Device connection plans

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Details regarding the manual

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

Release notes

Date	Changes
2023-11-16	Format updated Extended chapters 1&2 Added chapter "Battery connection plans" Added sensor "Hukseflux SR05-D1A3"

Contents

1. Advice on using the user manual

1.1 Purpose of this user 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.

The user manual is continuously updated. The current version can be found on our website: www.meteocontrol.com.

1.2 Target group and qualification

This manual is intended for persons who are responsible for planning the installation, installing, starting up, operating, and maintaining the blue'Log. The activities described in this document may only be carried out by qualified personnel. Qualified personnel must meet the following criteria:

- Training in the installation and configuration of IT systems
- Training in hazards and risks when installing, repairing and operating electrical equipment and systems.
- Training for the installation and commissioning of electrical equipment and systems
- Knowledge of the relevant laws, standards and guidelines
- Knowledge of and compliance with this document with all safety instructions

DANGER
Danger due to improper handling
• The staff responsible for the installation, operation and maintenance of the system must have read and understood this user manual before the devices can be installed and used safely!
• The manuals and documentation must be kept by the system and be available at all times.

meteocontrol GmbH accepts no liability for personal injury, damage to property, or system malfunctions and their consequences, insofar as these result from non-observance of this user manual.

1.3   Warranty and liability

The scope, period and form of the warranty are specified in the general terms and conditions of meteocontrol GmbH. Further information on warranty and liability can be found at www.meteocontrol.com.

meteocontrol rejects any liability for damage arising from the non-observance of the user manual. This applies, in particular, for damage from:

- Unintended use
- Faulty operation
- Wrongly chosen materials and tools
- Faulty or non-executed maintenance and repairs

In cases of control and regulation ("Power Control"), meteocontrol GmbH accepts no liability for events and occurrences outside of its control, such as:

- The correctness of control commands given by an energy supply company or failure to implement control commands
- Hardware and/or software faults on the part of the system operator
- End-user switching processes
- Any liability for damages caused by events and occurrences such as lost profits, grid instability, damage to parts of the customer's system, for instance of an inverter, shall remain expressly excluded.

2.   Safety

This chapter contains general safety regulations that must be followed when connecting devices to the blue'Log. Failure to do so can result in injury or death and/or damage the blue'Log and connected devices. Read these safety regulations carefully before you start work.

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.
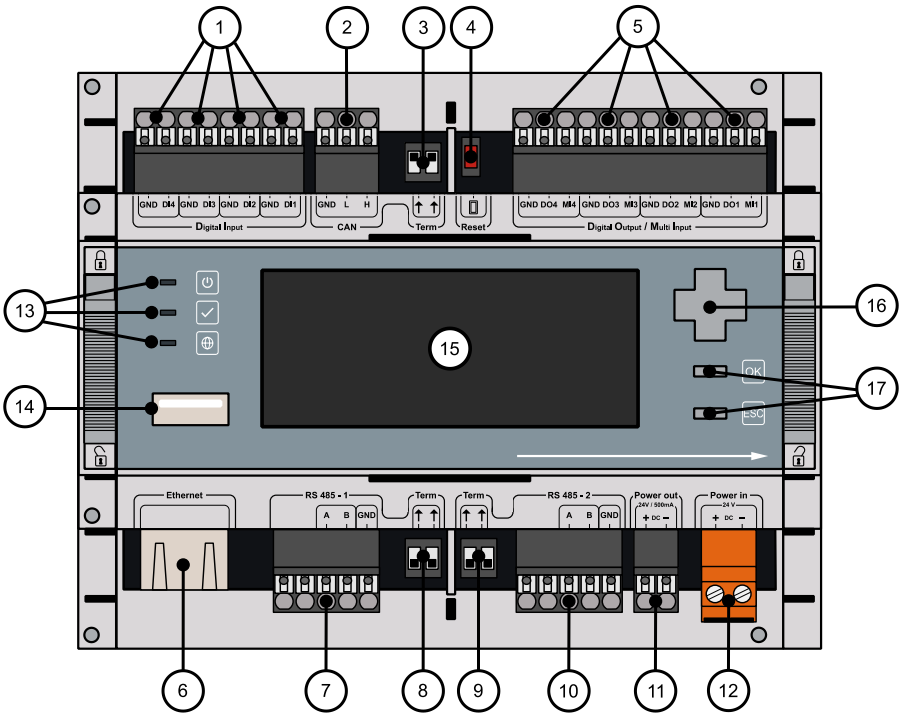
3. Overview of interfaces: blue'Log front panel

Figure 1 Overview of interfaces on the blue'Log front panel

(1) Digital input (DI1–DI4)
(2) CAN
(3) CAN termination
(4) Reset
(5) Digital output / multi-input
    (DO1 – DO4, MI1 – MI4)
(6) Ethernet
(7) RS485 -1
(8) Termination RS 485 - 1

(9) Termination RS 485 - 2
(10) RS485- 2
(11) Power out (24V DC / 500mA)
(12) Power in (24 V DC)
(13) LEDs: Power, status, online
(14) USB interface
(15) Display
(16) Control pad
(17) Buttons: OK, ESC

4.   Cabling

4.1   RS485

The blue'Log is equipped with two RS485 interfaces (RS485-1 und RS485-2) for connecting bus devices. These can query information from typical bus devices such as inverters, energy meters, string monitoring systems and power analyzers. Sensors and meters can be queried together if they communicate via Modbus.

