DIRIS *B-10* LoRa

LoRaWAN energy meters

LoRaWAN

new

DIRIS B-10 LoRa

logo_677_01.psd

Configuration with Easy Config System.

Function

The **DIRIS B-10 LoRa** is a modular energy meter that enables LoRaWAN wireless communication.

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

The DIRIS B-10 LoRa links up with its current sensors (connection RJ12) adapted to suit every type of installation: TE closed current sensor, TR/iTR normally closed, flexible TF.

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 energy meter by itself.
- Class 0.5 for the global measuring chain (energy meter + TE/iTR/TF current sensors) from 2 to 120% of rated current In.

Wireless communication

LoRaWAN communication permits the transmission and use of data from insulated 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.

Multifunction

The DIRIS B-10 LoRa energy meter can be enhanced by a range of functions through adding various optional modules:
- Input/output module,
- Analogue input/output module,
- Temperature input module.

The solution for

> Industry
> Building
> Infrastructure

Strong points

> Plug & Play
> Class summary
> Wireless communication
> Long range
> Multifunction

Integrated technologies

PreciSense **AutoCorrect** **VirtualMonitor**

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

Compliance with standards

> IEC 61557-12
> LoRaWAN

LoRaWAN

Objenious by Bouygues Telecom

> ISO 14025

PEP eco PASSPORT®

Do you need the support of an expert?

Socomec offers a range of services to ensure a functional, accurate and reliable energy monitoring system as part of your ISO 50001 strategy.
- Audit of the LoRa site
- Entry into service
- LoRa subscription
- Verification of the measuring chain up to 3% or 0.2% in the form of a support contract (regular verification for ISO 50001) or at periodic intervals.

For more information, contact your Socomec representative.

Application	DIRIS B-10 LoRa
Metering	
± kWh, ± kvarh, kVAh	•
Multi-tariff	•
Multi-measurement	
U12, U23, U31, V1, V2, V3, f	•
U system, V system	•
I1, I2, I3, In, ΣP, ΣQ, ΣS, ΣFP	•
P, Q, S, FP 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)	•
Logics (digital inputs)	•

Accessories

Sealing kit for DIRIS B
Prevents access to the cabling of the monitoring device.

diris-b_039_a.eps
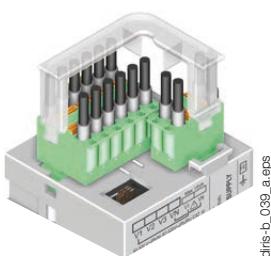
Wireless antenna kit, extended length 3 m
The antenna can be extended outside the cabinet in which the DIRIS B-10 LoRa energy meter is housed. This makes it possible to improve the range of limiting structures

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

DIRIS *B-10* LoRa
LoRaWAN energy meters

DIRIS D-30 monitor

DIRIS D-30

diris-d_001_a_1_cat

Connection

diris-b_043_a_1_x_cat.ai

RJ9

DIRIS D-30

DIRIS B-10 LoRa

Optional modules

DIRIS O

Optional module

DIRIS B-10 LoRa

diris-b_045_a.psd

diris-b_046_a.psd
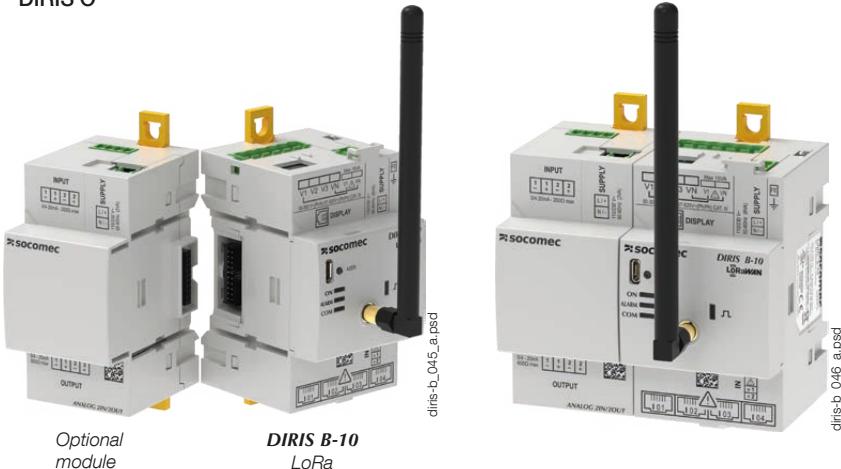
Optional modules (4 max.)*
- Digital inputs/outputs
- Analogue inputs/outputs
- Temperature inputs

