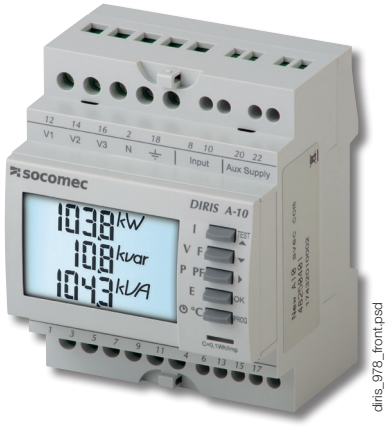
Single-circuit metering, measurement & analysis

DIRIS A-10

Multifunction meters - PMD

modular multifunction meter



DIRIS A-10

The solution for

- Industry
- Infrastructures
- Building

Strong points

- Easy to use
- Integrated temperature sensor
- Detects wiring errors
- Compliant with ANSI C12.20 and IEC 61557-12

Conformity to standards

- UL 61010-1
  CSA-C22.2 No. 61010-1
  Guide PICQ
  File E257746
- ANSI C12.20
- IEC 61557-12
- CEC compliant

Function

The **DIRIS A-10** is a modular multifunction meter for measuring electrical values in low voltage networks.
It allows all electrical parameters to be displayed and utilized for communication and/or output functions.

Advantages

Easy to use

Five direct access pushbuttons enable all measurements to be clearly viewed on the backlit LCD display.

Integrated temperature sensor

It allows variations in temperature to be detected.

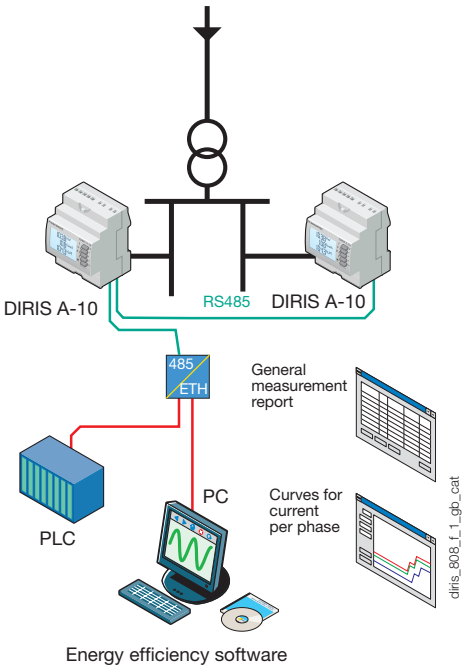
Detects wiring errors

An integrated test function can be utilized to detect incorrect wiring and to automatically correct CT installation errors.

Compliant with ANSI C12.20 and IEC 61557-12

IEC 61557-12 is a high-level standard for all PMDs (Performance Monitoring Devices) that are designed to measure and monitor electrical parameters in distribution networks.
Compliance with IEC 61557-12 ensures a high level of equipment performance, in terms of metrology, as well as mechanical and environmental aspects (EMC, temperature, etc.).

Principle diagram



Energy efficiency software

Bi-Directional Metering

DIRIS A-10 can measure the flow of electricity in both directions.

Functions

Multi-measurement
- Currents
  - instantaneous: I1, I2, I3, In
  - maximum average: I1, I2, I3, In
- Voltages & frequency
  - instantaneous: V1, V2, V3, U12, U23, U31, F
- Power
  - instantaneous: 3P, ΣP, 3Q, ΣQ, 3S, ΣS
  - maximum average: ΣP, ΣQ, ΣS
- Power factors
  - instantaneous: 3PF, ΣPF

Metering
- Active energy: +/- kWh
- Reactive energy: +/- kVarh
- Hours:

Harmonic analysis
- Total harmonic distortion (level 51)
  - 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

Dual tariff function
Selection of one out of 2 billing tariffs

Events
Alarms on all electrical values

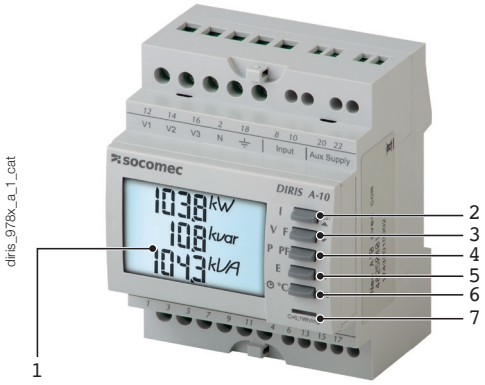
Communications(1)
RS485 with MODBUS protocol

