

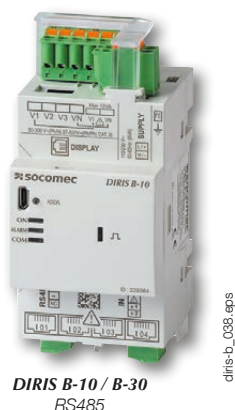


DIRIS B

Multifunction measuring unit - PMD

measurement, monitoring and event analysis with smart sensors - modular format

Single-circuit metering,
measurement &
analysis



diris_b_038.eps

The solution for

- > Industry
- > Building
- > Infrastructure
- > Local authority



Strong points

- > Plug & Play
- > Global accuracy class 0.5 in accordance with IEC 61557-12
- > Multi-circuit
- > Communication

Integrated technologies



For more information see our website www.socomec.com

Conformity to standards

- > UL E257746
- > IEC 61557-12
- > EN 50160
- > ISO 14025



Configuration
with Easy Config System.

Function

The DIRIS B is a power monitoring device in a modular format that communicates via RS485. The 4 RJ12 independent current inputs of the device allow it to manage several types and number of circuits: for example, 4 single-phase loads or 1 three-phase load + 1 single-phase load.

The DIRIS B is connected to current sensors (RJ12 connection) that are suitable for all types of installation: solid TE, split-core TR/ITR, and flexible TF current sensors.

Advantages

Plug & Play

A rapid RJ12 connection makes wiring easy and reliable and prevents wiring errors. Automatically addressing and configuring the product (communication address, load type, type and ratio of current sensor) allow you to simplify implementation and to save time.

Class 0.5 in accordance with IEC 61557-12



- Class 0.2 for the meter alone.
- Class 0.5 from 2% to 120% of nominal current for the global measurement chain (associated with TE/ITR/TF current sensors).

Multi-circuit

- 4 current measurement inputs allow you to configure multiple circuits in order to optimise the number of measurement devices per installation.

Communication

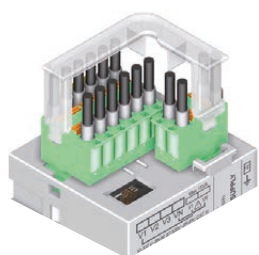
- The DIRIS B can be connected to:
 - a remote DIRIS D-30 screen for displaying measurement and metering data.
 - DIRIS Digiware M-50/M-70 gateways for centralisation and communication of data via Ethernet. DIRIS Digiware M-70 embeds WEBVIEW-M, a webserver for remote visualisation of measurement data.
 - optional modules for more communication options including a second RS485 port or PROFIBUS DP protocol. Digital or Analog input/output, as well as temperature input modules can also be connected.

| Application | Local metering | Local analysis |
|--|---|---|
| |  |  |
| DIRIS B | B-10 RS485 | B-30 RS485 |
| Number of current inputs | 4 | 4 |
| Metering | | |
| ± kWh, ± kvarh, kVAh | • | • |
| Load curves | | • |
| Multi-tariff | • | • |
| Multi-measurement | | |
| U12, U23, U31, V1, V2, V3, f | • | • |
| U system, V system | • | • |
| I1, I2, I3, In, ΣP, ΣQ, ΣS, ΣPF | • | • |
| P, Q, S, PF per phase | • | • |
| Predictive power | • | • |
| Ph/N unbalance | • | • |
| Ph/Ph unbalance | • | • |
| Current unbalance (Inba, Idir, linv, Ihom, Inb) | • | • |
| Phi, cos Phi, tan Phi | • | • |
| Quality analysis | | |
| THDv1, THDv2, THDv3, THDu12, THDu23, THDu31 | • | • |
| THDi1, THDi2, THDi3, THDin | • | • |
| Individual harmonics U & V (up to 63 rd) | | • |
| Individual harmonics I (up to 63 rd) | | • |
| Crest factor I1, I2, I3, In | | • |
| Crest factor V1, V2, V3, U12, U23, U31 | | • |
| Voltage dips, interruptions, swells (EN 50160) | | • |
| Overcurrents | | • |
| Alarms | | |
| On threshold | | • |
| Inputs/outputs | | • |
| History of average values | | |
| 45 days (max) | | • |
| Communication | | |
| RS485 Modbus | • | • |
| 2 inputs (status/pulse) | • | • |

Accessories

DIRIS B sealing cover

- Prevents access to the cabling of the monitoring device.



