

DIRIS B-10L*

LoRaWAN® Power Monitoring Device

new



DIRIS B-10L



Configuration with
Easy Config System.

Function

The DIRIS B-10L is a modular power monitoring device embedding a LoRaWAN® wireless communication.

Its four independent RJ12 current inputs make it possible to manage several types of loads: e.g. 4 single-phase loads or one 3-phase load + 1 single-phase load.

Advantages

Plug & Play

The connection is simple thanks to the RJ12 rapid connector which limits the risk of wiring errors. Addressing and automatic configuration of the product (type of load, type and size of current sensor) make it possible to simplify the implementation and to save time.

Accurate

- In accordance with standard IEC 61557-12.
- Class 0.2 for just the DIRIS B-10L alone.
- Class 0.5 for the global measuring chain (DIRIS B-10L + TE/ITR/TF current sensors) from 2 to 120% of rated current In.

*Europe only

The DIRIS B-10L is associated with current sensors (RJ12 connection), suitable for any type of installation: TE solid core, TR / ITR split core and TF flexible current sensors.

Wireless communication

LoRaWAN® communication permits the transmission and use of data from remote isolated measuring points that do not have wired communication.

Long range

The choice of use over both private or operated LoRaWAN® networks makes it possible to cover single-site or multi-site applications, reducing the range limitations.

Secure communication

Communication between B-10L and the LoRaWAN gateways feature end-to-end encryption that ensures confidentiality and integrity of measurement data.

The solution for

- > Industry
- > Buildings
- > Infrastructure



Strong points

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

Compliance with standards

- > IEC 61557-12
- > LoRaWAN®



- > ISO 14025




Services experts

Socomec offers a range of services to ensure a functional, accurate and reliable energy monitoring system as part of your ISO 50001 strategy.

- Verification of LoRaWAN® network coverage on site.
- Commissioning of equipment.
- Verification of consistent data reporting in the EMS software.

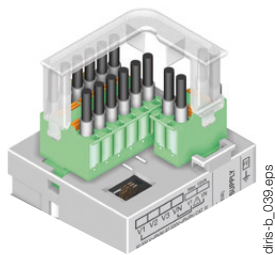
For more information, contact your Socomec representative.omec.

Application	
	DIRIS B-10 LoRaWAN®
Metering	
± kWh, ± kvarh, kVAh	•
Multi-measurement	
U12, U23, U31, V1, V2, V3, f	•
U system, V system	•
I1, I2, I3, In, ΣP, ΣQ, ΣS, PF	•
P, Q, S, PF per phase	•
Predictive power	•
Phi, cos Phi, tan Phi	•
Temperatures	•
Analysis of quality	
THDv1, THDv2, THDv3, THDu12, THDu23, THDu31	•
THDi1, THDi2, THDi3, THDin	•
Voltage imbalances Ph/N and Ph/Ph	•
Current imbalance (Inba, Idir, Iinv, Ihom, Inb)	•
Alarms	
Systems (CT disconnected, VI association, bad CT primary)	•
Protection (VirtualMonitor)	•
Logical (digital inputs)	•
Measurement	•

Accessories

Sealing kit for DIRIS B-10L

Prevents access to the cabling of the monitoring device.



Wireless antenna kit, extended length 3 m

The antenna can be extended outside the cabinet in which the DIRIS B-10L is housed. This allows to improve the transmission range within constraining infrastructures.

USB configuration cable (2 m)

The configuration of the DIRIS B-10L is done from the Easy Config System software via a direct USB connection to a PC.

