The new DIRIS A Power Measurement Devices with extended functionality enable you to...

Reduce costs
All industries are faced with the need to minimize operating and maintenance costs. In this kind of environment, the measurement system is a key component, enabling energy quality and costs to be monitored.

Reduce production losses
The measurement system is at the heart of any solution designed to prevent electrical incidents, or even production downtime, which often generate significant financial losses or material wastes.

Improve efficiency
The measurement system is a key factor in identifying malfunctions within the installation, which can then lead to improved energy efficiency. The DIRIS line of products allow you to detect where you consume the most and adapt your energy consumption.

Enhance performance
The accuracy class of the measurement units is essential in reducing energy consumption.

Enjoy unparalleled ease of use
Equipped with a large backlit screen, DIRIS A units display a number of key power system values, while remaining easy to view. The direct access keys (four to six depending on the model) enable optimum use of the available functions.

DIRIS units are easy to install: The Easy Config software can be used to quickly and easily create, edit and save configurations.

All units are equipped with an integrated test function that can be utilized to detect incorrect wiring and to automatically correct CT installation errors.

Features

### Metering
Energy consumed by each building or manufacturing line, in order to distribute and optimize energy costs (multi-utility management)

### Measuring
All electrical or analog values to verify that your facilities are working properly. DIRIS measurement units can measure and display more than 200 parameters with a very high-level of accuracy.
- Class 0.5 ANSI C12.20
- Class 0.5S IEC 62053-22

### Monitoring
Electrical networks via alarm management, secure monitoring of distribution parameters and remote control of electrical apparatus. DIRIS meters allow you to analyze the quality of your network and to avoid the installation deterioration.

### Analyzing
Energy quality via a detailed breakdown of harmonics identifying troughs, outages, overvoltages and overcurrents on the network.

APPLICATONS
- Industrial monitoring
- Energy monitoring in building automation systems
- Renewable energy
- Energy management
- Commercial sub-metering
- Cost allocation

Agency approvals: UL file # E257746, CE 2011/65/EU, 2014/35/EU LVD, 2014/30/EU EMC

tPWP-1
DIRIS A Multifunction Meters

The DIRIS A10 is a modular DIN rail mountable multifunction meter for measuring electrical values in low voltage networks. It allows all electrical parameters to be displayed and utilized for communication and/or output functions.

The DIRIS A20 is a panel-mounted unit which gives you access to all the measurements required for successfully carrying out energy efficiency projects and ensuring the electrical distribution is monitored.

Features
- Easy to use solution for industry, infrastructure and data centers
- Integrated temperature sensor (on A10)
- Detects wiring errors
- Compliant with ANSI C12.20 and IEC 61557-12
- Conformity to standards IEC 61557-12, IEC 62053-22 class 0.5S, IEC 62053-23 class 2, UL 61010 File E257746 and ANSI C12.20

Advantages
- Easy to use
  - **A10**: Five direct-access pushbuttons enable all measurements to be clearly viewed on its backlit LCD display. Unit is DIN rail mountable.
  - **A20**: Thanks to its large backlit LCD display and its multiple viewing screens with direct pushbutton access, DIRIS A20 multifunction meters directly display a number of multi-measurement and metering values: +kWh, +kvarh, I, U, V, F, P, Q, S, PF, etc. Designed for panel mounting.

Integrated temperature sensor (on A10)
Allows variations in temperature to be detected.

Detects wiring errors
An integrated test function can be utilized to detect incorrect wiring and to automatically correct CT installation errors.

Compliant with ANSI C12.20 and IEC 61557-12
IEC 61557-12 is a high-level standard for all Performance Monitoring Devices (PMDs) that are designed to measure and monitor electrical parameters in distribution networks. Compliance with IEC 61557-12 ensures a high level of equipment performance, in terms of metrology, and the mechanical and environmental aspects (EMC, temperature, etc.)

Functions

Multi-measurement
- Instantaneous: I1, I2, I3, In
- Maximum average: I1, I2, I3

Voltages & frequency
- Instantaneous: V1, V2, V3, U12, U23, U31, F

Power
- Instantaneous: 3P, 3Q, 3S, 35, 3S
- Maximum average: 3P, 3Q, 3S

Power factors
- Instantaneous: 3PF, 3PF

Metering
- Active energy: +kWh
- Reactive energy: +kvarh
- Harmonic analysis
  - Total Harmonic Distortion (level 51)
  - Currents: thd1, thd I2, thd I3
  - Phase-to-neutral voltage: thd V1, thd V2, thd V3
  - Phase-to-phase voltage: thd U12, thd U23, thd U31

Dual tariff function (A10)
Selection of one out two billing tariffs

Events
- Alarms on all electrical values

Communications
- RS485 with MODBUS protocol

Input
- Remote command of device

Output
- Remote command of device
- Alarm output
- Pulse output

Part Number Description Operating Voltage Frequency Price
4825U010 DIN rail mount multifunction meter with backlit LCD display. Without RS485. 110-277 VAC 50/60 Hz $215.75
4825U011 DIN rail mount multifunction meter with backlit LCD display. With RS485. 110-277 VAC 50/60 Hz $249.00
4825U200 Panel mount multifunction meter with backlit LCD display. 110-240 VAC 120-250 VDC 50/60 Hz $298.00

For latest prices, please check AutomationDirect.com.