Please note the following regarding the bus cabling:

- Each RS485 interface supports only a single protocol (for example, Modbus).
- Devices from different brands or categories with a Modbus RTU protocol can be mixed at one bus line. However, this is not recommended because it reduces the performance and quality of Monitoring and Power Control functions.
- If devices from different brands or categories with a Modbus RTU protocol are connected to one RS485 interface, then the baud rate and protocol frame of the RS485 settings must be the same (see Compatibility list).
- The blue'Log functions exclusively as a Master on the bus.
- Observe the maximum permitted number of bus devices (see Compatibility list).
- The order of the bus devices on the bus is unimportant.
- A repeater must be used 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 blue'Log does not have its own grounding.
- When wiring the bus wires, the AC and DC cables must be routed separately.
- Do not switch the bus signal wires.
- Manufacturers interpret the underlying standard of the RS485 interface differently. This means that the A and B wire labels may be different depending on the manufacturer. The + and – indicators, on the other hand, are unambiguous.
- To prevent reflections, the bus must always be terminated with a parallel terminator.
- For more information, see the device connection plans.

4.2 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 blue'Log has integrated terminating resistors, which can be turned on/off via the termination switches.
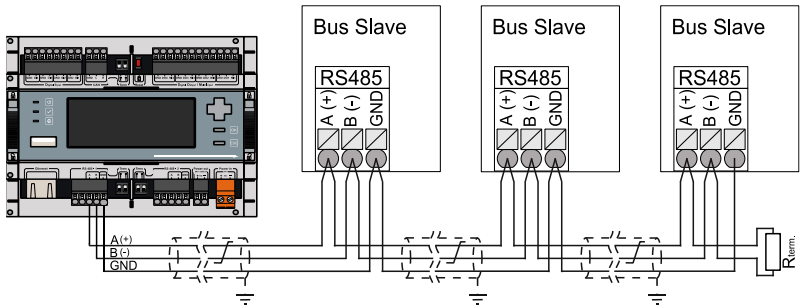

Figure 2 Daisy chain wiring RS485

4.3   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 lines.

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.
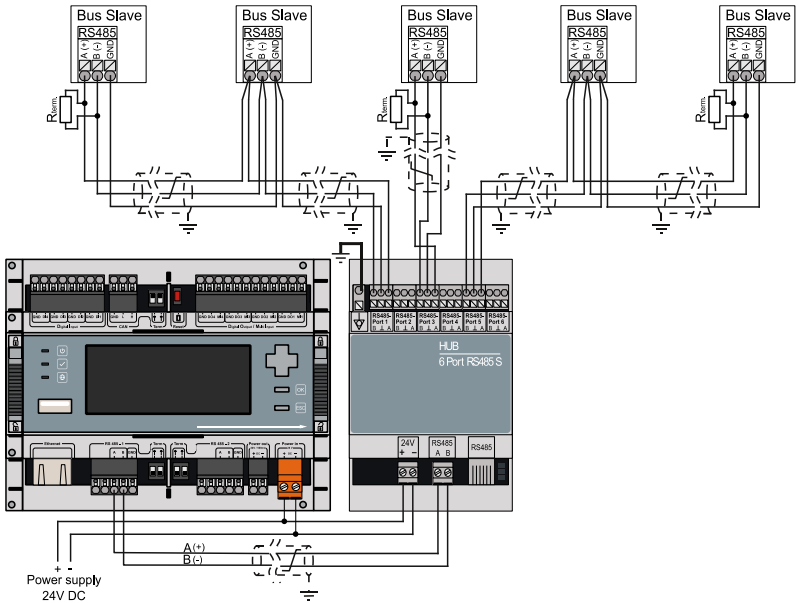

Figure 3 Star wiring RS485

5.   Inverter connection plans

You can connect inverters to the blue'Log via the following interfaces:

- Ethernet
- RS485 – 1/2

For detailed information regarding the connection of inverters, please refer to the inverter manufacturer documentation.

6.   Sensor connection plans

6.1   Irradiance sensors
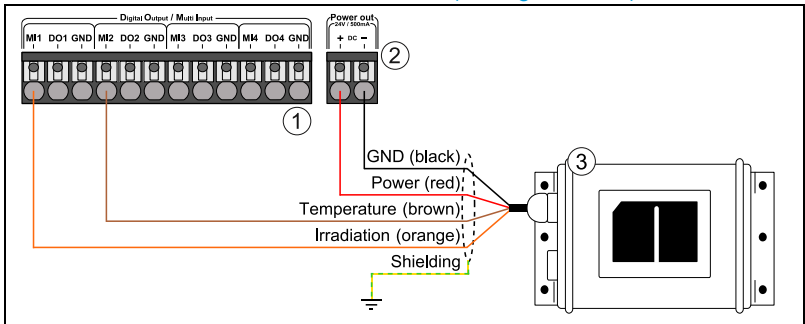### Si-V-010, Si-V-010-T, Si-I-420, Si-I-420-T (analog interface)

Figure 4 Sensor connection

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

Connection

Wire color	Use
Black	Ground
Red	Power supply (12 … 28 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-V-010	Irradiance	Analog 0…10 V	W/m^2	150	0
	-	-	-	-	-
Si-V-010-T	Irradiance	Analog 0…10 V	W/m^2	150	0
	Temperature	Analog 0…10 V	°C	13	-40
Si-I-420	Irradiance	Analog 4…20 mA	W/m^2	93.75	-375
	-	-	-	-	-
Si-I-420-T	Irradiance	Analog 4…20 mA	W/m^2	93.75	-375
	Temperature	Analog 4…20 mA	°C	8.125	-72.5

Si-RS485TC-T-MB, Si-RS485TC-2T-MB, Si-RS485TC-T-TM-MB (Modbus RTU)
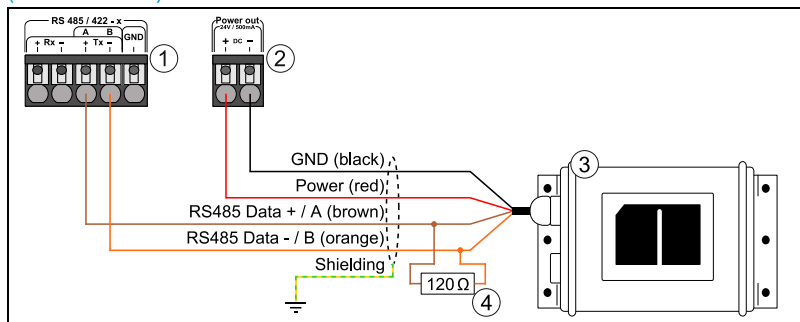
Figure 5 Sensor connection