Input
- Tariff selection
- Remote device status

Output
- Remote command of device
- Alarm report
- Pulse report

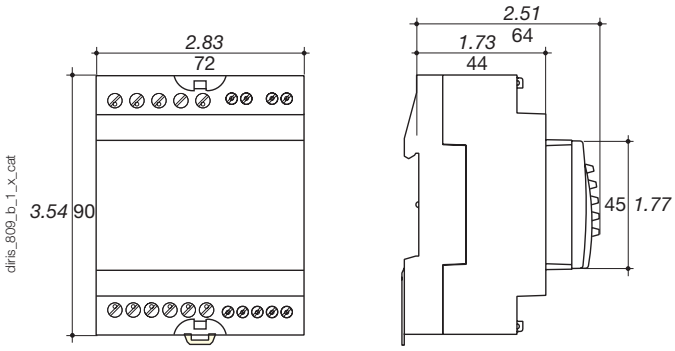
(1) Available on specific version (see the following pages).

Front panel



1. Backlit LCD display.
2. Direct access key for currents (instant and maximum), current THD and test function.
3. Direct access key for voltages, frequency and voltage THD.
4. Direct access key for active, reactive and apparent power (instantaneous and max. values) and power factor.
5. Direct access key for energies.
6. Pushbutton for hour meter, temperature and programming menu access.
7. Metrological LED.

Dimensions (in/mm)



Type	Modular
Number of modules	4
Dimensions W x H x D	2.83 x 3.54 x 2.51 in / 72 x 90 x 64 mm
Case degree of protection	IP 30
Front degree of protection	IP 52
Display type	Backlit LCD display
Voltage and current connection cross-section	AWG 6 / 4 mm^2
Connection cross-section for AUX supply, input, output and comms.	AWG 10 / 2.5 mm^2
Weight	7.23 oz / 205 g (4825 0400) 7.58 oz / 215 g (4825 0401)

Electrical characteristics

Current measurement (TRMS)	
Via CT primary	9 999 A
Via CT secondary	5 A
Measurement range	0 … 11 kA
Input consumption	0.6 VA
Measurement updating period	1 s
Accuracy	0.2 %
Permanent overload	6 A
Intermittent overload	10 I_n for 1 s
Voltage measurements (TRMS)	
Direct measurement between phases	50 … 500 VAC
Direct measurement between phase and neutral	28 … 289 VAC
Input consumption	≤ 0.1 VA
Measurement updating period	1 s
Accuracy	0.2 %
Power measurement	
Measurement updating period	1 s
Accuracy	0.5 %
Power factor measurement	
Measurement updating period	1 s
Accuracy	0.5 %
Frequency measurement	
Measurement range	45 … 65 Hz
Measurement updating period	1 s
Accuracy	0.1 %

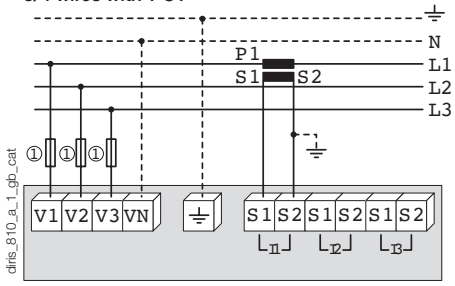
Energy accuracy	
Active (according to IEC 62053-22)	Class 0.5 S
Reactive (according to IEC 62053-23)	Class 2
Auxiliary power supply	
Alternating voltage	110 … 277 VAC
AC tolerance	± 15 %
Frequency	50 / 60 Hz
Consumption	< 3 VA
Digital output (pulses or on/off)	
Number	1
Type	20 / 30 VDC - 0.5 A - 10 VA
Max. number of operations	≤ 10^8
Input (tariff)	
Number	1
Type	0 VAC: T1 / 200-277 VAC: T2
Communication	
Link	RS485
Type	2 … 3 half duplex wires
Protocol	MODBUS RTU
MODBUS® speed	2400 … 38400 bauds
Operating conditions	
Operating temperature	+14 °F … +131 °F / - 10 … + 55 °C
Storage temperature	-4 °F … +158 °F / - 20 … + 70 °C
Relative humidity	85 %

Connection

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.
- It is recommended that the earthing point for the DIRIS A-10 and the current transformer secondaries are not earthed at the same time.

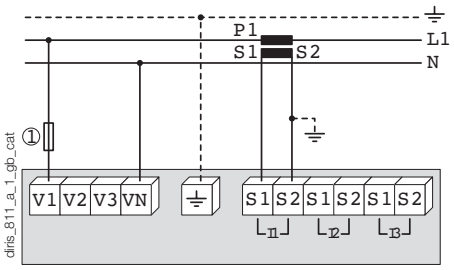
Low voltage balanced network

3/4 wires with 1 CT



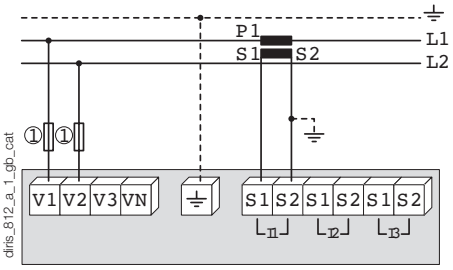
1. 0.5 A class CC.

