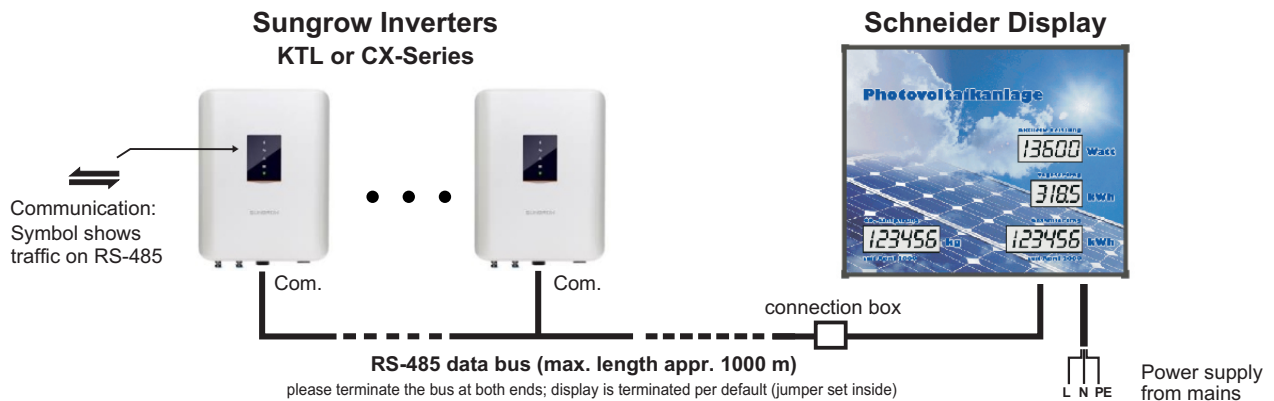# Connection diagram: Display for Sungrow-Inverters via RS-485 (direct) - KTL and CX-series

The display unit is equipped with two cables, each about 3 m long, which provide the connection to mains and to the data source. The display has to be connected directly to the RS-485-Inverter-Bus, recommended cable e.g.shielded cable: JY-(St)-Y 4 x 0.6 mm².

Sungrow Inverters
KTL or CX-Series

Schneider Display

Communication:
Symbol shows
traffic on RS-485

Com.   Com.

connection box

RS-485 data bus (max. length appr. 1000 m)
please terminate the bus at both ends; display is terminated per default (jumper set inside)

Power supply
from mains

L N PE

		brown	L	Mains 230V, 50 Hz
mains cable	H03VV-F3 x 0.75 mm²	blue	N	LCD: typ. 1,5 Watt
		yellow/green	PE	LED: typ. 11 Watt
data cable (from the display)	4 x 0.34 mm²	brown	A = 6	Com.-Interface (RJ45-Socket)
		blue	B = 3	Sungrow KTL or CX-Series
		grey	Gnd	Contact for Display Configuration
		black	Config.	(default: EE=0; SE=05; O2=0.563)

Concept of data connection:

The Sungrow inverters are addressed directly by the display - using Modbus-RTU at the inverter's Com-Port.

All the data which are transmitted via interface (e.g. "actual power", "daily" or "total energy") can be visualized 1:1 on the display unit. Additional data can be calculated in the display, such as the "CO_2 -equivalent value".

Advices for installation:

Each inverter has to get its own unique device-ID (bus address). The display requests the address-range 1 to 4 and a maximum of 4 inverters can be summarized directly by the display. Please settle the device address by the following steps:

Log into the inverter by APP "iSolarCloud":

-> Local access -> Bluetooth -> select device no.
-> Login (Account/Password) -> More
-> Communication Parameters -> Device Address

Hotplugging: After all inverters have started up and are ready connected to the display with the appropriate device-IDs, please restart the display unit once by Power-On-Reset in order that the display collects all inverters correctly.

Termination: Please terminate the RS-485 data bus at both ends. Set the termination at the last inverter in the chain. The display is terminated per default. In case of need, there is a red jumper inside on the main control board.

Com.-Port: The "Communication accessory port" can only do one thing at a time: Either connecting via RS485 to the display (this handout) or to a Logger or connecting to a WiFi- or E-Net-module ("Dongle" from Sungrow).

The RS485-Port at the inverters is different: it is intended for using a smart energy meter or can be used for a connection between several inverters in a daisy chain manner.

Configuration:

The following parameters are adjustable at the display:

"EE": Offset for the total energy value - default is: EE=0

"SE": Serial mode - Baudrate: 9600, 8, n, 1 (fix)
    SE = 05: Modbus RTU direct to inverter (this handout)
    SE = 07: Modbus RTU to Logger 1000 (extra handout)
    SE = 08: LAN connection TCP to Logger (extra handout)

"O2": Factor of CO2-avoidings (equivalent value, depending on the regional energy mix, e.g. 0563 = 0,563 kg/kWh)

Check of configuration:

✗ Keep button pressed without any interrupt

✗ after 4 sec. "EE" appears (Energy offset); after another 4 sec."SE" (serial mode) or "IP" (ImPulse Rate) appears and then "O2" (CO_2 multiplier).

✗ after altogether 16 sec. the display switches back to normal operating mode without any change

Change of configuration:

✗ Press the button until you reach the value you want to change; then release button - the leading digit of the current value starts to blink and is changeable.

✗ Short contact: the next digit starts to blink

✗ Long contact (appr. 1 sec.): the blinking digit is increased by one. "0" follows "9".

✗ Approx. 10 sec. after last action the edit mode ends. All changes are stored secure against power failure.

Safety Information:

Installation of the display unit by skilled staff only. Relevant rules for electrical safety have to be followed.

Disconnect from mains before opening.