Device connection plans

Version 20170224*

Copyright

Details regarding the manual

The original operating manual is written in German. All other language versions are translations of the original operating manual and are hereby identified as such.

All information in this operating manual has been compiled and checked with the greatest care and diligence. Nevertheless, the possibility of errors cannot be entirely excluded. The manufacturer therefore cannot accept any liability for errors or their consequences.

Subject to technical alterations.

*Latest Version

The latest version of this document "Device connection plans" can be found on the manufacturer's website.

Contents

1. Notes on this operating manual

This manual is a key aid when it comes to ensuring proper operation of the device. It contains important information and safety notes to help you use the devices correctly, economically and in the intended manner.

The manual helps to avoid dangers, to reduce repair costs and downtimes, and to increase the reliability and operating life of the devices.

During installation, all the manuals for system modules and components must be taken into account.

2. Safety instructions for operation

2.1 Intended use

Only the permitted signals and signal strengths may be applied to the connections of the data loggers and modules used here.

Installation is only permitted indoors. For installation outdoors or in a dusty environment, the device must be installed in a standardized protective enclosure.

2.2 Personnel

Installation, commissioning and maintenance of the device may only be performed by a qualified electrician.

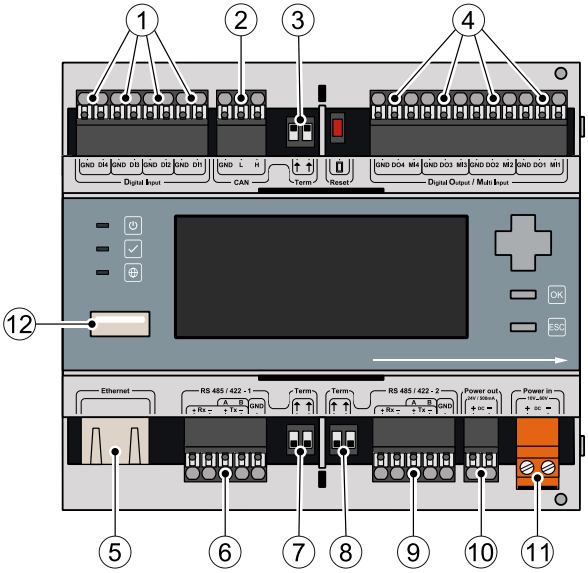
Given their specialist training, knowledge, experience and familiarity with the relevant standards and regulations, a qualified electrician is in a position not only to carry out work on electrical systems but also to recognize and avoid possible dangers unaided.

The qualified electrician must comply with the occupational health and safety laws in force.

Please note in particular:

- all national installation and set-up regulations (e.g. VDE in Germany),
- all generally accepted codes of practice,
- information on transport, installation, operation, service, maintenance and disposal given in the documentation for the devices used,
- specific values, limits and information relating to operating and ambient conditions on type plates and in data sheets.

3. Overview of interfaces



Overview of interfaces

(1) Digital input (DI1–DI4)
(2) CAN
(3) CAN termination
(4) Digital output / multi-input (DO1–DO4 / MI1–MI4)
(5) Ethernet
(6) RS485/422 - 1
(7) RS485/422 termination – 1
(8) RS485/422 termination – 2
(9) RS485/422 - 2
(10) Power Out (24V / 500mA – DC)
(11) Power In (10V…60V – DC)
(12) USB interface

4. Cabling

4.1 RS485/422

The two separate RS485/422 interfaces (RS485/422–1 and RS485/422–2) are used for querying information recorded on various bus devices such as inverters, power quality analyzers, etc.

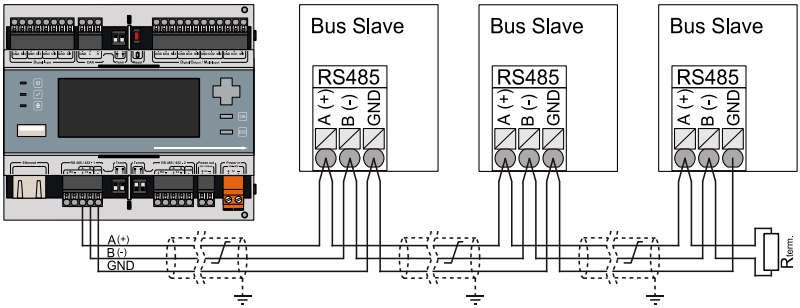
Please note the following regarding the bus cabling:

- Each RS485/422 interface supports only a single protocol (for example, Modbus).
- All devices on a bus must use the same protocol to communicate.
- The data logger functions exclusively as a master on the bus.
- The maximum permitted number of bus devices has to be observed (see driver data sheets).
- The order of the bus devices on the bus is unimportant.
- The use of a repeater is necessary for every 32nd bus device and for long cable runs.
- The bus should be cabled with a twisted and shielded pair of wires.
- The shield of the bus cable must be grounded at one end of the connection only. The data logger does not have its own grounding
- When wiring the bus wires, it is important that AC and DC cables are routed separately.
- Do not switch the buses signal wires.
- Different manufacturers interpret the RS485 interface's underlying standard differently. A and B wire labels may be different depending on different manufacturer. The + and – indicators, on the other hand, are unambiguous.
- To prevent reflections, the bus must always be terminated with a parallel terminator.

Daisy chain

If you want to connect more than one device to the bus, you must daisy-chain the connection. This means different devices can only be queried jointly if they use the same communication protocol and the same serial communication parameters (baud rate, data bits, parity, stop bits).

The first and last device on the bus must be terminated with a resistor. The data logger has integrated terminating resistors, which can be turned on/off with termination switches ⑦ and ⑧



Daisy chain wiring RS485/422

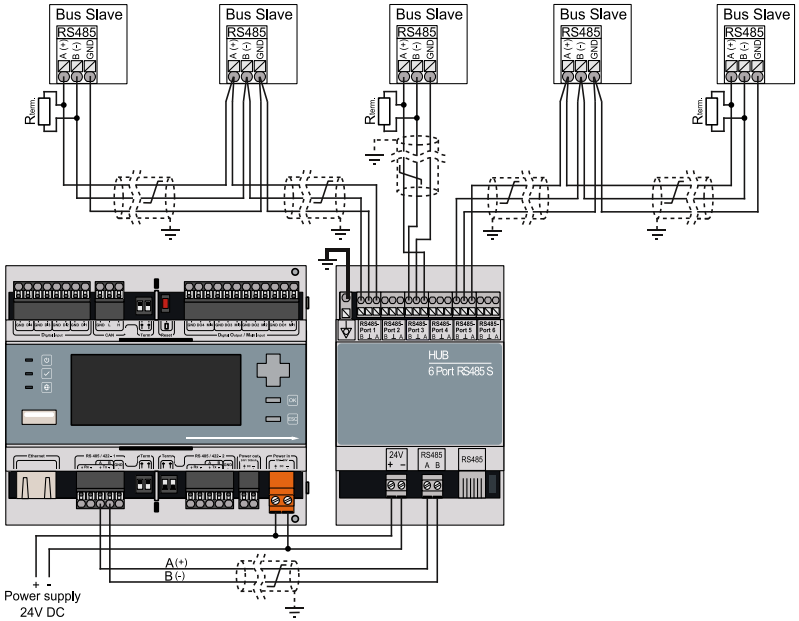
Star wiring

An equally viable option for operating multiple devices on the RS485 bus is called star wiring. In this variant of wiring, the HUB 6 Port RS485 S (product number: 421.641) is used to separate the bus into several bus strings.

Various devices can only be queried together if they communicate with the same protocol and the serial communication parameters are identical (baud rate, number of data bits, parity, stop bits).

Each bus string can have a maximum length of 1200 m. All devices on the same bus string are wired together in the daisy chain. The first and last device of each bus string must be terminated by a resistor. The HUB has integrated terminating resistors at each interface, which are permanently active.

In this wiring variant, the total number of bus devices may not exceed the maximum number to bus devices.

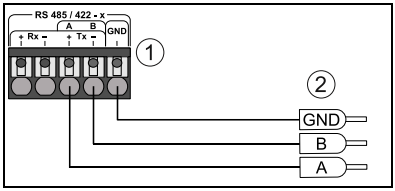


Star wiring RS485

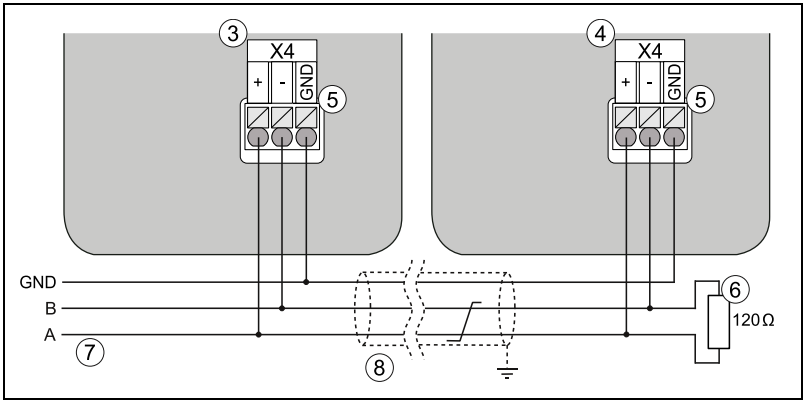
5. Inverter connection plans

5.1 ABB (PVS, PRO) inverters

String inverters PVS



Data logger connection

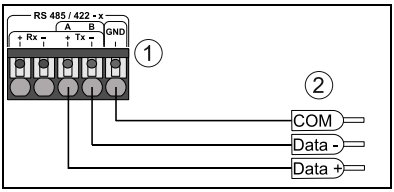


Inverter connection

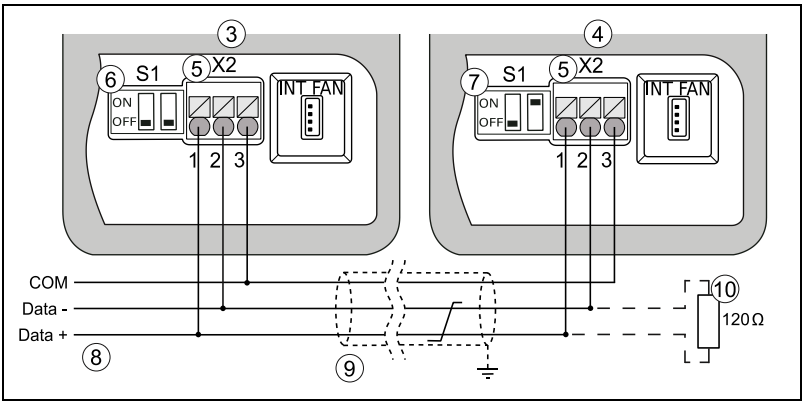
(1) Data logger terminal, RS485/422
(2) Wire end ferrules (inverter)
(3) First and subsequent inverters
(4) Last inverter
(5) RS485 terminal
(6) Terminating resistor
(7) Cable from data logger
(8) Bus cable

- Maximum of 31 inverters per communication interface
- Set the bus address in the inverter (see inverter documentation)
- Terminate the RS485 bus on the last inverter with a 120 Ω terminating resistor ⑥

String inverters PRO



Data logger connection

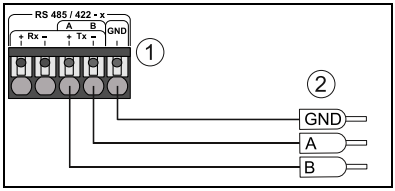


Inverter connection

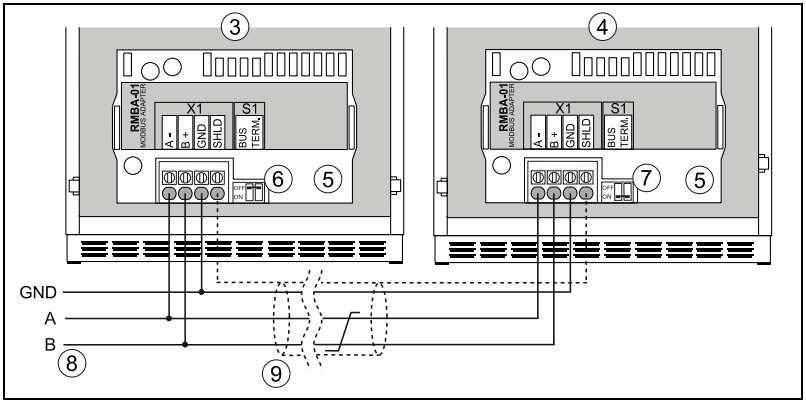
(1) Data logger terminal, RS485/422
(2) Wire end ferrules (inverter)
(3) First and subsequent inverters
(4) Last inverter
(5) RS485 terminal (X2)
(6) Terminating switch, termination disabled
(7) Terminating switch, termination enabled
(8) Cable from data logger
(9) Bus cable
(10) Terminating resistor (optional)

- Maximum of 31 inverters per communication interface
- Set the bus address in the inverter (see inverter documentation)
- Terminate the RS485 bus on the last inverter (set slide switch ⑦ to "ON" position)
- If the last inverter is not activated, terminate the RS485 bus with a 120 Ω terminating resistor ⑩ instead of termination via switch

Central inverters PVS (Modbus RTU)



Data logger connection

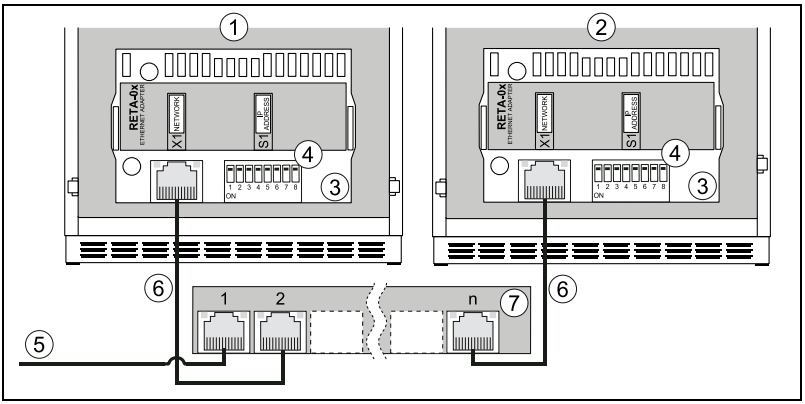


Inverter connection

(1) Data logger terminal, RS485/422
(2) Wire end ferrules (inverter)
(3) First and subsequent inverters
(4) Last inverter
(5) Modbus adapter module RMBA-01
(6) Terminating switch, termination disabled
(7) Terminating switch, termination enabled
(8) Cable from data logger
(9) Bus cable

- Maximum of 31 inverters per communication interface
- Install the RS485 communication interface RMBA-01 on the inverter (see inverter documentation)
- Set the bus address in the inverter (see inverter documentation)
- Terminate the RS485 bus on the last inverter (set slide switch ⑦ to "ON" position)

Central inverters (Modbus TCP)



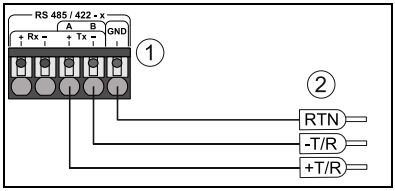
Inverter connection

(1) First and subsequent inverters
(2) Last inverter
(3) Ethernet adapter module RETA-0x
(4) DIP switch for setting the IP address
(5) Ethernet patch cable from data logger
(6) Ethernet patch cable
(7) Ethernet switch

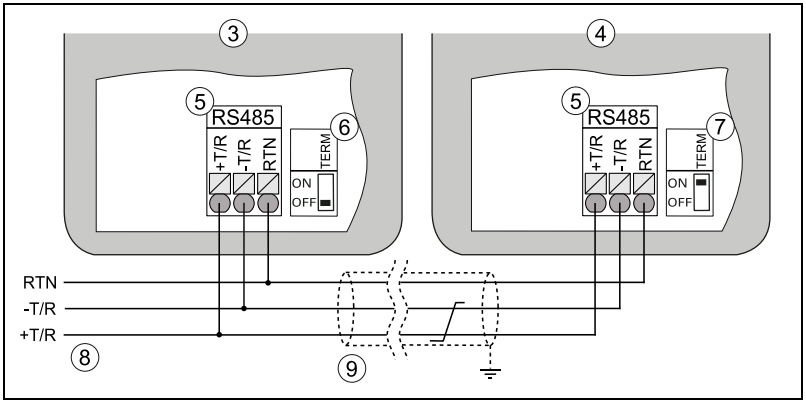
- Maximum of 31 inverters
- Install the Ethernet communication interface RETA-0x on the inverter (see inverter documentation)
- Set the network parameters for the inverters (see RETA-0x documentation)
- Data logger and inverters must be on the same subnet (net mask)

5.2 ABB (formerly Power One – UNO, TRIO, PVI, PLUS, ULTRA) inverters

String inverters UNO, TRIO, PVI



Data logger connection

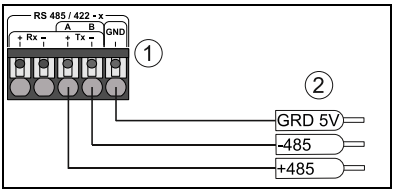


Inverter connection

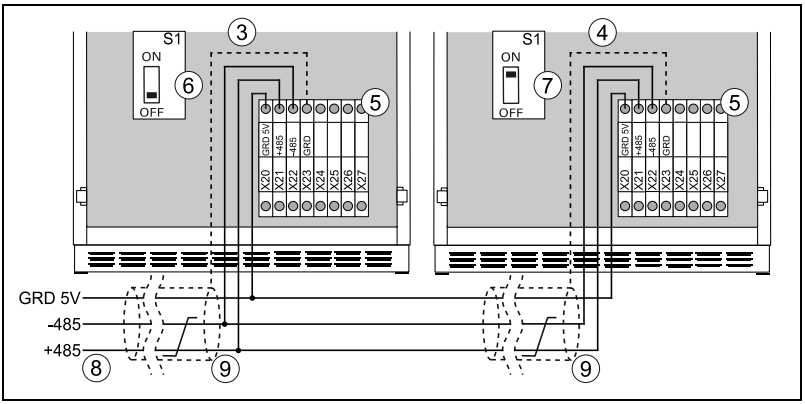
(1) Data logger terminal, RS485/422
(2) Wire end ferrules (inverter)
(3) First and subsequent inverters
(4) Last inverter
(5) RS485 terminal
(6) Terminating switch, termination disabled
(7) Terminating switch, termination enabled
(8) Cable from data logger
(9) Bus cable

- Maximum of 31 inverters per communication interface
- Set the bus address in the inverter (see inverter documentation)
- Terminate the RS485 bus on the last inverter (set slide switch ⑦ to "ON" position)