Single-phase



1. 0.5 A class CC.

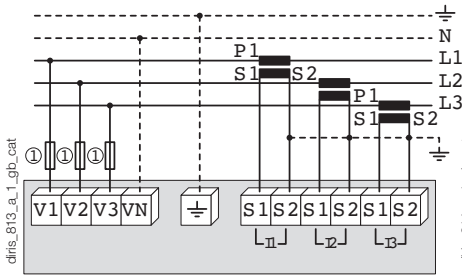
Two-phase



1. 0.5 A class CC.

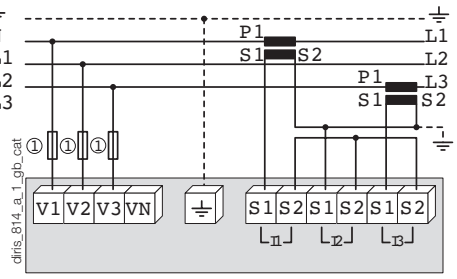
Low voltage unbalanced network

3/4 wires with 3 CTs



1. 0.5 A class CC.

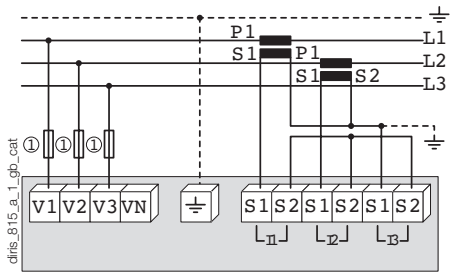
3 wires with 2 CTs



Use of 2 CTs reduces by 0.5% the accuracy of the phases, the current of which is worked out by vector calculation.

1. 0.5 A class CC.

3 wires with 2 CTs

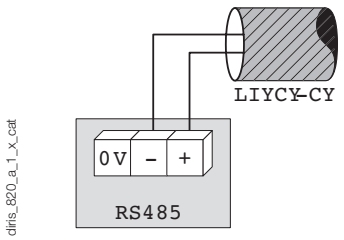


Use of 2 CTs reduces by 0.5% the accuracy of the phases, the current of which is worked out by vector calculation.

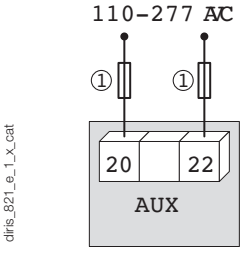
1. 0.5 A class CC.

Additional information

Communication via RS485 link

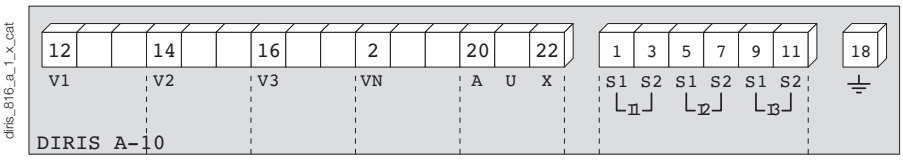


AC auxiliary power supply



1. 0.5 A class CC.

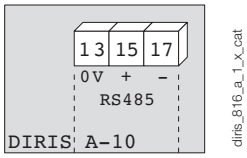
Terminals



AUX: auxiliary power supply U_s.
V1, V2, V3 & VN: voltage inputs.

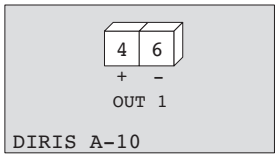
S1 - S2: current inputs.

Communication terminals



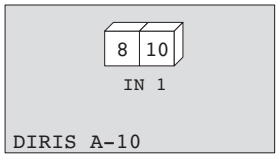
RS485 link.

Pulse or alarm output terminals



4 - 6: output n°1

Input terminals



8 - 10: input n°1

References

Basic device **Description**		**DIRIS A-10** **Reference**
DIRIS A-10		4825 **0400**
DIRIS A-10 with RS485 MODBUS communication		4825 **0401**
Description of accessories	**To be ordered in multiples of**	**Reference**
Fuse holder Class CC to protect voltage inputs 3 pole	4	5705 **0003**
Class CC 0.5 A fuses	10	6CC0 **0500**

Expert Services

> Our local team offers complete support to ensure the success of your project, from consultation to implementation of your metering system.

See page xxx.