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

Connection

Wire color	Use
Black	Ground
Red	Power supply (12 … 28 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)

6.2   Pyranometers
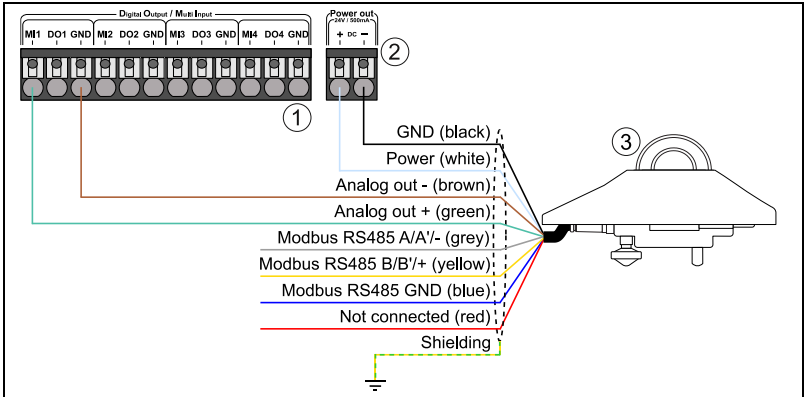### Kipp & Zonen SMP3, SMP10, SMP11 (analog interface)

Figure 6 Sensor connection

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

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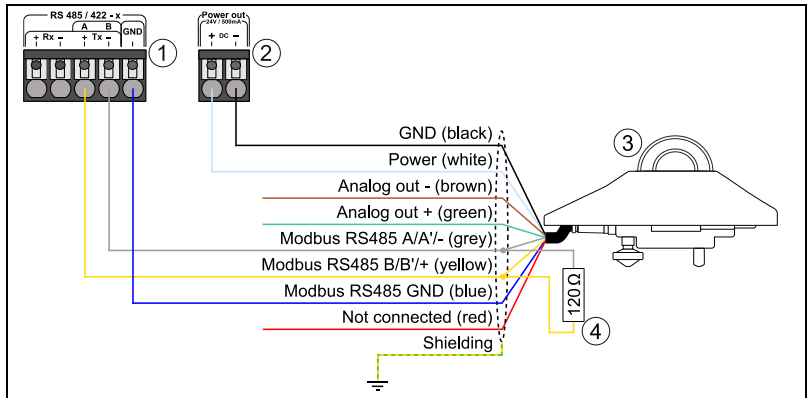
Kipp & Zonen SMP3, SMP10, SMP11 (Modbus RTU)

Figure 7 Sensor connection

(1) Data logger terminal, RS485
(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

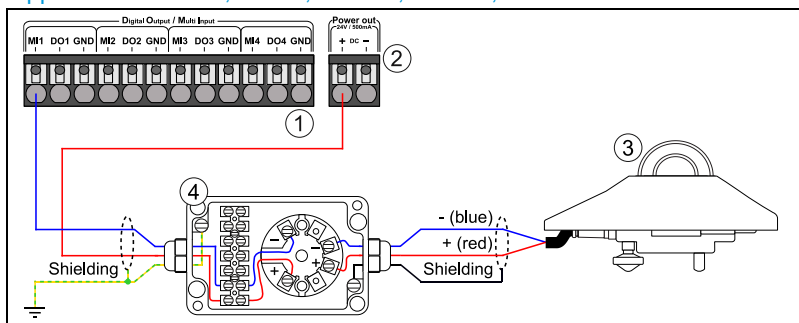## Kipp & Zonen CMP3, CMP6, CMP11, CMP21, CMP22 with AMPBOX

Figure 8 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
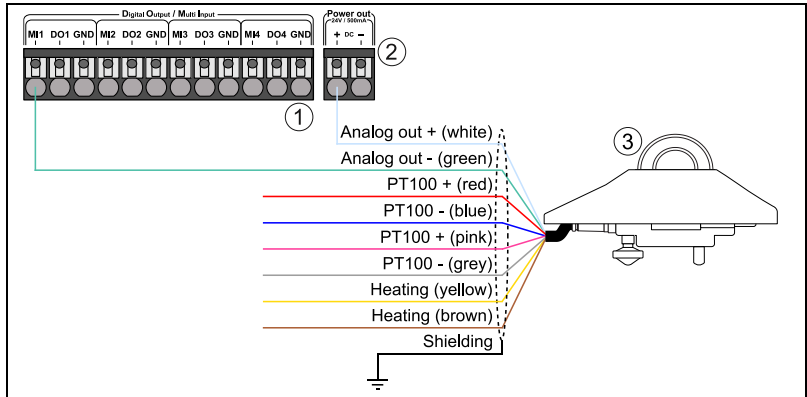
Hukseflux SR20-TR

Figure 9 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
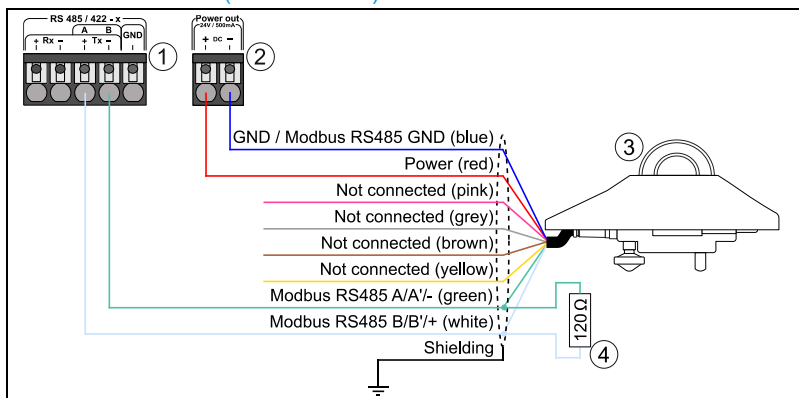
Hukseflux SR20-D1 (Modbus RTU)