Central inverters PLUS



Data logger connection

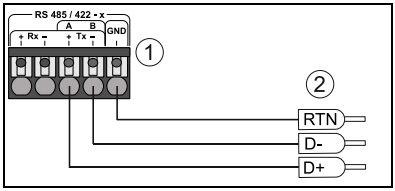


Inverter connection

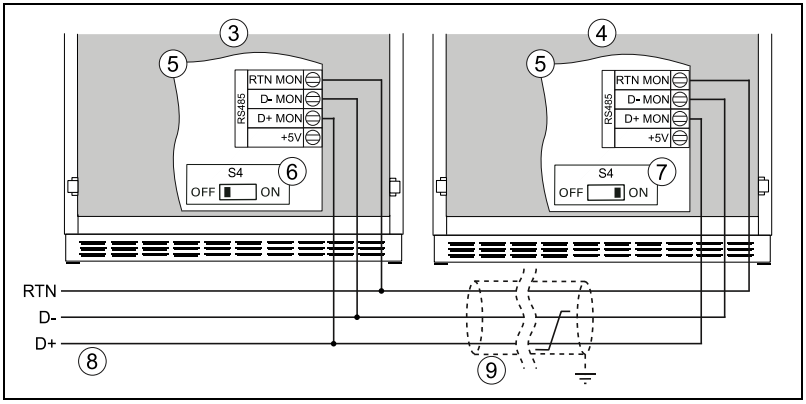
(1) Data logger terminal, RS485/422
(2) Wire end ferrules (inverter)
(3) First and subsequent inverters
(4) Last inverter
(5) RS485 terminal
(6) Terminating switch, termination disabled
(7) Terminating switch, termination enabled
(8) Cable from data logger
(9) Bus cable

- Maximum of 31 inverters per communication interface
- Set the bus address in the inverter
  (see inverter documentation)
- Terminate the RS485 bus on the last inverter
  (set slide switch ⑦ to "ON" position).
  Any framework of a PLUS central inverter contains a configuration card. Only on the top framework of the last inverter on the bus the terminating resistor is to activate ("ON" switch). Please also see the documentation for the inverter

Central inverters ULTRA



Data logger connection



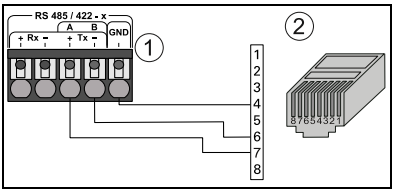
Inverter connection

(1) Data logger terminal, RS485/422
(2) Wire end ferrules (inverter)
(3) First and subsequent inverters
(4) Last inverter
(5) Communication card
(6) Terminating switch, termination disabled
(7) Terminating switch, termination enabled
(8) Cable from data logger
(9) Bus cable

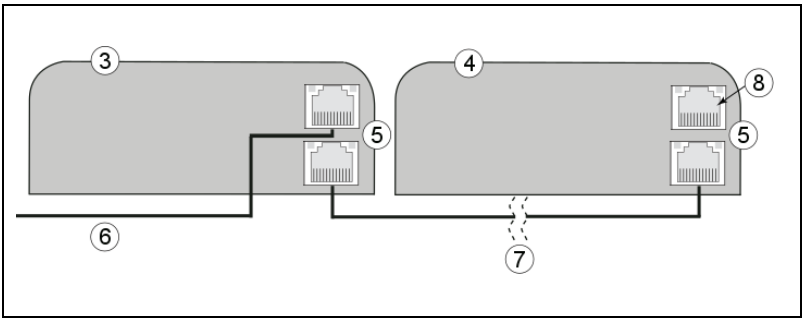
- Maximum of 31 inverters per communication interface
- Set the bus address in the inverter (see inverter documentation)
- Terminate the RS485 bus on the last inverter (set slide switch ⑦ to "ON" position)

5.3 Delta inverters

SOLIVIA CS/CM, SOLIVIA G3



Data logger connection



Inverter connection

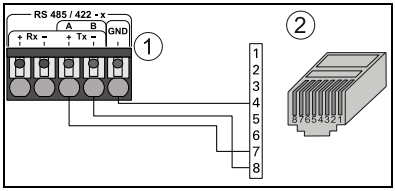
(1) Data logger terminal, RS485/422
(2) RJ45 plug (inverter)
(3) First and subsequent inverters

(4) Last inverter
(5) RS485 interfaces with RJ45 sockets

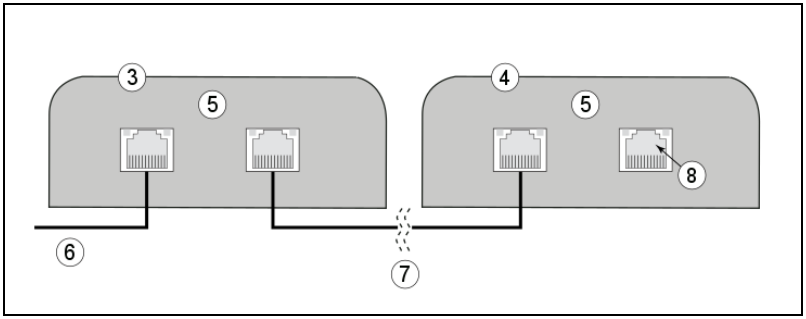
(6) Cable from data logger
(7) Ethernet patch cable
(8) Switch on the terminating resistor/ cover unused slots

- Maximum of 31 inverters per communication interface
- Set the bus address in the inverter (see inverter documentation)
- As the two RS485 interfaces are internally wired (1:1) they can be used both as input and output
- Terminate the RS485 bus on the last inverter (see inverter documentation)

SOLIVIA G4



Data logger connection

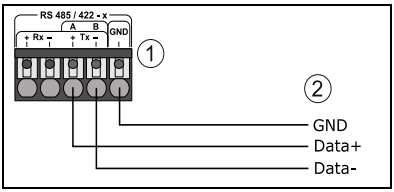


Inverter connection

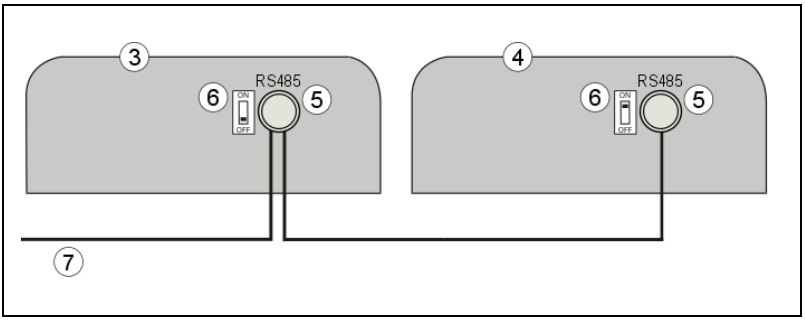
(1) Data logger terminal, RS485/422
(2) RJ45 plug (inverter)
(3) First and subsequent inverters
(4) Last inverter
(5) RS485 interfaces with RJ45 sockets
(6) Cable from data logger
(7) Ethernet patch cable
(8) Switch on the terminating resistor/ cover unused slots

- Maximum of 31 inverters per communication interface
- Set the bus address in the inverter (see inverter documentation)
- As the two RS485 interfaces are internally wired (1:1) they can be used both as input and output
- Terminate the RS485 bus on the last inverter (see inverter documentation)

RPI



Data logger connection



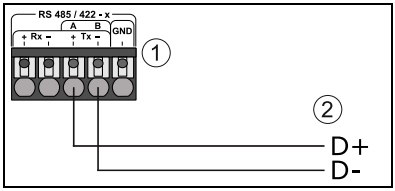
Inverter connection

(1) Data logger terminal, RS485/422
(2) Inverter terminal, RS485
(3) First and subsequent inverters
(4) Last inverter
(5) RS485 interface of the inverter
(6) Terminating switch
(7) Cable from data logger

- Maximum of 31 inverters per communication interface
- Set the bus address in the inverter (see inverter documentation)
- Terminate the RS485 bus on the last inverter
  (set slide switch to "ON" position)

5.4 Fronius inverters (Datamanager 2.0)

Data logger connection RS485 or Ethernet



Data logger connection

(1) Data logger terminal, RS485/422 (2) Datamanager 2.0 terminal, RS485

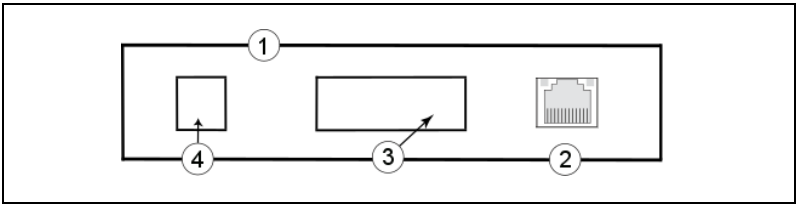
General connecting conditions

- Depending on the plant configuration one or more inverters with Datcom / Com Card can be connected to the Datamanager via RS422 Solarnet.
- It is recommended that not more than 20 inverters get connected to a single Datamanager.
- If more than one Datamanager gets connected to a blue'Log then:
  - Ethernet (Modbus TCP), connection of maximum one Datamanager
  - RS485 (Modbus RTU), connection of more than one Datamanager per interface possible, but not more than 31 inverters
- meteocontrol recommends the connection of one Datamanager per RS485 interface to achieve a high data quality and optimized Power Control.

  For example:

  - Datamanager 1 with 20 inverters connected to RS485-1 on the blue'Log
  - Datamanager 2 with 20 inverters connected to RS485-2 on the blue'Log

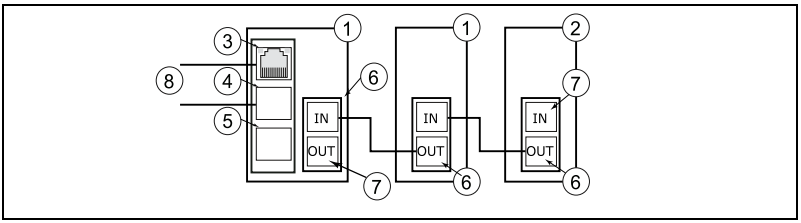
Datamanager 2.0 (plug-in card)
Fronius Galvo, Fronius Symo, Fronius Primo



Datamanager 2.0 (plug-in card)

(1) Datamanager 2.0 (plug-in card)
(2) LAN connection socket
(3) RS485 Modbus RTU
(4) Master/ slave switch

Fronius Galvo, Fronius Symo, Fronius Primo

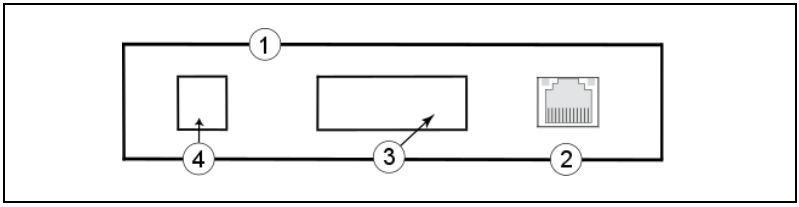


Datamanager 2.0 (plug-in card) connection

(1) First and subsequent inverters
(2) Last inverter
(3) LAN connection socket
(4) RS485 Modbus RTU
(5) Slide switch to “Master“ position
(6) DATCOM
(7) Fronius Solar Net termination plug
(8) Connection to blue’Log via LAN or RS485

- Terminate unused Solar Net slots (see inverter documentation)

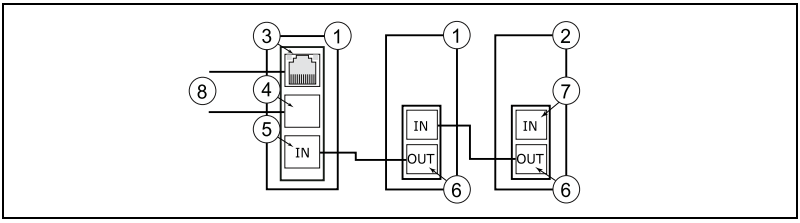
Datamanager 2.0 (plug-in card)
Fronius IG, Fronius IG Plus, Fronius IG Plus V, Fronius IG Plus A
Fronius CL, Fronius CL USA, Fronius IG 300 – 500



Datamanager 2.0 (plug-in card)

(1) Datamanager 2.0 (plug-in card)
(2) LAN connection socket
(3) RS485 Modbus RTU
(4) Solar Net IN connection socket

Fronius IG, Fronius IG Plus, Fronius IG Plus V, Fronius IG Plus A
Fronius CL, Fronius CL USA, Fronius IG 300 – 500

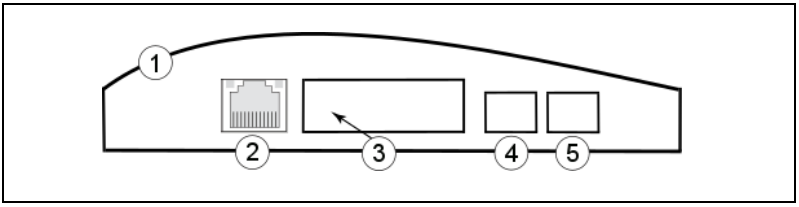


Datamanager 2.0 (plug-in card) connection

(1) First and subsequent inverters
(2) Last inverter
(3) LAN connection socket
(4) RS485 Modbus RTU
(5) Solar Net IN connection socket
(6) DATCOM
(7) Fronius Solar Net terminating resistor
(8) Connection to blue'Log via LAN or RS485

- Terminate unused Solar Net slots (see inverter documentation)

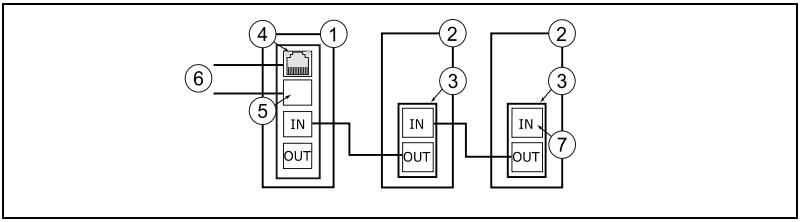
Datamanager Box 2.0
Fronius Galvo, Fronius Symo, Fronius Primo
Fronius IG, Fronius IG Plus, Fronius IG Plus V, Fronius IG Plus A
Fronius CL, Fronius CL USA, Fronius IG 300 – 500



Datamanager Box 2.0

(1) Datamanager Box 2.0
(2) LAN connection socket
(3) RS485 Modbus RTU
(4) Solar Net IN connection socket
(5) Solar Net OUT connection socket

Fronius Galvo, Fronius Symo, Fronius Primo
Fronius IG, Fronius IG Plus, Fronius IG Plus V, Fronius IG Plus A
Fronius CL, Fronius CL USA, Fronius IG 300 – 500



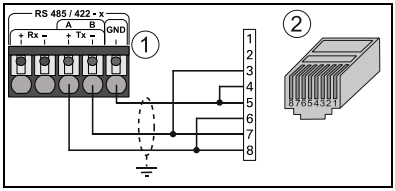
Datamanager Box 2.0 connection

(1) Datamanager Box 2.0
(2) First and subsequent inverters
(3) DATCOM
(4) LAN connection socket
(5) RS485 Modbus RTU
(6) Connection to blue'Log via LAN or RS485
(7) Fronius Solar Net terminating resistor

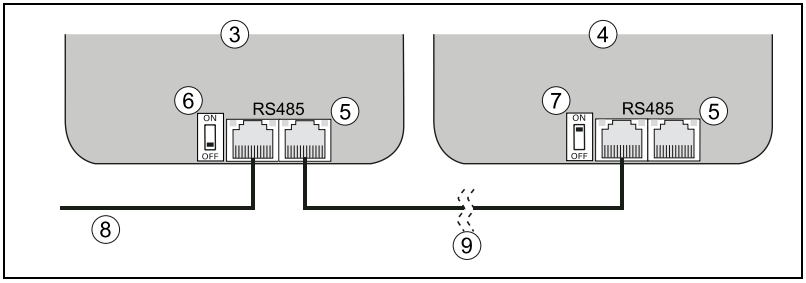
- Terminate unused Solar Net slots (see inverter documentation)

5.5 GoodWe inverters

DT series



Data logger connection



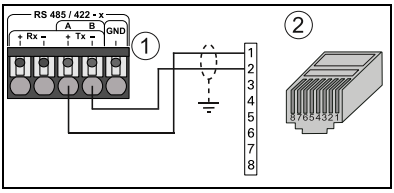
Inverter connection

(1) Data logger terminal, RS485/422
(2) RJ45 plug (inverter)
(3) First and subsequent inverters
(4) Last inverter
(5) RJ45 sockets inverter
(6) Terminating switch, termination disabled
(7) Terminating switch, termination enabled
(8) Cable from data logger
(9) Ethernet patch cable

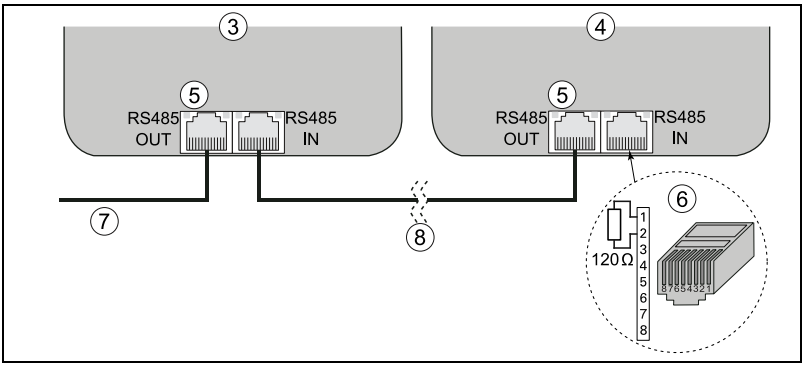
- Maximum of 31 inverters per communication interface
- Set the bus address in the inverter (see inverter documentation)
- Terminate the RS485 bus on the last inverter (set left slide switch ⑦ to "ON" position)

5.6 Huawei inverters

SUN2000



Data logger connection



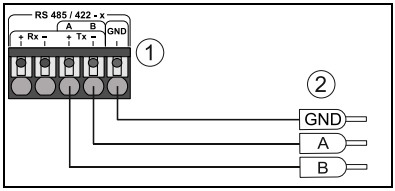
Inverter connection

(1) Data logger terminal, RS485/422
(2) RJ45 plug (inverter)
(3) First and subsequent inverters
(4) Last inverter
(5) RJ45 socket inverter
(6) Bus terminating plug assignment
(7) Cable from data logger
(8) Ethernet patch cable

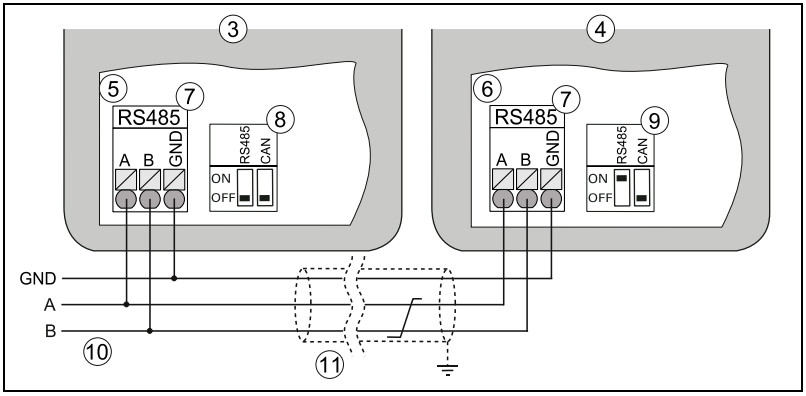
- Maximum of 31 inverters per communication interface
- Set the bus address in the inverter (see inverter documentation)
- Terminate the RS485 bus on the last inverter with the bus terminating plug ⑥. With the RJ45 bus terminating plug, a 120 Ω resistor is connected between pins 1 and 2