DIRIS B-10L

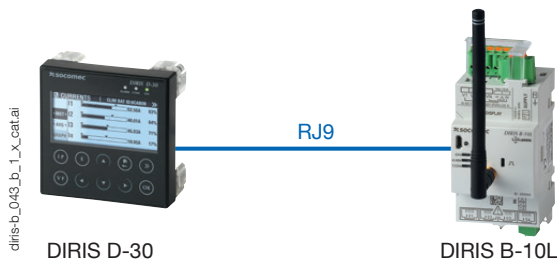
LoRaWAN® Power Monitoring Device

DIRIS D-30 monitor

DIRIS D-30



Connection



Optional modules

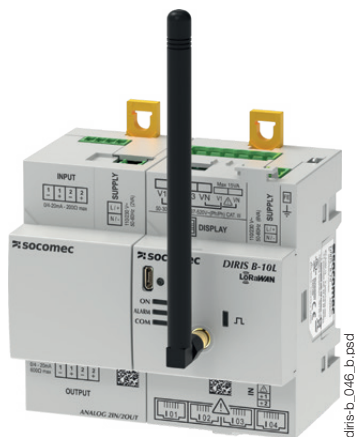
DIRIS O



Optional modules (4 max.)*

- Digital inputs/outputs
- Temperature inputs

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



DIRIS O-iod

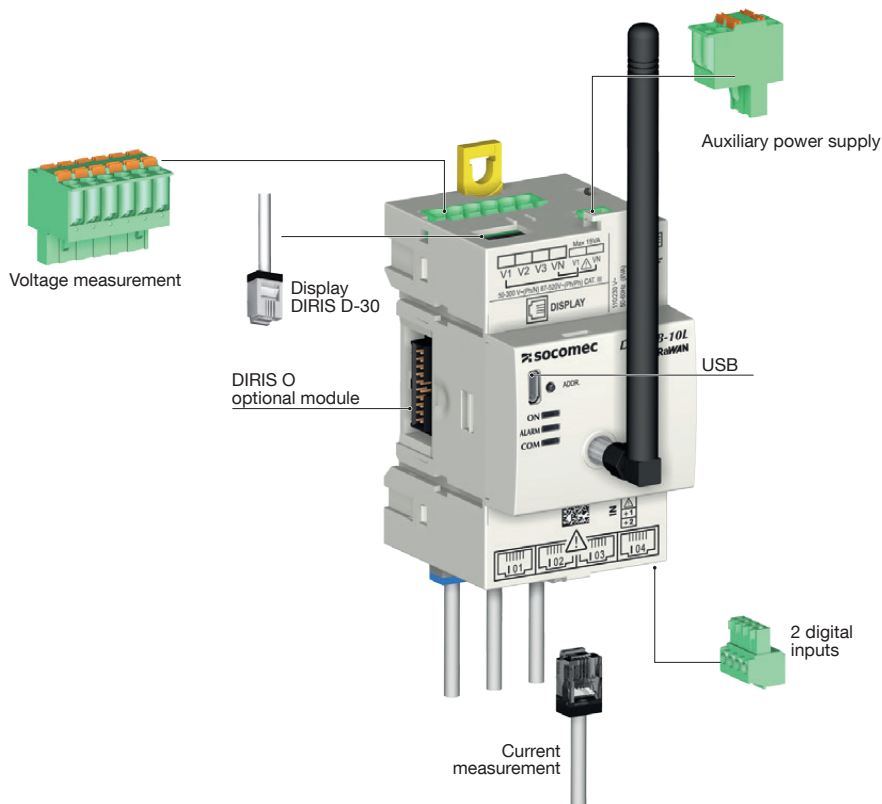
- 2 digital inputs enable meter impulses to be retrieved, or the uploading of information relating to the statuses of auxiliary contacts.
- 2 digital outputs can be connected to configurable alarms warning of exceeded thresholds (power, current, etc.) or can be piloted remotely.



DIRIS O-it

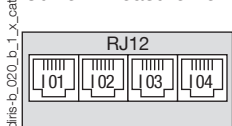
- 3 temperature inputs to be connected to PT100 or PT1000 sensors.
- Ambient temperature

DIRIS B terminal strips

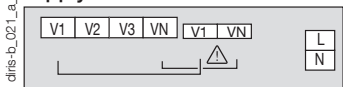


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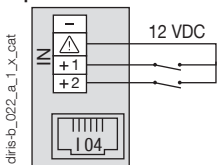
Current measurement



