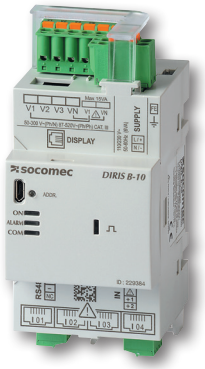
DIRIS B

Power Monitoring Device - PMD

measurement, monitoring and analysis with smart sensors - modular format



diris-b_038.eps

DIRIS B-10/B-30
RS485

Configuration with Easy Config System.

The solution for

- Industry
- Service sector
- Infrastructure
- Data centres

Strong points

- Plug & Play
- Class 0.5 in accordance with standard IEC 61557-12
- Multi-circuit
- Smart

Integrated technologies

PreciSense AutoCorrect VirtualMonitor

For further information, please visit our website www.socomec.com

Conformity to standards

- IEC 61557-12
- UL 61010 Guide PICQ File E257746
- ANSI C12.20
- EN 50160

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 unit allow it to manage several types and numbers 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) suitable for all types of installation: solid-core TE, split-core TR/iTR, and flexible TF current sensors.

Advantages

Plug & Play

A quick RJ12 connection makes wiring easy and reliable and prevents wiring errors. Automatic addressing and configuration (communication address, load type, type and ratio of current sensor) simplify implementation and save time.

Class 0.5 in accordance with standard IEC 61557-12

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

Multi-circuit

- 4 current measurement inputs enable a multi-circuit configuration to optimise the number of PMDs per installation.

Smart

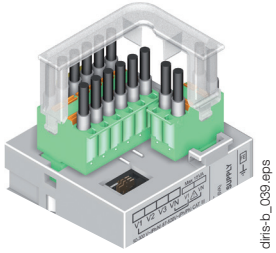
The DIRIS B can be connected to:

- 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. The M-70 gateway embeds a WEBVIEW-M Web server for remote viewing of measurement data,
- oOptional modules for more communication options including a second RS485 port or PROFIBUS DP protocol. Digital or analogue input / output modules and temperature inputs 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, Iinv, 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 63rd)		•
Individual harmonics I (up to 63rd)		•
Crest factors I1, I2, I3, In		•
Crest factor V1, V2, V3, U12, U23, U31		•
Voltage dips, interruptions and overvoltages (EN 50160)		•
Overcurrents		•
Alarms		
On threshold		•
Inputs/outputs	•	•
Trends of average values		
45 days (max)		•
Communication		
RS485 Modbus	•	•
2 inputs (status / pulse)	•	•

Accessories

Sealing kit for DIRIS B
Secures the wiring of the PMD.



USB configuration cable (2 m)
- Advanced configuration of DIRIS B can be achieved by Ethernet using EASY CONFIG software, or by direct USB connection.

DIRIS B

Power Monitoring Device - PMD

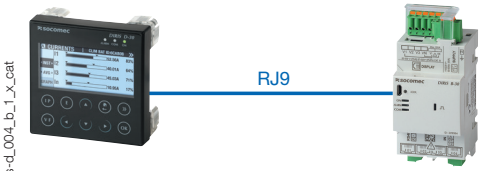
measurement, monitoring and analysis with smart sensors - modular format

DIRIS D-30 display

DIRIS D-30

diris-d_001_a_1_cat

Connexion



diris-d_004_b_1_x_cat

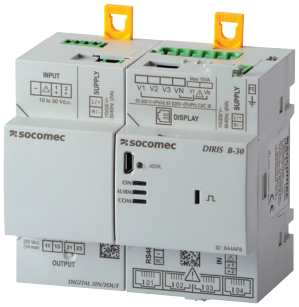
DIRIS D-30 DIRIS B

Optional modules

DIRIS O

diris-b_031_a

Optional module ***DIRIS B***



diris-b_029_a

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 enable metering pulses to be retrieved, or the uploading of information relating to the status of auxiliary contacts.
- 2 digital outputs can be connected to configurable alarms warning of exceeded thresholds (power, current, etc.) or can be remotely controlled.

