DIRIS A-20
Multifunction performance metering & monitoring device - PMD
Multi-measurement

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.

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, 3P, 3Q, 3Q, 3S, 2S
- Maximum average: 3P, 3Q, 3S
- Power factors: instantaneous: 3PF, 3PF

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. See page 530.

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, 3P, 3Q, 3Q, 3S, 2S
- Maximum average: 3P, 3Q, 3S
- Power factors: Instantaneous: 3PF, 3PF

Measuring
- Active energy: +/- kWh
- Reactive energy: +/- kvarh
- Timetables: 0

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
Comunications
- 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).
Single-circuit metering, measurement & analysis of the product can provide the user with flexibility and with additional modules, the DIRIS A-20 functional scope of this product. Equipped output modules can extend the basic functional performance of this product. Additional communication and input/output modules can extend the basic capabilities of the DIRIS A-20.

The DIRIS A-20 is equipped with an error detection system, ensuring reliable and accurate measurements. Under the environmental conditions typical of industrial and tertiary applications, the DIRIS A-20 guarantees performance levels and compliance with IEC 61557-12.

With 4 hot keys, the DIRIS A-29 is easy to use. Based on its large backlit multiple-display screen, user-friendly operation is achieved.

Advantages:
- Efficiency software programs.
- All of this information can be used and distribution.
- Time and to provide assured monitoring of electrical networks and to complete energy efficient projects successfully.
- The user with all of the measurements needed to control and monitoring devices that provide the

### 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

<table>
<thead>
<tr>
<th>Type</th>
<th>Plug-in</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dimensions L x H x P</td>
<td>96 x 96 x 60 mm</td>
</tr>
<tr>
<td>Case degree of protection</td>
<td>IP50</td>
</tr>
<tr>
<td>Display type</td>
<td>Backlit LCD</td>
</tr>
<tr>
<td>Type of terminal strips</td>
<td>Fixed or removable</td>
</tr>
<tr>
<td>Section for connection of voltages and other terminals</td>
<td>0.2 … 2.5 mm²</td>
</tr>
<tr>
<td>Section for connection of currents</td>
<td>0.5 … 6 mm²</td>
</tr>
<tr>
<td>Weight</td>
<td>400 g</td>
</tr>
</tbody>
</table>

### 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.
  - 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.
  - Equipment control

### Accessories

**Current transformer (see page 488)**

**IP65 protection**
### Electrical Characteristics

<table>
<thead>
<tr>
<th>Current measurement (TRMS)</th>
<th>Energy accuracy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Via CT primary</td>
<td>Active (according to IEC 62053-22)</td>
</tr>
<tr>
<td>Via CT secondary</td>
<td>Class 0.5 S</td>
</tr>
<tr>
<td>Measurement range</td>
<td>Reactive in acc. with CEI 62053-23</td>
</tr>
<tr>
<td>Input consumption</td>
<td>Class 2</td>
</tr>
<tr>
<td>Measurement updating period</td>
<td>± 10%</td>
</tr>
<tr>
<td>Accuracy</td>
<td>DC voltage</td>
</tr>
<tr>
<td>Permanent overload</td>
<td>± 20%</td>
</tr>
<tr>
<td>Intermittent overload</td>
<td>50 / 60 Hz</td>
</tr>
<tr>
<td></td>
<td>Power consumption</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Voltage measurements (TRMS)</th>
<th>Auxiliary power supply</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct measurement between phases</td>
<td>Alternative voltage</td>
</tr>
<tr>
<td>Direct measurement between phase and neutral</td>
<td>110 ... 400 VAC</td>
</tr>
<tr>
<td>Input consumption</td>
<td>AC tolerance</td>
</tr>
<tr>
<td>Measurement updating period</td>
<td>± 10%</td>
</tr>
<tr>
<td>Accuracy</td>
<td>DC voltage</td>
</tr>
<tr>
<td></td>
<td>± 20%</td>
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<td></td>
<td>Frequency</td>
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<td></td>
<td>50 / 60 Hz</td>
</tr>
<tr>
<td></td>
<td>Power consumption</td>
</tr>
</tbody>
</table>

### Pulse or alarm output
- Number: 1
- Type: 100 VDC - 0.5 A - 10 VA
- Max. number of manoeuvres: ≤ 10³

### 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: 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

#### Module communication

- **V1**, **V2**, **V3** & **VN**: voltage inputs.
- **A**, **U**, **X**: auxiliary power supply Us.
- **S1 - S2**: current inputs.
- **OUT 1**: On/Off output.

#### Output or alarm module

- **IN 3**, **IN 2**, **IN 1**: inputs.
- **OUT 1**: 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, which can be found in the SOCOMEC catalogue please consult us.

### 3/4 wires with 1 CT

- **P1**, **S1**, **S2**, **S3**, **L1**, **L2**, **L3**, **N**
- 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

- **P1**, **S1**, **S2**, **L1**, **N**
- 1. 0.5 A gG / 0.5 A class CC fuses.

### Two-phase

- **P1**, **S1**, **S2**, **L1**, **L2**
- 1. 0.5 A gG / 0.5 A class CC fuses.
Low voltage unbalanced network

3/4 wires with 3 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

110 / 400 VAC 120 / 350 VDC

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

References

<table>
<thead>
<tr>
<th>Basic device</th>
<th>DIRIS A-20</th>
</tr>
</thead>
<tbody>
<tr>
<td>Auxiliary power supply U_s</td>
<td>Part number</td>
</tr>
<tr>
<td>110 ... 400 VAC / 120 ... 350 VDC</td>
<td>4825 0402</td>
</tr>
</tbody>
</table>

Options

| Plug-in optional modules       | Part number         |
| On/Off output                  | 4825 0080           |
| RS485 MODBUS® communication    | 4825 0082           |
| 3 inputs, 1 output             | 4825 0003           |

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   |
| Plug-in kit for protection voltage inputs (type RM) 3 pole | 4                           | 5601 0018  |
| Fuse circuit breakers to protect voltage inputs (type RM) 1 pole + neutral | 6                           | 5601 0017  |
| Fuse circuit breakers to protect the auxiliary power supply (type RM) 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 | 1                           | see page 530 |

Expert Services

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- Our experts “Expert Services” offer complete support for the success of your project.