

# DIRIS A14

## PMD - MID multifunction measuring unit

measuring and monitoring - modular format




*DIRIS A14 panel mounted*




*DIRIS A14 DIN rail mounted*

## Function

The **DIRIS A14** is an MID approved multifunction meter - for measuring electrical values in low voltage networks.

It allows all electrical parameters to be displayed and utilised for communication and/or output functions.

## Advantages

**Single-phase and three-phases MID certified**

DIRIS A14 products with MID certification provide the guaranteed accuracy required for applications in which sub-billing of the electrical energy consumed is necessary, whether on a three-phase or single-phase network. “Module B+D” certification guarantees that the design and manufacturing process of products are approved by an accredited laboratory.

**Bi-directional metering (four quadrants)**

This function is for metering energy production or energy consumption.

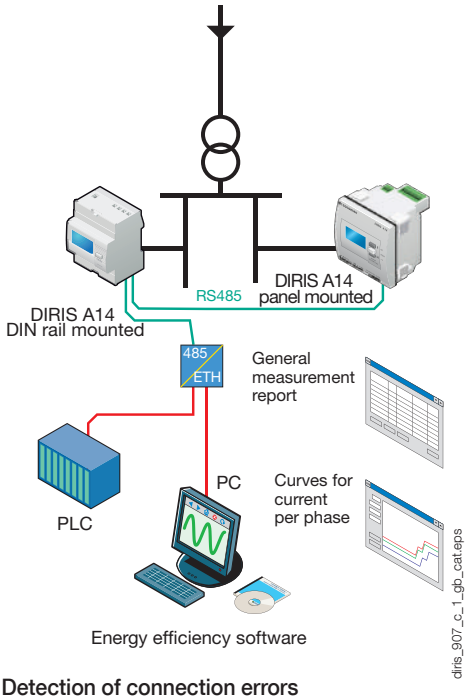
**Multi-measurement and load curve**

Display of electrical values (I, U, V, ΣP, ΣQ, ΣS, PF) and P+ load curve over a 7 day period via communication.

**IEC 61557-12 measuring method**

IEC 61557-12 is a high-level standard covering all PMDs (Performance Monitoring Devices). By using the measuring method of IEC 61557-12 ensures a high level of equipment performance, in terms of metrology.

## Functional diagram




**Detection of connection errors**

The product is protected against phase/neutral inversion and detects wiring errors. The power supply internally derived from the voltage connections ensures realtime MID counting as soon as the mains voltage is present.

## The solution for

- Industry
- Infrastructures
- Data centers



## Strong points

- Single-phase and three-phases MID certified
- Bi-directional metering
- Multi-measurement and load curves
- IEC 61557-12 measuring method
- Detection of connection errors

## Compliance with standards

- IEC 61557-12
- IEC 62053-23 class 2
- EN50470-1
- EN50470-3 class C

## Associated with current transformers



*See “Current transformers”.*

## Functions

**Multi-measurement**

- Currents
  - instantaneous: I1, I2, I3, In
  - maximum average: I1, I2, I3, In
- Frequency
- Voltages
  - instantaneous: V1, V2, V3, U12, U23, U31, F
- Powers
  - instantaneous: ΣP, ΣQ, ΣS
  - maximum average: ΣP, ΣQ, ΣS
- Power factor (cos φ)
  - instantaneous: Σ cos φ
  - maximum average: Σ cos φ

**Total and partial metering**

- Active energy: + kWh, - kWh
- Reactive energy: + kvarh, - kvarh

**Harmonic analysis (via communication)**

- Total harmonic distortion (rank 63)
  - Currents: thd I1, thd I2, thd I3
  - Phase-to-neutral voltage: thd V1, thd V2, thd V3
  - Phase-to-phase voltage: thd U12, thd U23, thd U31

**Multi tariff function (via communication)**

- Selection of one out of 4 billing tariffs

**Events (via communication)**

- Active energy consumption: day n-1 / week n-1 / month n-1
- Active power load curves: P 10 minutes over 7 days with time-log