USB configuration cable (2 m)

- Advanced configuration of DIRIS B gateways can be achieved using the EASY CONFIG software via Ethernet or direct USB connection.

DIRIS B

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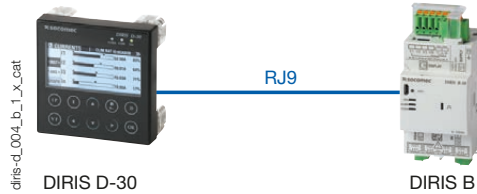
DIRIS D-30 display

DIRIS D-30



diris-d_001_a_1_cat

Connection



diris-d_004_b_1_LX_cat

DIRIS D-30

DIRIS B

Optional modules

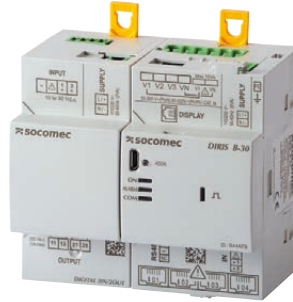
DIRIS O



diris-b_001_a

Optional module

DIRIS B



Optional modules (4 max.)*

- Digital inputs/outputs
- Analogue inputs/outputs
- Temperature inputs
- Communication protocols

* maximum 4 optional modules with maximum 1 temperature module and 1 communication module (Modbus, PROFIBUS).



diris-o_019_a

DIRIS O-iod

- 2 digital inputs centralises the metering pulses or the input status changes of the auxiliary contacts.
- 2 digital outputs can be connected to configurable alarms warning of exceeded thresholds (power, current, etc.) or can be piloted remotely.



diris-o_018_a

DIRIS O-ioa

- 2 inputs (4-20 mA) centralise analogue sensors (pressure, humidity, temperature, etc.)
- 2 outputs (4-20 mA) report the measurements (power, currents, etc.) to PLCs.



diris-o_020_a

DIRIS O-it

- 3 temperature inputs to be connected to PT100 or PT1000 sensors.
- Ambient air temperature.



diris-o_024_a

DIRIS O-m

- Provides a second RS485 Modbus communication port to the DIRIS B for simultaneous sending of information via RS485 to two supervision stations.

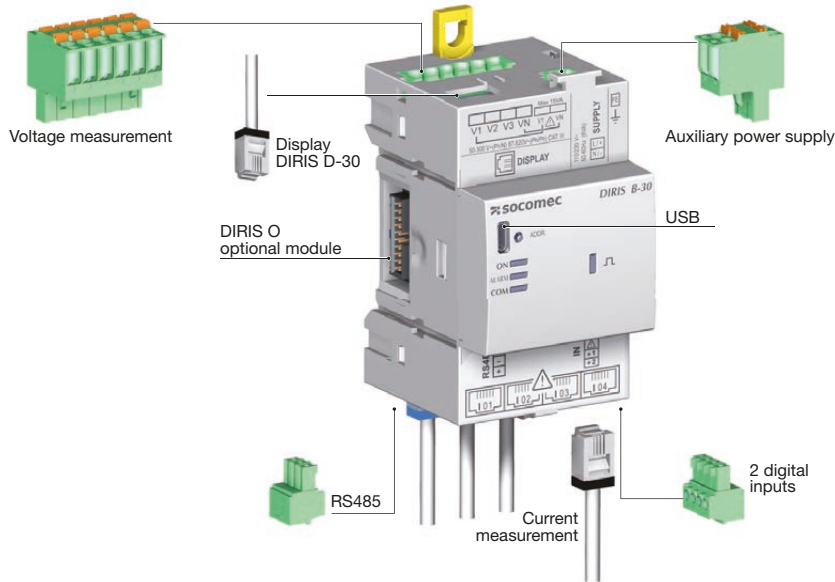


diris-o_023_a

DIRIS O-p

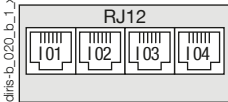
- Adds a PROFIBUS DPV1 communication port to the DIRIS B.