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

diris-o_019_a

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_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 temperature

DIRIS B terminal strips

Auxiliary power supply

Voltage measurement

Display DIRIS D-30

DIRIS O optional module

USB

2 digital inputs

Current measurement
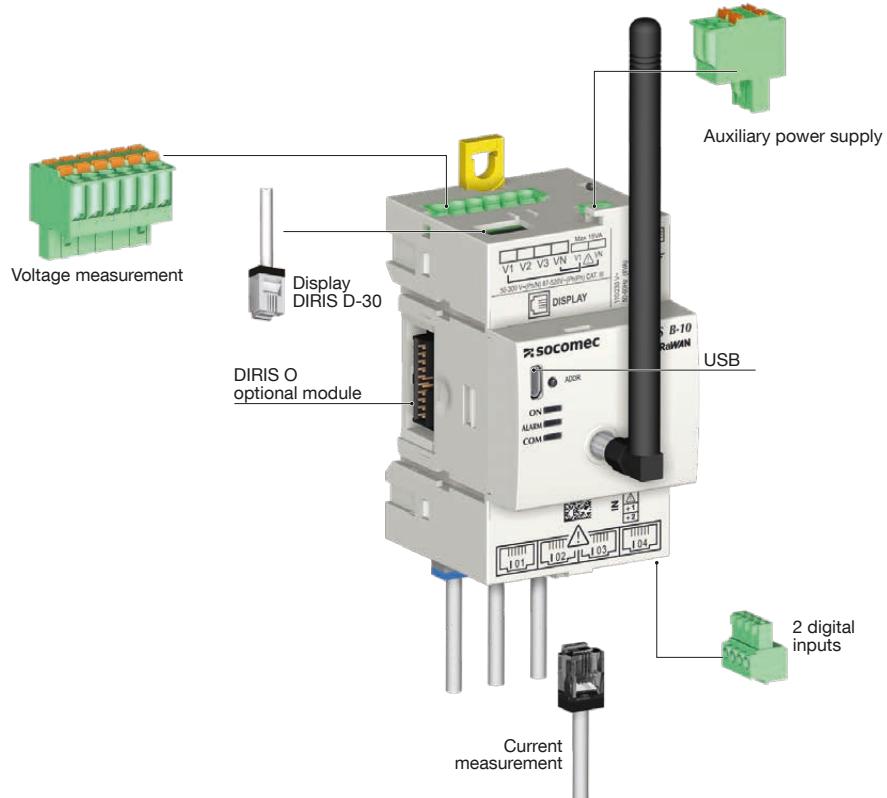
diris-b_050_a_1_en_cat.ai

Current measurement

RJ12

| 01 | 02 | 03 | 04 |

diris-b_020_b_1_x_cat
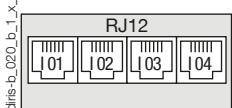
Voltage measurement and auxiliary power supply

| V1 | V2 | V3 | VN | V1 | VN | | L |
| | | | | | | | N |

diris-b_021_a_1_x_cat
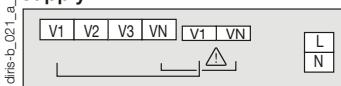
2 inputs supplied with power by the product

12 VDC

IN
−
+1
+2

I 04

diris-b_022_a_1_x_cat
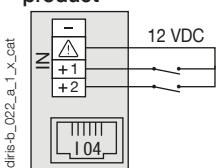
Self-powered

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

L1
L2
L3
N

① ① ①

| V1 | V2 | V3 | VN | V1 | VN |

L
N

110-230VAC

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

diris-b_025_c_1_x_cat
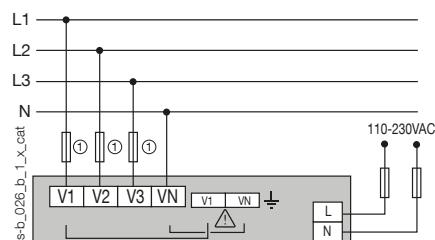
2 inputs with an external power source

