



DIRIS A-30

Multifunction power metering & monitoring device - PMD

Single-circuit metering,
measurement &
analysis



DIRIS A-30

Function

The **DIRIS A-30** is a power metering and monitoring device that provides the user with all of the measurements needed to complete energy efficiency projects and to ensure the monitoring of electrical distribution.

All the information can be used and analyzed remotely with energy efficiency software packages.

Advantages

User-friendly operation

With its large backlit multiple-display screen and 6 pushbuttons, the DIRIS A-30 is easy to use.

Detects wiring errors.

The DIRIS A-30 is provided with a correction function for CT wiring errors.

Customizable

The DIRIS A-30 can be equipped with additional modules that give the user flexibility throughout the service life of the product.

Communication modules and additional digital or analog inputs/outputs can be used to increase its range of functionality.

Functions

Multi-measurement

- Currents
 - instantaneous: I₁, I₂, I₃, In, I_{system}
 - average/max average: I₁, I₂, I₃, In
- Voltages & frequency
 - instantaneous: V₁, V₂, V₃, U₁₂, U₂₃, U₃₁, F, V_{system}, U_{system}
 - average/max average: V₁, V₂, V₃, U₁₂, U₂₃, U₃₁, F
- Powers
 - instantaneous: 3P, ΣP , 3Q, ΣQ , 3S, ΣS
 - max average: ΣP , ΣQ , ΣS
 - predictive: (ΣP), (ΣQ), (ΣS)
- Power factors
 - instantaneous: 3PF, ΣPF
 - average/max average: ΣPF
- Kfactor

Metering

- Active energy: +/- kWh
- Reactive energy: +/- kvarh
- Effective power: kWh
- Time table: \ominus

Harmonic analysis

- Total Harmonic Distortion
- Currents: thd I₁, thd I₂, thd I₃, thd In
- Phase-to-neutral voltage: thd V₁, thd V₂, thd V₃
- Phase-to-phase voltage: thd U₁₂, thd U₂₃, thd U₃₁

Individual harmonics up to 63rd

- Currents: H₁₁, H₁₂, H₁₃, H_{In}
- Phase-to-neutral voltage: HV₁, HV₂, HV₃,
- Phase-to-phase voltages: HU₁₂, HU₂₃, HU₃₁

Demand profiles

- Active & reactive power: $\Sigma P +/- ; \Sigma Q +/-$
- Voltages & frequency: V₁, V₂, V₃, U₁₂, U₂₃, U₃₁, F

Events⁽¹⁾

- Alarms on all electrical parameters.

The solution for

- Industry
- Building
- Infrastructures



Strong points

- User-friendly operation
- Detects wiring errors.
- Customizable
- Compliant with ANSI C12.20

