

DIRIS B-10L

LoRaWAN® Power Monitoring Devices



Configuration
with Easy Config System.



DIRIS B-10L

Function

DIRIS B-10L is a modular PMD with LoRaWAN® wireless communication. Its four independent RJ12 current inputs enable management of several types of circuit: e.g. 4 single-phase loads or one 3-phase load + 1 single-phase load. The **DIRIS B-10L** combines with current sensors (RJ12 connection), suitable for any type of installation: solid-core TE, split-core TR/ITR, flexible TF current sensors.

Advantages

Plug & Play

- Connection is very easy thanks to the RJ12 quick connector that reduces the risk of wiring errors.
- Automatic addressing and configuration (type of user load, type and size of current sensor) greatly simplify implementation and save time.

Accurate

- Conformity to standard IEC 61557-12.
- Class 0.2 for DIRIS B-10L alone.
- Class 0.5 for the overall measurement chain (DIRIS B-10L + TE/ITR/TF current sensors) from 2 to 120% of rated input current.

Wireless communication

- **LoRaWAN®** communication enables transmission and use of data from remote isolated measurement points without wired communication.

Long range

- Choice of use via private networks or **LoRaWAN®** enables coverage of applications on a single site of several sites, reducing the range limitations.

Secure communication

- Communication between B-10L and the **LoRaWAN®** communication gateways is end-to-end encrypted to ensure the confidentiality and integrity of measurement data.

The solution for

- > Industry
- > Service sector
- > Infrastructure

Strong points

- > Plug & Play
- > Accurate
- > Wireless communication
- > Long range
- > Secure communication

Conformity to standards

- > IEC 61557-12
- > LoRaWAN®



- > ISO 14025



Complete the system with:

- > **LoRaWAN®** environmental sensors



- > **LoRaWAN®** communication gateways



General characteristics

- 4 independent RJ12 inputs.

Application

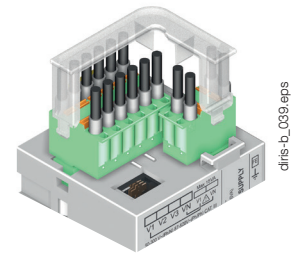


DIRIS B-10L

Metering	
±kWh, ±kVAh, kVAh	•
Multi-measurement	
U12, U23, U31, V1, V2, V3, f	•
U system, V system	•
I1, I2, I3, In, ΣP, ΣQ, ΣS, ΣPF	•
P, Q, S, FP per phase	•
Predictive power	•
Phi, cos Phi, tan Phi	•
Temperatures	•
Quality analysis	
THDv1, THDv2, THDv3, THDu12, THDu23, THDu31	•
THDi1, THDi2, THDi3, THDin	•
Voltage unbalances Ph/N and Ph/Ph	•
Current unbalance (Inba, Idir, linv, Ihom, Inb)	•
Alarms	
Systems (CT disconnected, VI association, bad CT primary)	•
Protection (VirtualMonitor)	•
Logical (digital inputs)	•

Accessories

Sealing kit for DIRIS B-10L
Secures the wiring of the PMD.

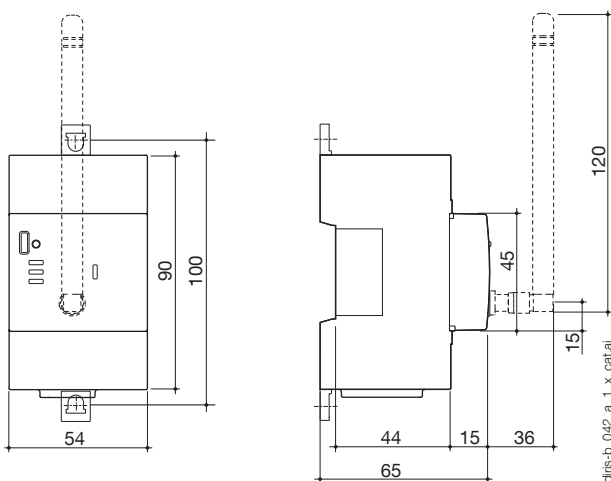


Remote radio antenna kit, length 3 m
The antenna can be extended outside the cabinet in which the DIRIS B-10L PMD is housed. This makes it possible to improve the range on limiting structures

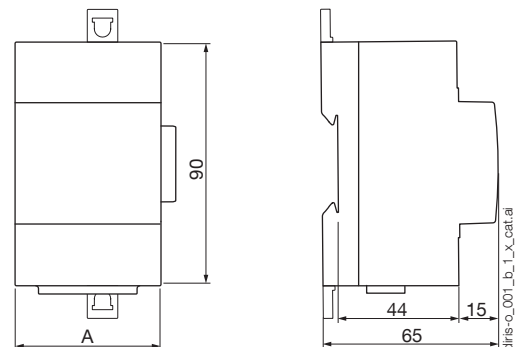
USB configuration cable (2 m)
Advanced configuration of DIRIS B-10L can be achieved by Ethernet using EASY CONFIG software, or by direct USB connection.