5.7 Kaco inverters

Powador 3200…6600, 7700…9600



Data logger connection

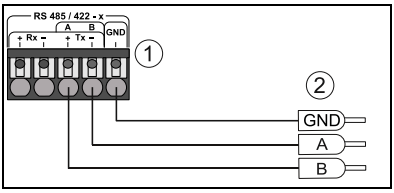


Inverter connection

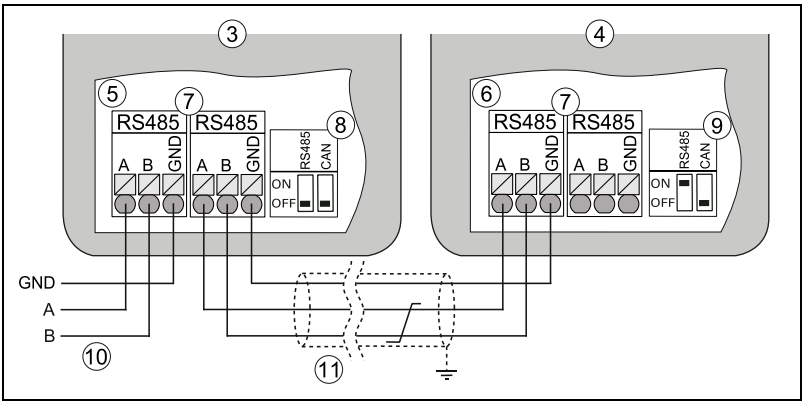
(1) Data logger terminal, RS485/422
(2) Wire end ferrules (inverter)
(3) First and subsequent inverters
(4) Last inverter
(5) RS485 connection board – first and subsequent inverters
(6) RS485 connection board – last inverter
(7) RS485 terminal
(8) Terminating switch, termination disabled
(9) Terminating switch, termination enabled
(10) Cable from data logger
(11) Bus cable

- Maximum of 31 inverters per communication interface
- Set the bus address in the inverter (see inverter documentation)
- Terminate the RS485 bus on the last inverter (set left slide switch ⑨ to "ON" position)

Powador 2002...6200, 2500xi...5000xi
Powador 30.0 TL3...72.0 TL3, 16.0 TR3, 18.0 TR3
KACO blueplanet 1501xi...7600xi



Data logger connection

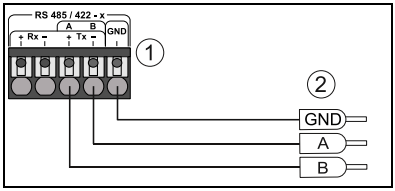


Inverter connection

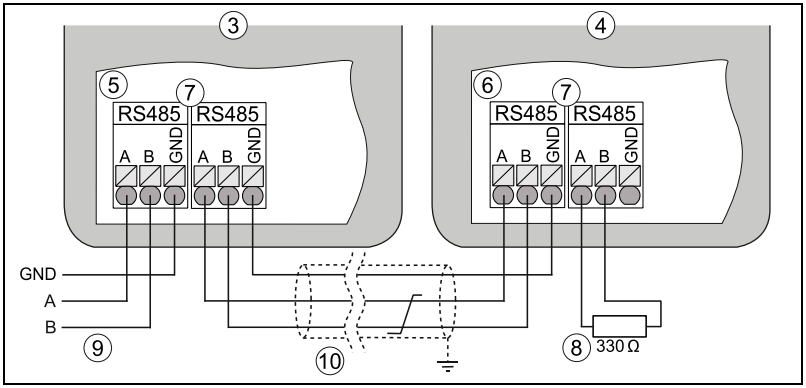
(1) Data logger terminal, RS485/422
(2) Wire end ferrules (inverter)
(3) First and subsequent inverters
(4) Last inverter
(5) RS485 connection board – first and subsequent inverters
(6) RS485 connection board – last inverter
(7) RS485 terminals
(8) Terminating switch, termination disabled
(9) Terminating switch, termination enabled
(10) Cable from data logger
(11) Bus cable

- Maximum of 31 inverters per communication interface
- Set the bus address in the inverter (see inverter documentation)
- Terminate the RS485 bus on the last inverter (set left slide switch ⑨ to "ON" position)

Powador 1501xi...5001xi, 25000xi...33000xi
Powador 6.0 TL3...39.0 TL3
KACO blueplanet 32.0 TL3…50.0 TL3, XP10U-H6



Data logger connection

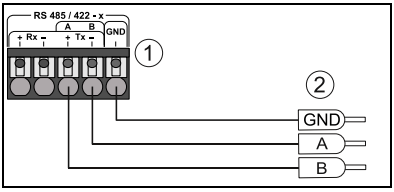


Inverter connection

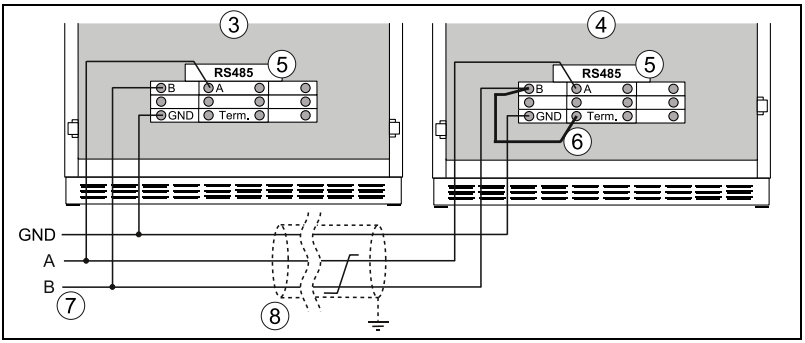
(1) Data logger terminal, RS485/422
(2) Wire end ferrules (inverter)
(3) First and subsequent inverters
(4) Last inverter
(5) RS485 connection board – first and subsequent inverters
(6) RS485 connection board – last inverter
(7) RS485 terminals
(8) Terminating resistor
(9) Cable from data logger
(10) Bus cable

- Maximum of 31 inverters per communication interface. Exception: With the 20000xi, 25000xi, 30000xi and 33000xi series models, only 12 inverters can be queried with each data logger communication interface
- Set the bus address in the inverter (see inverter documentation)
- Terminate the RS485 bus on the last inverter with a 330 Ω terminating resistor ⑧

Powador XP500-HV-TL, XP550-HV-TL
KACO blueplanet XP83U-H6…XP100U-H6, XP100U-H2, XP100U-H4



Data logger connection

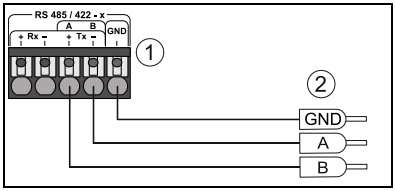


Inverter connection

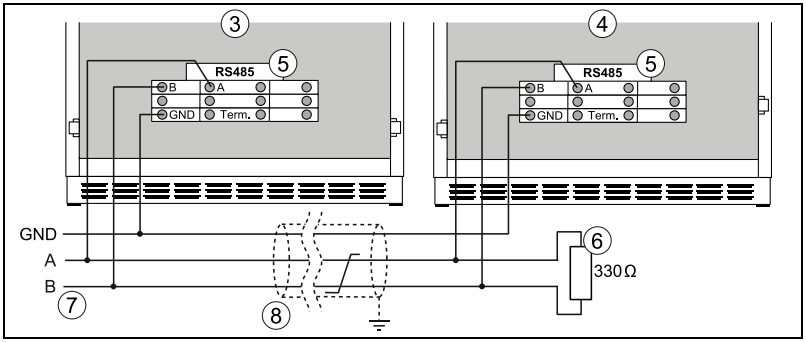
(1) Data logger terminal, RS485/422
(2) Wire end ferrules (inverter)
(3) First and subsequent inverters
(4) Last inverter
(5) RS485 connecting terminal
(6) Terminating bridge
(7) Cable from data logger
(8) Bus cable

- Maximum of 31 inverters per communication interface
- Set the bus address in the inverter
  (see inverter documentation)
- Terminate the RS485 bus on the last inverter
  (set terminating bridge ⑥ of the inverter)

Powador XP100-HV, XP200-HV, XP250-HV



Data logger connection



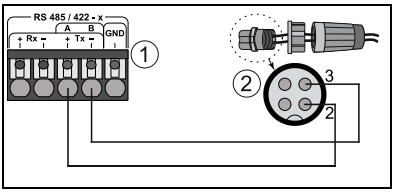
Inverter connection

(1) Data logger terminal, RS485/422
(2) Wire end ferrules (inverter)
(3) First and subsequent inverters
(4) Last inverter
(5) RS485 connecting terminal
(6) Terminating resistor
(7) Cable from data logger
(8) Bus cable

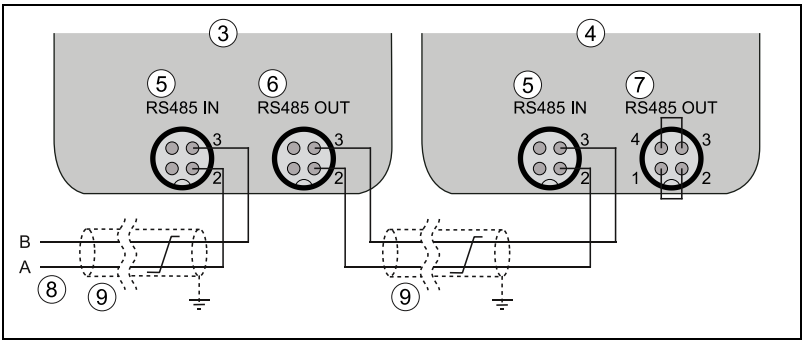
- Maximum of 31 inverters per communication interface
- Set the bus address in the inverter (see inverter documentation)
- Terminate the RS485 bus on the last inverter with a 330 Ω terminating resistor ⑥

5.8 LSis inverters

LSPV-10K to LSPV-20K



Data logger connection



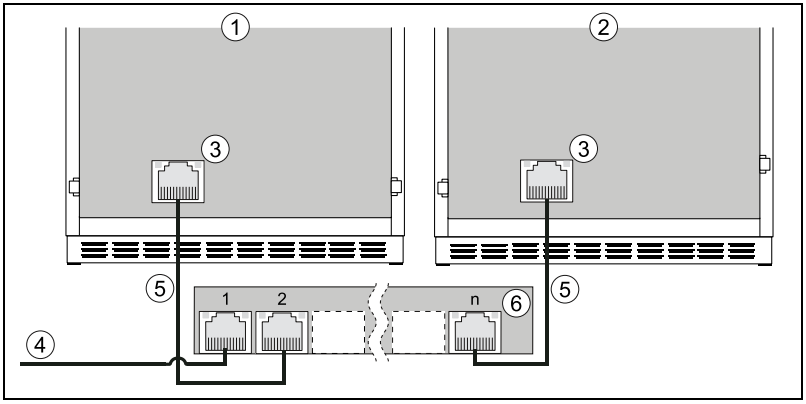
Inverter connection

(1) Data logger terminal, RS485/422
(2) M12-plug (inverters)
(3) First and subsequent inverters
(4) Last inverter
(5) Input socket inverters
(6) Output socket inverter, non-terminated
(7) Output socket inverter, with termination wire jumper
(8) Cable from data logger
(9) Bus cable

- Maximum of 31 inverters per communication interface
- Set the bus address in the inverter (see inverter documentation)
- Terminate the RS485 bus on the last inverter with wire jumpers in the M12-plug ⑦ between Pin 3 and Pin 4 as well as Pin 2 and Pin 1

5.9 LTi inverters

Central inverters PVMaster II and III (Modbus TCP)



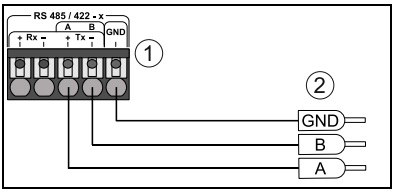
Inverter connection

(1) First and subsequent inverters
(2) Last inverter
(3) RJ45 socket (inverter)
(4) Ethernet patch cable from data logger
(5) Ethernet patch cable
(6) Ethernet switch

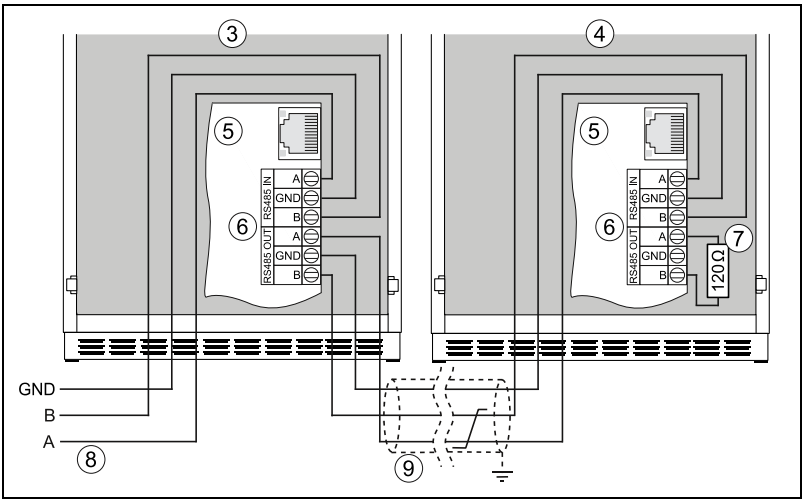
- Maximum of 31 inverters
- Set the network parameters for the inverters (see inverter documentation)
- Data logger and inverters must be on the same subnet (net mask)

5.10 Power Electronics inverters

Modbus RTU



Data logger connection

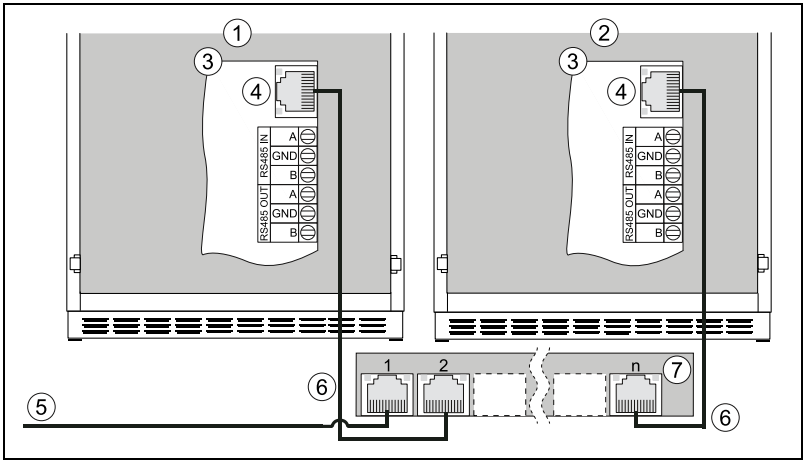


Inverter connection

(1) Data logger terminal, RS485/422
(2) Wire end ferrules (inverter)
(3) First and subsequent inverters
(4) Last inverter
(5) Control card
(6) RS485 connecting terminal
(7) Terminating resistor
(8) Cable from data logger
(9) Bus cable

- Maximum of 31 inverters per communication interface
- Set the bus address in the inverter (see inverter documentation)
- Terminate the RS485 bus on the last inverter with a 120 Ω terminating resistor ⑦

Modbus TCP



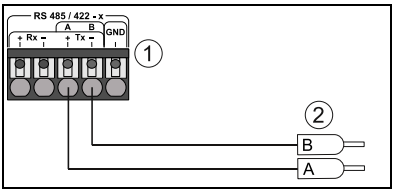
Inverter connection

(1) First and subsequent inverters
(2) Last inverter
(3) Control card
(4) RJ45 Ethernet socket
(5) Ethernet patch cable from data logger
(6) Ethernet patch cable
(7) Ethernet switch

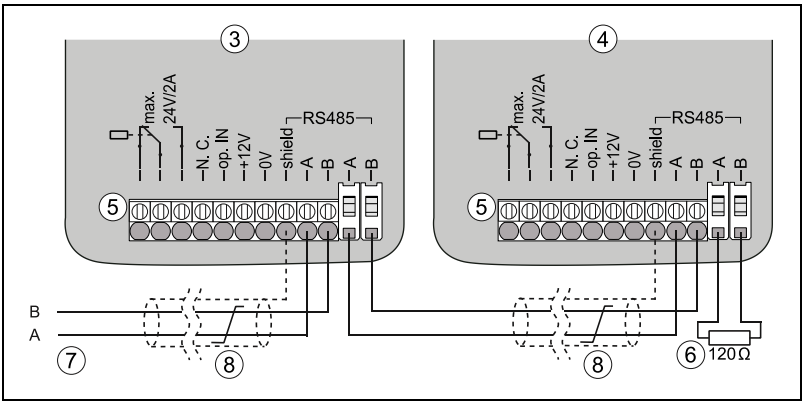
- Maximum of 31 inverters
- Set the network parameters for the inverters (see inverter documentation)
- Data logger and inverters must be on the same subnet (net mask)

5.11 REFUsol (formerly Advanced Energy) inverters

String inverters REFUsol 00xK, series 801S



Data logger connection

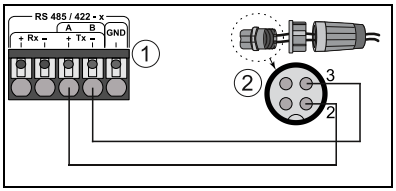


Inverter connection

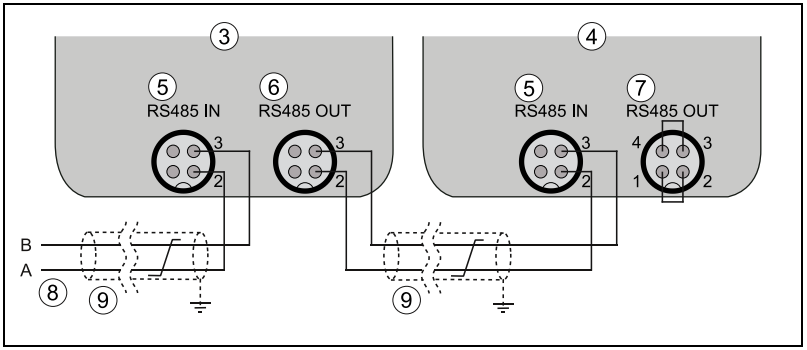
(1) Data logger terminal, RS485/422
(2) Wire end ferrules (inverter)
(3) First and subsequent inverters
(4) Last inverter
(5) Communication connecting terminal of inverters
(6) Terminating resistor
(7) Cable from data logger
(8) Bus cable

- Maximum of 31 inverters per communication interface
- Set the bus address in the inverter (see inverter documentation)
- Terminate the RS485 bus on the last inverter with a 120 Ω terminating resistor ⑥