Compliance with standards

- UL 61010-1
CSA-C22.2 No.
61010-1
Guide PICQ
File E257746



- ANSI C12.20
- IEC 61557-12

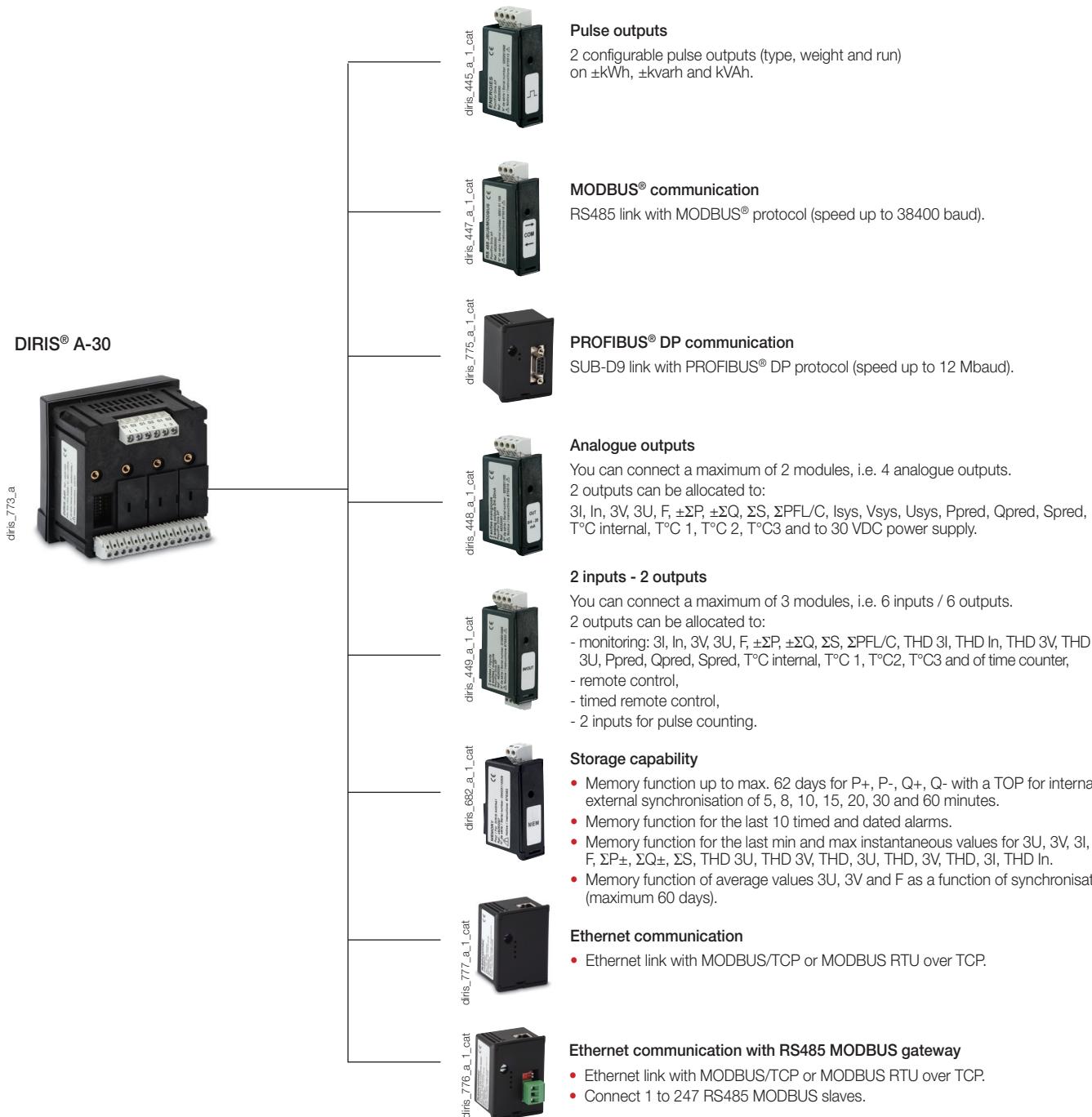


Front panel



1. Backlit LCD display.
2. Pushbutton for currents and for connection correction function.
3. Pushbutton for voltages and frequency.
4. Pushbutton for active, reactive and effective powers and for power factor.
5. Pushbutton for maximum and average values for currents and power levels.
6. Pushbutton for harmonics.
7. Pushbutton for electrical energy meters, timers and impulse counters.

Hot swappable modules



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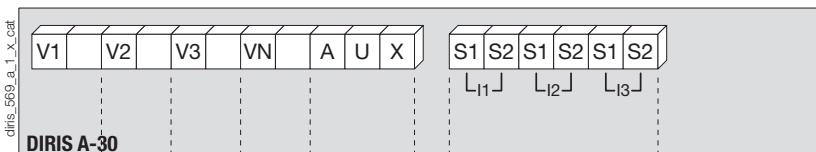
Accessory

IP65 protection



Terminals

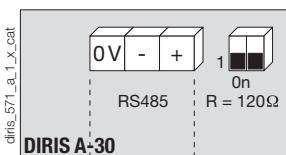
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S1 - S2: current inputs

AUX: auxiliary power supplies U_s
V1 - V2 - V3 - VN: voltage inputs

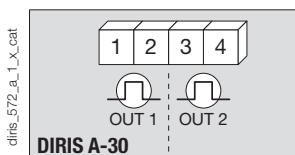
Communication module



RS485 link.