Voltage measurement and auxiliary power supply

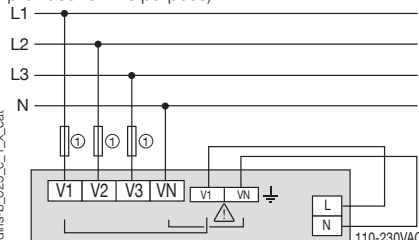


2 inputs supplied with power by the product

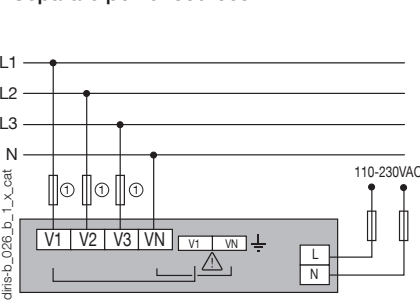


Self-powered

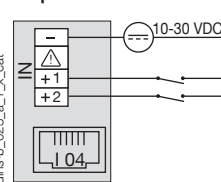
Scope for simplifying linking up the power supply using the measurement terminal strip (terminals provided for this purpose)



Separate power sources



2 inputs with an external power source

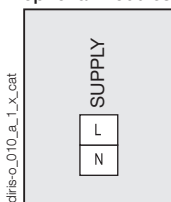


RJ9 for DIRIS D-30
(Autonomous power supply and data)



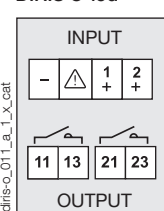
Terminals of DIRIS O optional modules

Power supply for optional modules

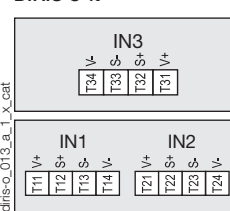


NC: not connected

DIRIS O-iod



DIRIS O-it



DIRIS B-10L

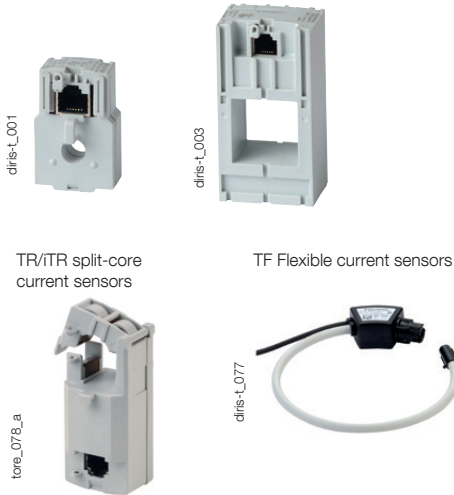
LoRaWAN® Power Monitoring Device

Connections

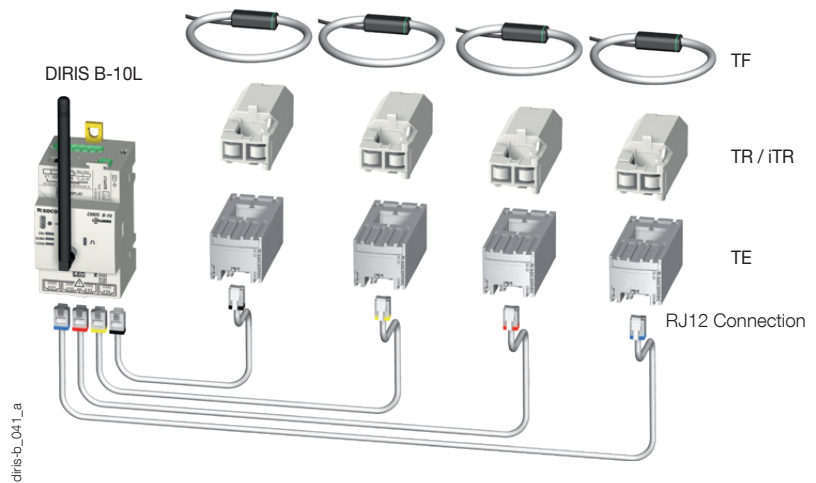
Associated current sensors

Various types of current sensors can be connected to the DIRIS B-10L: 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-10L automatically recognises the type of sensor used and its current rating. This guarantees the overall accuracy of the DIRIS B-10L + current sensor measurement chain. For more information: see "TE, TR/iTR, TF sensors" pages.

