

# DIRIS A-20

Multifunction measuring unit - PMD  
measurement and monitoring - door mounting



DIRIS A-20

diris\_061\_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
- > IEC 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. See "Easy Config System" pages.

## 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-20 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.

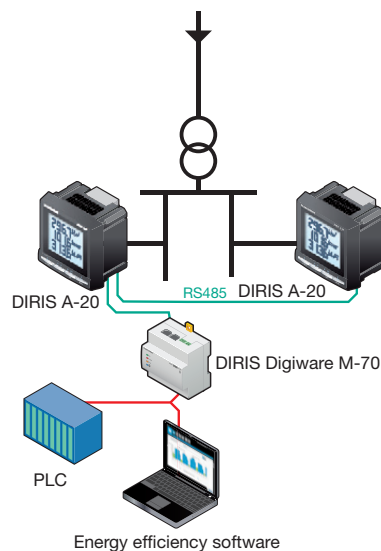
### Detects wiring errors

The DIRIS A-20 is equipped with an error correction function for CT 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\_576\_L1\_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
- Hours: ⌚

### 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 <sup>(1)</sup>

RS485 with MODBUS protocol

### Output

- Equipment control
- Alarm report
- Pulse report

### Input

- Information report from a dry external contact

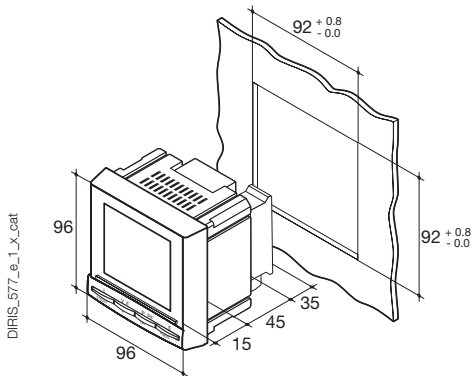
(1) Available as an option (see the following pages).

## 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.

## Case



|  |                             |
|--|-----------------------------|
| Type   | Plug-in                     |
| Dimensions W x H x D                                   | 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 <sup>2</sup> |
| Section for connection of currents                     | 0.5 ... 6 mm <sup>2</sup>   |
| Weight   | 400 g                       |

## Plug-in optional modules



### 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).



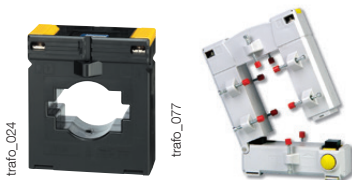
### 3 inputs , 1 output

- 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 "Current transformers" pages.



### IP65 protection



# DIRIS A-20

## Multifunction measuring unit - PMD

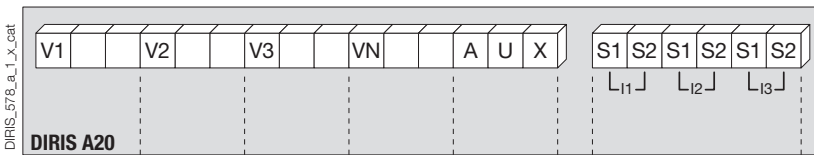
measurement and monitoring - door mounting

### 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 <sub>n</sub> 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 <sup>8</sup>        |
| 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%                      |

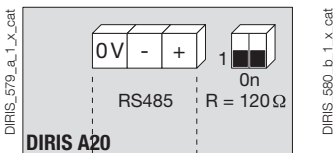
### Terminals



S1 - S2: current inputs.

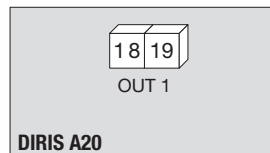
AUX: auxiliary power supply U<sub>s</sub>.  
V1, V2, V3 & VN: voltage inputs.

#### Module communication



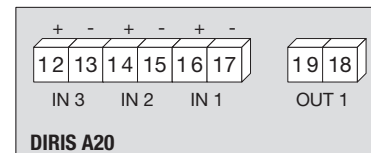
RS485 link.  
R = 120 Ω : internal resistance for the RS485 link.

#### Output or alarm module



18 - 19: output n°1

#### Module with 3 inputs, 1 output



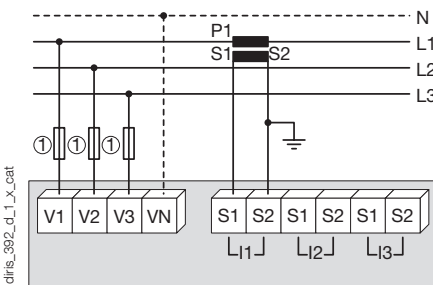
### Connection

#### Low voltage balanced network

##### Recommendation

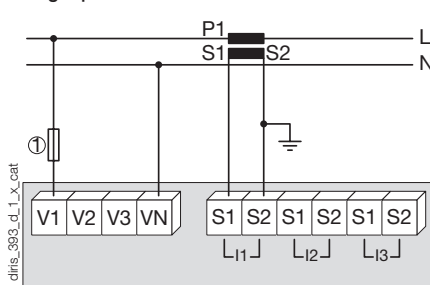
- For IT earthing systems, it is recommended that the CT secondary is not connected to earth.
- When disconnecting the DIRIS, the secondary of each current transformer must be short-circuited. This operation can be carried out automatically by a SOCOMEC PTI, which can be found in the SOCOMEC catalogue: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

