DIRIS A-20

Multifunction power metering & monitoring device - PMD
Multi-measurement

DIRIS A-20

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.
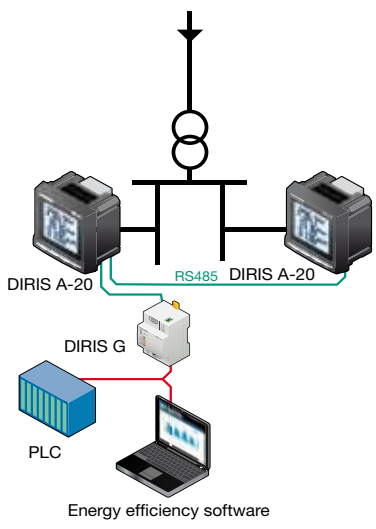
Detects wiring errors

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

Energy efficiency software

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.

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
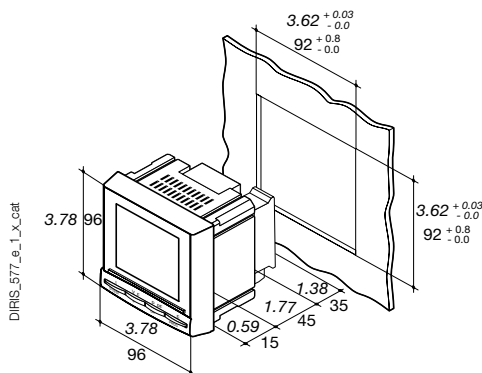**Input**
• Information report from a dry external contact
(1) Available as an option (see the following pages).

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Front panel

DIRIS_981x_a_1_cat

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.

1 2 3 4 5

Dimensions (in/mm)

DIRIS_577_e_1_x_cat

$3.62\,^{+0.03}_{-0.0}$
$92\,^{+0.8}_{-0.0}$

3.78 96

$3.62\,^{+0.03}_{-0.0}$
$92\,^{+0.8}_{-0.0}$

1.38   35
1.77   45
0.59   15
3.78
96

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® A-20

DIRIS_773_a_1_cat

diris_445_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

diris_447_a_1_cat

Communication

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

diris_449_a_1_cat

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
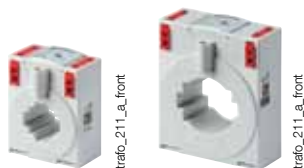
trafo_211_a_front

trafo_211_a_front

IP65 protection

DIRIS_720_a_2_cat

| Accessories		
Description	To be ordered in multiples of	Part number
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*
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Multi-measurement

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 over 1 sec
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%

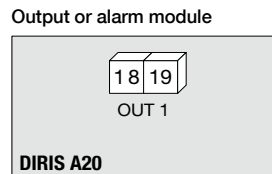| Energy accuracy	
Active (according to IEC 62053-22)	Class 0.5 S
Reactive (in acc. with CEI 62053-23)	Class 2
Auxiliary power supply	
Alternative voltage	110 … 400 VAC
AC tolerance	± 10%
DC voltage	120 … 289 VDC
DC tolerance	± 20%
Frequency	50 / 60 Hz
Power consumption	10 VA
Pulse or alarm output	
Number	1
Type	100 VDC - 0.5 A - 10 VA
Max. number of manoeuvres	≤ 10^8
Inputs	
Number	3
Power supply	10 … 30 VDC
Minimum width of signal	10 ms
Minimum length between 2 pulses	18 ms
Type	Optical couplers
Communication	
Link	RS485
Type	2 to 3 half duplex wires
Protocol	MODBUS® in RTU mode
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
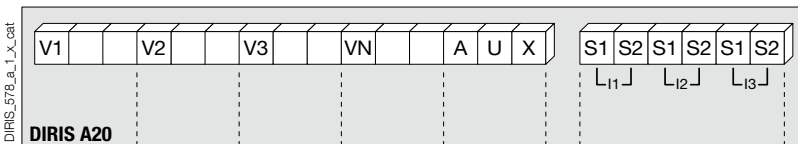
S1 - S2: current inputs.

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

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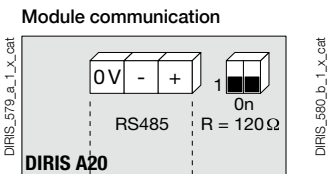
RS485 link.
R = 120 Ω : internal resistance for the RS485 link.