diris-o_018_a

DIRIS O-ioa

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

diris-o_020_a

DIRIS O-it

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

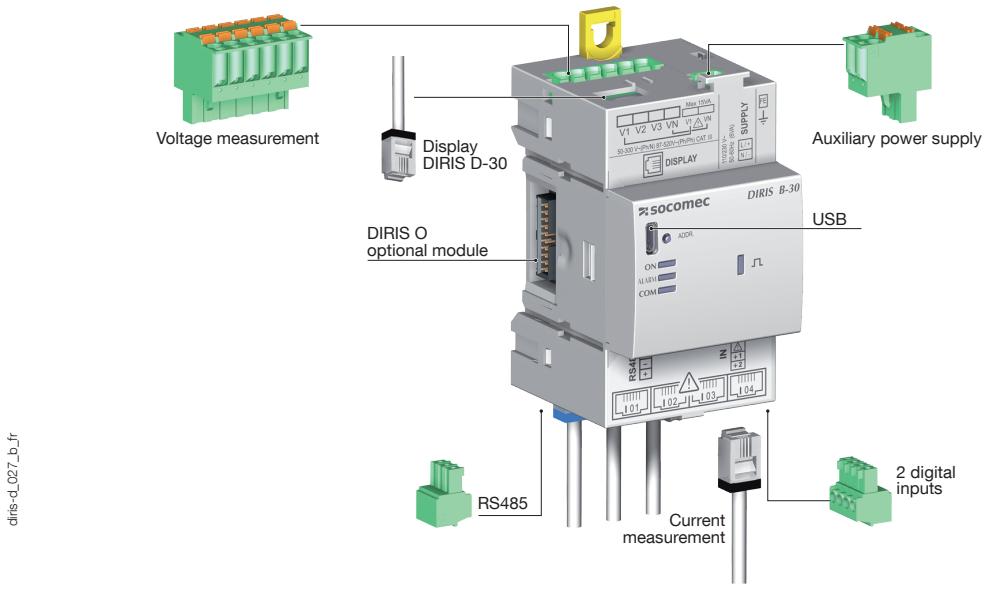
diris-o_023_a

DIRIS O-p

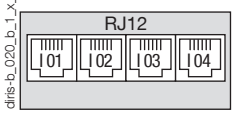
- Adds a PROFIBUS DPV1 communication port to the DIRIS B.

socomec Innovative Power Solutions

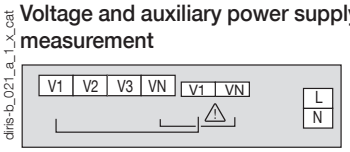
DIRIS B terminal strips



Current measurement

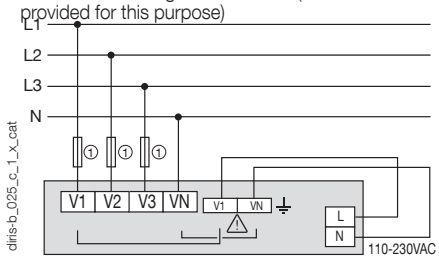


Voltage and auxiliary power supply measurement



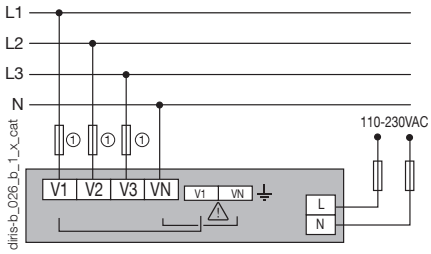
Self-powering

Possibility of easily connecting the power supply from the measuring terminal block (terminals provided for this purpose)



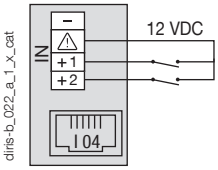
1. 0.5 A gG / 0.5 A class CC fuses.

Separate power supply

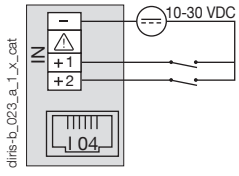


1. 0.5 A gG / 0.5 A class CC fuses.

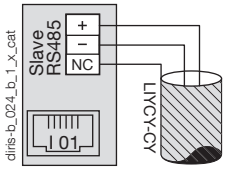
2 inputs powered by the product



2 inputs with external power supply

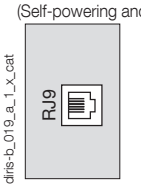


RS485



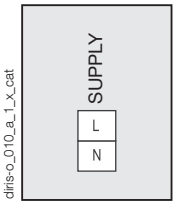
RJ9 for DIRIS D-30

(Self-powering and data)