**Communications**

- RS485 with MODBUS protocol



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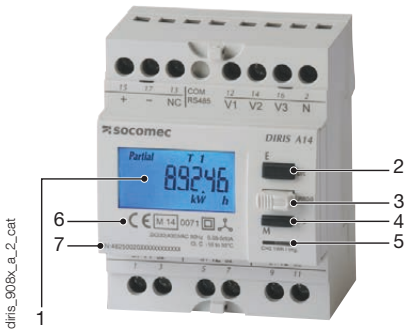
## Front panel

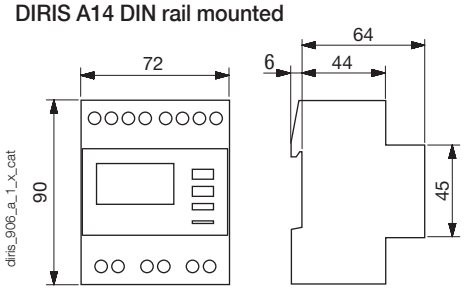



1. Backlit LCD display
2. Direct access for energies and validation key
3. Programming key
4. Navigation key for measurements
5. Metrological LED
6. MID marking
7. Serial Number

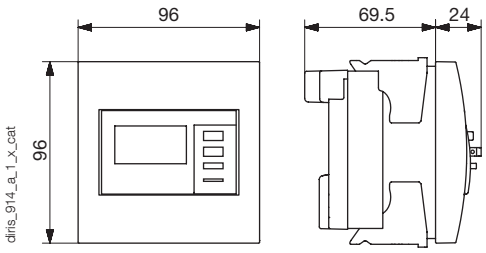



## Case

### DIRIS A14 DIN rail mounted




### DIRIS A14 door mounted




| | DIRIS A14 DIN rail mounted | DIRIS A14 door mounted |
|---|---|---|
| Type | modular | Recessed |
| Number of modules | 4 | - |
| Dimensions W x H x D | 72 x 90 x 64 mm | 96 x 96 x 69.5 mm |
| Case degree of protection | IP20 | |
| Front degree of protection | IP51 | |
| Display type | Backlit LCD | |
| Rigid cable cross-section | 1.5 … 10 mm² | |
| Flexible cable cross-section | 1 … 6 mm² | |
| Weight | 240 g | 450 g |

## Electrical characteristics

| | |
|---|---|
| **Current measurement (TRMS)** | |
| Via CT primary | 10 … 2500 A |
| Via CT secondary | 5 A |
| Input consumption | 0.6 VA |
| Startup current (Ist) | 5 mA |
| Minimum current (Imin) | 50 mA |
| Transmission current (Itr) | 250 mA |
| Reference current (Iref) | 5 A |
| Measurement updating period | 1 s |
| Accuracy | 0.5% |
| Permanent overload | 6 A |
| Intermittent overload | 120 A for 0.5 s |
| **Voltage measurements (TRMS)** | |
| Direct measurement (four phases) | 50 …460 VAC |
| Input consumption | 2 VA |
| Measurement updating period | 1 s |
| Accuracy | 0.2% |
| Permanent overload | 480 V (phase-to-phase measurement) |
| **Power measurement** | |
| Measurement updating period | 1 s |
| Accuracy | 0.5% |
| **Power factor measurement (cos φ)** | |
| Measurement updating period | 1 s |
| Accuracy | 0.01 |

| | |
|---|---|
| **Energy accuracy** | |
| Active (according to IEC 62053-22) | Class 0.5 S |
| Reactive (according to IEC 62053-23) | Class 2 |
| Active (according to EN 50470) | Class C |
| **Metrological LED ($EA^+$,$EA^-$)** | |
| Pulse weight | 10000 pulses/kWh |
| Colour | Red |
| **Auxiliary power supply** | |
| Self-powered | Yes |
| Frequency | 50 / 60 Hz |
| **Communication** | |
| Link | RS485 |
| Type | 2 to 3 half duplex wires |
| Protocol | MODBUS® RTU |
| MODBUS® speed | 4800 … 38400 bauds |
| **Operating conditions** | |
| Operating temperature | -10 … +55°C |
| Storage temperature | -20 … +70°C |
| Relative humidity | 95% non-condensing |