Figure 10 Sensor connection

(1) Data logger terminal, RS485   (3) Pyranometer
(2) Data logger terminal, Power Out   (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
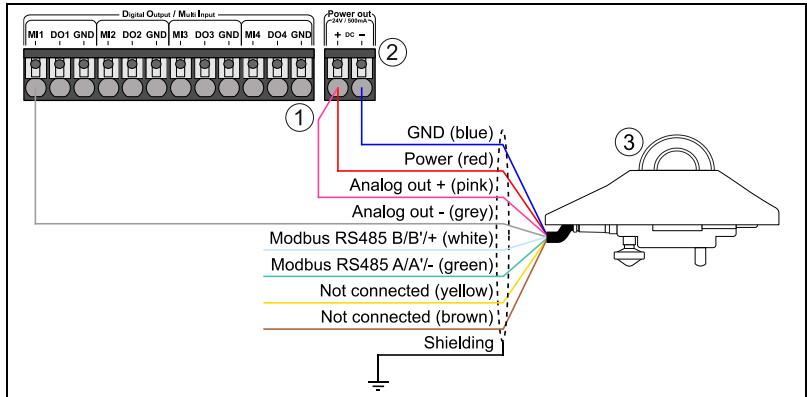
Hukseflux SR20-D2 (analog interface)

Figure 11 Sensor connection

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

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
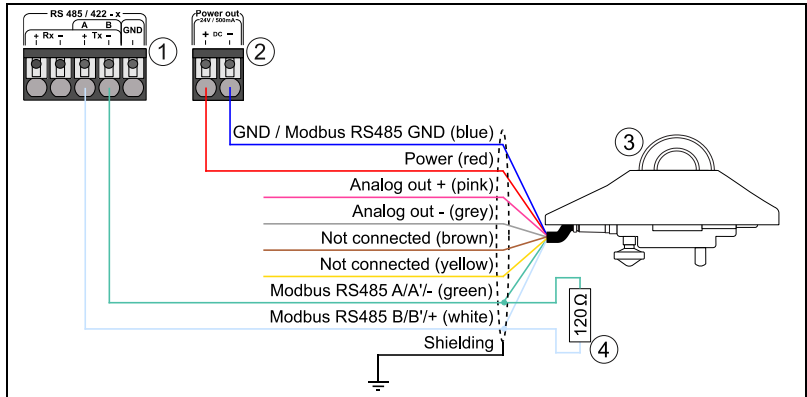
Hukseflux SR20-D2 (Modbus RTU)

Figure 12 Sensor connection

(1) Data logger terminal, RS485   (3) Pyranometer
(2) Data logger terminal, Power Out   (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
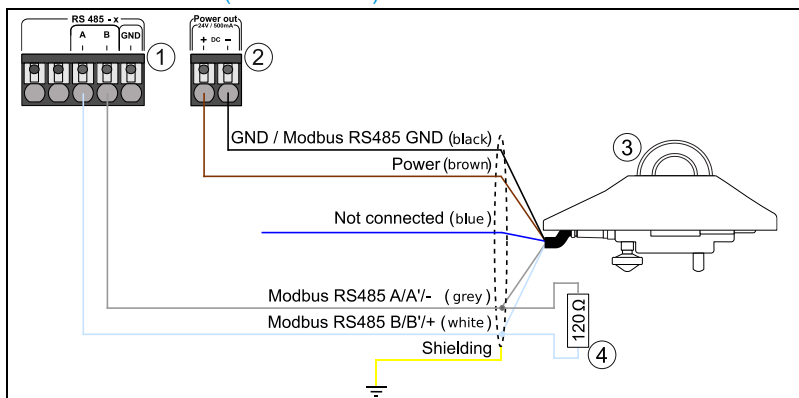
Hukseflux SR30-D1 (Modbus RTU)

Figure 13 Sensor connection

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

Connection

Wire color	Use
Black	GND / Modbus RS485 GND
Brown	Power supply (8 … 30 V DC)
Blue	Not used
Grey	RS485 Modbus interface B (-)
White	RS485 Modbus interface A (+)
Yellow	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
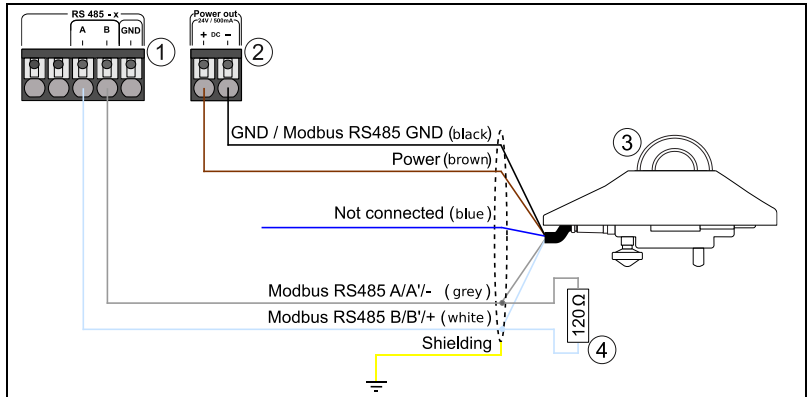
Hukseflux SR05-D1A (Modbus RTU)