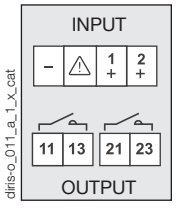


DIRIS O optional module terminal blocks

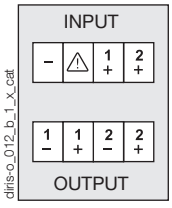
Power supply for optional modules



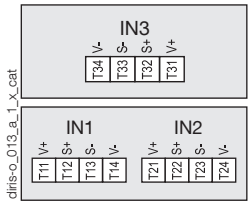
DIRIS O-iod



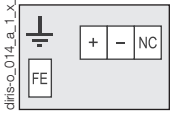
DIRIS O-ioa



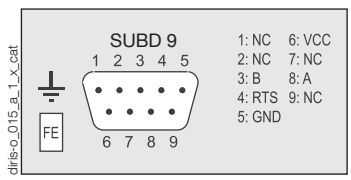
DIRIS O-it



DIRIS O-m RS485



DIRIS O-p



NC: not connected

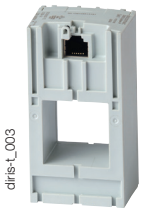
Connections

Associated current sensors

Various types of current sensor are associated with the DIRIS B: solid-core (TE), split-core (TR/iTR) or flexible (TF). This range of sensors can be adapted to all types of new or existing installations. A quick RJ12 connection makes wiring easy and reliable and prevents wiring errors. The rating and type of sensor are recognised automatically by DIRIS B. This makes it possible to ensure overall accuracy of the DIRIS B measurement chain + current sensors.

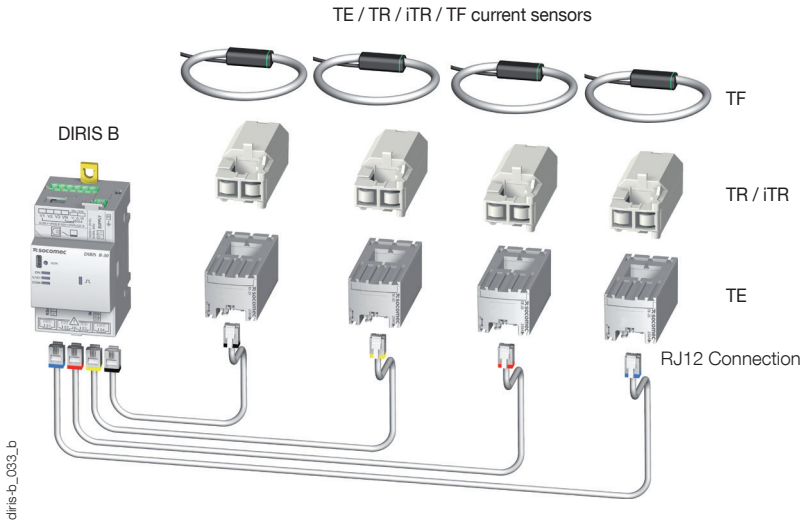
For further information, see the page on "TE, TR/iTR, TF sensors".

Solid-core TE



Split-core TR/iTR

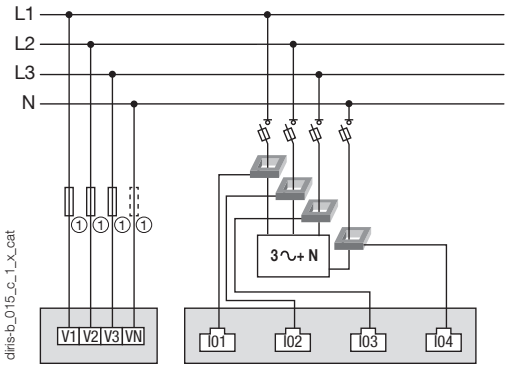
TF Flexible current sensors



Networks and connection examples

Three phase + Neutral

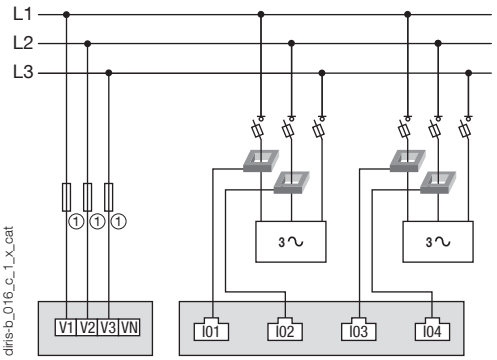
3P+N - 4CT (1 three-phase load + measured Neutral)