TE solid-core current sensors



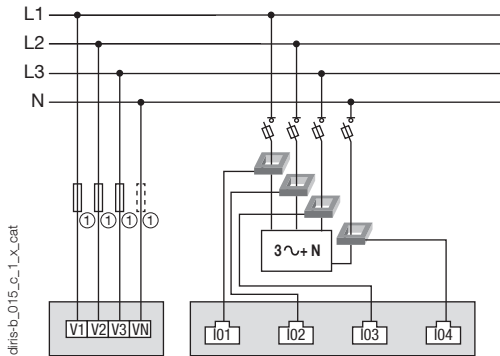
TE / TR / iTR / TF current sensors



Network and connection examples

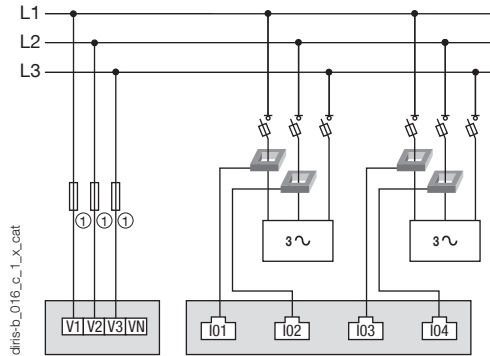
Three-phase + Neutral

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



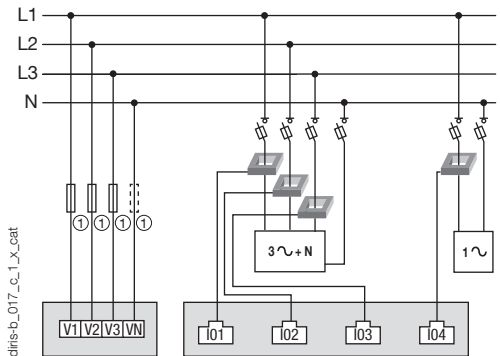
Three-phase

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



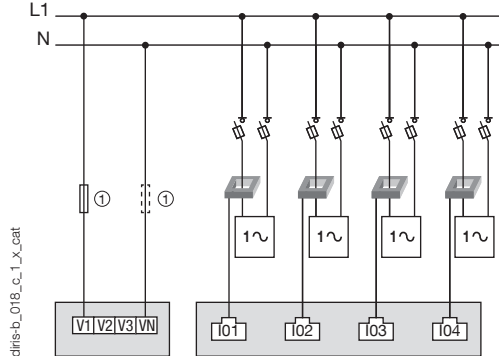
Three-phase

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



Single-phase

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



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

On units with an autonomous power supply, a fuse must be added to the neutral wire.



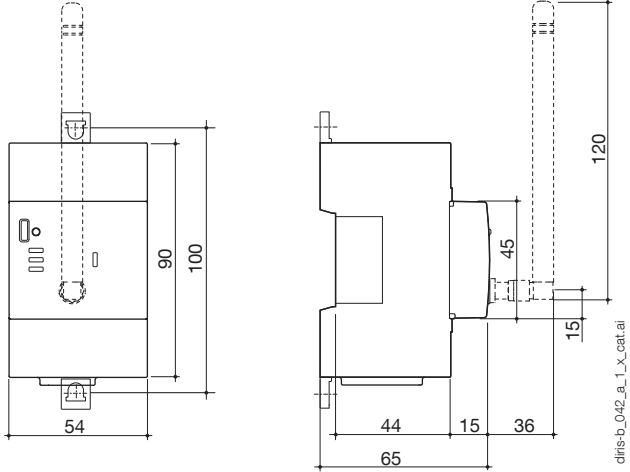
CT: Current sensor



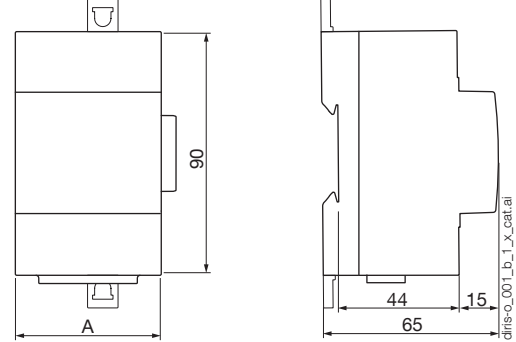
Load

Dimensions (mm)