Figure 14 Sensor connection

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

Connection

Wire color	Use
Black	GND / Modbus RS485 GND
Brown	Power supply (8 … 30 V DC)
Blue	Not used
Grey	RS485 Modbus interface B (-)
White	RS485 Modbus interface A (+)
Yellow	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
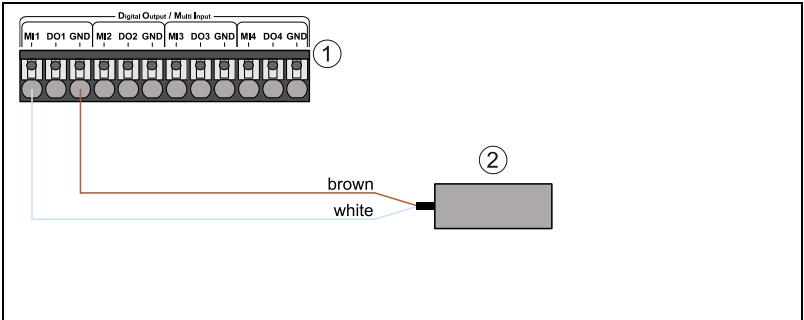
6.3 Temperature sensors

PT1000 adhesive sensor

Figure 15 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

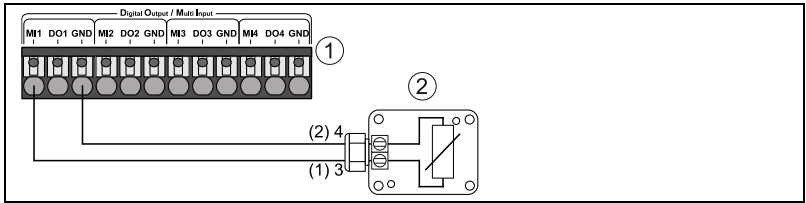| Measurement	Input	Unit	Gradient	Offset
Temperature	PT1000	°C	1	0

PT1000 sensor in the housing

Figure 16 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

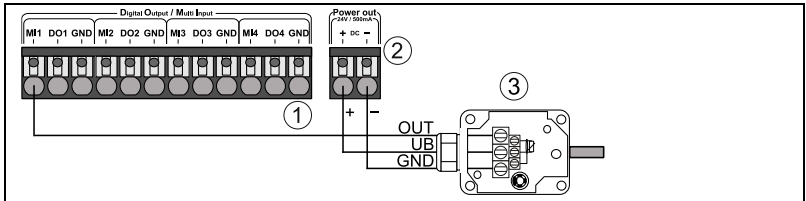| Measurement	Input	Unit	Gradient	Offset
Temperature	PT1000	°C	1	0

PT1000 sensor with integrated inverter

Figure 17 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

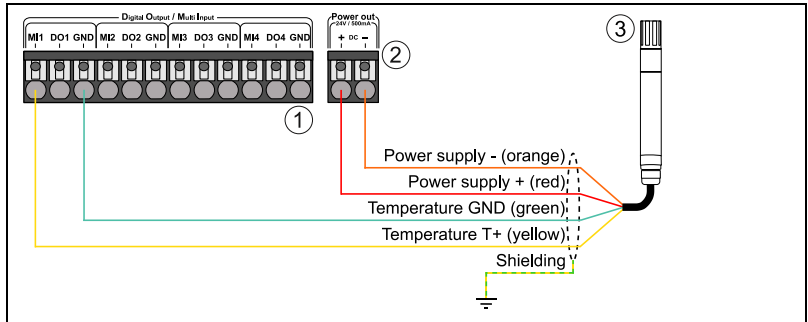| Measurement	Input	Unit	Gradient	Offset
Temperature	PT1000	°C	1	0

PT100 meteocontrol compact

Figure 18 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

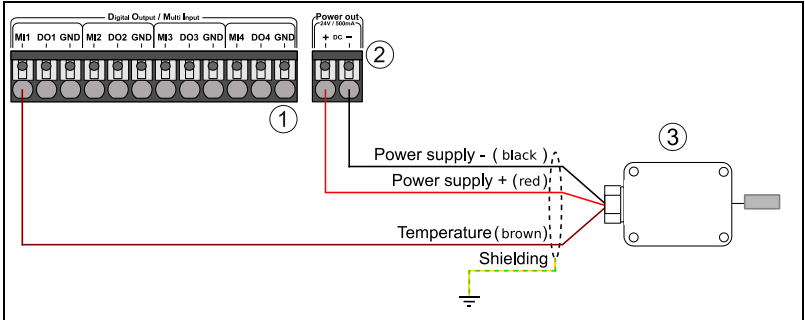| Measurement	Input	Unit	Gradient	Offset
Temperature	Analog 0…10 V	°C	10	-30

Tm-I-4090 module temperature sensors

Figure 19 Sensor connection

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

(3) Tm-I-4090 module temperature
    sensor

Connection

Wire color	Use
Black	Power supply -
Red	Power supply + (12 … 28 V DC)
Brown	Temperature signal (4 … 20 mA)

Configuration data

Measurement	Input	Unit	Gradient	Offset
Temperature	Analog 4 … 20 mA	°C	8.125	-72.5

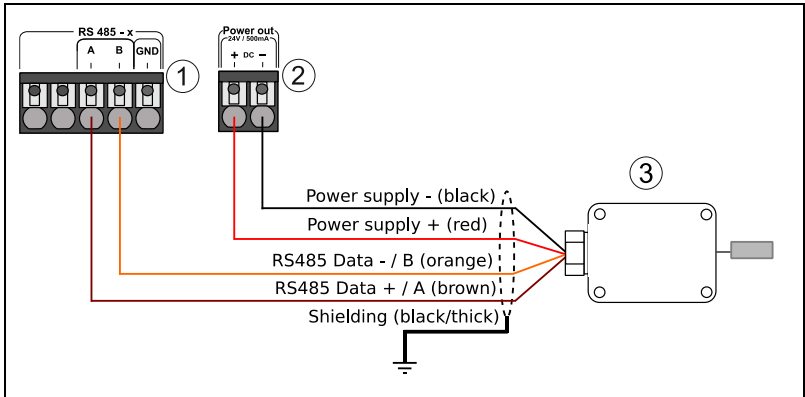## Ta-ext-RS485-MB ambient temperature sensor (Modbus RTU)