String inverters REFUsol 00xK, series 802, 803, 807, 808
String inverters AE 3TL



Data logger connection

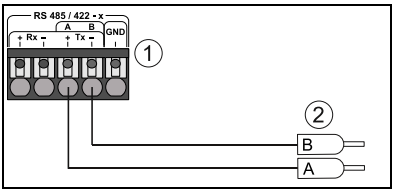


Inverter connection

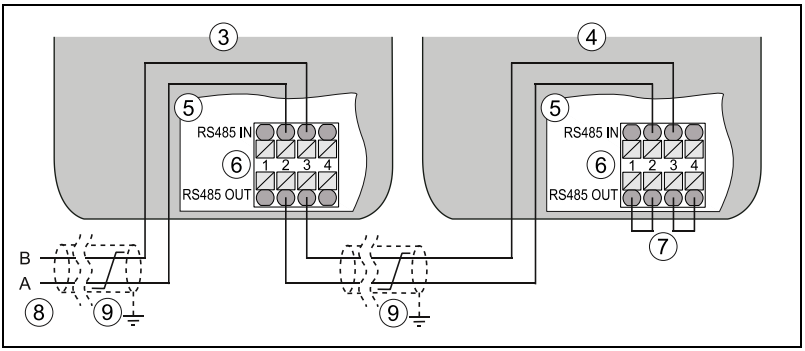
(1) Data logger terminal, RS485/422
(2) M12-plug (inverters)
(3) First and subsequent inverters
(4) Last inverter
(5) Input socket inverters
(6) Output socket inverter, non-terminated
(7) Output socket inverter, with termination wire jumper
(8) Cable from data logger
(9) Bus cable

- Maximum of 31 inverters per communication interface
- Set the bus address in the inverter (see inverter documentation)
- Terminate the RS485 bus on the last inverter with wire jumpers in the M12-plug ⑦ between Pin 3 and Pin 4 as well as Pin 2 and Pin 1

String inverters REFUsol 00xK-UL, series 804



Data logger connection

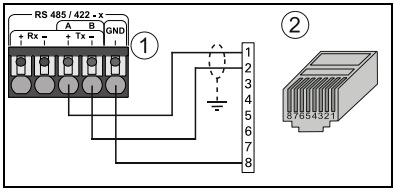


Inverter connection

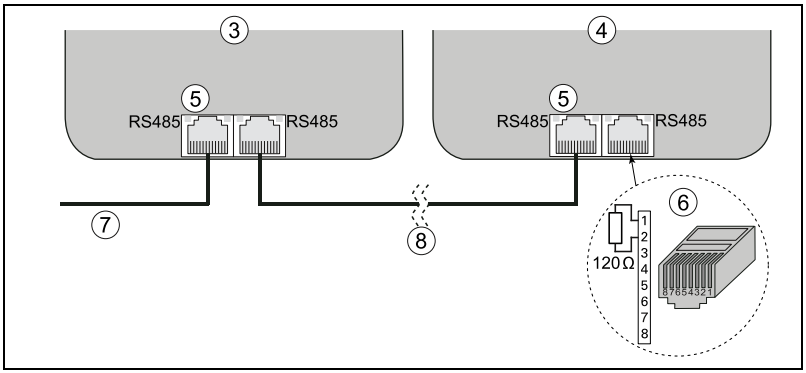
(1) Data logger terminal, RS485/422
(2) Wire end ferrules (inverter)
(3) First and subsequent inverters
(4) Last inverter
(5) Communication board
(6) RS485 connecting terminal
(7) Termination wire jumpers
(8) Cable from data logger
(9) Bus cable

- Maximum of 31 inverters per communication interface
- Set the bus address in the inverter (see inverter documentation)
- Terminate the RS485 bus on the last inverter with wire jumpers at RS485 OUT ⑦ between Pin 2 and Pin 1 as well as Pin 3 and Pin 4

String inverters AE 1TL



Data logger connection



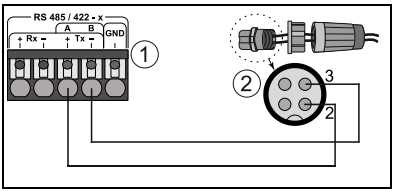
Inverter connection

(1) Data logger terminal, RS485/422
(2) RJ45 plug (inverter)
(3) First and subsequent inverters
(4) Last inverter
(5) RJ45 socket inverter
(6) Bus terminating plug assignment
(7) Cable from data logger
(8) Ethernet patch cable

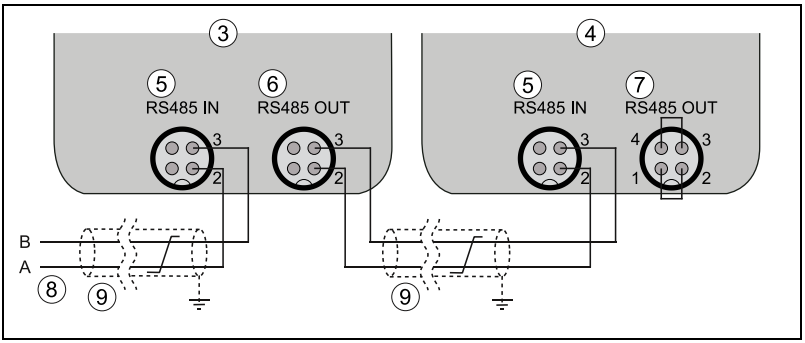
- Maximum of 31 inverters per communication interface
- Set the bus address in the inverter (see inverter documentation)
- Terminate the RS485 bus on the last inverter with the bus terminating plug ⑥. With the RJ45 bus terminating plug, a 120 Ω resistor is connected between pins 1 and 2

5.12 Satcon inverters

Equinox LC



Data logger connection

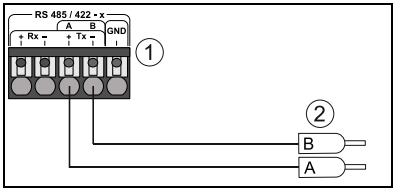


Inverter connection

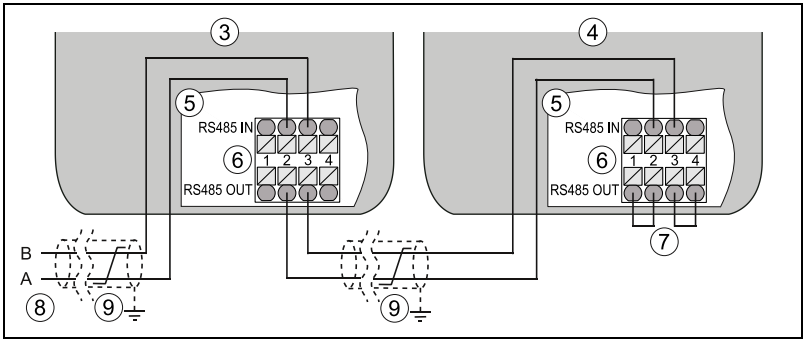
(1) Data logger terminal, RS485/422
(2) M12-plug (inverters)
(3) First and subsequent inverters
(4) Last inverter
(5) Input socket inverters
(6) Output socket inverter, non-terminated
(7) Output socket inverter, with termination wire jumper
(8) Cable from data logger
(9) Bus cable

- Maximum of 31 inverters per communication interface
- Set the bus address in the inverter (see inverter documentation)
- Terminate the RS485 bus on the last inverter with wire jumpers in the M12-plug ⑦ between Pin 3 and Pin 4 as well as Pin 2 and Pin 1

Equinox LC UL



Data logger connection



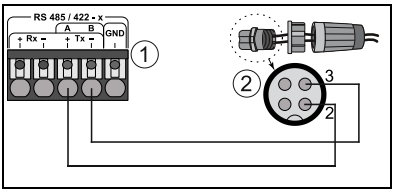
Inverter connection

(1) Data logger terminal, RS485/422
(2) Wire end ferrules (inverter)
(3) First and subsequent inverters
(4) Last inverter
(5) Communication board
(6) RS485 connecting terminal
(7) Termination wire jumpers
(8) Cable from data logger
(9) Bus cable

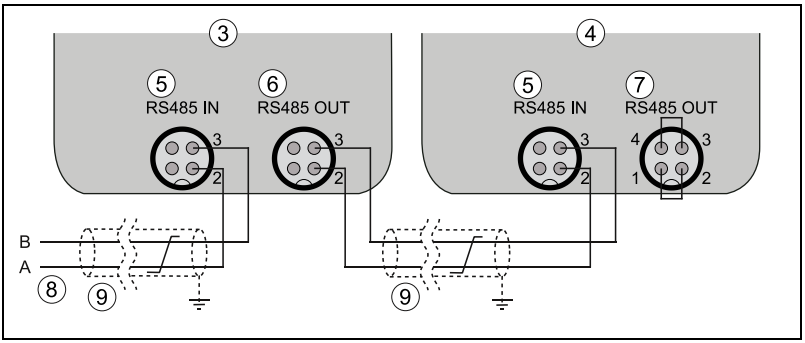
- Maximum of 31 inverters per communication interface
- Set the bus address in the inverter (see inverter documentation)
- Terminate the RS485 bus on the last inverter with wire jumpers at RS485 OUT ⑦ between Pin 2 and Pin 1 as well as Pin 3 and Pin 4

5.13 Schüco inverters

IPE 04



Data logger connection



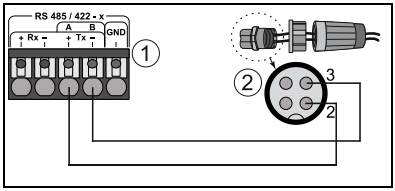
Inverter connection

(1) Data logger terminal, RS485/422
(2) M12-plug (inverters)
(3) First and subsequent inverters
(4) Last inverter
(5) Input socket inverters
(6) Output socket inverter, non-terminated
(7) Output socket inverter, with termination wire jumper
(8) Cable from data logger
(9) Bus cable

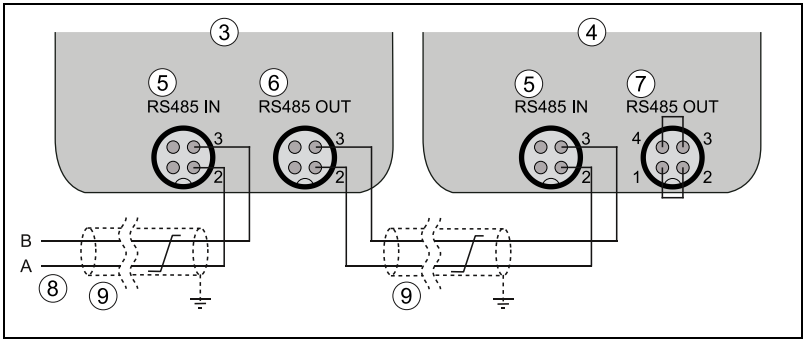
- Maximum of 31 inverters per communication interface
- Set the bus address in the inverter (see inverter documentation)
- Terminate the RS485 bus on the last inverter with wire jumpers in the M12-plug ⑦ between Pin 3 and Pin 4 as well as Pin 2 and Pin 1

5.14 Siemens inverters

SINVERT PVM



Data logger connection

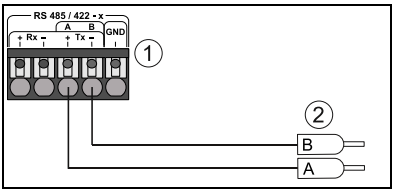


Inverter connection

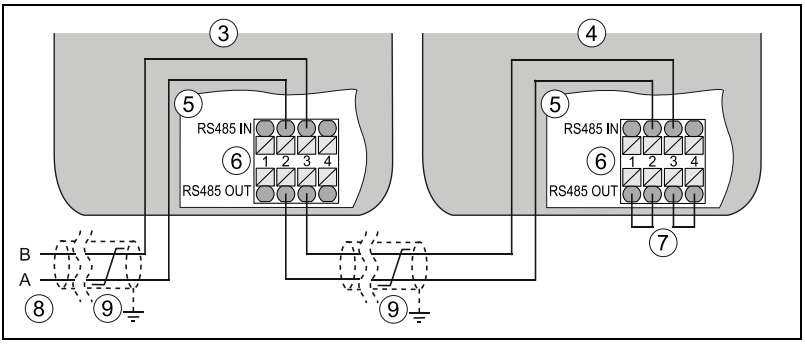
(1) Data logger terminal, RS485/422
(2) M12-plug (inverters)
(3) First and subsequent inverters
(4) Last inverter
(5) Input socket inverters
(6) Output socket inverter, non-terminated
(7) Output socket inverter, with termination wire jumper
(8) Cable from data logger
(9) Bus cable

- Maximum of 31 inverters per communication interface
- Set the bus address in the inverter (see inverter documentation)
- Terminate the RS485 bus on the last inverter with wire jumpers in the M12-plug ⑦ between Pin 3 and Pin 4 as well as Pin 2 and Pin 1

SINVERT PVM UL



Data logger connection



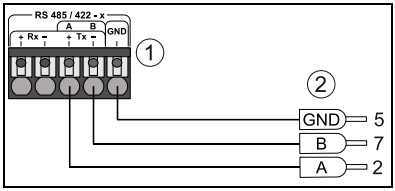
Inverter connection

(1) Data logger terminal, RS485/422
(2) Wire end ferrules (inverter)
(3) First and subsequent inverters
(4) Last inverter
(5) Communication board
(6) RS485 connecting terminal
(7) Termination wire jumpers
(8) Cable from data logger
(9) Bus cable

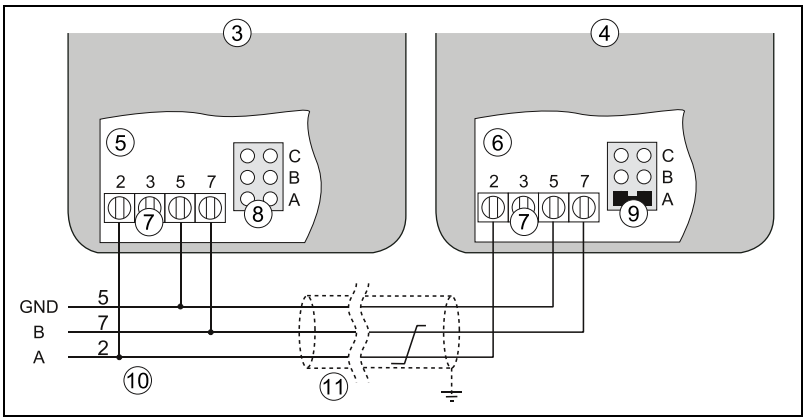
- Maximum of 31 inverters per communication interface
- Set the bus address in the inverter
  (see inverter documentation)
- Terminate the RS485 bus on the last inverter with wire jumpers at RS485 OUT ⑦ between Pin 2 and Pin 1 as well as Pin 3 and Pin 4

5.15 SMA inverters

SMA string inverters, piggy-back



Data logger connection



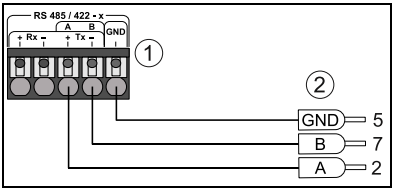
Inverter connection

(1) Data logger terminal, RS485/422
(2) Wire end ferrules (inverter)
(3) First and subsequent inverters
(4) Last inverter
(5) Piggy-back – first and subsequent inverters
(6) Piggy-back – last inverter
(7) RS485 terminal
(8) Jumper position – first and subsequent inverters
(9) Jumper position – last inverter
(10) Cable from data logger
(11) Bus cable

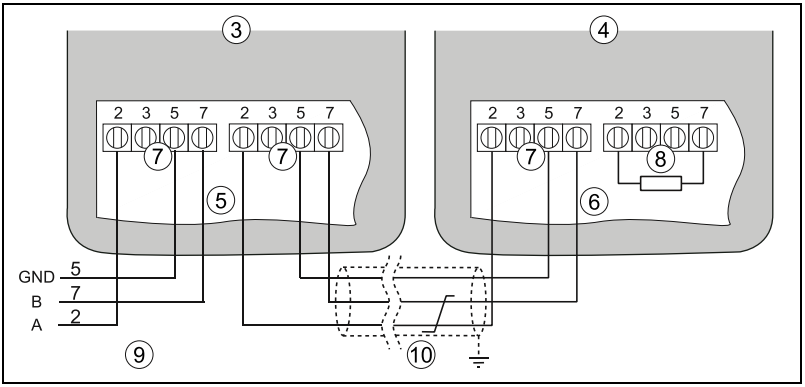
- Maximum of 31 inverters per communication interface
- Install the RS485 communication interface "piggy-back" on the SMA inverter (see inverter documentation)
- On the last inverter, set the jumper ⑨ to "A"

SMA string inverters – RS485 quick module

SMA string inverters – RS485 data module



Data logger connection



Inverter connection

(1) Data logger terminal, RS485/422

(2) Wire end ferrules (inverter)

(3) First and subsequent inverters

(4) Last inverter

(5) RS485 quick module – first and subsequent inverters

(6) RS485 quick module – last inverter

(7) RS485 terminal without terminating resistor

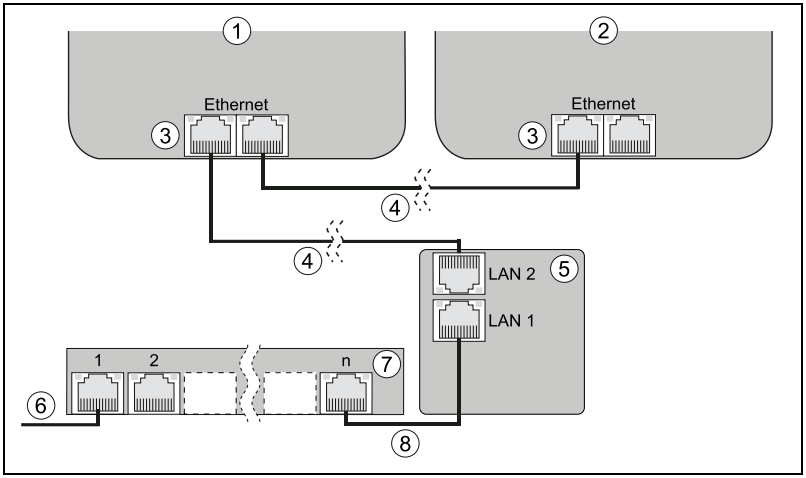
(8) RS485 terminal with terminating resistor

(9) Cable from data logger

(10) Bus cable

- Maximum of 31 inverters per communication interface
- Install the RS485 communication interface "RS485 Quick Module" or "RS485 Data Module" on the SMA inverter (see inverter documentation)
- Place the terminating resistor on the last inverter

SMA string inverters Sunny Tripower 60 (Modbus TCP)



Inverter connection

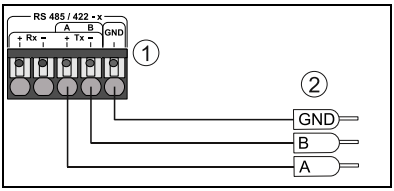
(1) First and subsequent inverters
(2) Last inverter