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

Three-phase

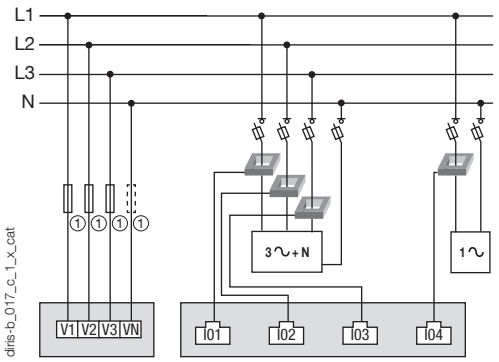
3P - 2CT (2 three-phase loads without neutral)



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

Three-phase

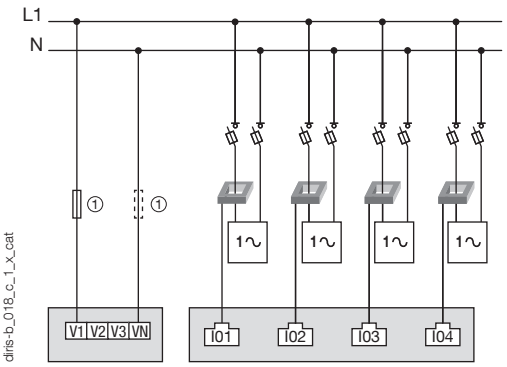
3P+N - 3CT & 1P+N - 1CT (1 three-phase load & 1 single-phase load)



1. 0.5 A gG / 0.5 A class CC fuses.
If self-powered, a fuse must always be added to the Neutral.

Single-phase

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

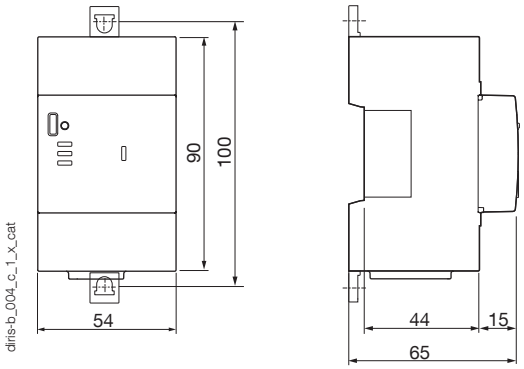


1. 0.5 A gG / 0.5 A class CC fuses.

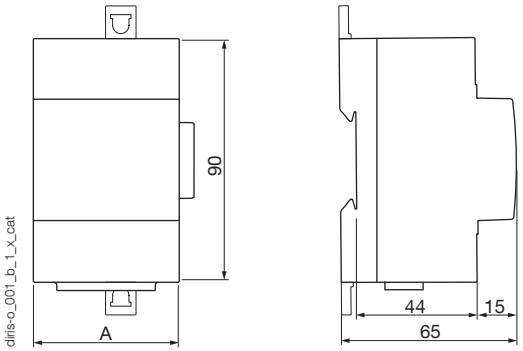
CT: Current transformer 3~ Load

Dimensions (mm)

DIRIS B

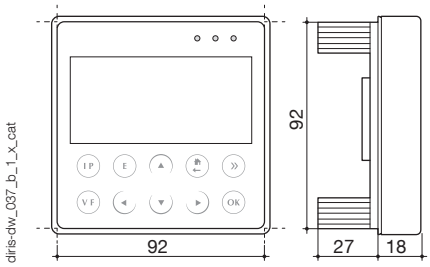


DIRIS O optional modules



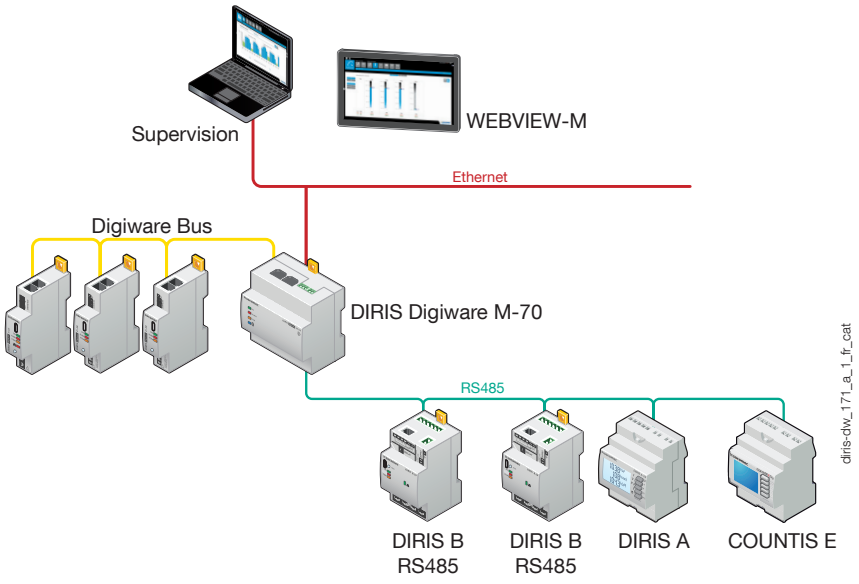
DIRIS O optional modules	A (mm)
DIRIS O-iod - DIRIS O-ioa - DIRIS O-it	45
DIRIS O-m - DIRIS O-p	54