Figure 20 Sensor connection

(1) Data logger terminal, RS485 (3) Ta-ext-RS485-MB
(2) Data logger terminal, Power Out

Connection

Wire color	Use
Black	Power supply -
Red	Power supply + (10 … 28 V DC)
Brown	RS485 Modbus interface A (+)
Orange	RS485 Modbus interface B (-)
Black (thick)	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
- Various Modbus devices can only be queried together if the serial communication parameters are identical (baud rate, number of data bits, parity, stop bits)
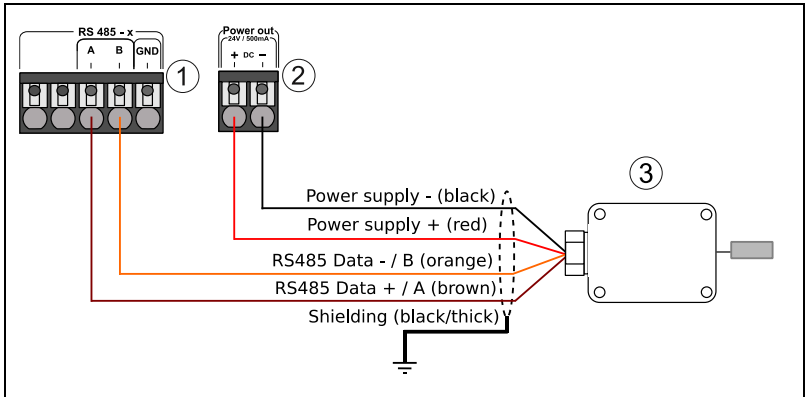
Tm-RS485-MB module temperature sensor (Modbus RTU)

Figure 21 Sensor connection

(1) Data logger terminal, RS485   (3) Tm-RS485-MB
(2) Data logger terminal, Power Out

Connection

Wire color	Use
Black	Power supply -
Red	Power supply + (10 … 28 V DC)
Brown	RS485 Modbus interface A (+)
Orange	RS485 Modbus interface B (-)
Black (thick)	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
- Various Modbus devices can only be queried together if the serial communication parameters are identical (baud rate, number of data bits, parity, stop bits)

6.4   Hygro-thermal sensors
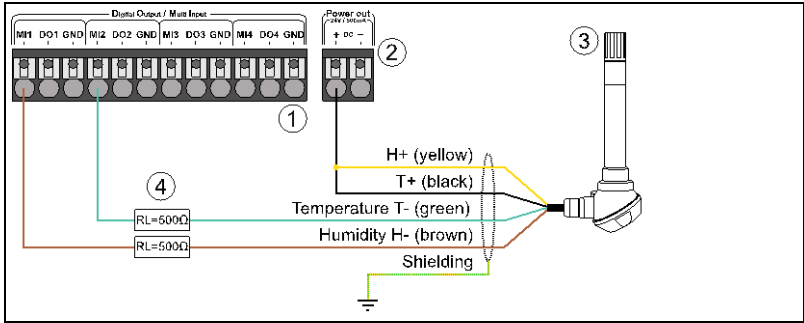### meteocontrol compact hygro-thermal sensor

Figure 22 Sensor connection

(1) Data logger terminal,   (3) Hygro-thermal sensor
     digital output / multi-input
(2) Data logger terminal, Power Out (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 V DC at the sensor the load resistance (cable + input resistance data logger) should be between 600 and 700 Ohm to obtain the best 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.

6.5 Wind speed sensors

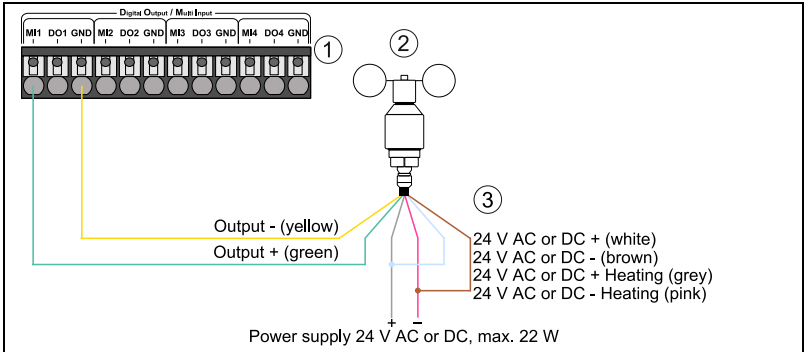### meteocontrol compact wind speed sensor (0…10 V) / (4…20 mA)

Figure 23 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

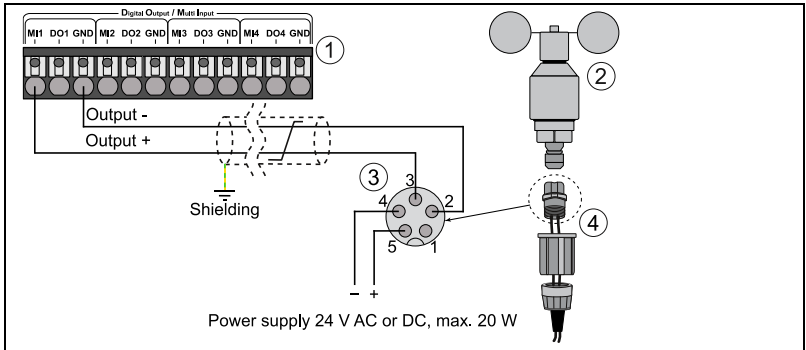## meteocontrol classic wind speed sensor (0…10 V) / (4…20 mA)