DIRIS B terminals

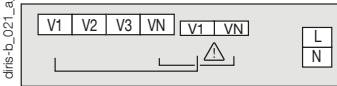


dfiris-d_027_b_1_gb_cat

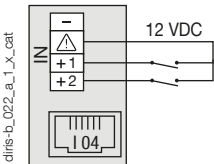
Current measurement



Voltage measurement and auxiliary power supply



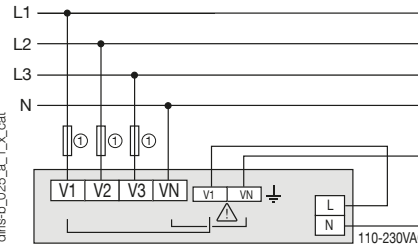
2 inputs supplied by the product



Terminals of optional DIRIS O modules

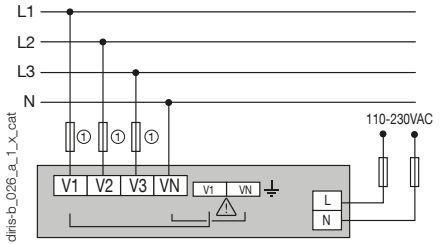
Self supply

Easy connection of the power supply from the measurement terminal (specific terminals)



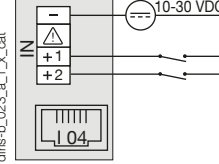
1. Fuses 0.5 A gG / 0.5 A class CC.

Separate power supply

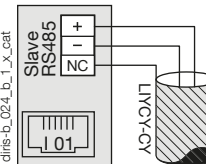


1. Fuses 0.5 A gG / 0.5 A class CC.

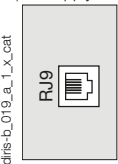
2 inputs with external power supply



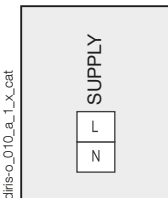
RS485



RJ9 for DIRIS D-30 (self-supply and data)

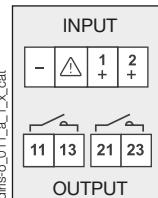


Optional module power supply



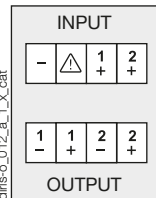
dfiris-o_010_a_1_x_cat

DIRIS O-iod



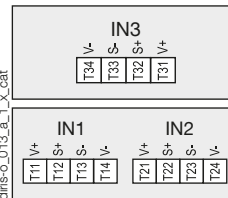
dfiris-o_011_a_1_x_cat

DIRIS O-ioa



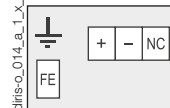
dfiris-o_012_a_1_x_cat

DIRIS O-it



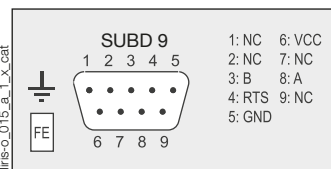
dfiris-o_013_a_1_x_cat

DIRIS O-m RS485



dfiris-o_014_a_1_x_cat

DIRIS O-p



dfiris-o_015_a_1_x_cat

DIRIS B

Multifunction measuring unit - PMD

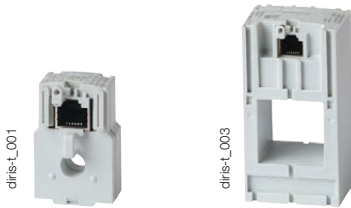
measurement, monitoring and event analysis with smart sensors - modular format