10-30 VDC

IN
−
+1
+2

I 04

diris-b_023_a_1_x_cat

Separate power sources

L1
L2
L3
N

① ① ①

110-230VAC

| V1 | V2 | V3 | VN | V1 | VN |

L
N

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

diris-b_026_b_1_x_cat
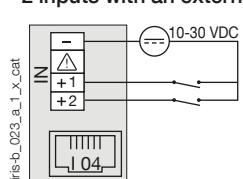
RJ9 for DIRIS D-30

(Autonomous power supply and data)

RJ9

diris-b_019_a_1_x_cat

Terminals of DIRIS O optional modules

Power supply for optional modules

SUPPLY

L
N

NC: not connected

diris-o_010_a_1_cat

DIRIS O-iod

INPUT

| − | ⚠ | 1 + | 2 + |

| 11 | 13 | 21 | 23 |

OUTPUT

diris-o_011_a_1_x_cat

DIRIS O-ioa

INPUT

| − | ⚠ | 1 + | 2 + |

| 1 | 1 + | 2 − | 2 + |

OUTPUT

diris-o_012_b_1_x_cat

DIRIS O-it

IN3

| T34 V− | T33 S− | T32 S+ | T31 V+ |

| IN1 | | | | IN2 | | | |
| T11 V+ | T12 S+ | T13 S− | T14 V− | T21 V+ | T22 S+ | T23 S− | T24 V− |
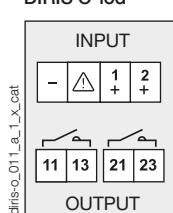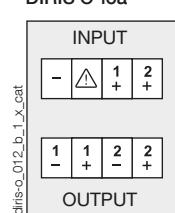
diris-o_013_a_1_x_cat

DIRIS *B-10* LoRa
LoRaWAN energy meters

Connections

Associated current sensors

Different types of current sensor are linked to DIRIS B: closed-loop (TE), normally closed (TR/iTR) or flexible (TF). 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 size and type of sensor are recognised automatically by DIRIS B. This makes it possible to ensure total precision of the DIRIS B measurement chain + current sensors.
For more information, see the page on "TE, TR/iTR, TF sensors".

TE solid current sensors

Current sensors TE / TR / iTR / TF

DIRIS B-10
LoRa

TF

TR / iTR

TE

RJ12 Connection
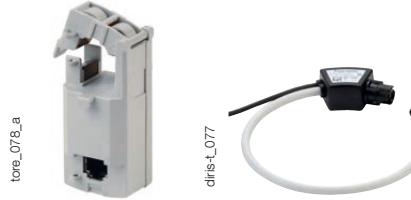
Normally closed TR/iTR   TF Flexible current sensors
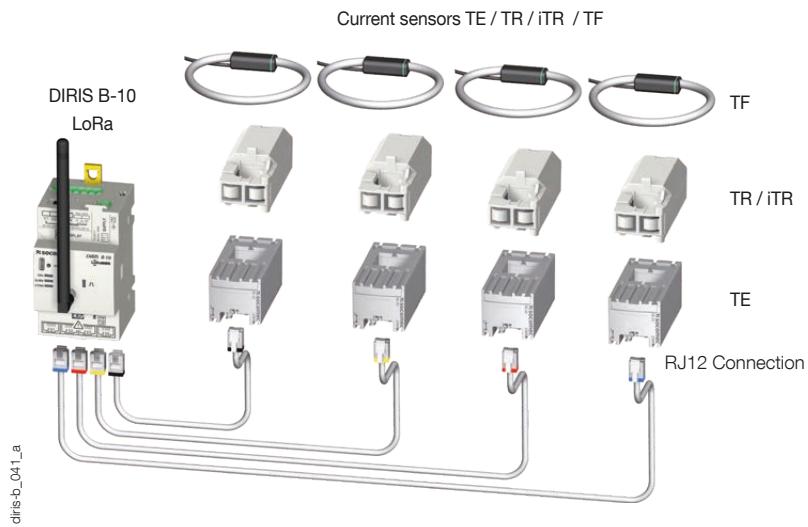
Network and connection examples