(3) RJ45 sockets (inverter)
(4) Ethernet patch cable

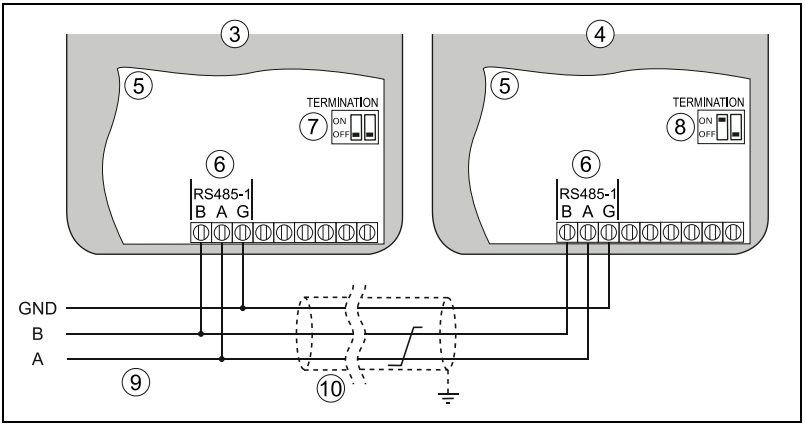
(5) SMA inverter manager
(6) Ethernet patch cable from data logger
(7) Ethernet switch
(8) Ethernet patch cable to SMA inverter manager

- Communication exclusively via the SMA inverter manager
- Maximum of 1 SMA inverter manager per blue'Log
- Maximum of 42 inverters per SMA inverter manager
- Set the network parameters for the SMA inverter manager (see SMA inverter manager documentation)
- Data logger and SMA inverter manager must be on the same subnet (net mask)

5.16 SolarEdge inverters



Data logger connection



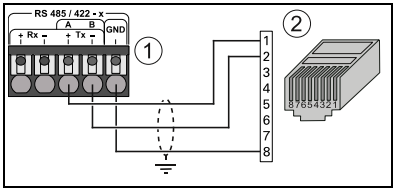
Inverter connection

(1) Data logger terminal, RS485/422
(2) Wire end ferrules (inverter)
(3) First and subsequent inverters
(4) Last inverter
(5) Connecting board
(6) RS485 connecting terminal
(7) Terminating switch, termination disabled
(8) Terminating switch, termination enabled
(9) Cable from data logger
(10) Bus cable

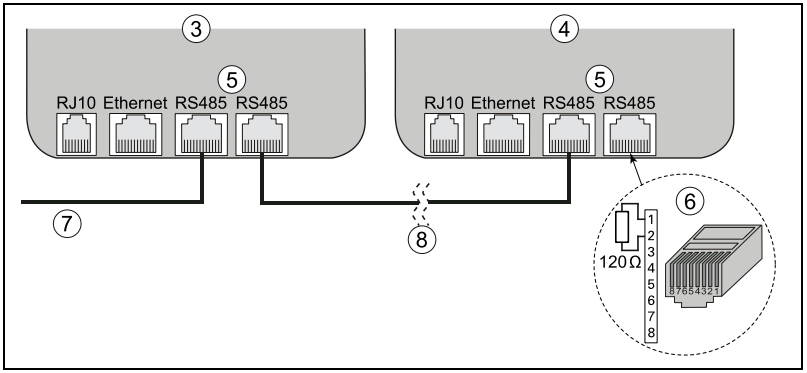
- Maximum of 31 inverters per communication interface
- Set the bus address in the inverter (see inverter documentation)
- Terminate the RS485 bus on the last inverter (set slide switch ⑧ to "ON" position)

5.17 Steca inverters

Coolcept StecaGrid, Alpinsun, High Efficiency, Solar Frontier



Data logger connection

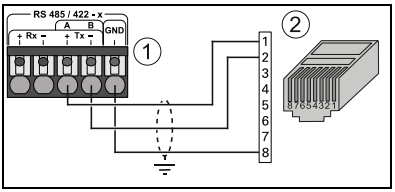


Inverter connection

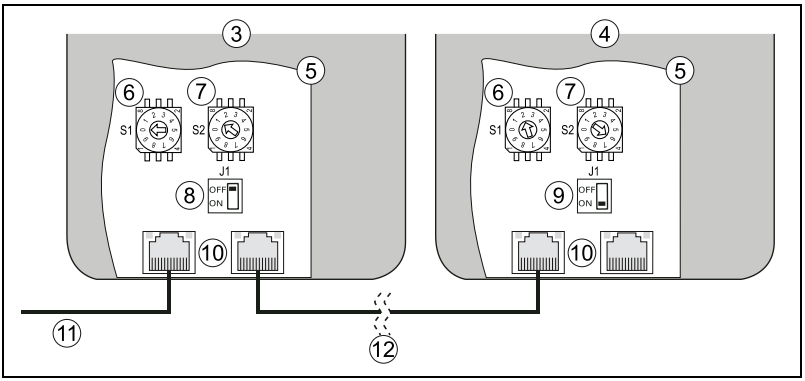
(1) Data logger terminal, RS485/422
(2) RJ45 plug (inverter)
(3) First and subsequent inverters
(4) Last inverter
(5) RJ45 sockets (inverter)
(6) Bus terminating plug assignment
(7) Cable from data logger
(8) Ethernet patch cable

- Maximum of 31 inverters per communication interface
- Set the bus address in the inverter (see inverter documentation)
- Terminate the RS485 bus on the last inverter with the bus terminating plug ⑥. With the RJ45 bus terminating plug, a 120 Ω resistor is connected between pins 1 and 2

StecaGrid 8000 3ph, 10000 3ph



Data logger connection



Inverter connection

(1) Data logger terminal, RS485/422

(2) RJ45 plug (inverter)

(3) First and subsequent inverters

(4) Last inverter

(5) Interface card

(6) Addresses rotary switch S1: setting the 10th digit of the inverter bus address

(7) Addresses rotary switch S2: Setting the 1st digit of the inverter bus address

(8) Terminating switch, termination disabled

(9) Terminating switch, termination enabled

(10) RJ45 sockets (inverter)

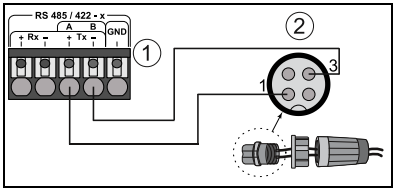
(11) Cable from data logger

(12) Ethernet patch cable

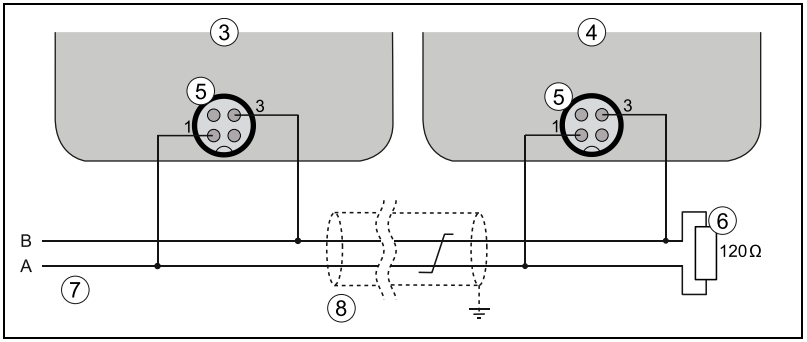
- Maximum of 31 inverters per communication interface
- Set the bus address of the inverter by using of the address rotary switches S1 ⑥ and S2 ⑦
  (see inverter documentation)
- Terminate the RS485 bus on the last inverter
  (set slide switch ⑨ to "ON" position)

5.18 Sungrow inverters

M12 connection



Data logger connection

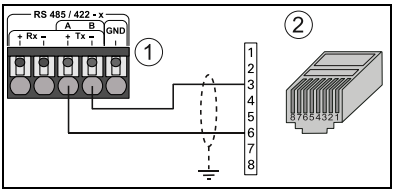


Inverter connection

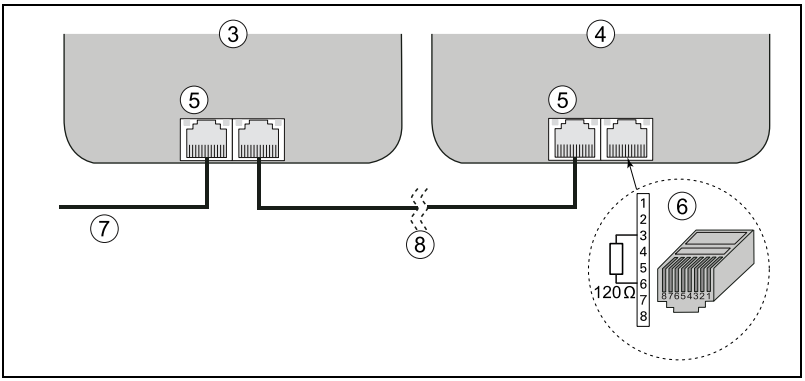
(1) Data logger terminal, RS485/422
(2) M12 connector (inverter)
(3) First and subsequent inverters
(4) Last inverter
(5) Inverter socket
(6) Terminating resistor
(7) Cable from data logger
(8) Bus cable

- Maximum of 31 inverters per communication interface
- Set the bus address in the inverter (see inverter documentation)
- Terminate the RS485 bus on the last inverter with a 120 Ω terminating resistor ⑥

RJ45 connection



Data logger connection

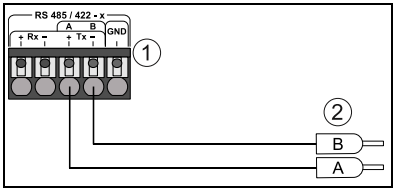


Inverter connection

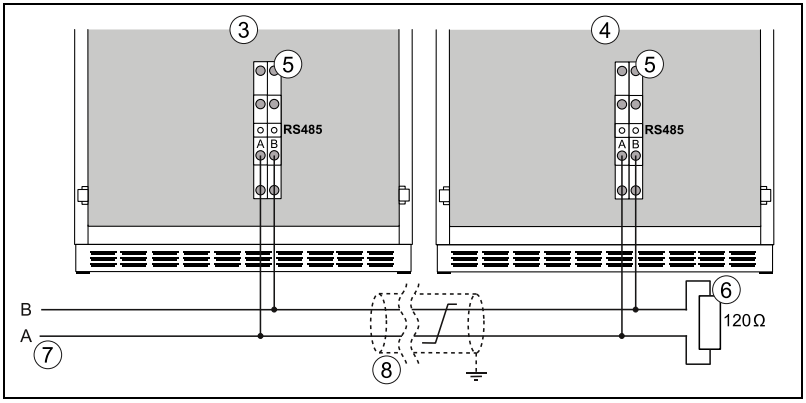
(1) Data logger terminal, RS485/422
(2) RJ45 plug (inverter)
(3) First and subsequent inverters
(4) Last inverter
(5) RJ45 socket (inverter)
(6) Bus terminating plug assignment
(7) Cable from data logger
(8) Ethernet patch cable

- Maximum of 31 inverters per communication interface
- Set the bus address in the inverter
  (see inverter documentation)
- Terminate the RS485 bus on the last inverter with the bus terminating plug ⑥. With the RJ45 bus terminating plug, a 120 Ω resistor is connected between pins 3 and 6

RS485 central inverters connection



Data logger connection



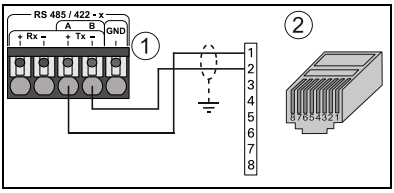
Inverter connection

(1) Data logger terminal, RS485/422
(2) Wire end ferrules (inverter)
(3) First and subsequent inverters
(4) Last inverter
(5) RS485 connecting terminal
(6) Terminating resistor
(7) Cable from data logger
(8) Bus cable

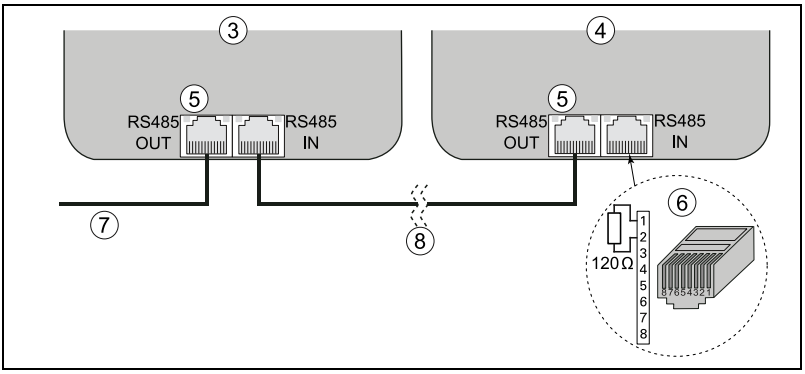
- Maximum of 31 inverters per communication interface
- Set the bus address in the inverter (see inverter documentation)
- Terminate the RS485 bus on the last inverter with a 120 Ω terminating resistor ⑥

5.19 Sunways inverters

SPT series



Data logger connection



Inverter connection

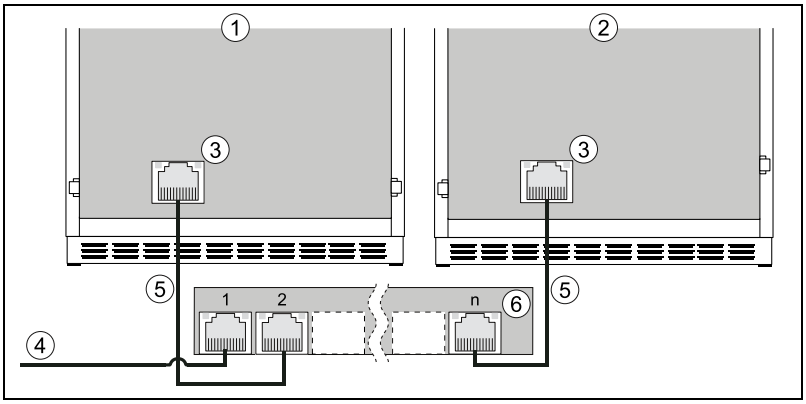
(1) Data logger terminal, RS485/422
(2) RJ45 plug (inverter)
(3) First and subsequent inverters
(4) Last inverter
(5) RJ45 sockets (inverter)
(6) Bus terminating plug assignment
(7) Cable from data logger
(8) Ethernet patch cable

- Maximum of 31 inverters per communication interface
- Set the bus address in the inverter
  (see inverter documentation)
- Terminate the RS485 bus on the last inverter with the bus terminating plug ⑥. With the RJ45 bus terminating plug, a 120 Ω resistor is connected between pins 1 and 2

5.20 TMEIC inverters

Central inverters SOLAR WARE (Modbus TCP)

Central inverters SOLAR WARE Samurai (Modbus TCP)



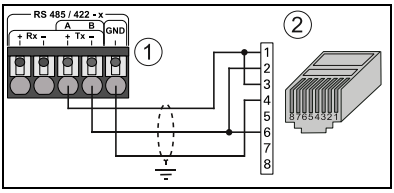
Inverter connection

(1) First and subsequent inverters
(2) Last inverter
(3) RJ45 socket (inverter)
(4) Ethernet patch cable from data logger
(5) Ethernet patch cable
(6) Ethernet switch

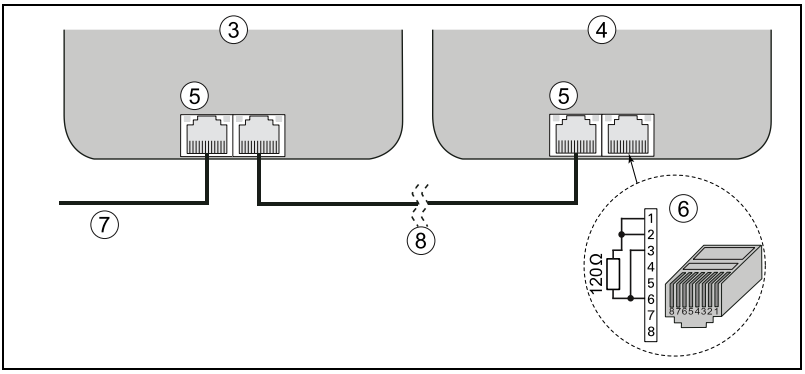
- Maximum of 31 inverters
- Set the network parameters for the inverters (see inverter documentation)
- Data logger and inverters must be on the same subnet (net mask)

5.21 Zeversolar inverters

Eversol TLC



Data logger connection



Inverter connection

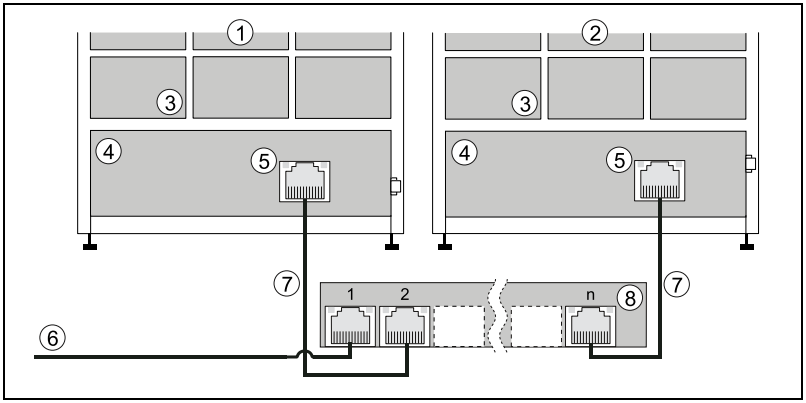
(1) Data logger terminal, RS485/422
(2) RJ45 plug (inverter)
(3) First and subsequent inverters
(4) Last inverter
(5) RJ45 sockets (inverter)
(6) Bus terminating plug assignment
(7) Cable from data logger
(8) Ethernet patch cable

- Maximum of 31 inverters per communication interface
- Set the bus address in the inverter (see inverter documentation)
- Terminate the RS485 bus on the last inverter with the bus terminating plug ⑥. With the RJ45 bus terminating plug, a 120 Ω resistor is connected between the bridges pin 1, pin 2 and pin 3, pin 6

6. Energy storage systems connection plans

6.1 VARTA Storage energy storage systems

Engion Family / Home



Energy storage system connection

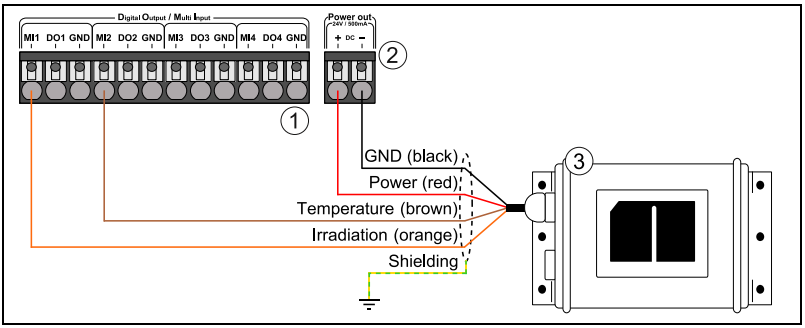
(1) First and subsequent energy storage system
(2) Last energy storage system
(3) Battery module slot
(4) Service area
(5) RJ45 Ethernet socket
(6) Ethernet patch cable from data logger
(7) Ethernet patch cable
(8) Ethernet switch

