 %

Analog inputs

Analog inputs are calibrated. Measuring accuracy on inputs has tolerance 0,1. The configuration list serves for correct analog outputs setting. It is delivered together with the SM2-AD module.

The customer when ordering chooses in which ranges each inputs have to measure (eg. 0-20 mV).

If measuring requested ranges are not entered, all analog inputs SM2-AD are configured for measuring in range 0-10V.

Example of setting of analog input AI range for measuring wind speed with an anemometer. We know the anemometer has current loop 4-20mA for wind speed 0-25 m/s. The analog input in SM2-MU is configured for measuring in range 0-20 mA.

Calculation:
 20 mA - 4 mA = 16 tj. measuring range
 25 / 16 (maximum of measuring range / measuring range) = 1,5625
 lower limit definition (current 0 - 4 mA corresponds to speed 0 m/s):
 1,5625 * 4 = 6,25
 0 - 6,25 = -6,25

Entered analog input range for measuring of this sensor is -6,25 to 25 m/s.

Analog Inputs

ID	Name	Range	Unit	Value
65542	Wind speed	-6.2 25.0	m/s	2.1 m/s
65543	Analog Input 8	0.0 10.0	V	0.0 V
65544	Analog Input 9	0.0 10.0	V	0.0 V