#### 3/4 wires with 1 CT



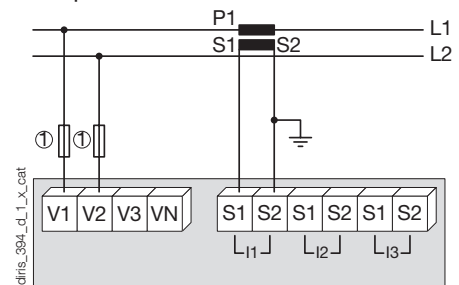
The 1CT solution reduces by 0.5% the accuracy of the phase for which the current is deduced by a vector calculation.  
1. 0.5 A gG / 0.5 A class CC fuses.

#### Single-phase



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

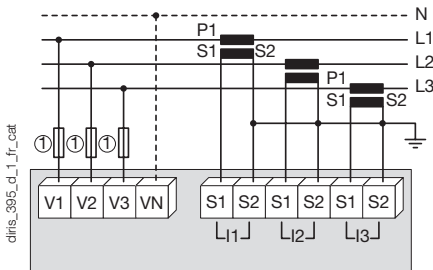
#### Two-phase



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

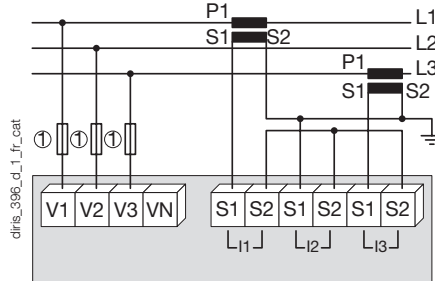
## Low voltage unbalanced network

### 3/4 wires with 3 CTs



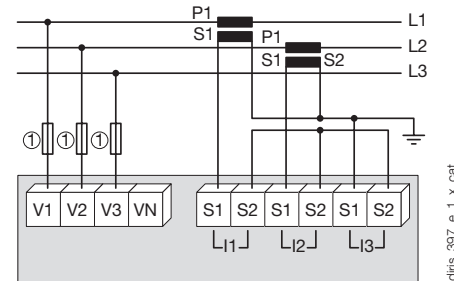
1. 0.5 A gG / 0.5 A class CC fuses.

### 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.

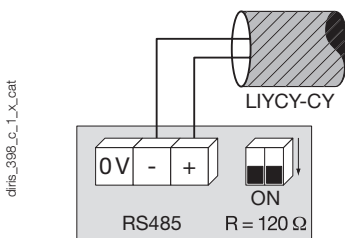
### 3 wires with 2 CTs



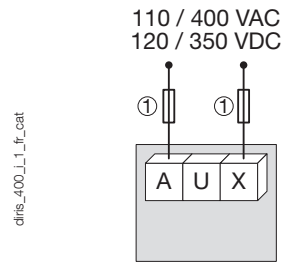
The 2CT solution reduces by 0.5% the accuracy of the phase for which the current is deduced by a vector calculation.  
1. 0.5 A gG / 0.5 A class CC fuses.

## 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                           |                                  |
|---|--------------------------------------|----------------------------------|
| <b>Auxiliary power supply U<sub>s</sub></b>   | <b>Reference</b>                     |                                  |
| 110 ... 400 VAC / 120 ... 350 VDC   | 4825 <b>0402</b>                     |                                  |
| <b>Options</b>  |                                      |                                  |
| <b>Plug-in modules</b>  | <b>Reference</b>                     |                                  |
| On/Off output.  | 4825 <b>0080</b>                     |                                  |
| RS485 MODBUS® communication   | 4825 <b>0082</b>                     |                                  |
| 3 inputs, 1 output  | 4825 <b>0083</b>                     |                                  |
| <b>Accessoires</b>  | <b>To be ordered in multiples of</b> | <b>Reference</b>                 |
| Protection IP65   | 1                                    | 4825 <b>0089</b>                 |
| Plug-in kit for cutout 144 x 96 mm  | 1                                    | 4825 <b>0088</b>                 |
| 3-pole fuse disconnect switches to protect input voltages (RM type)                 | 4                                    | 5601 <b>0018</b>                 |
| 1-pole + neutral fuse disconnect switches to protect the auxiliary supply (RM type) | 6                                    | 5601 <b>0017</b>                 |
| gG 10x38 0.5 A fuses  | 10                                   | 6012 <b>0000</b>                 |
| Ferrite for use with communication modules  | 1                                    | 4899 <b>0011</b>                 |
| Current transformer range   | 1                                    | See "Current transformers" pages |
| Software associated with DIRIS  | See "Easy Config System" pages       |                                  |
| Automatic CT short-circuiting device  | See "Current transformers" pages     |                                  |

## Expert Services

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