- Maximum of 31 energy storage systems
- Set the network parameters for the energy storage systems (see energy storage system documentation)
- Data logger and energy storage systems must be on the same subnet (net mask)

7. Sensor connection plans

7.1 Irradiance sensors

SI-12-TC-T, SI-020-TC-T-K, SI-420-TC-T



Sensor connection

(1) Data logger terminal, digital output / multi-input
(2) Data logger terminal, Power Out
(3) Irradiance sensor

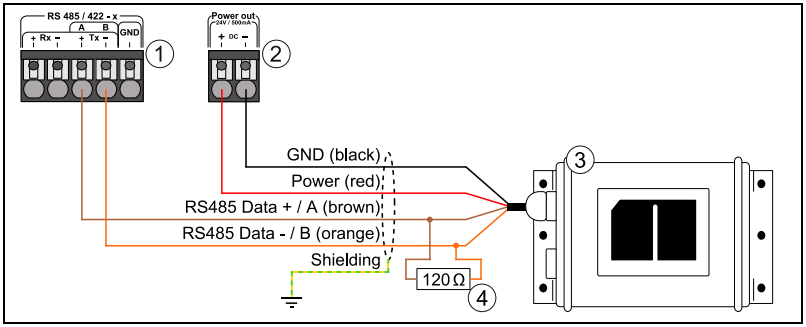
Connection

Wire color	Use
Black	Ground
Red	Power supply (12…24 V DC)
Brown	Temperature signal (0…10 V / 0…20 mA / 12.28…20 mA)
Orange	Irradiance signal (0…10 V / 0…20 mA / 4…20 mA)

Configuration data

Sensor	Measurement	Input	Unit	Gradient	Offset
SI-12-TC-T	Irradiance	Analog 0…10 V	W/m²	120	0
	Temperature	Analog 0…10 V	°C	10.869	-20
SI-020-TC-T-K	Irradiance	Analog 0…20 mA	W/m²	60	0
	Temperature	Analog 0…20 mA	°C	12.5	-123.5
SI-420-TC-T	Irradiance	Analog 4…20 mA	W/m²	75	-300
	Temperature	Analog 12.28…20 mA	°C	12.5	-173.5

Si-RS485-TC-T, Si-RS485-TC-T V2 (Modbus RTU)



Sensor connection

(1) Data logger terminal, RS485/422
(2) Data logger terminal, Power Out
(3) Irradiance sensor
(4) Terminating resistor

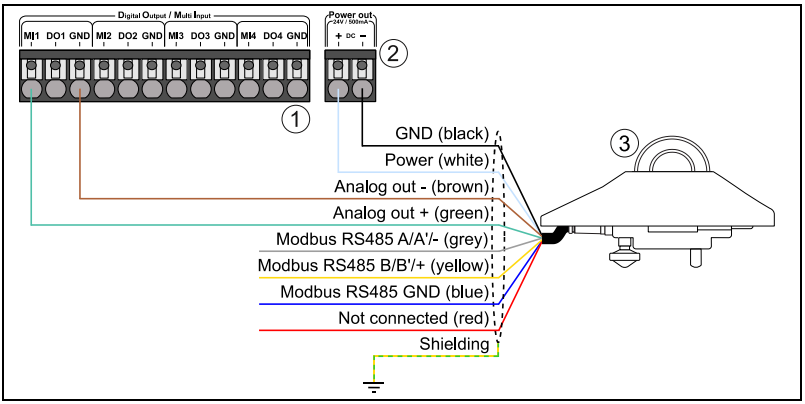
Connection

Wire color	Use
Black	Ground
Red	Power supply (12…24 V DC)
Brown	RS485 Modbus interface A (+)
Orange	RS485 Modbus interface B (-)

- Set the bus address on the sensor (see sensor documentation)
- If the device is the last one on the RS485 bus, terminate the bus with a 120 Ω terminating resistor ④
- Various Modbus devices can only be queried together if the serial communication parameters are identical (baud rate, number of data bits, parity, stop bits)

7.2 Pyranometers

Kipp & Zonen SMP3, SMP10, SMP11 (analog interface)



Sensor connection

(1) Data logger terminal, digital output / multi-input
(2) Data logger terminal, Power Out
(3) Pyranometer

Connection

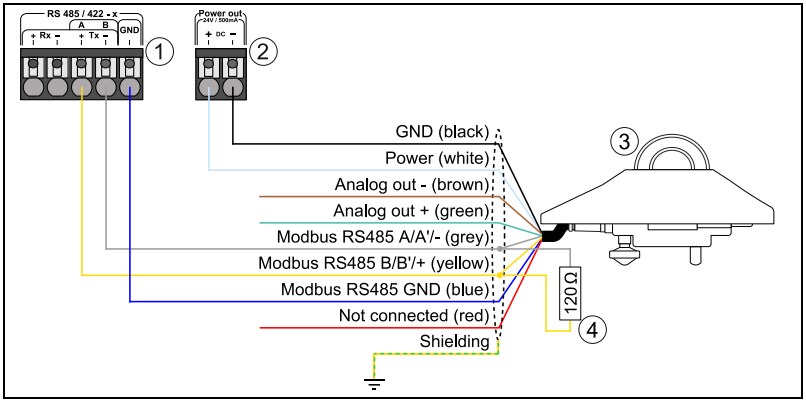
Wire color	Use
Black	GND
White	Power supply (5…30 V DC)
Brown	Irradiance signal GND
Green	Irradiance signal (4…20 mA)
Gray	RS485 Modbus interface B (-)
Yellow	RS485 Modbus interface A (+)
Blue	RS485 Modbus interface GND
Red	Not used

Configuration data

Measurement	Input	Unit	Gradient	Offset
Irradiance on horizontal plane	Analog 4…20 mA	W/m²	100	-400
Irradiance on module plane	Analog 4…20 mA	W/m²	100	-400

- Pyranometers can be used to measure irradiance either in horizontal or module plane

Kipp & Zonen SMP3, SMP10, SMP11 (Modbus RTU)



Sensor connection

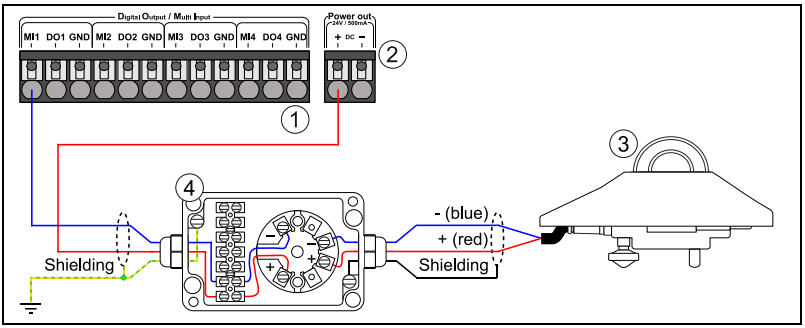
(1) Data logger terminal, RS485/422
(2) Data logger terminal, Power Out
(3) Pyranometer
(4) Load resistor

Connection

Wire color	Use
Black	GND
White	Power supply (5…30 V DC)
Brown	Irradiance signal GND
Green	Irradiance signal (4…20 mA)
Gray	RS485 Modbus interface B (-)
Yellow	RS485 Modbus interface A (+)
Blue	RS485 Modbus interface GND
Red	Not used

- Set the bus address on the sensor (see sensor documentation)
- If the device is the last one on the RS485 bus, terminate the bus with a 120 Ω terminating resistor ④
- Various Modbus devices can only be queried together if the serial communication parameters are identical (baud rate, number of data bits, parity, stop bits)
- Pyranometers can be used to measure irradiance either in horizontal or module plane

Kipp & Zonen CMP3, CMP6, CMP11, CMP21, CMP22 with AMPBOX



Sensor connection

(1) Data logger terminal, digital output / multi-input
(2) Data logger terminal, Power Out
(3) Pyranometer
(4) AMPBOX

Connection

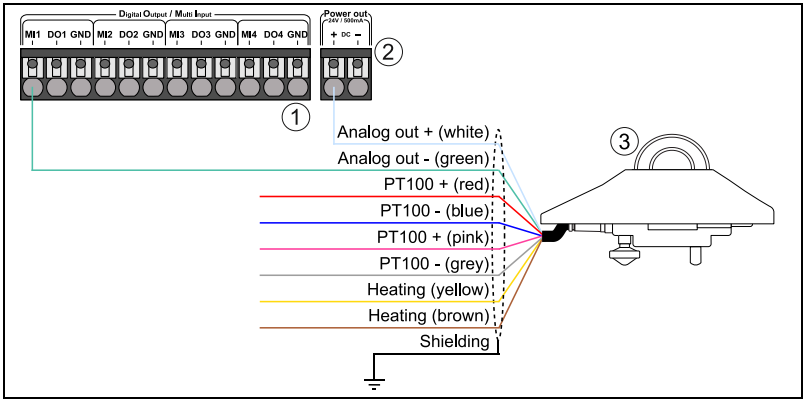
Wire color	Use
Blue	- (High)
Red	+ (Low)

Configuration data

Measurement	Input	Unit	Gradient	Offset
Irradiance on horizontal plane	Analog 4…20 mA	W/m^2	100	-400
Irradiance on module plane	Analog 4…20 mA	W/m^2	100	-400

- Pyranometers can be used to measure irradiance either in horizontal or module plane
- Input and output of the AMPBOX are galvanically isolated to prevent back coupling, signal interferences and to protect the data logger
- The connecting cable between the AMPBOX and the pyranometer must not be lengthened or shortened
- Because the AMPBOX and the pyranometer are calibrated together, both devices must always be installed together

Hukseflux SR20-TR



Sensor connection

(1) Data logger terminal, digital output / multi-input
(2) Data logger terminal, Power Out
(3) Pyranometer

Connection

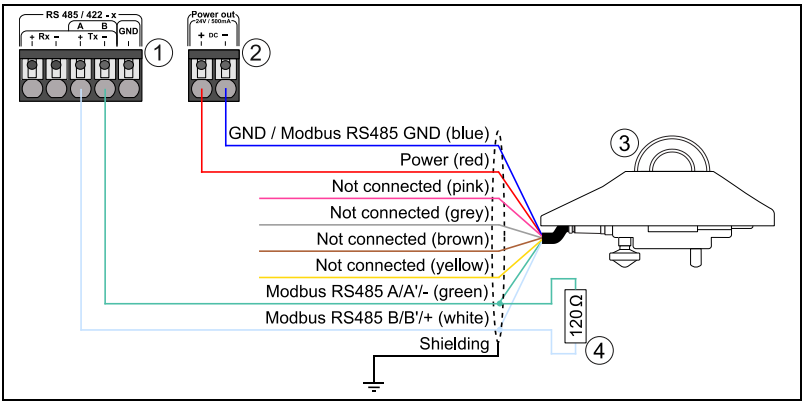
Wire color	Use
White	Irradiance signal power supply (7,2…35 V DC)
Green	Irradiance signal (4…20 mA)
Red	Temperature signal (PT100, 4-wire configuration)
Blue	Temperature signal (GND, 4-wire configuration)
Pink	Temperature signal (PT100, 4-wire configuration)
Grey	Temperature signal (GND, 4-wire configuration)
Yellow	Power supply for heater (not controlled)
Brown	Heater GND (not controlled)
Black	Shield

Configuration data

Measurement	Input	Unit	Gradient	Offset
Irradiance on horizontal plane	Analog 4…20 mA	W/m^2	100	-400
Irradiance on module plane	Analog 4…20 mA	W/m^2	100	-400

- Pyranometers can be used to measure irradiance either in horizontal or module plane

Hukseflux SR20-D1 (Modbus RTU)



Sensor connection

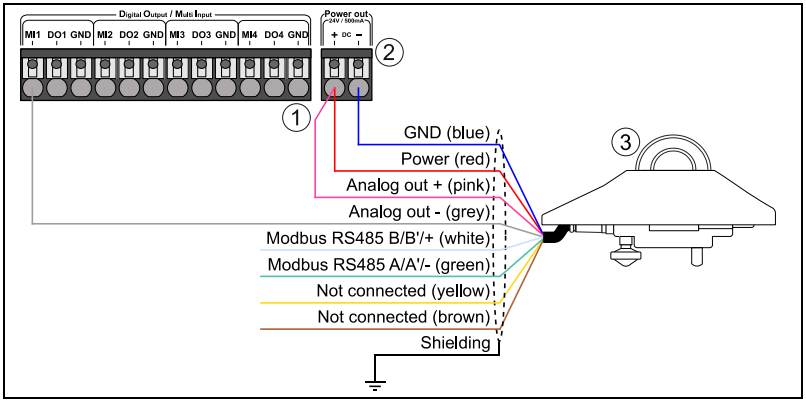
(1) Data logger terminal, RS485/422
(2) Data logger terminal, Power Out
(3) Pyranometer
(4) Load resistor

Connection

Wire color	Use
Blue	GND / RS485 Modbus interface GND
Red	Power supply (5…30 V DC)
Pink	Not used
Gray	Not used
Brown	Not used
Yellow	Not used
Green	RS485 Modbus interface B (-)
White	RS485 Modbus interface A (+)
Black	Shield

- Set the bus address on the sensor (see sensor documentation)
- If the device is the last one on the RS485 bus, terminate the bus with a 120 Ω terminating resistor ④
- Various Modbus devices can only be queried together if the serial communication parameters are identical (baud rate, number of data bits, parity, stop bits)
- Pyranometers can be used to measure irradiance either in horizontal or module plane

Hukseflux SR20-D2 (analog interface)



Sensor connection

(1) Data logger terminal, digital output / multi-input
(2) Data logger terminal, Power Out
(3) Pyranometer

Connection

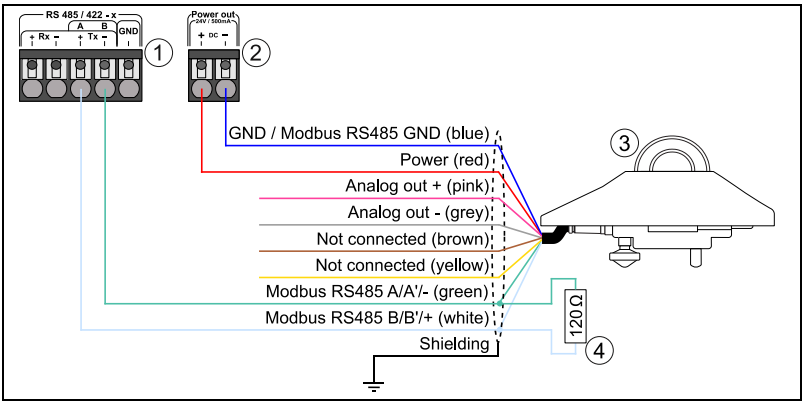
Wire color	Use
Blue	GND
Red	Power supply (5,5…30 V DC)
Pink	Irradiance signal power supply (5,5…30 V DC)
Grey	Irradiance signal (4…20 mA)
White	RS485 Modbus interface B (-)
Green	RS485 Modbus interface A (+)
Yellow	Not used
Brown	Not used
Black	Shield

Configuration data

Measurement	Input	Unit	Gradient	Offset
Irradiance on horizontal plane	Analog 4…20 mA	W/m^2	100	-400
Irradiance on module plane	Analog 4…20 mA	W/m^2	100	-400

- Pyranometers can be used to measure irradiance either in horizontal or module plane

Hukseflux SR20-D2 (Modbus RTU)



Sensor connection

(1) Data logger terminal, RS485/422
(2) Data logger terminal, Power Out
(3) Pyranometer
(4) Load resistor

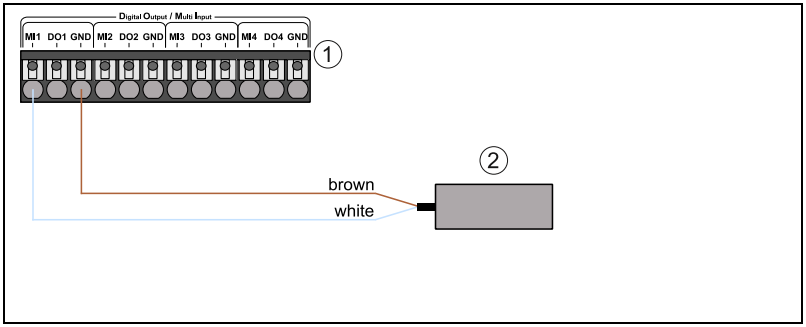
Connection

Wire color	Use
Blue	GND / RS485 Modbus interface GND
Red	Power supply (5,5…30 V DC)
Pink	Irradiance signal power supply (5,5…30 V DC)
Grey	Irradiance signal (4…20 mA)
Brown	Not used
Yellow	Not used
Green	RS485 Modbus interface B (-)
White	RS485 Modbus interface A (+)
Black	Shield

- Set the bus address on the sensor (see sensor documentation)
- If the device is the last one on the RS485 bus, terminate the bus with a 120 Ω terminating resistor ④
- Various Modbus devices can only be queried together if the serial communication parameters are identical (baud rate, number of data bits, parity, stop bits)
- Pyranometers can be used to measure irradiance either in horizontal or module plane

7.3 Temperature sensors

PT1000 adhesive sensor



Sensor connection

(1) Data logger terminal, digital output / multi-input

(2) PT1000 adhesive sensor

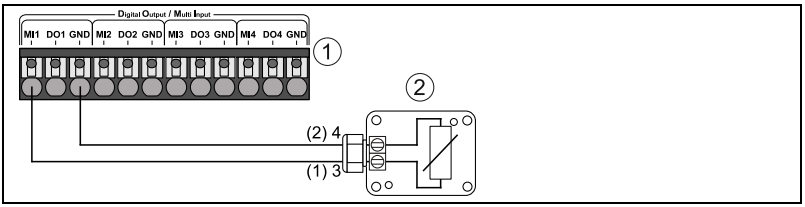
Connection

Wire color	Use
Brown	Ground
White	PT1000 temperature signal

Configuration data

Measurement	Input	Unit	Gradient	Offset
Temperature	PT1000	°C	1	0

PT1000 sensor in the housing



Sensor connection

(1) Data logger terminal, digital output / multi-input

(3) PT1000 sensor in the housing

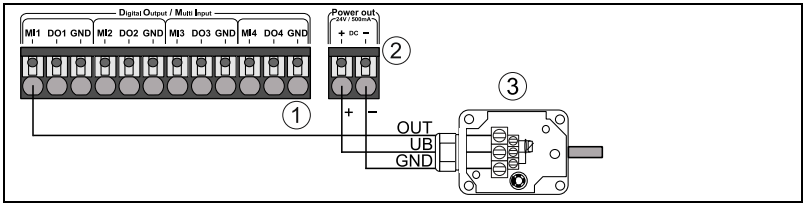
Connection

Wire	Use
(2) 4	Ground
(1) 3	PT1000 temperature signal

Configuration data

Measurement	Input	Unit	Gradient	Offset
Temperature	PT1000	°C	1	0

PT1000 sensor with integrated inverter



Sensor connection

(1) Data logger terminal, digital output / multi-input

(3) PT1000 sensor with integrated inverter

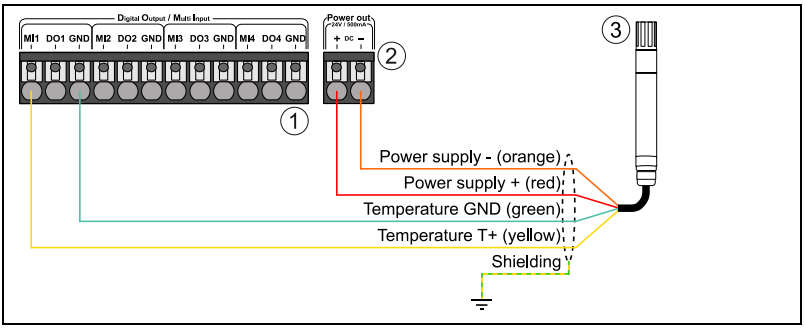
Connection

Wire	Use
OUT	PT1000 temperature signal
UB	Supply voltage (15…24 V DC or 24 V AC)
GND	Ground