R = 120 Ω : internal resistance for the RS485 end of line termination.

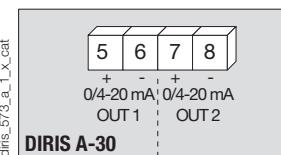
Pulse output module



1 - 2: pulse output n°1.

3 - 4: relay output n°2.

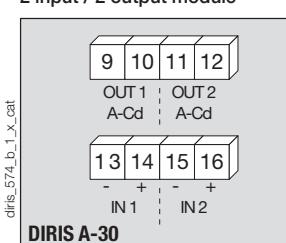
Analog output module



5 - 6: analog output n°1.

7 - 8: analog output n°2.

2 input / 2 output module



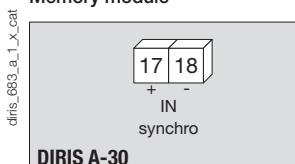
9 - 10: relay output n°1.

11 - 12: relay output n°2.

13 - 14: optical input n°1.

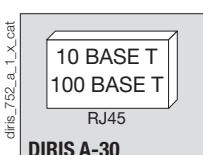
15 - 16: optical input n°2.

Memory module

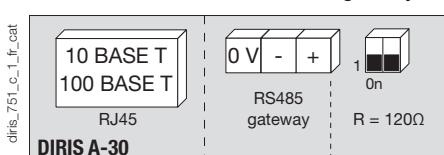


17 - 18: synchronization input.

Ethernet module



Ethernet module + RS485 MODBUS gateway



Electrical characteristics

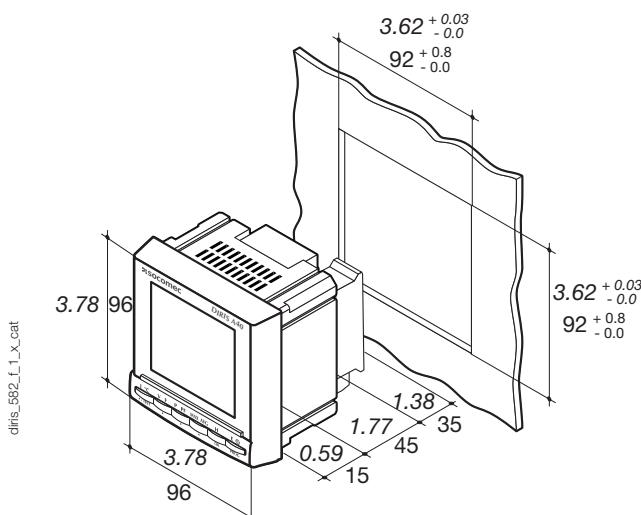
Measurement of currents on insulated inputs (TRMS)	
Via CT primary	9,999 A
Via CT secondary	1 or 5 A
Measurement range	0 ... 11 kA
Input consumption	≤ 0,1 VA
Measurement updating period	1 s
Accuracy	0.2%
Permanent overload	6 A
Intermittent overload	10 I _n for 1 s
Voltage measurements (TRMS)	
Direct measurement between phases	50 ... 500 VAC
Direct measurement between phase and neutral	28 ... 289 VAC
VT primary measurement	500,000 VAC
VT secondary measurement	60, 100, 110, 173, 190 VAC
Frequency	50 / 60 Hz
Input consumption	≤ 0,1 VA
Measurement updating period	1 s
Accuracy	0.2%
Current - voltage product	
Limitation for CT 1 A	10,000,000
Limitation for CT 5 A	10,000,000
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	
Alternative voltage	110 ... 400 VAC
AC tolerance	± 10 %
Direct current	120 ... 350 VDC / 12 ... 48 VDC
DC tolerance	± 20 % / - 6 ... + 20 %
Frequency	50 / 60 Hz
Power consumption	≤ 10 VA