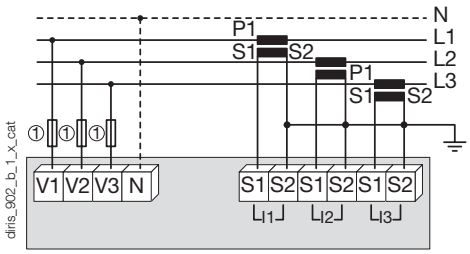
## Connection

### Low voltage balanced network

**Recommendation:**
**- For IT earthing systems, it is recommended that the CT secondary is not connected to earth.**
- When disconnecting the DIRIS, the secondary of each current transformer must be short-circuited.
This operation can be carried out automatically by a SOCOMEC PTI, which can be found in the SOCOMEC catalogue: please consult us.

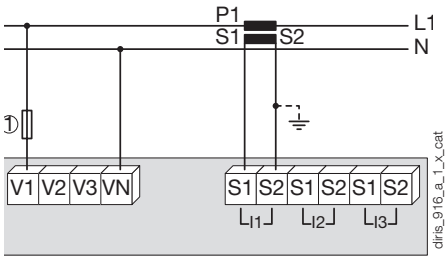
### Low voltage unbalanced network

**3/4 wires with 3 CTs**



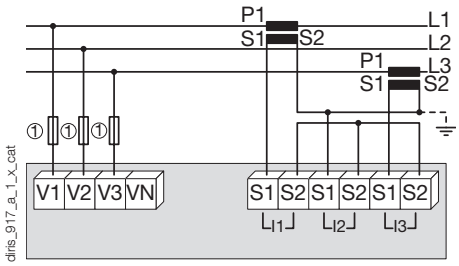

*1. 0.5 A gG / 0.5 A class CC fuses.*

**Single-phase**



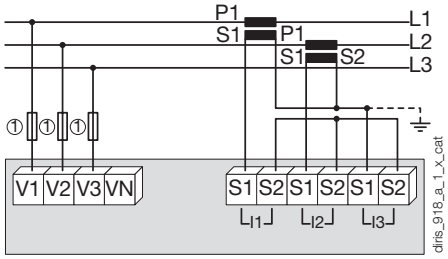

*1. 0.5 A gG / 0.5 A class CC fuses.*

**3 wires with 2 CTs**




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

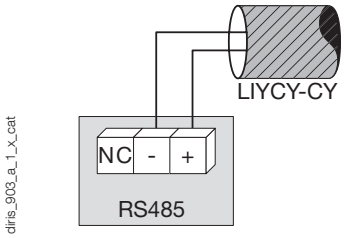
**3 wires with 2 CTs**




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

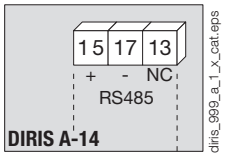
### Additional information

**Communication via RS485 link**

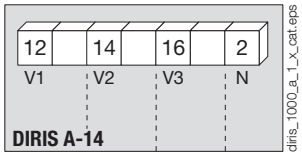


## Terminals

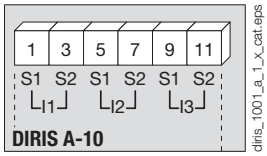
**Communication Module**




**RS485 link.**




**V1, V2, V3 & N :** voltage inputs.




**S1 - S2 :** current inputs.

## References

| **Basic device**<br>**Description** | | **DIRIS A14**<br>**Reference** |
|---|---|---|
| DIRIS A14 MID DIN rail mounted | | 4825 **0020** |
| DIRIS A14 MID door mounted | | 4825 **0021** |
| **Accessoires** | **À commander par multiple de** | **Référence** |
| Fuse disconnect switches for the protection of voltage inputs (type RM) | 4 | 5601 **0018** |
| Fuse disconnect switches to protect the 1-pole + neutral auxiliary power supply (RM type) | 6 | 5601 **0017** |
| gG 10x38 0,5 A fuses type | 10 | 6012 **0000** |
| Automatic CT short-circuiting device | See “Current transformers” pages | |

## Expert Services

> Study, definition, advice, implementation, maintenance and training… Our experts “Expert Services” offer complete support for the success of your project.