Configuration data

Measurement	Input	Unit	Gradient	Offset
Temperature	PT1000	°C	1	0

PT100 meteocontrol compact



Sensor connection

(1) Data logger terminal, digital output / multi-input
(2) Data logger terminal, Power Out
(3) PT100 Temperature sensor

Connection

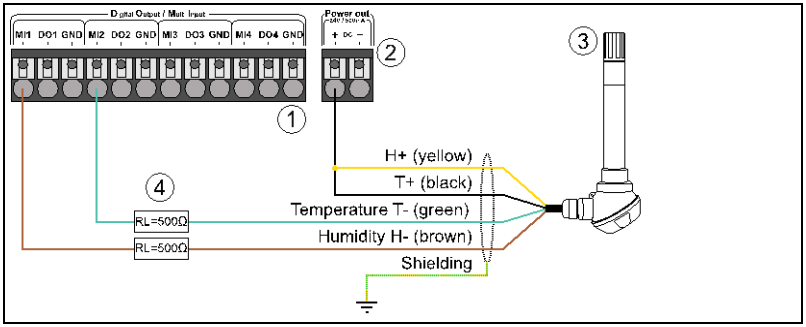
Wire color	Use
Orange	Ground
Red	Supply voltage (24 V DC ± 10 %)
Green	Temperature signal ground
Yellow	Temperature signal (0…10 V)

Configuration data

Measurement	Input	Unit	Gradient	Offset
Temperature	Analog 0…10 V	°C	10	-30

7.4 Hygro-thermal sensors

meteocontrol compact hygro-thermal sensor



Sensor connection

(1) Data logger terminal, digital output / multi-input
(2) Data logger terminal, Power Out
(3) Hygro-thermal sensor
(4) Load resistor

Connection

Wire color	Use
Yellow	Power supply for humidity sensor (24 V DC)
Black	Power supply for temperature sensor (24 V DC)
Green	Temperature signal (4…20 mA)
Brown	Ambient air humidity signal (4…20 mA)

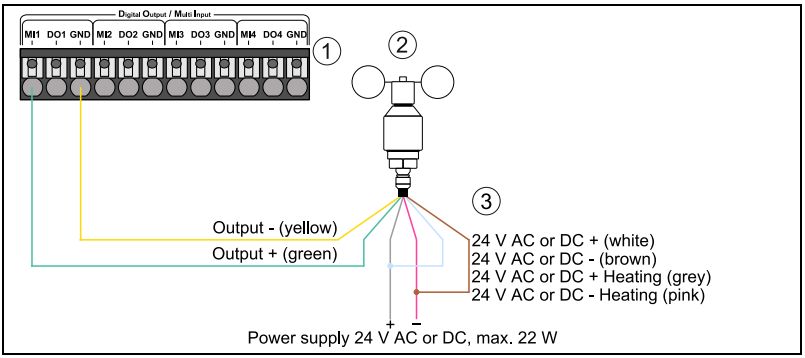
Configuration data

Measurement	Input	Unit	Gradient	Offset
Temperature	Analog 4…20 mA	°C	6.25	-55
Ambient air humidity	Analog 4…20 mA	% r. h.	6.25	-25

- At a supply voltage of 24 VDC at the sensor the load resistance (cabel + input resistance data logger) should be between 600 and 700 Ohm to obtain optimum measurement results. The input resistance of the data logger is 40 Ohm. The installation of an additional resistance (approx. 500 Ohm) improves the measurement accuracy of the sensor.

7.5 Wind speed sensors

meteocontrol compact wind speed sensor (0…10 V) / (4…20 mA)



Sensor connection

(1) Data logger terminal, digital output / multi-input
(2) Wind speed sensor
(3) Sensor power supply

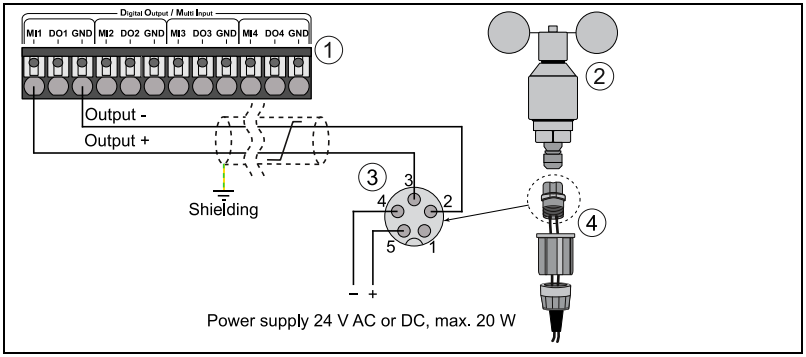
Connection

Wire color	Use
Yellow	Wind speed signal ground
Green	Wind speed signal (4…20 mA)
Gray	Power supply for heater (24 V DC +)
Pink	Heater GND (24 V DC -)
White	Power supply for sensor (24 V DC +)
Brown	Sensor GND (24 V DC -)

Configuration data

Sensor	Measurement	Input	Unit	Gradient	Offset
mc comp. wind speed sensor (0-10 V)	Wind speed	Analog 0…10 V	m/s	5	0
mc comp. wind speed sensor (4-20 mA)	Wind speed	Analog 4…20 mA	m/s	3.09	-11.86

meteocontrol classic wind speed sensor (0…10 V) / (4…20 mA)



Sensor connection

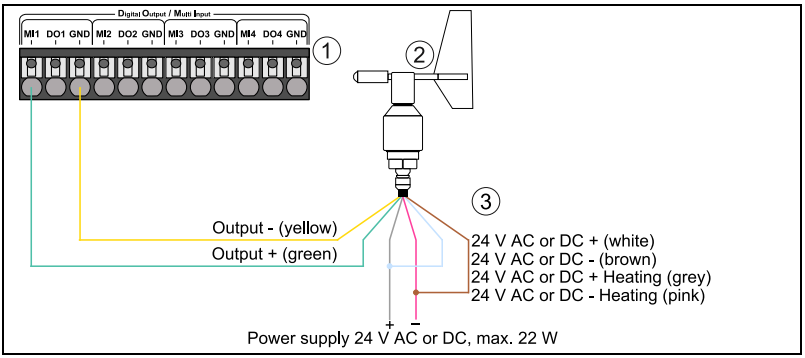
(1) Data logger terminal, digital output / multi-input
(2) Wind speed sensor
(3) Sensor connector assignment
(4) Sensor connector

Configuration data

Sensor	Measurement	Input	Unit	Gradient	Offset
mc classic wind speed sensor (0-10 V)	Wind speed	Analog 0…10 V	m/s	5	0
mc classic wind speed sensor (4-20 mA)	Wind speed	Analog 4…20 mA	m/s	3.125	-12,5

7.6 Wind direction sensors

meteocontrol compact wind direction sensor (0…10 V) / (4…20 mA)



Sensor connection

(1) Data logger terminal, digital output / multi-input
(2) Wind direction sensor
(3) Sensor power supply

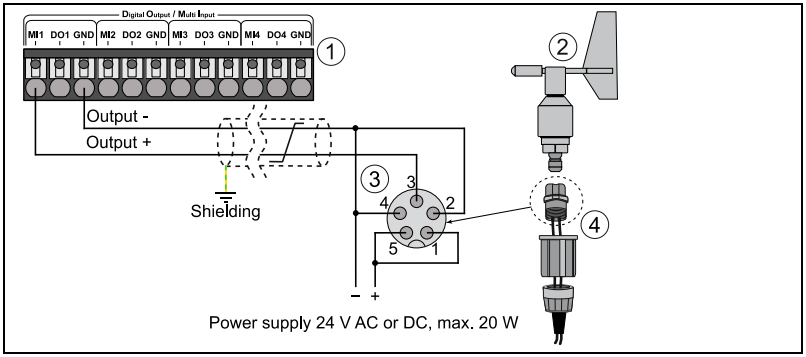
Connection

Wire color	Use
Yellow	Wind direction signal GND
Green	Wind direction signal (4…20 mA)
Gray	Power supply for heater (24 V AC or DC +)
Pink	Heater GND (24 V DC -)
White	Power supply for sensor (24 V AC or DC +)
Brown	Sensor GND (24 V AC or DC -)

Configuration data

Sensor	Measurement	Input	Unit	Gradient	Offset
mc compact wind direction (0-10 V)	Wind direction	Analog 0…10 V	°	36	0
mc compact wind direction (4-20 mA)	Wind direction	Analog 4…20 mA	°	22.5	-90

meteocontrol classic wind direction sensor (0…10 V) / (4…20 mA)



Sensor connection

(1) Data logger terminal, digital output / multi-input
(2) Wind direction sensor
(3) Sensor connector assignment
(4) Sensor connector

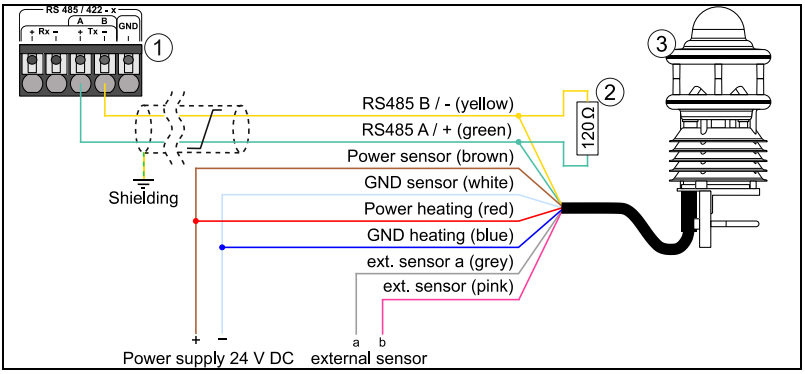
Configuration data

Sensor	Measurement	Input	Unit	Gradient	Offset
mc classic wind direction (0-10 V)	Wind direction	Analog 0…10 V	°	36	0
mc classic wind direction (4-20 mA)	Wind direction	Analog 4…20 mA	°	22.5	-90

7.7 Weather stations

Compact Weather Station WSxxx-UMB (Modbus RTU)

WS200-UMB, WS300-UMB, WS310-UMB, WS301-UMB, WS302-UMB, WS303-UMB, WS304-UMB, WS400-UMB, WS401-UMB, WS500-UMB, WS510-UMB, WS501-UMB, WS502-UMB, WS503-UMB, WS504-UMB, WS600-UMB, WS601-UMB, WS700-UMB, WS800-UMB



Sensor connection

(1) Data logger terminal, RS485/422
(2) Terminating resistor
(3) Compact weather station

Connection

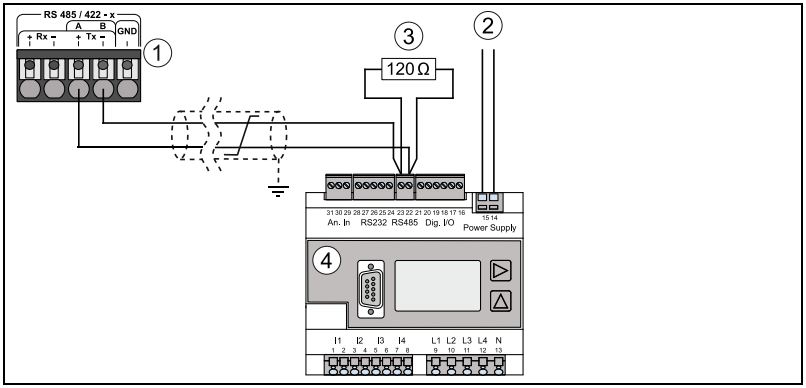
Wire color	Use
Yellow	RS485 bus wire B (-)
Green	RS485 bus wire A (+)
Brown	Power supply for sensor (+24 V DC)
White	Sensor GND (-)
Red	Power supply for heater (+24 V DC)
Blue	Heater GND (-)
Gray	Connector for external sensor a
Pink	Connector for external sensor b

- Check the respective sensor documentation to find out what power the 24 V DC power supply needs; it may vary depending on sensor model
- Set the bus address on the compact weather station (see compact weather station documentation)
- If the device is the last one on the RS485 bus, terminate the bus with a 120 Ω terminating resistor ②
- Various Modbus devices can only be queried together if the serial communication parameters are identical (baud rate, number of data bits, parity, stop bits)

8. Power quality analyzer connection plans

8.1 Janitza power quality analyzers

UMG104 (Modbus RTU)

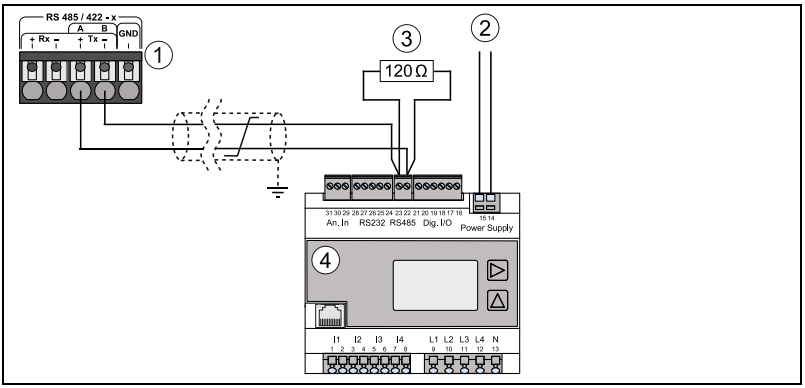


Power quality analyzer connection

(1) Data logger terminal, RS485/422
(2) Power supply for power quality analyzer (varies by model)
(3) Terminating resistor
(4) Power quality analyzer

- Set the bus address on the power quality analyzer (see power quality analyzer documentation)
- If the device is the last one on the RS485 bus, terminate the bus with a 120 Ω terminating resistor ③
- To ensure sufficient query speed for the power control, it is recommended to operate the power quality analyzer as a single device on the bus

UMG604 (Modbus RTU)

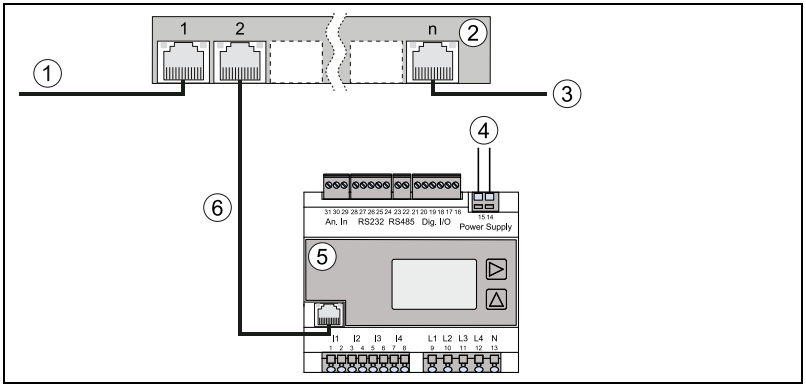


Power quality analyzer connection

(1) Data logger terminal, RS485/422
(2) Power supply for power quality analyzer (varies by model)
(3) Terminating resistor
(4) Power quality analyzer

- Set the bus address on the power quality analyzer (see power quality analyzer documentation)
- If the device is the last one on the RS485 bus, terminate the bus with a 120 Ω terminating resistor ③
- To ensure sufficient query speed for the power control, it is recommended to operate the power quality analyzer as a single device on the bus

UMG604 (Modbus TCP)

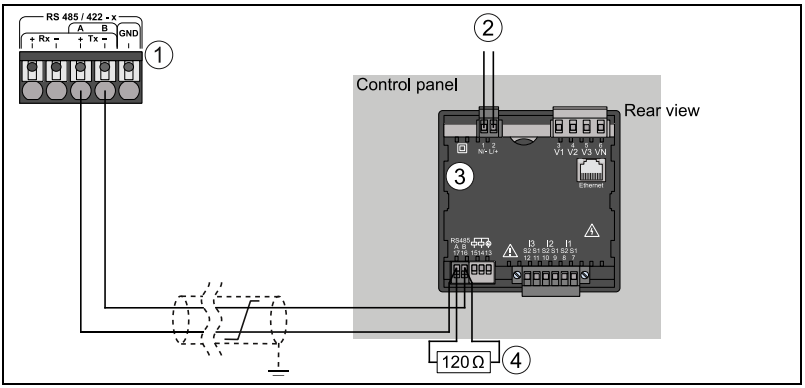


Power quality analyzer connection

(1) Ethernet patch cable from data logger
(2) Ethernet switch
(3) Ethernet patch cable to additional devices
(4) Power supply for power quality analyzer (varies by model)
(5) Power quality analyzer
(6) Ethernet patch cable

- Set the network parameters for the power quality analyzer (see power quality analyzer documentation)
- Data logger and power quality analyzer must be on the same subnet (net mask)

UMG96RM (Modbus RTU)

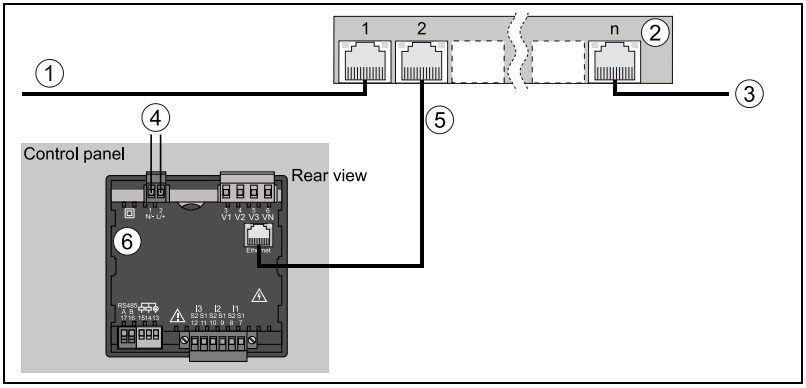


Power quality analyzer connection

(1) Data logger terminal, RS485/422
(2) Power supply for power quality analyzer (varies by model)
(3) Power quality analyzer (rear view)
(4) Terminating resistor