Connections

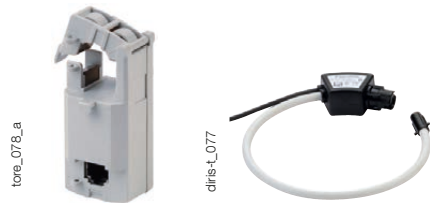
Associated current sensors

Various types of current sensors can be connected to the DIRIS B: solid-core TE, split-core TR/iTR, flexible TF current sensors. This range of sensors can be adapted to all types of new or existing installations. A rapid RJ12 connection makes wiring easy and reliable and prevents wiring errors. The DIRIS B automatically recognises the type of sensor used and its current rating. This guarantees the overall accuracy of the DIRIS B + current sensor measurement chain. For more information: see "TE, TR/iTR, TF sensors" pages.

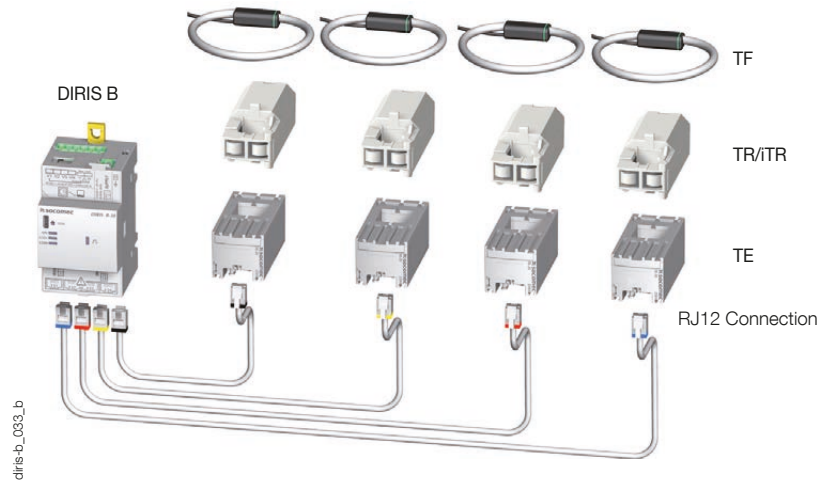
TE solid-core current sensors



TR/iTR split-core current sensors
TF flexible current sensors



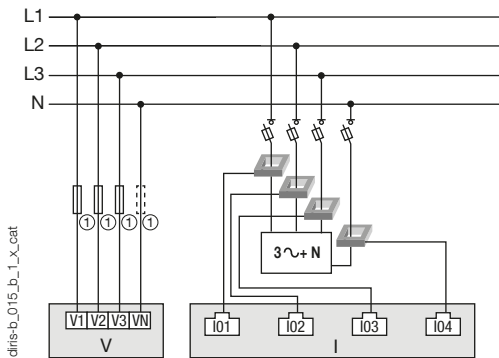
TE / TR / iTR / TF current sensors



Network and connection examples

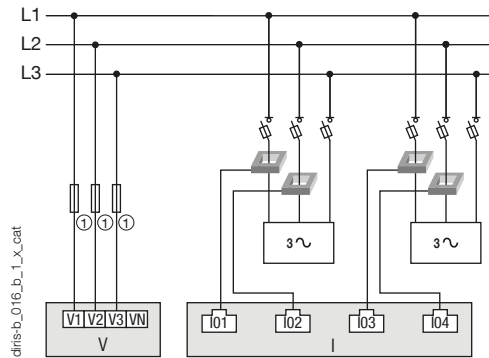
Three-phase + neutral

3P+N - 4CTs (measurement for 1 three-phase load + Neutral)



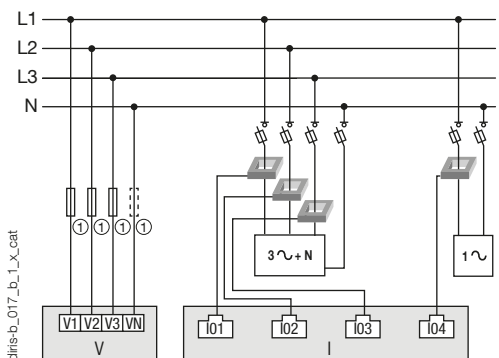
Three-phase

3P - 2CTs (2 three-phase loads without neutral)



