# DIRIS A-20

## Multifunction performance metering & monitoring device - PMD
### Multi-measurement

**DIRIS A-20**

diris_981_a_front.eps

### The solution for

> Industry
> Infrastructure
> Building

### Strong points

> User-friendly operation
> Compliant with IEC 61557-12
> Detects wiring errors
> Customisable

### Compliance with standards

> IEC 61557-12
> CEI 62053-22 class 0.5S
> IEC 62053-23 class 2
> UL

### Related software

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

## Function

**DIRIS A-20** units are performance 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 analysed 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-29 is easy to use.
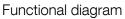
### Compliant with IEC 61557-12

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.
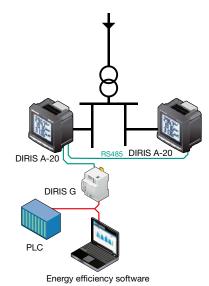
### Detects wiring errors

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

### Customisable

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 A-20
RS485   DIRIS A-20
DIRIS G
PLC
Energy efficiency software

DIRIS_576_i_1_en_cat

## 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
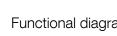  Phase-to-phase voltage: thd U12, thd U23, thd U31

**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).*

**socomec**
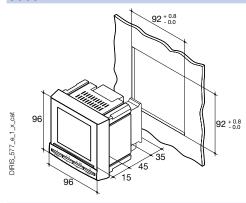Innovative Power Solutions

## 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.

## Case



| Type | Plug-in |
|---|---|
| Dimensions L x H x P | 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 | 0.2 … 2.5 mm$^2$ |
| Section for connection of currents | 0.5 … 6 mm$^2$ |
| Weight | 400 g |

## Plug-in optional modules

### DIRIS® A-20



**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

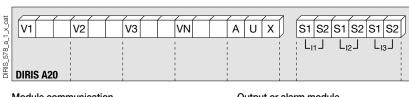**Current transformer (see page 488)**

**IP65 protection**

# DIRIS *A-20*

Multifunction performance metering & monitoring device - PMD
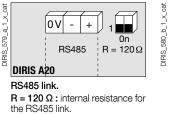
Multi-measurement

## 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 |
| Storage temperature | - 20 … + 85°C |
| 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, which can be found in the SOCOMEC catalogue: please consult us.
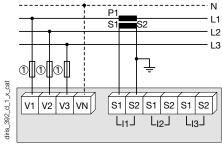
#### 3/4 wires with 1 CT
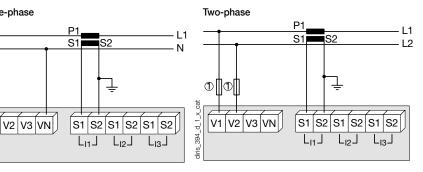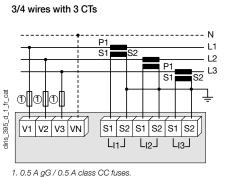


The 1CT solution reduces by 0.5% the accuracy of the phase for which the current is deduced by a vector calculation.
*1. 0.5 A gG / 0.5 A class CC fuses.*

#### 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.
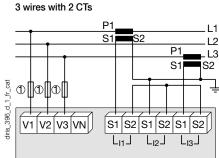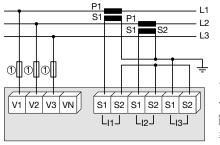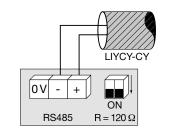*1. 0.5 A gG / 0.5 A class CC fuses.*
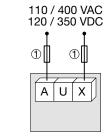
### 3 wires with 2 CTs

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

### AC and DC auxiliary power supply

110 / 400 VAC
120 / 350 VDC

diris_400_i_1_fr_cat

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

## References

| Basic device<br>Auxiliary power supply $U_s$ | | DIRIS A-20<br>Part number |
|---|---|---|
| 110 … 400 VAC / 120 … 350 VDC | | 4825 **0402** |
| **Options**<br>**Plug-in optional modules** | | **Part number** |
| On/Off output. | | 4825 **0080** |
| RS485 MODBUS® communication | | 4825 **0082** |
| 3 inputs, 1 output | | 4825 **0083** |
| **Accessories**<br>**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 circuit breakers to protect voltage inputs (type RM) 3 pole | 4 | 5601 **0018** |
| Fuse circuit breakers to protect the auxiliary power supply (type RM) 1 pole + neutral | 6 | 5601 **0017** |
| gG 10x38 0.5 A fuses | 10 | 6012 **0000** |
| Ferrite for use with communication modules | 1 | 4899 **0011** |
| Current transformer range | 1 | see page 488 |
| Software associated with DIRIS | | see page 530 |

## Expert Services

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