- Set the bus address on the power quality analyzer (see power quality analyzer documentation)
- If the device is the last one on the RS485 bus, terminate the bus with a 120 Ω terminating resistor ④
- To ensure sufficient query speed for the power control, it is recommended to operate the power quality analyzer as a single device on the bus

UMG96RM (Modbus TCP)



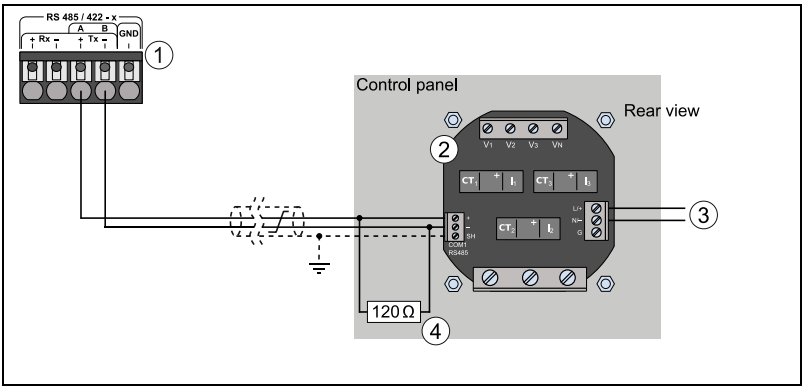
Power quality analyzer connection

(1) Ethernet patch cable from data logger
(2) Ethernet switch
(3) Ethernet patch cable to additional devices
(4) Power supply for power quality analyzer (varies by model)
(5) Ethernet patch cable
(6) Power quality analyzer (rear view)

- Set the network parameters for the power quality analyzer (see power quality analyzer documentation)
- Data logger and power quality analyzer must be on the same subnet (net mask)

8.2 Satec power quality analyzers

PM130 PLUS (Modbus RTU)



Power quality analyzer connection

(1) Data logger terminal, RS485/422

(2) Power quality analyzer (rear view)

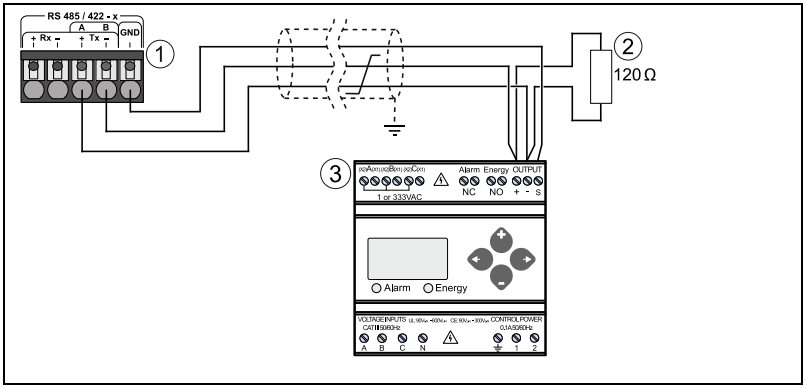
(3) Power supply for power quality analyzer (varies by model)

(4) Terminating resistor

- Set the bus address on the power quality analyzer (see power quality analyzer documentation)
- If the device is the last one on the RS485 bus, terminate the bus with a 120 Ω terminating resistor ④
- To ensure sufficient query speed for the power control, it is recommended to operate the power quality analyzer as a single device on the bus

8.3 Veris Industries power quality analyzers

E51C2 (Modbus RTU)



Power quality analyzer connection

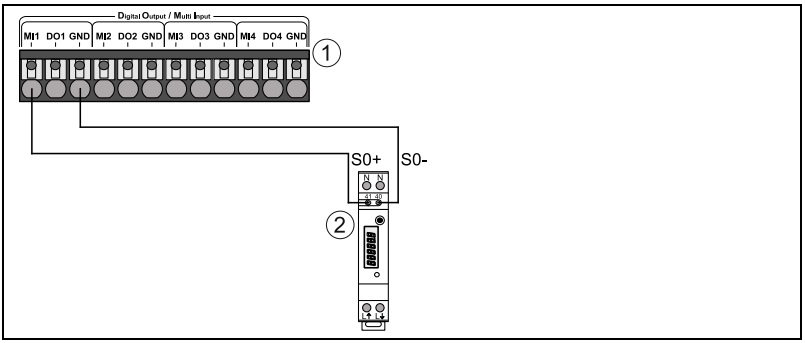
(1) Data logger terminal, RS485/422
(2) Terminating resistor
(3) Power quality analyzer

- Set the bus address on the power quality analyzer (see power quality analyzer documentation)
- If the device is the last one on the RS485 bus, terminate the bus with a 120 Ω terminating resistor ②
- To ensure sufficient query speed for the power control, it is recommended to operate the power quality analyzer as a single device on the bus

9. Energy meter connection plans

9.1 Single-phase energy meter

MIZ single-phase energy meter



Energy meter connection

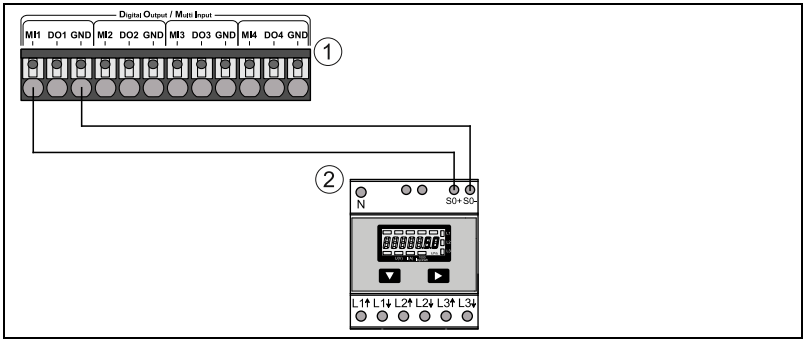
(1) Data logger terminal, digital output / multi-input

(2) Energy meter

- Connection via digital input also possible if the interfaces are not occupied by a ripple control receiver
- Pulse value of the S0 interface is 1000 pulses/kWh

9.2 3-phase energy meter

S0 ALE3B5F10KC3A00 energy meter



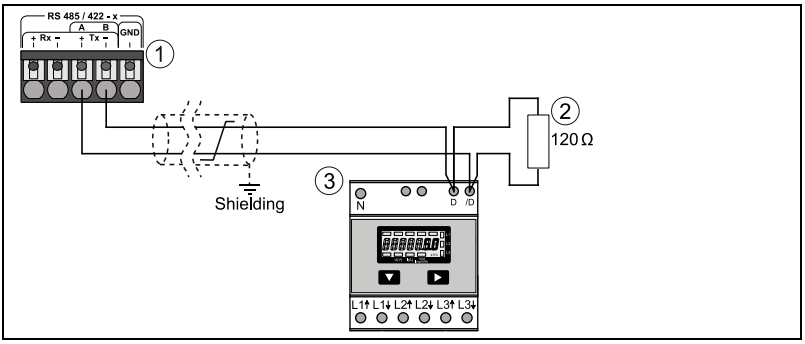
Energy meter connection

(1) Data logger terminal, digital output / multi-input

(2) Energy meter

- Connection via digital input also possible if the interfaces are not occupied by a ripple control receiver
- Pulse value of the S0 interface is 1000 pulses/kWh
- Energy meter suitable for IPL function

ALE3D5FD10C3A00 energy meter (Modbus)

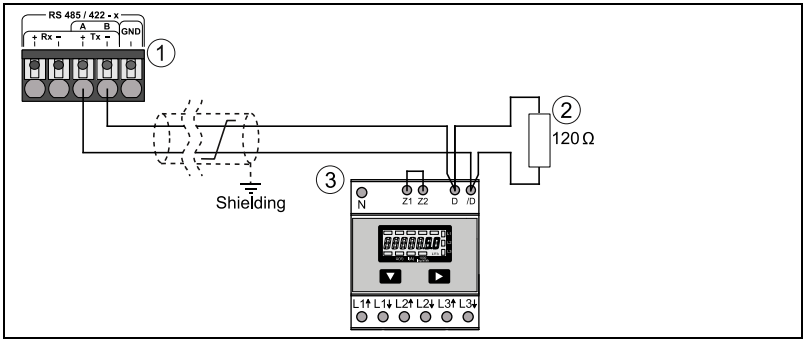


Energy meter connection

(1) Data logger terminal, digital output / multi-input
(2) Terminating resistor
(3) Energy meter

- Set the bus address on the energy meter (see energy meter documentation)
- If the device is the last one on the RS485 bus, terminate the bus with a 120 Ω terminating resistor ②
- Energy meter suitable for IPL function

AWD3D5WD00 current transformator energy meter (Modbus)

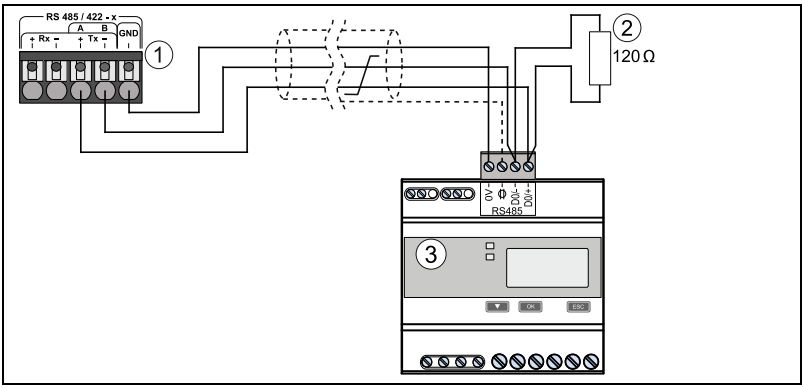


Energy meter connection

(1) Data logger terminal, digital output / multi-input
(2) Terminating resistor
(3) Energy meter

- Set the bus address on the energy meter (see energy meter documentation)
- If the device is the last one on the RS485 bus, terminate the bus with a 120 Ω terminating resistor ②
- Energy meter suitable for IPL function

Schneider Electric IEM 315x, IEM 325x, IEM 335x energy meter

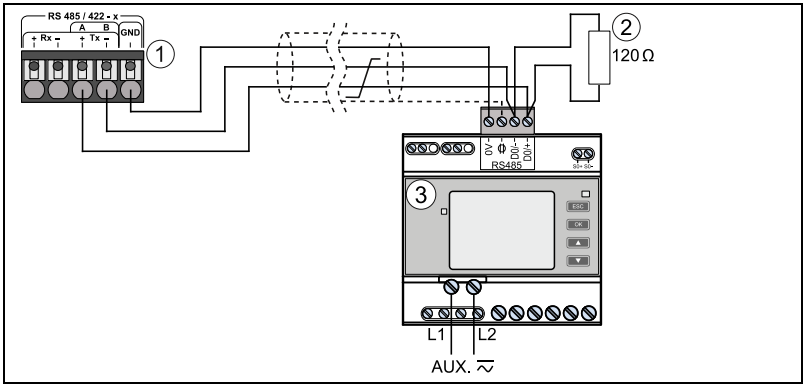


Energy meter connection

(1) Data logger terminal, RS485/422
(2) Terminating resistor
(3) Energy meter

- Set the bus address on the energy meter (see energy meter documentation).
- If the device is the last one on the RS485 bus, terminate the bus with a 120 Ω terminating resistor ②.
- Energy meter suitable for IPL function

Schneider Electric PM 325x energy meter



Energy meter connection

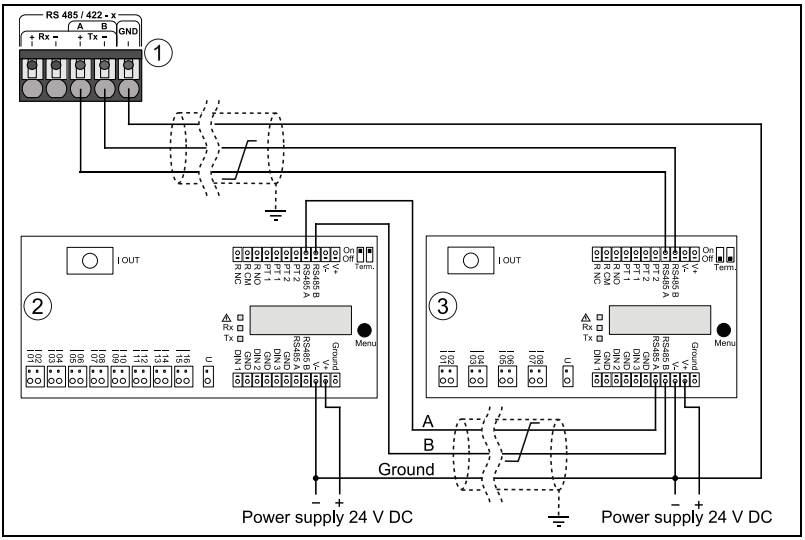
(1) Data logger terminal, RS485/422
(2) Terminating resistor
(3) Energy meter

- Set the bus address on the energy meter (see energy meter documentation)
- If the device is the last one on the RS485 bus, terminate the bus with a 120 Ω terminating resistor ②
- Energy meter suitable for IPL function

10. String measuring equipment

10.1 meteocontrol string measuring equipment

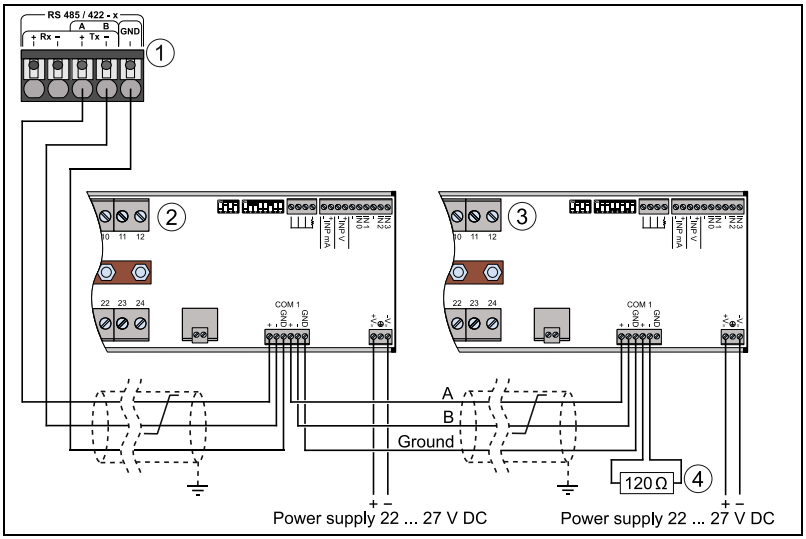
i'catcher 8-8, i'catcher 8-1B, i'catcher 16-1B, i'catcher 24-1B (Modbus RTU)



String monitor connection

(1) Data logger terminal, RS485/422
(2) First and subsequent i'catchers
(3) Last i'catcher

- Set the bus address on the i'catcher (see i'catcher documentation)
- If the device is the last one on the RS485 bus, set the terminating switch (Term.) to "On". Since the i'catcher 8-8 has no terminating switches, the bus must be terminated regularly with a 120 Ω resistor between wires A and B
- Various Modbus devices can only be queried together if the serial communication parameters are identical (baud rate, number of data bits, parity, stop bits)



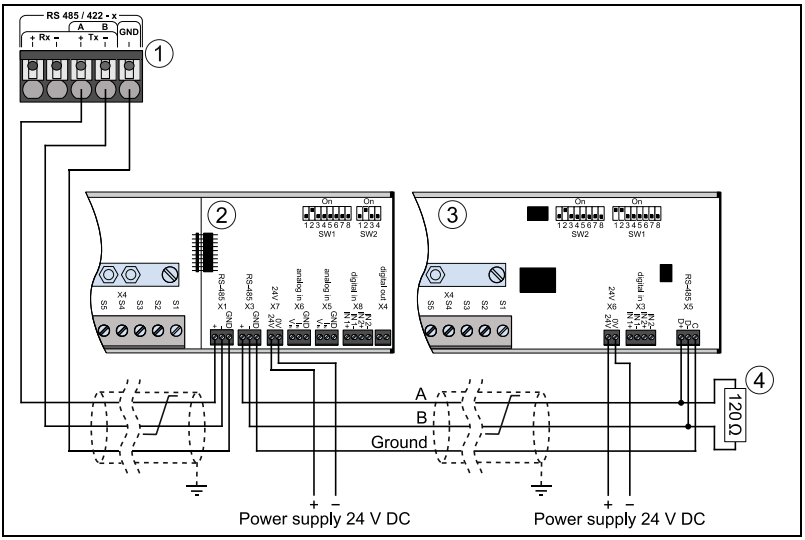
String monitor connection

(1) Data logger terminal, RS485/422
(2) First and subsequent String Monitoring Unit
(3) Last String Monitoring Unit
(4) Terminating resistor

- Set the bus address and make the serial RS485 settings on the String Monitoring Units
  (see String Monitoring Unit documentation)
- If the device is the last one on the RS485 bus, terminate the bus with a 120 Ω terminating resistor ④
- Various Modbus devices can only be queried together if the serial communication parameters are identical (baud rate, number of data bits, parity, stop bits)

10.2 Weidmüller string measuring equipment

Transclinic xi+



String monitor connection

(1) Data logger terminal, RS485/422

(2) First and subsequent Transclinic (Example: Transclinic 14i+)

(3) Last Transclinic (Example: Transclinic 16i+)

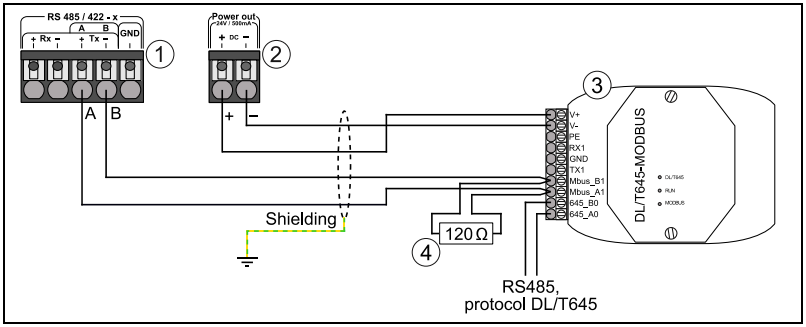
(4) Terminating resistor

- Set the bus address and make the serial RS485 settings on the Transclinic (see Transclinic documentation)
- If the device is the last one on the RS485 bus, terminate the bus with a 120 Ω terminating resistor ④
- Various Modbus devices can only be queried together if the serial communication parameters are identical (baud rate, number of data bits, parity, stop bits)

11. Signal converters

11.1 DL/T 645 to Modbus converter

MORED MRD-5020



Converter connection

(1) Data logger terminal, RS485/422

(2) Data logger terminal, Power Out

(3) DL/T 645 to Modbus converter MRD-5020

(4) Terminating resistor

- Set the bus address on the converter (see converter documentation)
- If the device is the last one on the RS485 bus, terminate the bus with a 120 Ω terminating resistor ④
- Various Modbus devices can only be queried together if the serial communication parameters are identical (baud rate, number of data bits, parity, stop bits)
- The DL/T 645 to Modbus converter MRD-5020 can query 5 DL/T 645 meter parallel. For all 5 channels of the converter a separate meter must be configured in the data logger

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