Monitoring and managing energy for low voltage electrical installations

**Function**

DIRIS A20 are measurement units which ensure the user has access to all the measurements required for successfully carrying out energy efficiency projects and ensuring the electrical distribution is monitored. All this information can be used and analysed remotely using the CONTROL VISION software.

**Conformity to standards**

- IEC 61557-12
- IEC 62053-22 class 0.5S
- IEC 62053-23 class 2

**Applications**

**Multi-function meter**
- Current
  - instantaneous: I1, I2, I3, In
  - maximum average: I1, I2, I3, In
- Voltages & frequency
  - instantaneous: U1, U2, U3, U12, U23, U31, F
- Power
  - instantaneous: 3P, ΣP, ΣQ, 3S, ΣS
  - maximum average: ΣP, ΣQ, ΣS
- Power factor
  - instantaneous: 3PF, ΣPF

**Metering**
- Active energy: + kWh
- Reactive energy: + kvarh
- Hours:

**Harmonic analysis**
- Total harmonic distortion (level 51)
  - Currents: thd I1, thd I2, thd I3
  - Phase-to-neutral voltage: thd U1, thd U2, thd U3
  - Phase to phase voltage: thd U12, thd U23, thd U31

**Events**
- Alarms on all electrical values

**Communications**
- RS485 (JBUS/MODBUS) digital

**Output**
- Remote command of apparatus
- Alarm report
- Pulse report

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

**DIRIS A20**

### Front panel

1. Backlit LCD screen.
2. Direct access key for currents (instantaneous and max. values), current THD and set up wiring correction.
3. Direct access key for voltages, frequency and voltage THD.
4. Pushbutton for active, reactive, and apparent power (instantaneous and max. values) and power factor.
5. Direct access key for energies and hour meter.

### Case

<table>
<thead>
<tr>
<th>Type</th>
<th>Panel mounting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dimensions W x H x D</td>
<td>96 x 96 x 60 mm</td>
</tr>
<tr>
<td>Case protection index</td>
<td>IP30</td>
</tr>
<tr>
<td>Front protection rating</td>
<td>IP52</td>
</tr>
<tr>
<td>Display type</td>
<td>LCD</td>
</tr>
<tr>
<td>Terminal blocks type</td>
<td>Fixed or pull-out</td>
</tr>
<tr>
<td>Voltage and other connection section</td>
<td>0.2 ... 2.5 mm²</td>
</tr>
<tr>
<td>Current connection section</td>
<td>0.5 ... 6 mm²</td>
</tr>
<tr>
<td>Weight</td>
<td>400 g</td>
</tr>
</tbody>
</table>

### Plug-in modules

1 Output assignable to:
- Pulses: configurable (type, weight, time) in kWh or kvarh
- Monitoring: 3I, In, 3V, 3U, F, 3P, 3Q, 3S, 3PLC, THD 3I, THD 3U and timer
- Control of apparatus

Communication

- RS485 link with JBUS / MODBUS protocol (speed up to 38400 bauds)

### Accessories

- **Current transformer (see page 334)**
- IP65 protection
- Mounting kit for 144 x 96 mm cut out plate
**DIRIS A20 - Electrical characteristics**

### Current measurement on high-impedance inputs (TRMS)
- Via CT primary: 9999 A
- Via CT secondary: 5 A
- Measurement range: 0 ... 11 kA
- Measurement updating period: 1 s
- Accuracy: 0.2 %
- Sustained overload: 6 A
- Intermittent overload: 10 I, for 1 s

### Voltage measurements (TRMS)
- Direct measurement between phases: 50 ... 500 VAC
- Direct measurement between phase and neutral: 26 ... 289 VAC
- Measurement updating period: 1 s
- Accuracy: 0.2 %
- Sustained overload: 800 VAC

### 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
- Alternating voltage: 110 ... 400 VAC
- AC tolerance: ± 10 %
- Direct voltage: 120 ... 350 VDC
- DC tolerance: ± 20 %
- Frequency: 50 / 60 Hz
- Consumption: 10 VA

### Pulse or alarm output
- Number: 1
- Type: 100 VDC - 0.5 A - 10 VA
- Max. number of operations: ≤ 10^8

### Communication
- Link: RS485
- Type: 2 ... 3 half duplex wires
- Protocol: JBUS/MODBUS® in RTU mode
- JBUS/MODBUS® speed: 1400 ... 38400 bauds

### Operating conditions
- Operating temperature: - 10 ... + 55 °C
- Storage temperature: - 20 ... + 85 °C
- Relative humidity: 95 %

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### Terminals

S1 - S2: current inputs.
AUX: auxiliary power supply Us.
V1, V2, V3 & VN: voltage inputs.

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### Connection

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

### Low voltage balanced network

- **3/4 wires with 1 CT**
  - V1, V2, V3, VN
  - S1, S2, S3

- **Single phase**
  - V1, V2, V3
  - S1, S2, S3

- **Two phase**
  - V1, V2, V3
  - S1, S2, S3

Use of 1 CT reduces by 0.5% the accuracy of the phases, the current of which is worked out by vector calculation.
Low voltage unbalanced network

3/4 wires with 3 CTs

3 wires with 2 CTs

3 wires with 2 CTs

Use of 2 CTs reduces by 0.5% the accuracy of the phase, whose current is worked out by vector calculation.

Additional information

Communication via RS485 link

AC & DC auxiliary power supply

It is recommended that the auxiliary power supply be protected by the use of 500 mA gG fuses.

References

Basic device
Auxiliary power supply Us

110 ... 400 VAC | 120 ... 350 VDC

Options
Plug-in modules

RS485_BUS / MODBUS® communication

Accessories
Description of accessories

To be ordered by multiple

Reference

IP55 protection

1

4825 0089

Panel mounting kit for a 144 x 96 mm cutout

1

4825 0088

Fuse combination switches for the protection of voltage inputs (type RM) 3 poles

4

5601 0018

Fuse combination switches for the protection of the auxiliary supply (type RM) 1 pole + neutral

6

5601 0017

Fuses type gG 10x38 0.5 A

10

6012 0000

Current transformers range

See page 334

Services and Technical assistance

Our expertise extends to a complete offer of services like commissioning installation audit, training, maintenance and project engineering.