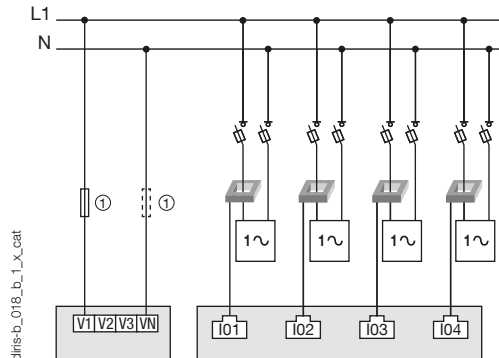
Three-phase

3P+N - 3CTs & 1P+N - 1CT (1 three-phase load & 1 single-phase load)



Single-phase

1P+N-1CT (4 single-phase loads)

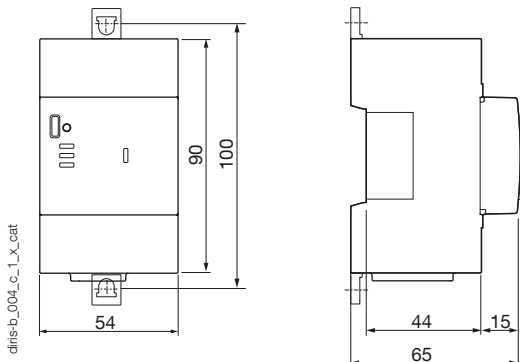


1. Fuses 0.5 A gG / 0.5 A class CC.
In case of self-supply, a fuse must be added on the neutral.

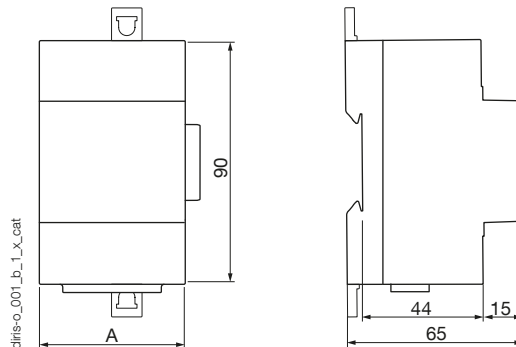


Dimensions (mm)

DIRIS B

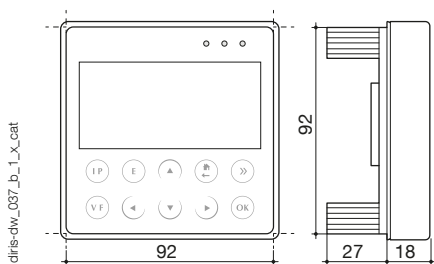


DIRIS O optional modules



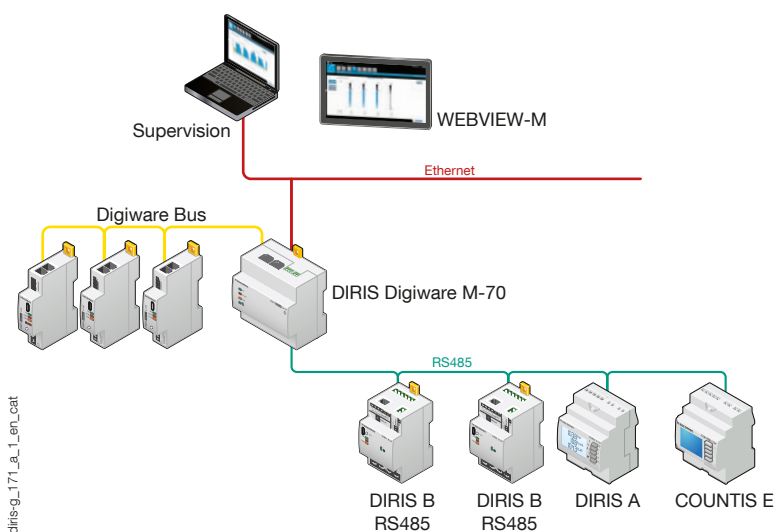
| DIRIS O optional modules | A (mm) |
|--|--------|
| DIRIS O-iod - DIRIS O-ioa - DIRIS O-it | 45 |
| DIRIS O-m - DIRIS O-p | 54 |

DIRIS D-30



Communication architecture

Example of communication architecture with DIRIS Digiware M-70 gateway and WEBVIEW-M embedded web server.



