

DIRIS A-20

Multifunction power metering & monitoring device - PMD
Multi-measurement

Single-circuit metering,
measurement &
analysis



DIRIS A-20

diris_981_a_front.eps

The solution for

- > Industry
- > Infrastructures
- > Building



Strong points

- > User-friendly operation
- > Compliant with ANSI C12.20 and IEC 61557-12
- > Detects wiring errors
- > Customizable

Compliance with standards

- > UL 61010 guide PICQ file E257746
- > ANSI C12.20
- > IEC 61557-12
- > IEC 62053-22 class 0.5S
- > IEC 62053-23 class 2



Related software

- > To use Socomec PMDs effectively, we can offer you several dedicated software tools. See page 280.

Function

DIRIS A-20 units are power metering and monitoring devices that provide the user with all of the measurements needed to complete energy efficient projects successfully and to provide assured monitoring of electrical distribution.

All of this information can be used and analyzed remotely with the help of energy efficiency software programs.

Advantages

User-friendly operation

With its large backlit multiple-display screen with 4 hot keys, the DIRIS A-20 is easy to use.

Compliant with ANSI C12.20 and IEC 61557-12

Reference standard for PMDs (Performance metering & monitoring devices), IEC 61557-12 guarantees performance levels and satisfactory performance from the PMDs under the environmental conditions typical of industrial and tertiary applications.

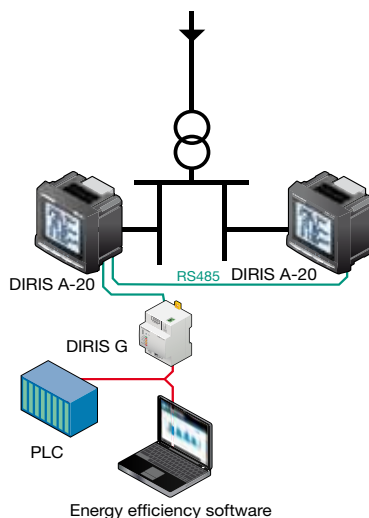
Detects wiring errors

The DIRIS A-20 is equipped with an error correction function for TC connection.

Customizable

Additional communication and input/output modules can extend the basic functional scope of this product. Equipped with additional modules, the DIRIS A-20 can provide the user with flexibility and expandability throughout the service life of the product.

Functional diagram



DIRIS_576_L1_en_caf

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
- Powers
 - instantaneous: 3P, ΣP, 3Q, ΣQ, 3S, ΣS
 - maximum average: ΣP, ΣQ, ΣS
- Power factors
 - instantaneous: 3PF, ΣPF

Metering

- Active energy: +/- kWh
- Reactive energy: +/- kvarh
- Timetable: ☺

Harmonic analysis

- Total harmonic distortion (rank 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

Events

Alarms on all electrical parameters

Communications⁽¹⁾

RS485 with MODBUS protocol

Output

- Equipment control
- Alarm report
- Pulse report

Input

- Information report from a dry external contact

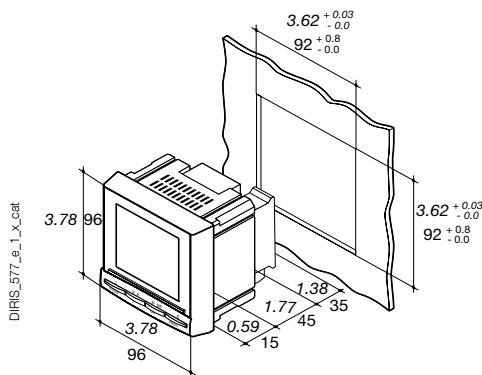
(1) Available as an option (see the following pages).

Front panel



1. Backlit LCD display
2. Pushbutton for currents (instantaneous and maximum), THD currents and the connection correction function.
3. Pushbutton for voltages, frequency and THD voltages.
4. Pushbutton for power (instantaneous and maximum), active, reactive and effective, power factor.
5. Pushbutton for energy sources and timer counter.

Dimensions (in/mm)



Type	Plug-in
Dimensions L x H x P	3.78 x 3.78 x 2.36 in / 96 x 96 x 60 mm
Case degree of protection	IP30
Front degree of protection	IP52
Display type	Backlit LCD
Type of terminal strips	Fixed or removable
Section for connection of voltages and other terminals	AWG 34 ... 10 / 0.2 ... 2.5 mm ²
Section for connection of currents	AWG 34 ... 10 / 0.2 ... 2.5 mm ²
Weight	14.11 oz / 400 g

Plug-in optional modules



DIRIS_773_a_1_cat



1 output

- 1 output that can be configured for:
- pulses: configurable (type, weight, duration) to kWh or kVarh.
 - Monitoring: 3I, In, 3V, 3U, F, ΣP, ΣQ, ΣS, ΣPFL/C, THD 3I, THD 3V, THD 3U and timer meter.
 - Equipment control



Communication

RS485 link with MODBUS protocol (speed up to 38 400 baud).