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

Three-phase
3P - 2CT (2 three-phase loads without neutral)
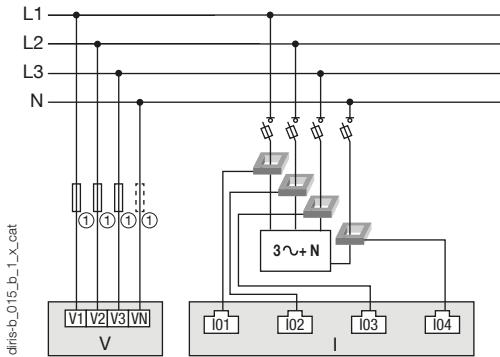
Three-phase
3P+N - 3CT & 1P+N - 1CT (1 three-phase load & 1 single-phase load)
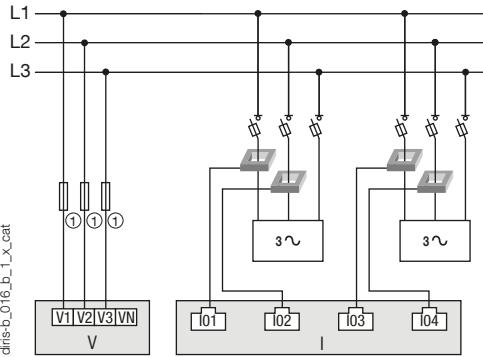
Single-phase
1P+N-1CT (4 single-phase loads)

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.
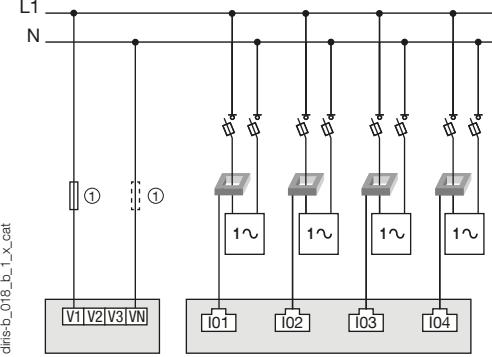
CT: Current sensor   3∿ Load

Dimensions (mm)

DIRIS B-10 LoRa
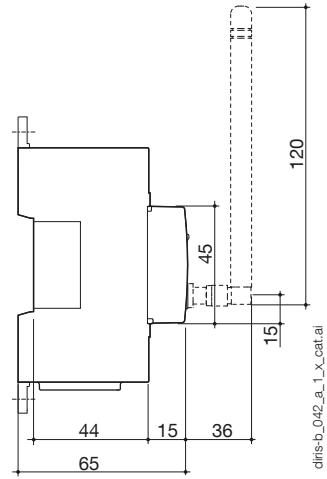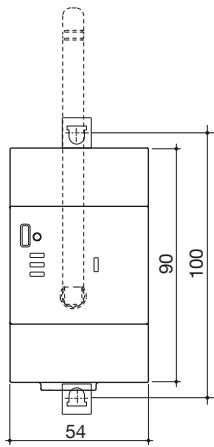
diris-b_042_a_1_x_cat.ai
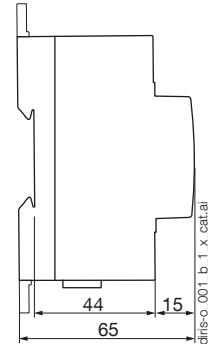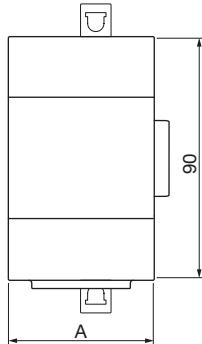
90
100
54
120
45
15
44   15   36
65