Figure 24 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

6.6 Wind direction sensors

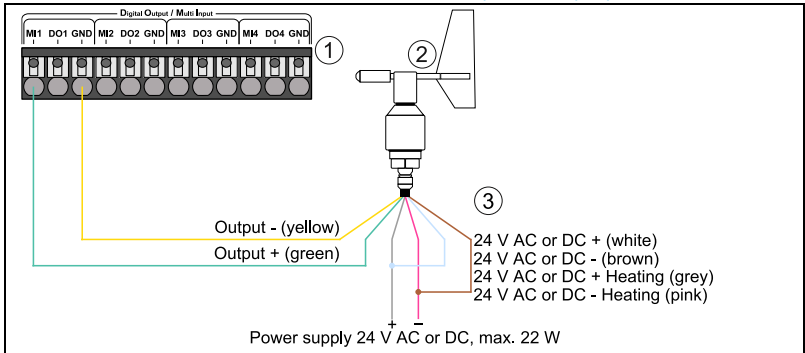### meteocontrol compact wind direction sensor (0…10 V) / (4…20 mA)

Figure 25 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

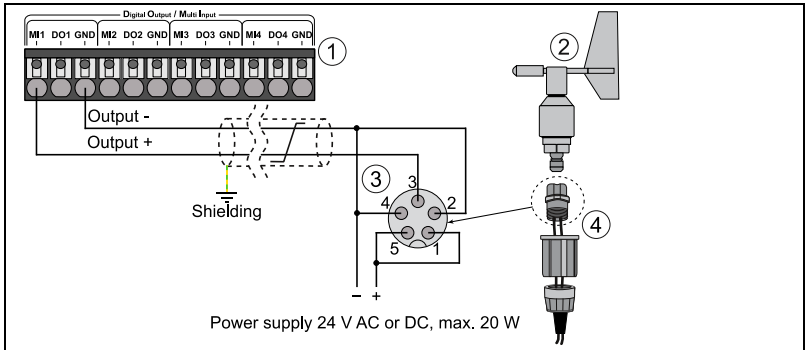## meteocontrol classic wind direction sensor (0…10 V) / (4…20 mA)

Figure 26 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

6.7 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
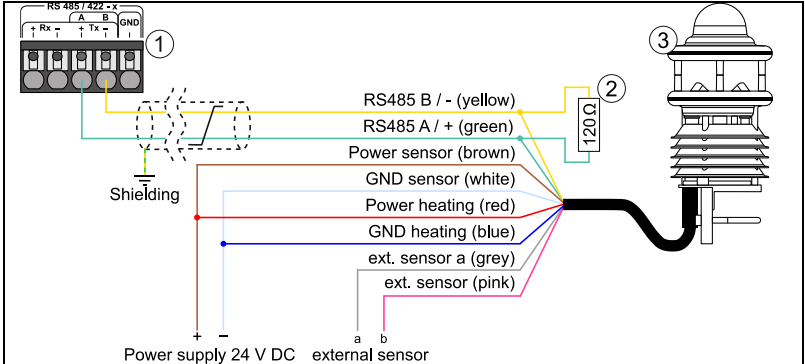

Figure 27 Sensor connection

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

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 the 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)

7. Power quality analyzer connection plans

7.1 Janitza power quality analyzers

Device	Connection via Modbus TCP	Connection via Modbus RTU	
		blue'Log	Janitza
UMG 96RM	✓	RS485 – A RS485 – B	RS485 – A (17) RS485 – B (16)
UMG 103 CBM	✓ -	RS485 – A RS485 – B	RS485 – A RS485 – B
UMG 104	✓ -	RS485 – A RS485 – B	RS485 – A (23) RS485 – B (22)
UMG 508	✓	RS485 – A RS485 – B	9-pole DSUB socket
UMG 509	✓	RS485 – A RS485 – B	RS485 – A (2) RS485 – B (3)
UMG 511	✓	RS485 – A RS485 – B	9-pole DSUB socket
UMG 512	✓	RS485 – A RS485 – B	RS485 – A (2) RS485 – B (3)
UMG 604	✓	RS485 – A RS485 – B	RS485 – A (23) RS485 – B (22)
UMG 605	✓	RS485 – A RS485 – B	RS485 – A (23) RS485 – B (22)

For connection via Modbus TCP

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

For connection via Modbus RTU

- 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
- 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

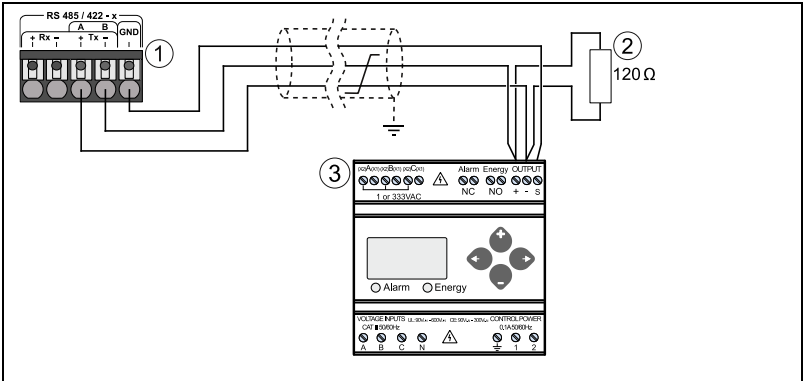## 7.2 Veris Industries power quality analyzers

E51C2 (Modbus RTU)

Figure 28 Power quality analyzer connection

(1) Data logger terminal, RS485   (3) Power quality analyzer
(2) 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 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

