Soiling Measurement Kit

Calculation of the Soiling Loss Index (SLI) and Soiling Ratio (SR)

Description

- Determine PV performance losses due to soiling
- Calculation of the Soiling Loss Index (SLI) and Soiling Ratio (SR)
- Measurement of short circuit current and module surface temperature

Soiling significantly affects the energy production of PV power plants. Effects of soiling on PV modules should be assessed site-specific due to variations in soil type, location and weather patterns. Implementing an Ammonit soiling measurement kit helps you to:

- Analyse soiling losses in the PV module performance
- Quantify site-specific impacts of soiling on PV energy production
- Optimize cleaning routines for best return-on-investment
- Determine typical soiling rates for forecasting models

Soiling is the accumulation of dust, dirt and other contaminants on the surfaces of PV modules. The amount of dust is extremely dependent on the location of the PV power plant, e.g., desert valley with sand storms. In absence of significant rain events or regular cleaning, production losses due to soiling effects increase. Measuring soiling effects provides important details about the PV power plant production, e.g., how much dust can be on the modules before any problem occurs and how does the dust affect transparency and efficiency of the modules.

Specifications

I-U Conversion Box
Order No. CM 8281

Characteristic	Description
Continuous current*	15 A
Peak current	40 A

Characteristic	Description
Shunt resistance	50 mΩ**
Shunt tolerance	1 %
Shunt temperature coefficient	< 50 ppm/K (20 ... 60 °C)
Max. input voltage ***	48 V
Max. operating temperature @ 16 A	60 °C (if ventilated)
IP class	IP65
Dimensions	160 x 100 x 81 mm

* Corresponding to max. short circuit curent of a solar module
** Other values are possible according to technical requirements
*** Corresponding to the max. open circuit voltage of a solar module

The I-U Conversion Box contains a shunt resistor of 50 mΩ (default configuration). According to Ohm's law, the max. continuous current of 15 A results in an output voltage of 0.75 V.

In order to achieve best match to the output voltage of the CM8281, the Ammonit Meteo-40 data logger must be set to the ±1.0 V range.

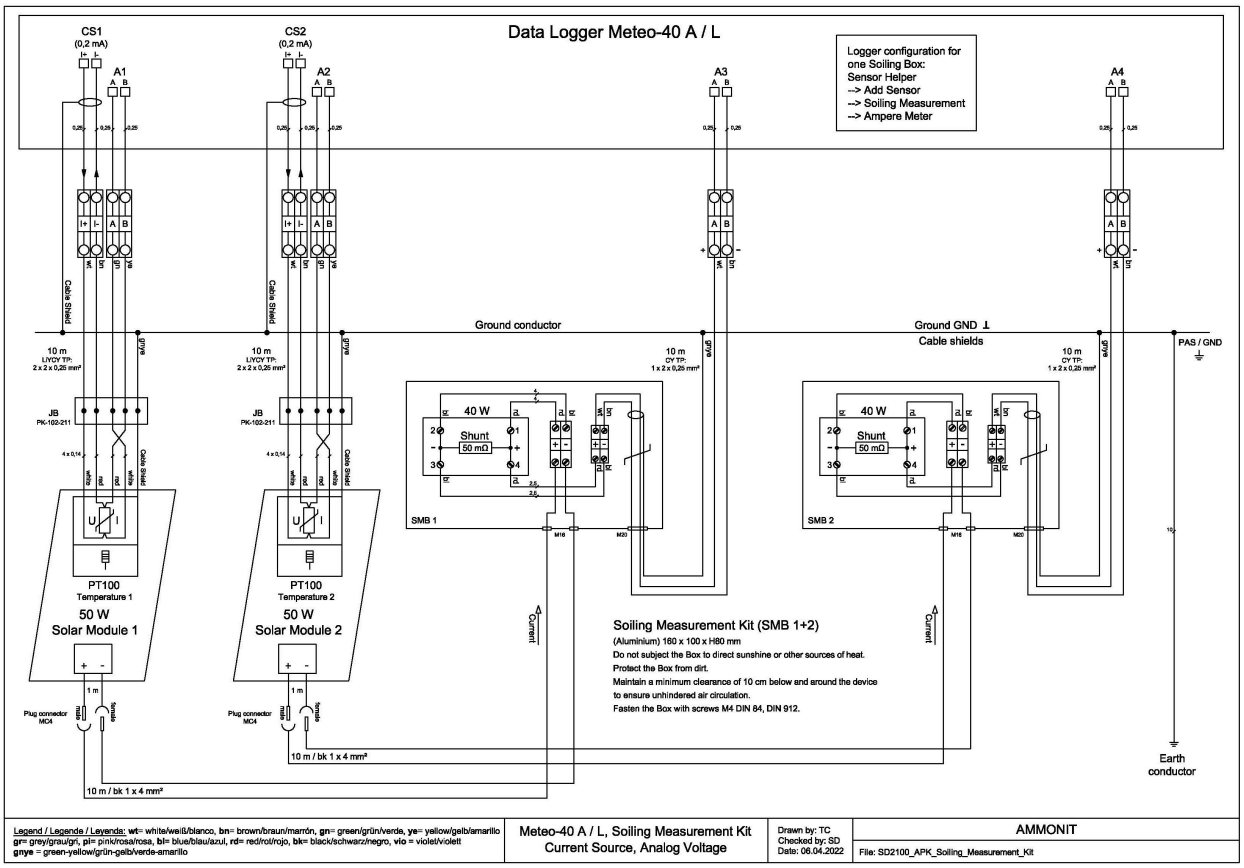
Surface Temperature Sensor
Order No. S68920

Characteristic	Description
Sensor type	Pt 100 class B
Sensor capture	Silicon rubber patch
Temperature range	-50 ... 150 °C
Dimensions	40 x 13 x 5 mm

Solar Module (50 W / 12 V)
Order No. M51052

Characteristic	Description
Module type	Monocrystalline
Standard Test Conditions (STCs) Solar irradiance Cell temperature	 1000 W/m² 25 °C
Peak Power (Pmax)	50 W
Short circuit current	(Isc) 3.07 A
Temperature coefficient of Isc (TK ISC)	0,081 %/°C
Dimensions	650 x 505 x 35 mm

Sensor connection diagram



Instructions