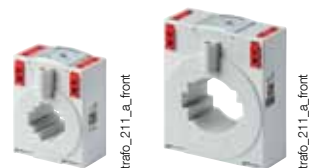


3 inputs , 1 output

- 3 inputs can be configured into:
- Information report from an external contact.
- 1 output that can be configured for:
- pulses: configurable (type, weight, duration) to kWh or kVarh.
 - Monitoring: 3I, In, 3V, 3U, F, ΣP, ΣQ, ΣS, ΣPFL/C, THD 3I, THD 3V, THD 3U and timer meter.
 - Equipment control

Accessories

UL recognized Current Transformers
See page 270



IP65 protection



Accessories	To be ordered in multiples of	Part number
Description		
Fuse holder Class CC to protect voltage inputs 3 pole	4	5705 0003
Class CC 0.5 A fuses	10	6CC0 5000

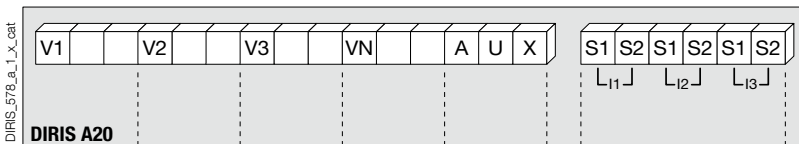
DIRIS A-20

Multifunction power metering & monitoring device - PMD
Multi-measurement

Electrical characteristics

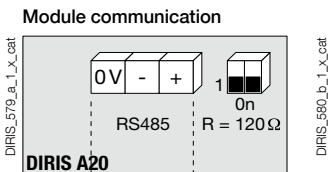
Current measurement (TRMS)		Energy accuracy	
Via CT primary	9 999 A	Active (according to IEC 62053-22)	Class 0.5 S
Via CT secondary	5 A	Reactive (in acc. with CEI 62053-23)	Class 2
Measurement range	0 ... 11 kA	Auxiliary power supply	
Input consumption	0.6 VA	Alternative voltage	110 ... 400 VAC
Measurement updating period	1 s	AC tolerance	± 10%
Accuracy	0.2%	DC voltage	120 ... 289 VDC
Permanent overload	6 A	DC tolerance	± 20%
Intermittent overload	10 I _n over 1 sec	Frequency	50 / 60 Hz
Voltage measurements (TRMS)		Power consumption	10 VA
Direct measurement between phases	50 ... 500 VAC	Pulse or alarm output	
Direct measurement between phase and neutral	28 ... 289 VAC	Number	1
Input consumption	≤ 0.1 VA	Type	100 VDC - 0.5 A - 10 VA
Measurement updating period	1 s	Max. number of manoeuvres	≤ 10 ⁸
Accuracy	0.2%	Inputs	
Power measurement		Number	3
Measurement updating period	1 s	Power supply	10 ... 30 VDC
Accuracy	0.5%	Minimum width of signal	10 ms
Power factor measurement		Minimum length between 2 pulses	18 ms
Measurement updating period	1 s	Type	Optical couplers
Accuracy	0.5%	Communication	
Frequency measurement		Link	RS485
Measurement range	45 ... 65 Hz	Type	2 to 3 half duplex wires
Measurement updating period	1 s	Protocol	MODBUS® in RTU mode
Accuracy	0.1%	MODBUS® speed	1400 ... 38400 baud
		Operating conditions	
		Operating temperature range	- 10 ... + 55 °C / +14 °F ... +131 °F
		Storage temperature	- 20 ... + 70 °C / -4 °F ... +158 °F
		Relative humidity	95%

Terminals

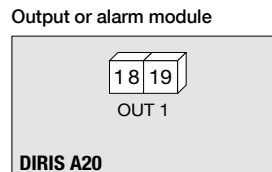


S1 - S2: current inputs.

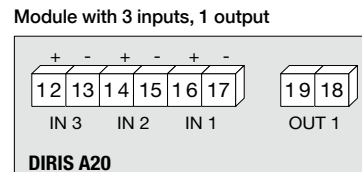
AUX: auxiliary power supply U_s.
V1, V2, V3 & VN: voltage inputs.



RS485 link.
R = 120 Ω : internal resistance for the RS485 link.