DIRIS O optional modules

90
A
diris-o_001_b_1_x_cat.ai
44   15
65

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

DIRIS D-30

diris-dw_037_b_1_x_cat.ai

92
92
27   18
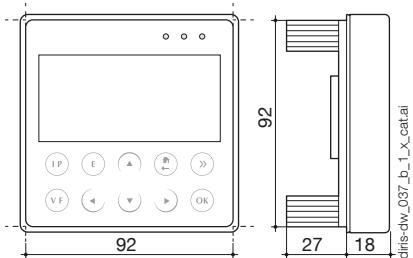
DIRIS *B-10* LoRa
LoRaWAN energy meters

Communication architecture

Architecture of private network and local retrieval of data

DIRIS B-10
LoRa

DIRIS B-10
LoRa

LoRaWAN

Ethernet

WEBVIEW-L

DATALOG H

Ethernet

LoRa interface
Core network embedded

Control unit

diris-b_047_a_1_en_cat.ai
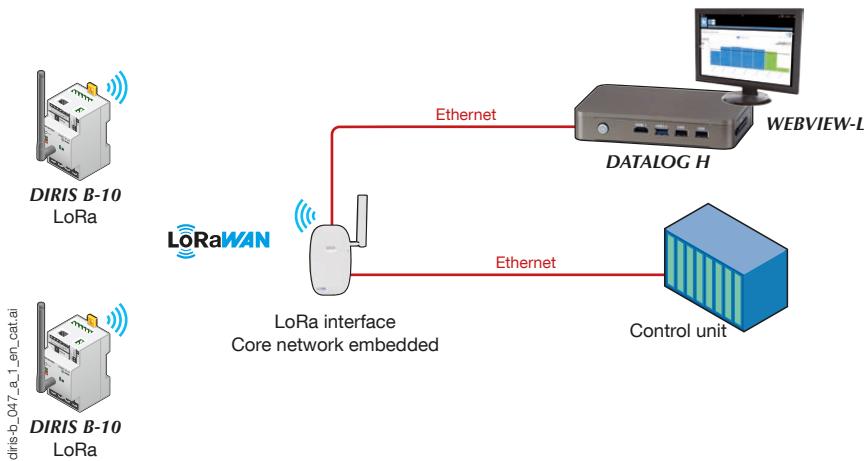
Cloud Architecture – private network

DIRIS B-10
LoRa

DIRIS B-10
LoRa

Cloud interface

2G/3G/4G

Ethernet

SOCOMEC IoT
network

SOCOMEC Cloud
Applications

diris-b_048_a_1_en_cat.ai
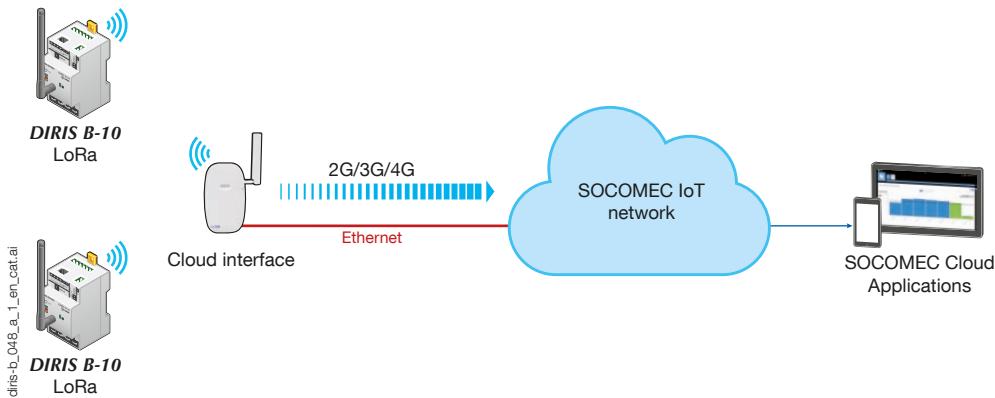
Cloud Architecture – operated network