Dimensions (mm)

DIRIS B-10L

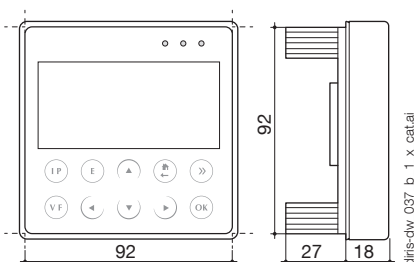


DIRIS O optional modules



DIRIS O optional modules	A (mm)
DIRIS O-iod - DIRIS O-it	45

DIRIS D-30



DIRIS B-10L

LoRaWAN® Power Monitoring Devices

DIRIS D-30 display

DIRIS D-30

Connexion



RJ9



DIRIS B-10L

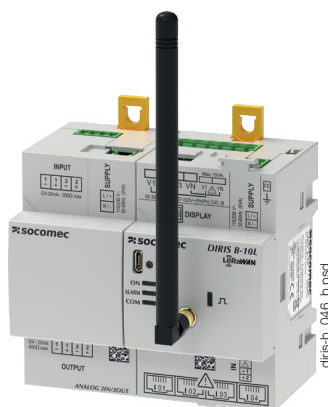
Optional modules

DIRIS O



Optional module.

DIRIS B-10L



Optional modules (4 max.)*

- Digital inputs/outputs
- Temperature inputs

* A maximum of 4 modules with a maximum of 1 temperature module.

DIRIS O-iod



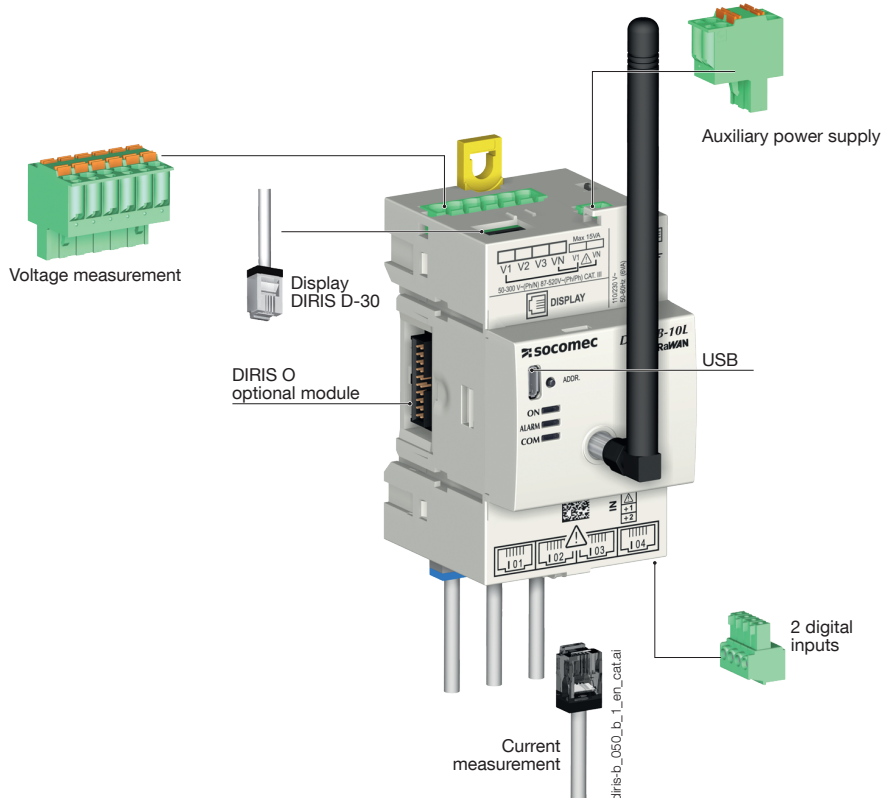
- 2 digital inputs enable metering pulses to be retrieved, or the uploading of information relating to the status of auxiliary contacts.
- 2 digital outputs can be connected to configurable alarms warning of exceeded thresholds (power, current, etc.) or can be remotely controlled.