Module 2 inputs - 2 outputs: outputs (alarms / control)	
Number of relays	2 ⁽¹⁾
Type	250 VAC - 5 A - 1150 VA
Module 2 inputs - 2 outputs: optical coupler inputs	
Number	2 ⁽¹⁾
Power supply	10 ... 30 VDC
Minimum width of signal	10 ms
Minimum length between 2 pulses	18 ms
Type	Optical couplers
Pulse output module	
Number of relays	2
Type	100 VDC - 0.5 A - 10 VA
Max. number of manoeuvres	≤ 10 ⁸
Analog output module	
Number of outputs	2 ⁽²⁾
Type	Insulated
Scale	0 / 4 ... 20 mA
Load resistance	600 Ω
Maximum current	30 mA
MODBUS communication module	
Link	RS485
Type	2 to 3 half duplex wires
Protocol	MODBUS® RTU
MODBUS® speed	4800 to 38400 baud
PROFIBUS DP communication module	
Link	SUB-D9
Protocol	PROFIBUS® DP
PROFIBUS® speed	9.8 kbaud ... 12 Mbaud
Ethernet communication module	
Connection technology	RJ45
Baud rate	10 base T / 100 base T
Protocol	MODBUS TCP or MODBUS RTU on TCP
Operating conditions	
Operating temperature range	+14 ... +131 °F / -10 ... +55 °C
Storage temperature	-4 ... +185 °F / -20 ... +85 °C
Relative humidity	95%

(1) Max. 3 modules per DIRIS A-30.

(2) Max. 2 modules per DIRIS A-30.

Dimensions (in/mm)



Type	Panel mounting
Dimensions W x H x D	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 display
Type of terminal strips	Fixed or detachable
Section of connection for voltages and other terminals	AWG 34 ... 10 / 0.2 ... 2.5 mm ²
Section of connection for currents	AWG 20 ... 9 / 0.5 ... 6 mm ²
Weight	14.11 oz / 400 g

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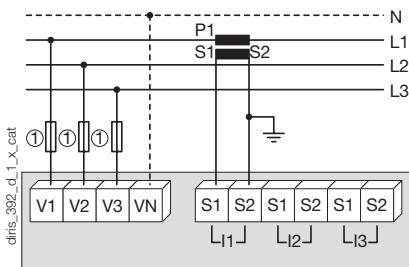
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Connections

Balanced low-voltage network for DIRIS A-30

Recommendation: When disconnecting the DIRIS, the secondary of each current transformer must be short-circuited. In TNC mode, it is advisable to connect the DIRIS A-30 to earth using the functional earth module.

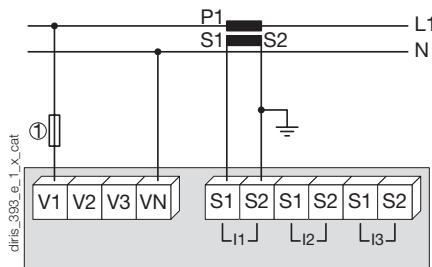
3/4 wires with 1 CTs



The use of 1 CT reduces by 0.5% the accuracy of the phases, the current for which is worked out by vector calculation.

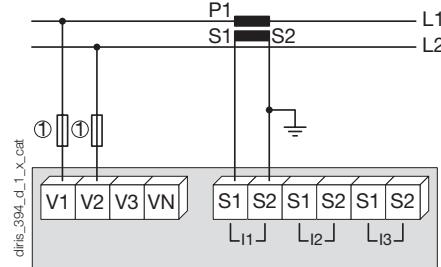
1. 0.5 A class CC fuses.

Single-phase



1. 0.5 A class CC fuses.