DIRIS B-10
LoRa

DIRIS B-10
LoRa

Site A

DIRIS B-10
LoRa

DIRIS B-10
LoRa

Site B

LoRa

LoRa

LoRa

Operator
Obienious

Cloud Application

diris-b_049_a_1_en_cat.ai
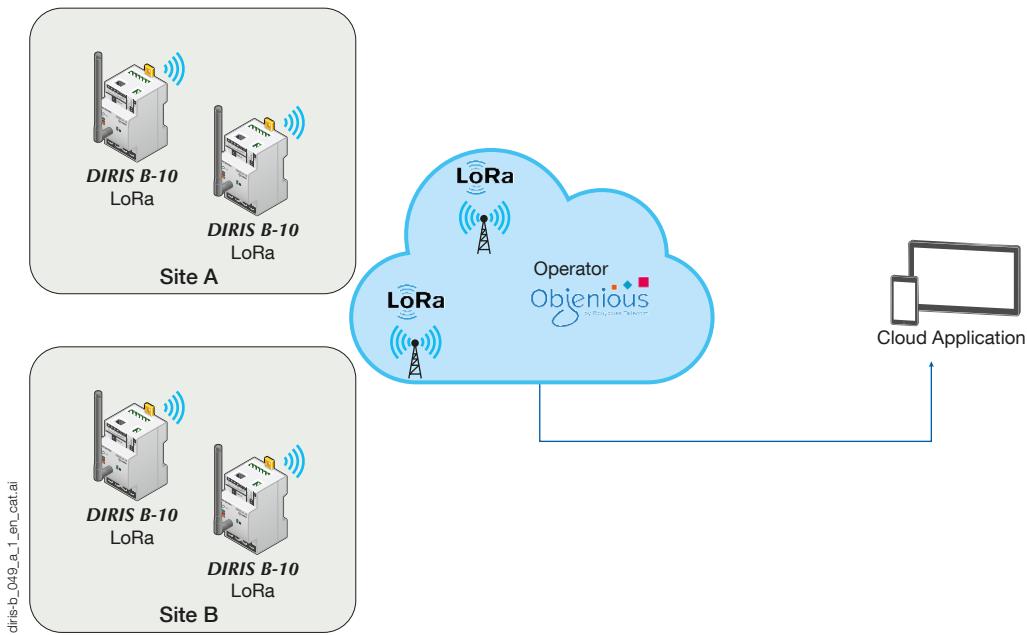
DIRIS B-10 LoRa characteristics

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 mm² or flexible with tip 0.25 … 1.5 mm²

Measurement characteristics

Measurement of energy and power levels	
Accuracy Active energy and active power	Class 0.2 DIRIS B standalone Class 0.5 with sensors TE, iTR or TF Class 1 with TR sensors
Reactive energy accuracy	Class 2 with sensors TE, TR/iTR or TF

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 mm² or flexible with tip 0.25 … 1.5 mm²

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 standalone Class 0.5 with sensors TE, iTR or TF 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	Level-setting
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	Optical coupler, internal polarisation (12 VDC ± 10%) or external (10-30 VDC ± 10%)
Function	Logical status or impulse counter
Number of outputs	2 per optional module - max. 4 optional modules
Type	Relay / 230 VAC ±15 % - 1A
Function	Configurable alarm (current, power…) when threshold is exceeded or status is controlled remotely
Connection of inputs / outputs	Unpluggable screw-type terminal strip, 4 positions, rigid or flexible cable, 0.14 to 1.5 mm²

DIRIS O-ioa - 2 analogue inputs / 2 analogue outputs	
Number of inputs	2 per optional module - max. 4 optional modules
Type	4-20 mA
Function	Connection of analogue sensors (pressure, humidity…)
Number of outputs	2 per optional module - max. 4 optional modules
Type	4-20 mA
Function	Transmission of an image of the measurements (power, currents, etc.) to automated machines.

DIRIS O-it - 3 temperature inputs	
Number of inputs	3 external inputs + 1 ambient measurement
Dynamic	-20 … 150 °C
Type	PT100 or PT1000

References

Multifunction meters		Reference
DIRIS B-10 LoRa	LoRaWAN - 230 VAC	4829 **0900**
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**

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 support)	4829 **0922**