DIRIS D-30



Communication architecture

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



DIRIS B

Power Monitoring Device - PMD

measurement, monitoring and analysis with smart sensors - modular format

DIRIS B characteristics

Electrical characteristics

Auxiliary power supply	
AC voltage	110-230 VAC ±15% (Ph/N or Ph/Ph) Cat III
Frequency	50/60 Hz
Consumption	< 2 VA without display, < 6 VA with display
Connection	Removable spring-cage terminal block, 2x 2 positions, 0.5 - 2.5 mm² solid cable or 0.25 - 1.5 mm² stranded cable with end piece

Measurement characteristics

Power and energy measurement	
Accuracy active energy and active power	Class 0.2 DIRIS B alone Class 0.5 with TE, iTR or TF sensors Class 1 with TR sensors
Reactive energy accuracy	Class 2 with TE, TR/iTR or TF sensors
Power factor measurement	
Accuracy	Class 0.5 with TE, iTR or TF sensors Class 1 with TR sensors
Voltage measurement	
Characteristics of the network measured	50-300 VAC (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	300 VAC Ph/N
Voltage measurement accuracy	Class 0.2
Connection	Removable spring-cage terminal block, 2x 6 positions, 0.5 - 2.5 mm² solid cable or 0.25 - 1.5 mm² stranded cable with end piece
Current measurement	
Number of current inputs	4
Associated current sensors	Solid-core TE , split-core TR/iTR, flexible TF sensors
Accuracy	Class 0.2 DIRIS B alone Class 0.5 with TE, iTR or TF sensors Class 1 with TR sensors
Connection	Specific Socomec cable with RJ12 connectors

Input characteristics

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

Communication characteristics

DIRIS B RS485	
Link	RS485
Link type	2 … 3 fils half duplex
Protocol	Modbus RTU
Speed	1200 … 115200 bauds
USB	RS485 DIRIS B configuration

Environmental characteristics

Ambient 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-powered and data
Micro-USB	Updating
Protection rating	IP65 (front face)
Environment	
Storage temperature (°C)	-20 ... +70 °C
Operating temperature (°C)	-20 ... +70 °C
Operating humidity	95% …+40 °C
Installation category	CAT III
Pollution Degree	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 module - 4 optional modules max.
Type	Optocoupler with internal (12 VDC ±10%) or external (10-30 VDC ±10%) bias
Function	Logical state or pulse metering
Number of outputs	2 per optional module - 4 optional modules max.
Type	Relay / 230 VAC ±15% - 1A
Function	Configurable alarm (current, power, etc.) on exceeded thresholds or remotely controlled state
Input / output connection	Removable screw terminal block, 4 positions, stranded or solid 0.14 - 1.5 mm² cable
DIRIS O-ioa - 2 analogue inputs/2 analogue outputs	
Number of inputs	2 per optional module - 4 optional modules max.
Type	4-20 mA
Function	Connection of analogue sensors (pressure, humidity, temperature, etc.)
Number of outputs	2 per optional module - 4 optional modules max.
Type	4-20 mA
Function	Transmission of measurements (power, currents, etc.) to PLCs

DIRIS O-it - 3 temperature inputs	
Number of inputs	3 external inputs + 1 ambient measurement
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 block, 3 positions, stranded or solid 0.14 - 1.5 mm² cable
DIRIS O-p - PROFIBUS communication	
Protocol	PROFIBUS DPV1

References

DIRIS B Power 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 PT 100 / PT 1000 temperature inputs	4829 **0032**
DIRIS O-m	RS485 MODBUS communication	4829 **0033**
DIRIS O-p	PROFIBUS communication	4829 **0034**

Accessories	Available for order 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**
Fused disconnect switches to protect the voltage inputs (RM type)	4	5701 **0018**
Fused disconnect switches to protect the 1 pole + neutral auxiliary power supply (RM type)	6	5701 **0017**
0.5 A 10x38 gG fuses	10	6012 **0000**