DIRIS B

Multifunction measuring unit - PMD

measurement, monitoring and event analysis with smart sensors - modular format

DIRIS B characteristics

Electrical characteristics

| Auxiliary power supply | |
|------------------------|--|
| AC voltage | 110-230 VAC ±15 % (Ph/N ou Ph/Ph) Cat III |
| Frequency | 50/60 Hz |
| Consumption | < 2 VA without display < 6VA with display |
| Connection | Removable spring-cage terminal, 2 x 2 positions, 0.5 ... 2.5 mm ² solid cable or 0.25 ... 1.5 mm ² stranded cable with ferrule |

Measurement characteristics

| Energy and power measurement | |
|--------------------------------|---|
| Accuracy | Class 0.2 DIRIS B alone |
| Active energy and active power | Class 0.5 with TE, ITR or TF current sensors Class 1 with TR current sensors |
| Reactive energy accuracy | Class 2 with TE, TR or TF current sensors |

| Power factor measurement | |
|--------------------------|---|
| Accuracy | Class 0.5 with TE, ITR or TF current sensors Class 1 with TR current sensors |

| Voltage measurement | |
|------------------------------------|--|
| Network characteristics measured | 50-300VAC (Ph/N) - 87-520VAC (Ph/Ph) - CAT III |
| Frequency range | 45 ... 65Hz |
| Frequency accuracy | Class 0.02 |
| Network type | Single-phase / Two-phase / Two-phase with neutral / Three-phase / Three-phase with neutral |
| Measurement by voltage transformer | Primary: 400 000 VAC Secondary: 60, 100, 110, 173, 190 VAC |
| Input consumption | ≤ 0.1 VA |
| Permanent overload | 300VAC Ph/N |
| Voltage measurement accuracy | Class 0.2 |
| Connection | Removable spring-cage terminal, 2 x 6 positions, 0.5 ... 2.5 mm ² solid cable or 0.25 ... 1.5 mm ² stranded cable with ferrule |

| Current measurement | |
|----------------------------|--|
| Number of current inputs | 4 |
| Associated current sensors | Solid TE , split-core TR/ITR , flexible TF current sensors |
| Accuracy | Class 0.2 DIRIS B alone Class 0.5 with TE, ITR or TF current sensors Class 1 with TR current sensors |
| Connection | RJ12 connectors with specific SOCOMEC cable |

Input characteristics

| | |
|---------------------|--|
| Number | 2 |
| Type / Power supply | Optocoupler internal polarisation (12 VDC ± 10 %) or external polarisation (10-30 VDC ± 10%) |
| Input function | Logic status, pulse meter or synchronisation pulse status (input 1) |

Communication characteristics

| DIRIS B RS485 | |
|-----------------|-----------------------------|
| Link | RS485 |
| Connection type | 2 ... 3 half duplex wires |
| Protocol | Modbus RTU |
| Speed | 1200 ... 115200 bauds |
| USB | DIRIS B RS485 configuration |

Environment characteristics

| | |
|-----------------------|-------------------------------|
| Operating temperature | -10 ... +70 °C |
| Storage temperature | -25 ... +85 °C |
| Operating humidity | 55 °C / 97% relative humidity |
| Operating altitude | 2000 m |
| Vibration | 1G from 10 to 100Hz |