DIRIS B-10L

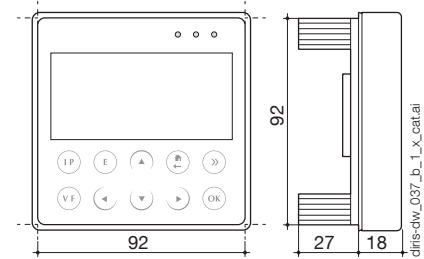


DIRIS O optional modules



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

DIRIS D-30

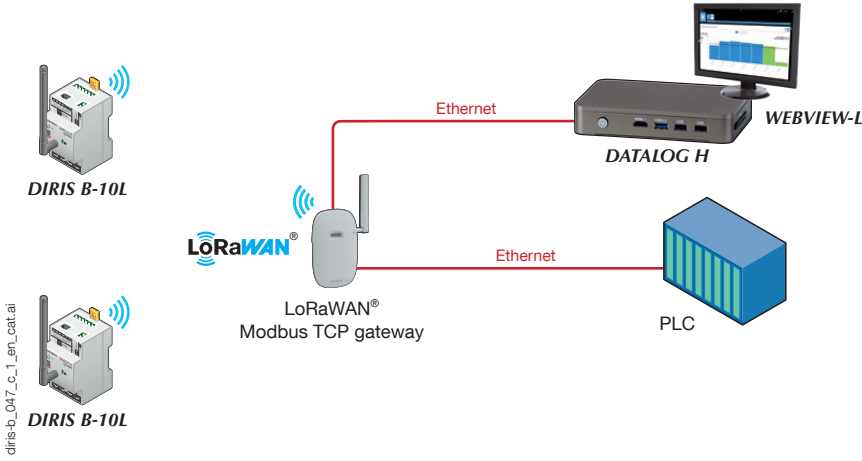


DIRIS B-10L

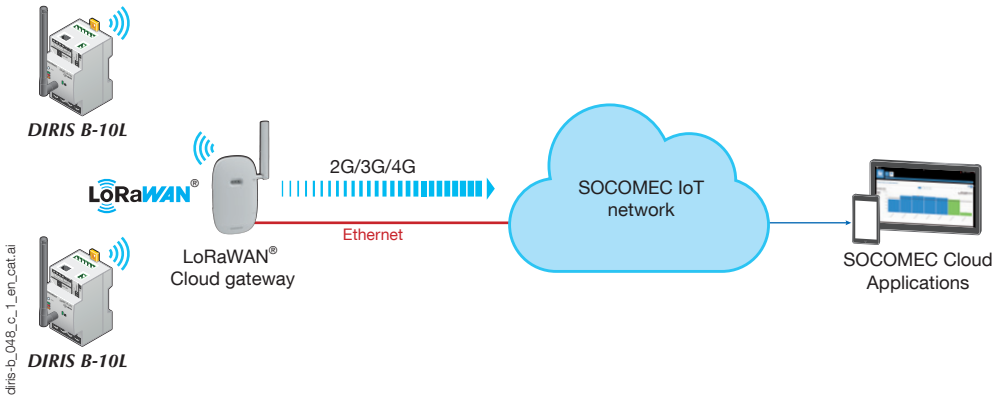
LoRaWAN® Power Monitoring Device

Communication architecture

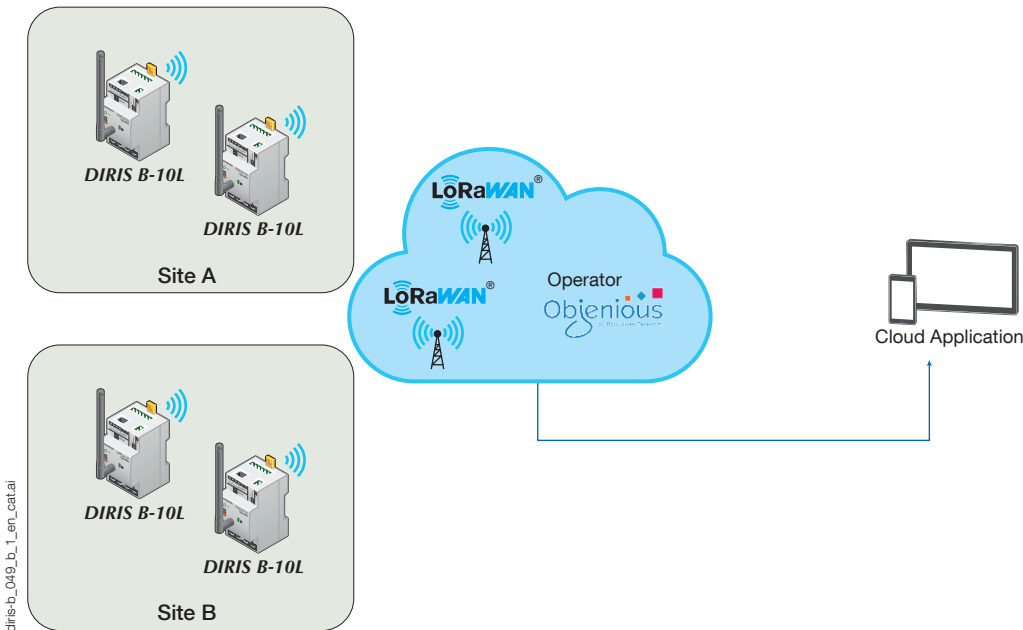
Architecture of private network and local retrieval of data



Cloud Architecture – private network



Cloud Architecture – operated network



DIRIS B-10L characteristics

Electrical characteristics

Auxiliary power supply	
AC voltage	110-230 VAC ±15% (Ph/N or Ph/Ph) Cat III
Frequency	50/60 Hz
Power consumption	< 2 VA without display unit, < 6 VA with display unit
Connection	Unpluggable spring-cage terminal strip, 2 x 2 positions, rigid cable 0.5 ... 2.5 mm ² or flexible with tip 0.25 ... 1.5 mm ²

Measurement characteristics

Measurement of energy and power levels	
Accuracy	Class 0.2 DIRIS B-10L alone
Active energy and active power	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

Measurement of power factor	
Accuracy	Class 0.5 with sensors TE, ITR or TF Class 1 with TR sensors

Voltage measurement	
Characteristics of the measured network	50-300VAC (Ph/N) - 87-520VAC (Ph/Ph) - CAT III
Frequency range	45 to 65Hz
Frequency accuracy	Class 0.02
Network type	Single-phase / two-phase / two-phase with neutral / 3-phase / 3-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
Accuracy of voltage measurement	Class 0.2
Connection	Pullout spring-cage terminal strip, 2 x 6 positions, rigid cable 0.5 ... 2.5 mm ² or flexible with tip 0.25 ... 1.5 mm ²