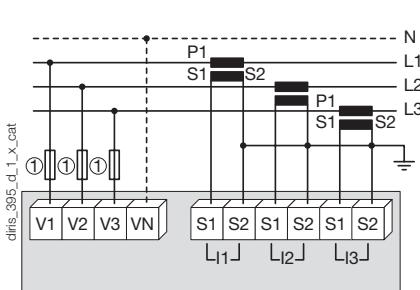
Two-phase



1. 0.5 A class CC fuses.

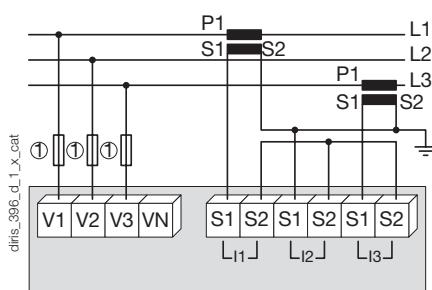
Balanced low-voltage network for DIRIS A-30

3/4 wires with 3 CTs



1. 0.5 A class CC fuses.

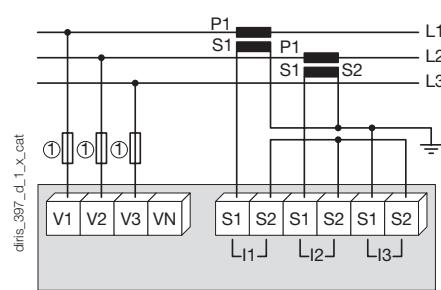
3 wires with 2 CTs



The use of 2 CTs reduces by 0.5% the accuracy of the phase, the current for which is worked out by vector calculation.

1.0.5 A class CC fuses.

3 wires with 2 CTs

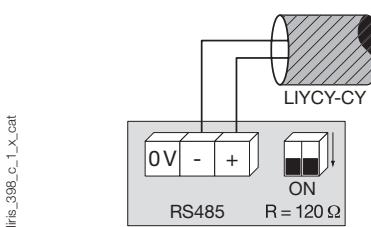


The use of 2 CTs reduces by 0.5% the accuracy of the phase, the current for which is worked out by vector calculation.

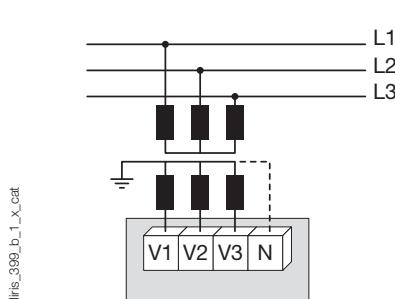
1. 0.5 A class CC fuses.

Additional information

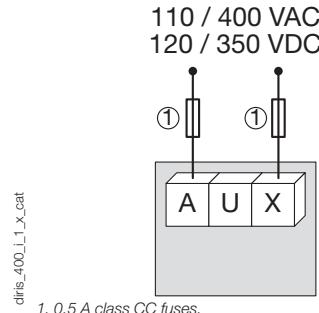
Communication via RS485 link



Connection of potential transformer for HV networks



AC and DC auxiliary power supply



1. 0.5 A class CC fuses.

References

Basic device	DIRIS A-30
Auxiliary power supply U _s	Part number
110 ... 400 VAC / 120 ... 350 VDC	4825 0403
12 ... 48 VDC	4825 0405

Options	Part number
Plug-in modules ⁽¹⁾	
Pulse outputs	4825 0090
RS485 MODBUS® communication	4825 0092
PROFIBUS® DP communication	4825 0205
Analog outputs	4825 0093
2 inputs - 2 outputs	4825 0094
Storage capability	4825 0097
Ethernet communication (integrated web server function) ⁽²⁾	4825 0203
Ethernet communication + RS485 gateway (integrated web server function) ⁽²⁾	4825 0204

(1) Ease of integration of additional functions (maximum 4 slots on A-30).

(2) Dimensions: 2 slots.

Accessories	To be ordered in multiples of	Part number
IP65 protection.	1	4825 0089
Integration kit for 5.67 x 3.78 in cutout	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

Expert Services

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