8. Energy meter connection plans

8.1 3-phase energy meter

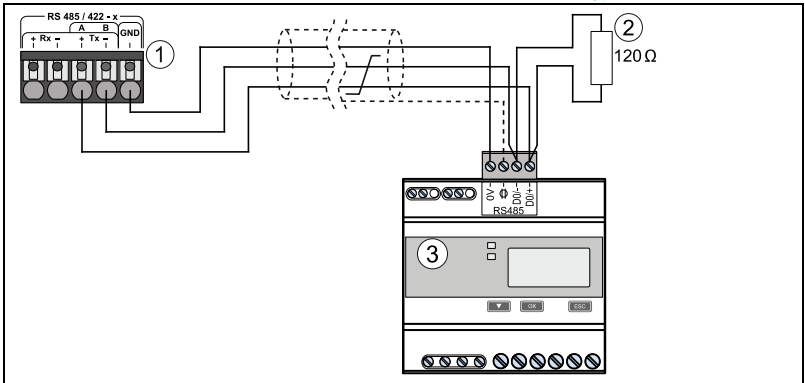### Schneider Electric IEM 315x, IEM 325x, IEM 335x energy meter

Figure 29 Energy meter connection

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

- 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

9. String measuring equipment

9.1 meteocontrol string measuring equipment

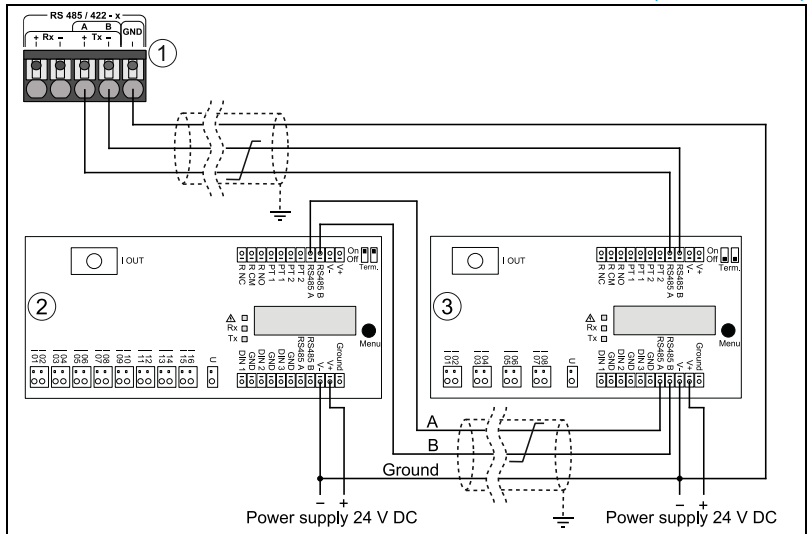i'catcher 8-8, i'catcher 8-1B, i'catcher 16-1B, i'catcher 24-1B (Modbus RTU)

Figure 30 String monitor connection

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

- 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 Monitoring Units
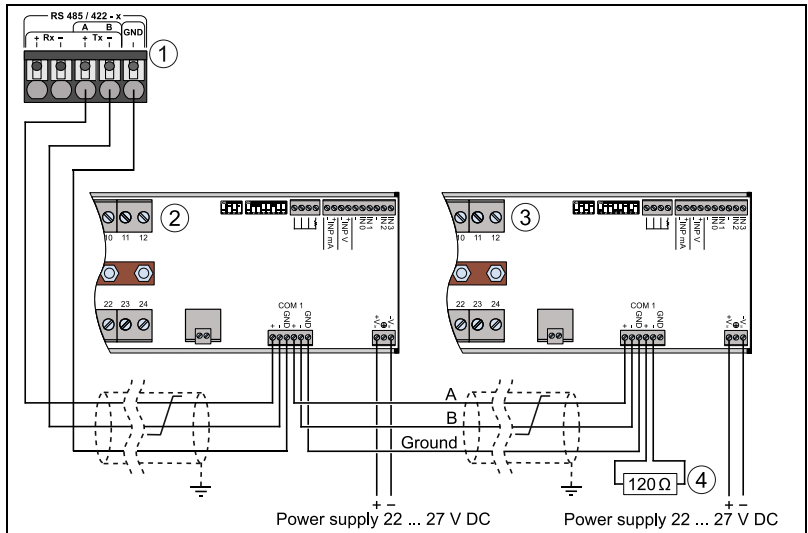## SMU 0825, SMU 1225, SMU 1625, SMU 2422 (Modbus RTU)

Figure 31 String monitor connection

(1) Data logger terminal, RS485
(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)

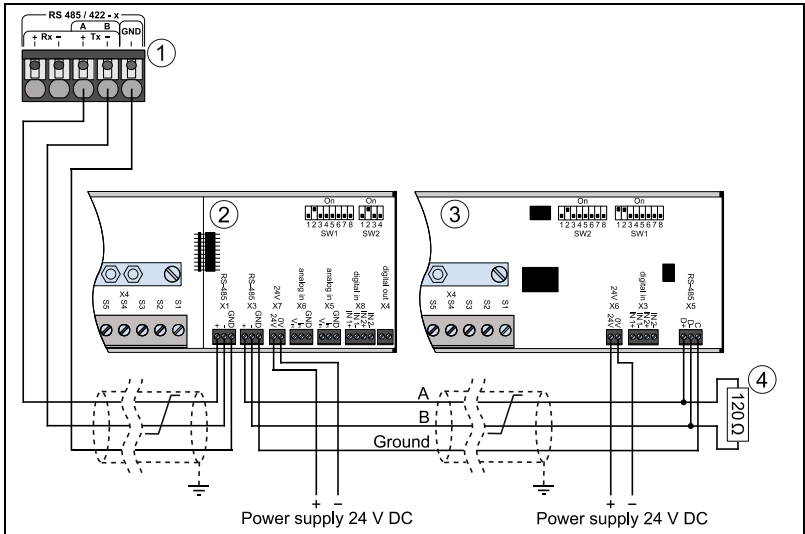## 9.2   Weidmüller string measuring equipment

Transclinic xi+

Figure 32 String monitor connection

(1) Data logger terminal, RS485

(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)

10. Battery connection plans

You can connect a battery to the blue'Log via the following interfaces:

- Ethernet
- RS485 – 1/2

For detailed information regarding the connection of batteries, please refer to the battery manufacturer documentation.