DIRIS O-it

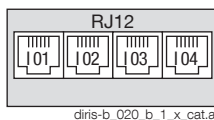


- 3 temperature inputs to be connected to PT100 or PT1000 probes.
- Ambient temperature

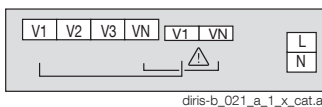
DIRIS B-10L terminal blocks



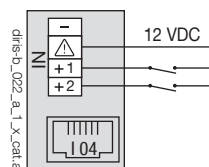
Current measurement



Voltage and auxiliary power supply measurement

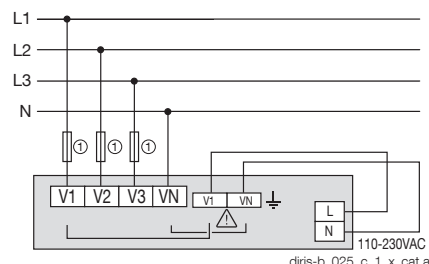


2 inputs powered by the product



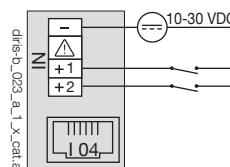
Self-powering

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

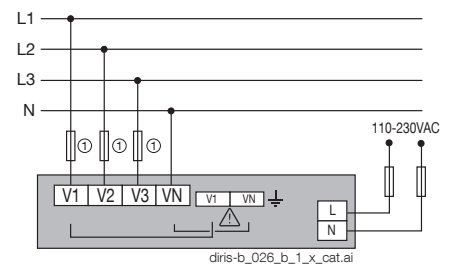


1. 0.5 A gG / 0.5 A class CC fuses.

2 inputs with external power supply

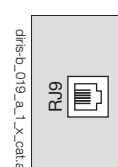


Separate power supply



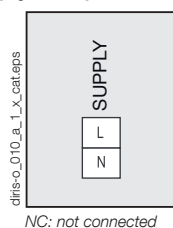
1. 0.5 A gG / 0.5 A class CC fuses.

RJ9 for DIRIS D-30 (Self-powering and data)

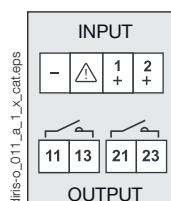


DIRIS O optional module terminal blocks

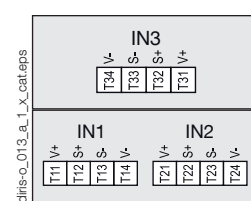
Power supply for optional modules



DIRIS O-iod



DIRIS O-it



DIRIS B-10L

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DIRIS D-30 display

Associated current sensors

Various types of current sensor are associated with the DIRIS B-10L: 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 DIRIS B-10L automatically recognises the sensor rating and type. This guarantees the overall accuracy of the DIRIS B-10L + current sensor measurement chain.