18 - 19: output n°1



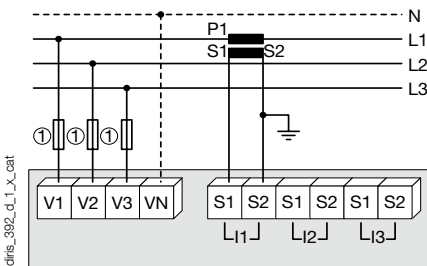
Connection

Low voltage balanced network

Recommendation

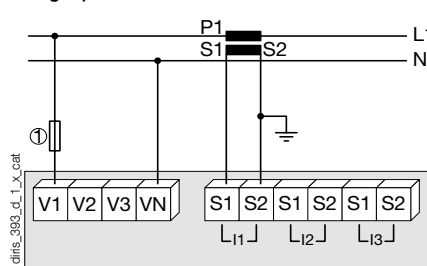
- For IT earthing systems, it is recommended that the CT secondary is not connected to earth.
- When disconnecting the DIRIS, the secondary of each current transformer must be short-circuited. This operation can be carried out automatically by a SOCOMEC PTI: please consult us.

3/4 wires with 1 CT



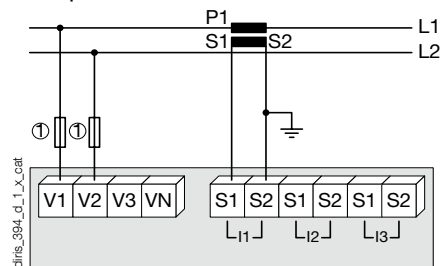
The 1CT solution reduces by 0.5% the accuracy of the phase for which the current is deduced by a vector calculation.
1. 0.5 A gG / 0.5 A class CC fuses.

Single-phase



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

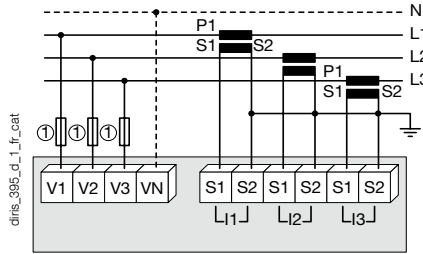
Two-phase



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

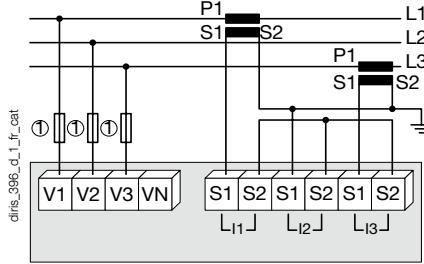
Low voltage unbalanced network

3/4 wires with 3 CTs



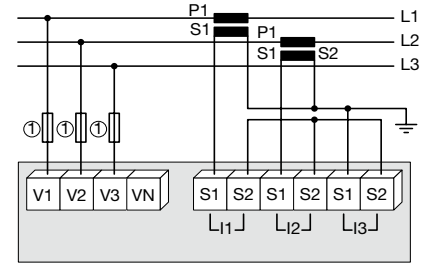
1. 0.5 A gG / 0.5 A class CC fuses.

3 wires with 2 CTs



The 2CT solution reduces by 0.5% the accuracy of the phase for which the current is deduced by a vector calculation.
1. 0.5 A gG / 0.5 A class CC fuses.

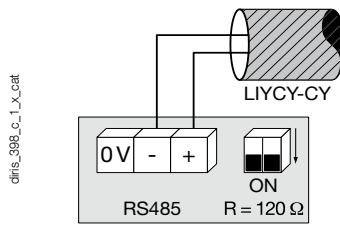
3 wires with 2 CTs



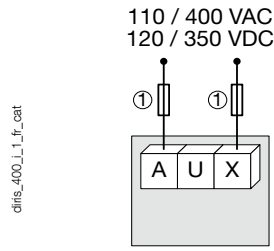
The 2CT solution reduces by 0.5% the accuracy of the phase for which the current is deduced by a vector calculation.
1. 0.5 A gG / 0.5 A class CC fuses.

Additional information

Communication via RS485 link



AC and DC auxiliary power supply



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

References

Basic device	DIRIS A-20	
Auxiliary power supply U_s	Part number	
110 ... 400 VAC / 120 ... 350 VDC	4825 0402	
Options		
Plug-in optional modules	Part number	
On/Off output.	4825 0080	
RS485 MODBUS® communication	4825 0082	
3 inputs, 1 output	4825 0083	
Accessories		
Designation of accessories	To be ordered in multiples of	Part number
Protection IP65	1	4825 0089
Plug-in kit for cutout 144 x 96 mm	1	4825 0088
Fuse holder Class CC to protect voltage inputs 3 pole	4	5705 0003
Class CC 0.5 A fuses	10	6CC0 5000
Ferrite for use with communication modules	1	4899 0011
Range of UL recognized current transformers	1	See page 270
Software associated with DIRIS		See page 280

Expert Services

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