DIRIS D-30 display characteristics

| Mechanical characteristics | |
|----------------------------|---|
| Screen type | Capacitive touch-screen technology, 10 keys |
| Screen resolution | 350 x 160 pixels |
| Single product connection | |
| RJ9 | Self-supply and data |
| Micro-USB | Updating |
| Degree of protection | IP65 (front face) |
| Environment | |
| Storage temperature (°C) | -20 ... +70°C |
| Operating temperature (°C) | -20 ... +70°C |
| Humidity | 95 % to 40°C |
| Installation category | CAT III |
| Degree of pollution | 2 |

DIRIS O optional modules characteristics

| Power supply ⁽¹⁾ | |
|-----------------------------|-------------------|
| AC voltage | 110-230 VAC ±15 % |
| Frequency | 50/60 Hz |

(1) No power supply on DIRIS O-it.

| DIRIS O-iod - 2 digital inputs/2 digital outputs | |
|--|--|
| Number of inputs | 2 per optional modules - max. 4 optional modules |
| Type | Optocoupler internal polarisation (12 VDC ± 10 %) or external polarisation (10-30 VDC ± 10%) |
| Function | Logic status or pulse meter |
| Number of outputs | 2 per optional modules - max. 4 optional modules |
| Type | Relay / 230 VAC ±15 % - 1 A |
| Function | Configurable alarm (current, power...) on threshold overruns or remote controlled status |
| Inputs/Outputs connection | Removable screw terminal, 4 positions, 0.14 to 1.5 mm ² stranded or solid cable |

| DIRIS O-ioa - 2 analogue inputs/2 analogue outputs | |
|--|---|
| Number of inputs | 2 per optional modules - max. 4 optional modules |
| Type | 4-20 mA |
| Function | Connection of analogue sensors (pressure, humidity, temperature...) |
| Number of outputs | 2 per optional modules - max. 4 optional modules |
| Type | 4-20 mA |
| Function | Transmission of measurement image (current, power...) to PLCs |

| DIRIS O-it - 3 temperature inputs | |
|-----------------------------------|---|
| Number of inputs | 3 external inputs + 1 measurement for ambient temperature |
| Dynamic | -20 ... 150 °C |
| Type | PT100 or PT1000 |
| Function inputs 1, 2 and 3 | Temperature measurement |

| DIRIS O-m - RS485 communication | |
|---------------------------------|--|
| Link | RS485 2 ... 3 half duplex wires |
| Protocol | Modbus RTU |
| Speed | 1200 ... 115200 bauds |
| Connection | Removable screw terminal, 3 positions, 0.14 to 1.5 mm ² stranded or solid cable |

| DIRIS O-p - PROFIBUS communication | |
|------------------------------------|---------------|
| Protocol | PROFIBUS DPV1 |

References

| DIRIS B monitoring devices | | Reference |
|---|--|------------------|
| DIRIS B-10 | RS485 - Modbus - 230 VAC | 4829 0010 |
| DIRIS B-30 | RS485 - Modbus - 230 VAC | 4829 0000 |
| DIRIS O optional modules | | Reference |
| DIRIS O-iod | 2 digital inputs / 2 digital outputs | 4829 0030 |
| DIRIS O-ioa | 2 analogue inputs/2 analogue outputs 4-20 mA | 4829 0031 |
| DIRIS O-it | 3 temperature inputs PT 100 / PT 1000 | 4829 0032 |
| DIRIS O-m | RS485 Modbus communication | 4829 0033 |
| DIRIS O-p | PROFIBUS communication | 4829 0034 |
| Accessories | To be ordered in multiples of | Reference |
| DIRIS D-30 - Single-point display | | 4829 0200 |
| RJ9 cable for DIRIS D-30 display - 1.5 m | | 4829 0280 |
| RJ9 cable for DIRIS D-30 display - 3 m | | 4829 0281 |
| DIRIS B sealing cover for I/O terminals | | 4829 0049 |
| USB configuration cable | | 4829 0050 |
| Fuse disconnect switches to protect voltage inputs (RM type) | 4 | 5701 0018 |
| Fuse disconnect switches to protect the 1-pole + neutral auxiliary power supply (RM type) | 6 | 5701 0017 |
| gG 10x38 0.5 A fuses | 10 | 6012 0000 |