Measurement of currents	
Number of current inputs	4
Associated current sensors	Solid TE sensors, split-core TR/ITR, flexible TF
Accuracy	Class 0.2 DIRIS B-10L 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

Characteristics of the DIRIS D-30 display unit

Mechanical characteristics	
Type of monitor	Capacitive touch-screen technology, 10 keys
Screen resolution	350 x 160 pixels
Single-product connection	
RJ9	Autonomous power supply and data
Micro-USB	Firmware Upgrade
Degree of protection	IP65 (front face)
Environment	
Storage temperature (°C)	-20 ... +70 °C
Operating temperature (°C)	-20 ... +70 °C
Humidity	95% ... 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 module - max. 4 optional modules
Type	Optocoupler, internal polarisation (12 VDC ± 10%) or external (10-30 VDC ± 10%)
Function	Logical status or pulse collection
Number of outputs	2 per optional module - max. 4 optional modules
Type	Relay / 230 VAC ±15% - 1A
Function	Alarm report on digital outputs
Connection of inputs / outputs	Unpluggable screw-type terminal strip, 4 positions, rigid or flexible cable, 0.14 to 1.5 mm ²

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 Device		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 temperature inputs PT 100 / PT 1000	4829 0032

Accessories		Reference
DIRIS D-30 - Single-point display unit		4829 0200
RJ9 cable for DIRIS D-30 monitor - 1.5 m		4829 0280
RJ9 cable for DIRIS D-30 monitor - 3 m		4829 0281
USB configuration cable		4829 0050
Remote antenna kit (antenna + 3 m extension cable + mounting bracket)		4829 0922