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

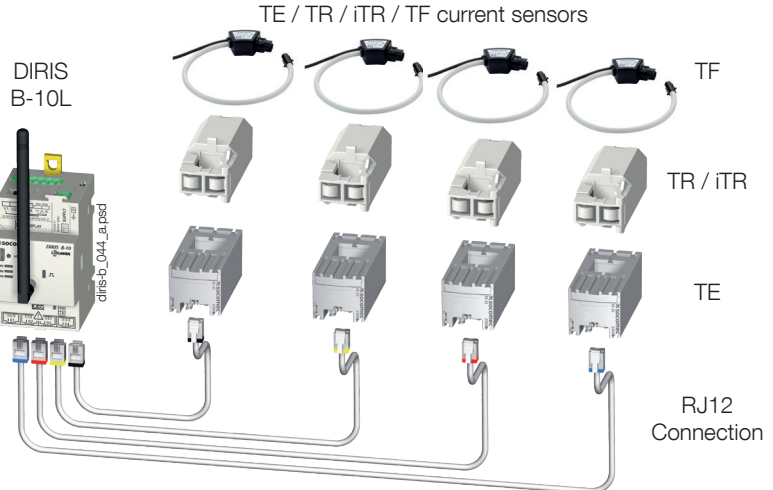
Solid-core TE



Split-core TR/iTR



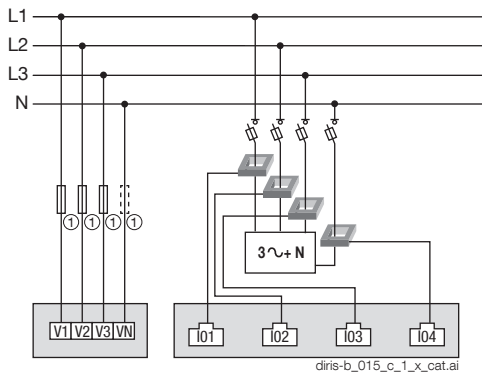
TF Flexible current sensors



Networks and connection examples

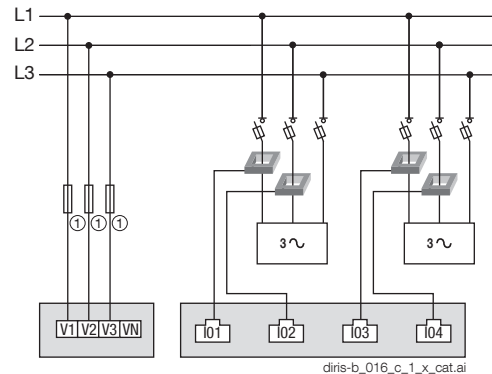
Three phase + Neutral

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



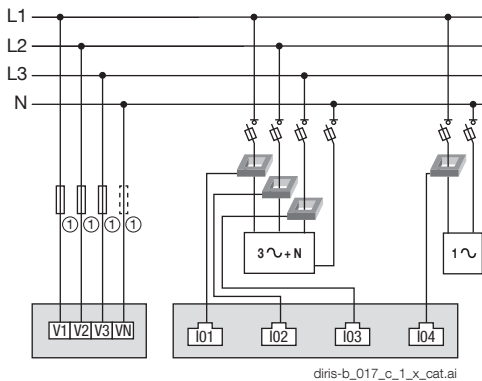
Three-phase

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



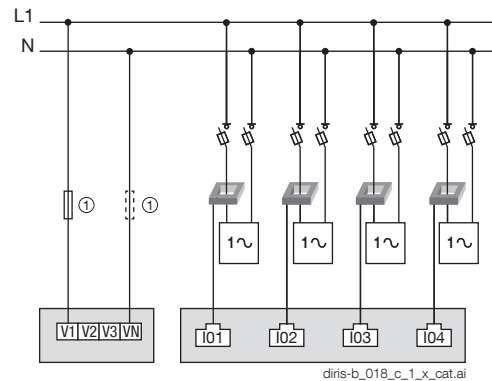
Three-phase

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



Single-phase

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



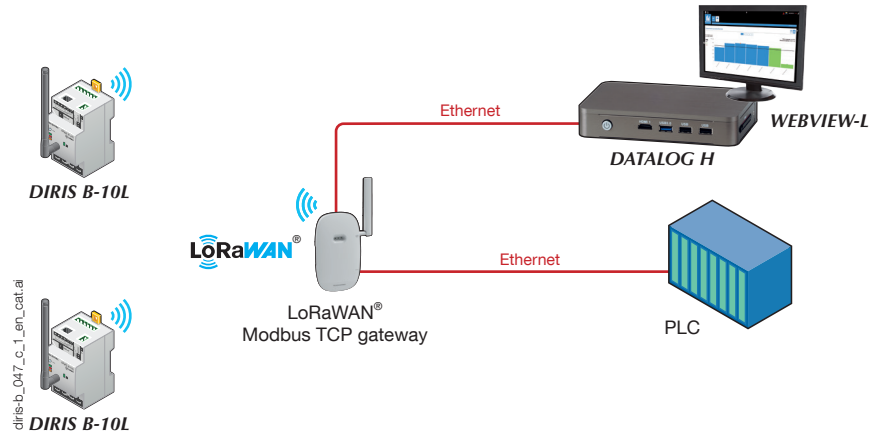
CT: Current transformer 3~ Load

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

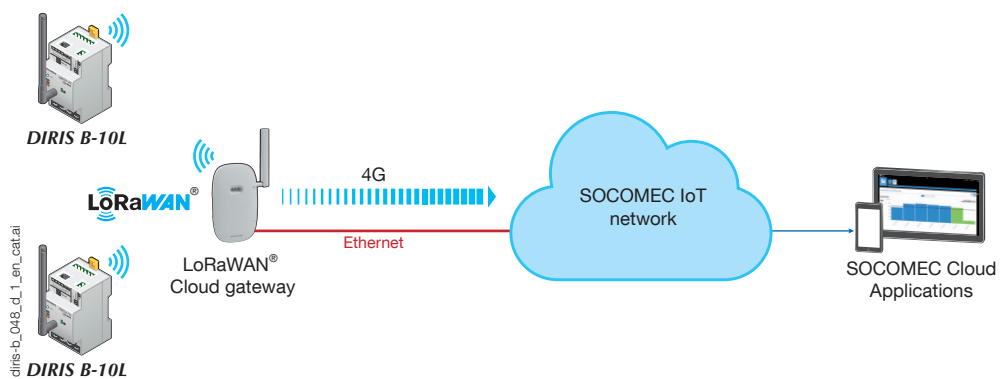
If self-powered, a fuse must always be added to the Neutral.