Output or alarm module

18 - 19: output n°1

Module with 3 inputs, 1 output
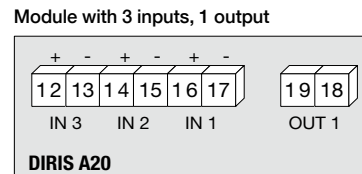
Connection

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.
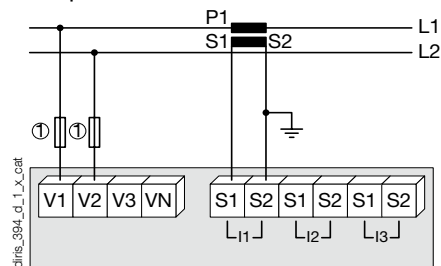
3/4 wires with 1 CT
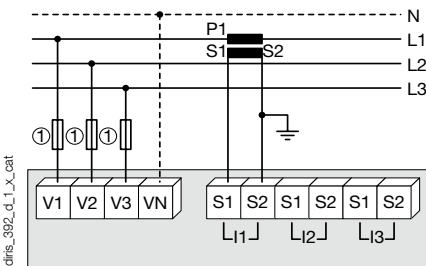
The 1CT solution reduces by 0.5% the accuracy of the phase for which the current is deduced by a vector calculation.
1. 0.5 A gG / 0.5 A class CC fuses.

Single-phase
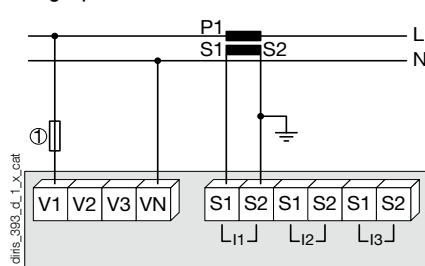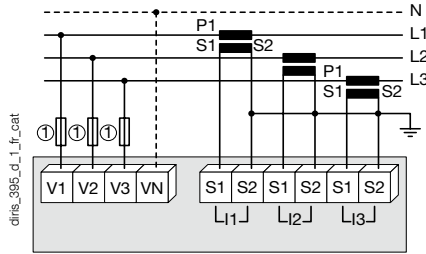

1. 0.5 A gG / 0.5 A class CC fuses.
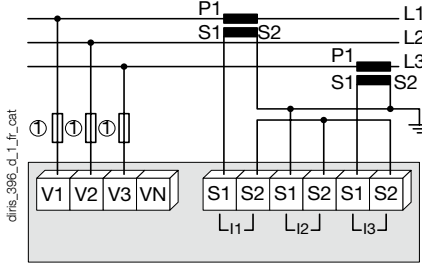
Two-phase

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

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Low voltage unbalanced network

3/4 wires with 3 CTs

diris_395_d_1_fr_cat

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

3 wires with 2 CTs

diris_396_d_1_fr_cat

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

diris_397_e_1_x_cat
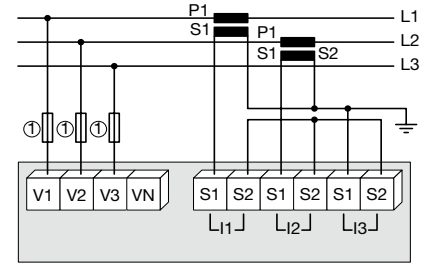
The 2CT solution reduces by 0.5% the accuracy of the phase for which the current is deduced by a vector calculation.
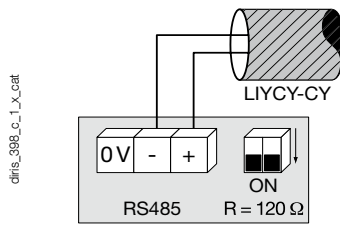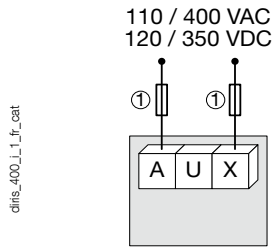*1. 0.5 A gG / 0.5 A class CC fuses.*

Additional information

Communication via RS485 link

diris_398_c_1_x_cat

LIYCY-CY

0 V   −   +

RS485   R = 120 Ω   ON

AC and DC auxiliary power supply

diris_400_i_1_fr_cat

110 / 400 VAC
120 / 350 VDC

A   U   X

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

References

Basic device		DIRIS A-20
Auxiliary power supply Uₛ		**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.