Communication architecture

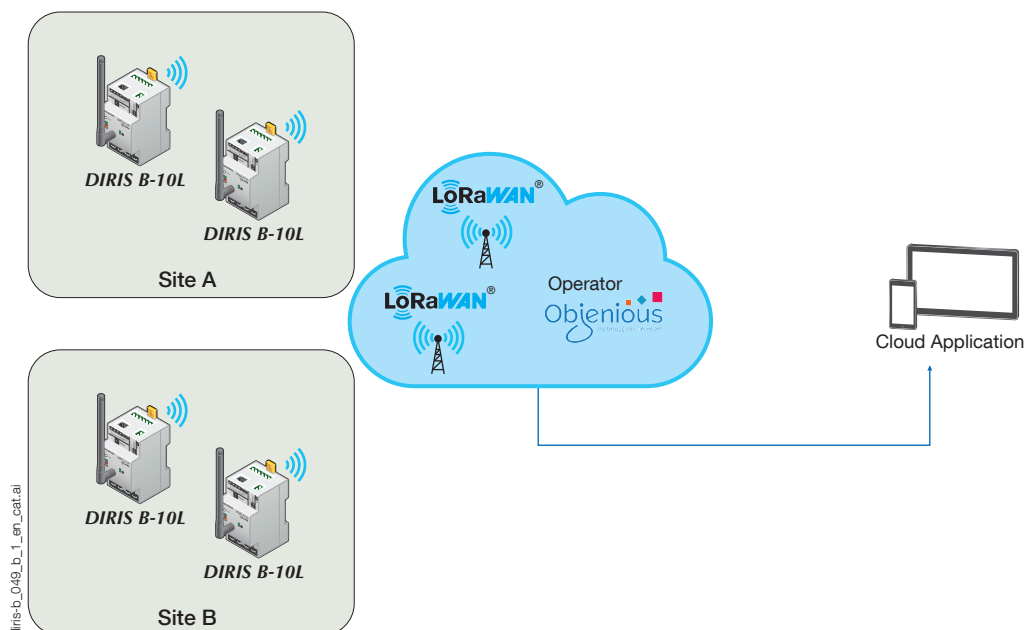
Architecture of private network and local retrieval of data



Cloud Architecture – private network



Cloud Architecture – operated network



DIRIS B-10L

LoRaWAN® Power Monitoring Devices

DIRIS B-10L characteristics

Electrical characteristics	
Auxiliary power supply	
AC voltage	110-230 VAC $\pm 15\%$ (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 mm ² solid cable or 0.25 - 1.5 mm ² stranded cable with end piece
Measurement characteristics	
Power and energy measurement	
Accuracy active energy and active power	Class 0.2 DIRIS B-10L 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) - 87-520 VAC (Ph/Ph) - CAT III
Frequency range	45 ... 65 Hz
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 mm ² solid cable or 0.25 - 1.5 mm ² 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
Communication characteristics	
Link	Wireless radio frequency
Protocol	LoRaWAN®
Frequency range	863 - 870 MHz
Class	Class C
Version	1.0.3
Activation method	OTAA
Use	Europe
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	1 G from 10 to 100 Hz

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	Firmware update
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-it - 3 temperature inputs	
Number of inputs	3 external inputs + 1 ambient measurement
Dynamic	-20 ...+150 °C
Type	PT100 or PT1000

References

Power Monitoring Devices		Reference
DIRIS B-10L	LoRaWAN® - 230 VAC	4829 0900
DIRIS O optional modules		Reference
DIRIS O-iod	2 digital inputs / 2 digital outputs	4829 0030
DIRIS O-it	3 PT 100 / PT 1000 temperature inputs	4829 0032
Accessories		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
USB configuration cable		4829 0050
Remote antenna kit (antenna + 3 m extension cable + mounting support)		4829 0922
Remote antenna kit (antenna + 3 m extension cable + mounting support) Quantity : 4		5701 0018
Remote antenna kit (antenna + 3 m extension cable + mounting support) Quantity : 6		5701 0017
Remote antenna kit (antenna + 3 m extension cable + mounting support) Quantity : 10		6012 0000

Expert Services



EXPERT SERVICES

Socomec offers a wide range of services to ensure the functionality, accuracy and reliability of the measurement system in the context of our ISO 50001 strategy.

- Checking LoRaWAN® network coverage on site.
- Commissioning the equipment.
- Checking the consistency of data reports in the EMS software.

For further information, please talk to your Socomec contact.