DIRIS A Multifunction Meters

Principle Diagram

PC
DIRIS METER
General measurement report
Curves for current per phase
PLC
RS485

For latest prices, please check AutomationDirect.com.
DIRIS A10
Multifunction Meter

**Current Measurement (TRMS)**
- Via CT primary: 9,999A
- Via CT secondary: 5A
- Measurement range: 0-11 kA
- Input consumption: 0.6 VA
- Measurement updating period: 1s
- Accuracy: 0.2%
- Permanent overload: 6A
- Intermittent overload: 10 In for 1s

**Voltage Measurement (TRMS)**
- Direct measurement between phases: 50-500 VAC
- Direct measurement between phase and neutral: 28-289 VAC
- Input consumption: ≤ 0.1VA
- Measurement updating period: 1s
- Accuracy: 0.2%
- Permanent overload: 800VAC

**Power Measurement**
- Measurement updating period: 1s
- Accuracy: 0.5%

**Power Factor Measurement**
- Measurement updating period: 1s
- Accuracy: 0.5%

**Frequency Measurement**
- Measurement range: 45-65 Hz
- Measurement updating period: 1s
- Accuracy: 0.1%

**Energy Accuracy**
- Active (according to IEC 62053-22): Class 0.5 S
- Reactive (according to IEC 62053-23): Class 2

**Metrological LED (EA+)**
- Pulse weight: 10,000 pulses/kWh
- Color: Red

**Auxiliary Power Supply**
- Alternating voltage: 110-277 VAC
- AC tolerance: ±15%
- Frequency: 50/60 Hz
- Consumption: <3VA

**Digital Output (Pulse or Alarm)**
- Number: 1
- Type: 20/30 VDC, 0.5 A, 10VA
- Max. number of operations: ≤10⁵

**Input (tariff)**
- Number: 1
- Tariff Pricing Tiers (T1, T2): 0 VAC:T1 / 100-277 VAC:T2

**Communication**
- Link: RS485
- Type: 2-3 half duplex wires
- Protocol: MODBUS RTU
- MODBUS speed: 2400-38400 baud

**Operating Conditions**
- Operating temperature: +14 to +131° F / -10 to +55° C
- Storage temperature: -4 to +158° F / -20 to +70° C
- Relative humidity: 85%

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**Case dimensions**

**Inches [mm]**

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Width</td>
<td>2.83 [72.0]</td>
</tr>
<tr>
<td>Height</td>
<td>3.66 [93.0]</td>
</tr>
<tr>
<td>Depth</td>
<td>2.49 [63.2]</td>
</tr>
</tbody>
</table>

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**Physical characteristics**

<table>
<thead>
<tr>
<th>Type</th>
<th>Modular</th>
</tr>
</thead>
<tbody>
<tr>
<td>Case degree of protection</td>
<td>IP30</td>
</tr>
<tr>
<td>Front degree of protection</td>
<td>IP52</td>
</tr>
<tr>
<td>Display type</td>
<td>Backlit LCD display, blue background</td>
</tr>
<tr>
<td>Character size and type</td>
<td>4 characters, black, 8mm (0.31 in.)</td>
</tr>
<tr>
<td>Voltage and current connection cross-section</td>
<td>AWG 12 (4 mm²)</td>
</tr>
<tr>
<td>Connection cross-section for AUX supply, input, output and comms</td>
<td>AWG 14 (2.5 mm²)</td>
</tr>
<tr>
<td>Weight</td>
<td>7.23 oz./205g (4825 U010)</td>
</tr>
<tr>
<td></td>
<td>7.58 oz./215g (4825 U011)</td>
</tr>
</tbody>
</table>

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For latest prices, please check AutomationDirect.com.
## DIRIS A10 Multifunction Meter

### Terminals

<table>
<thead>
<tr>
<th>12</th>
<th>14</th>
<th>16</th>
<th>2</th>
<th>20</th>
<th>22</th>
</tr>
</thead>
<tbody>
<tr>
<td>V1</td>
<td>V2</td>
<td>V3</td>
<td>VN</td>
<td>A</td>
<td>U</td>
</tr>
</tbody>
</table>

**Auxiliary power supply** U<sub>C</sub>

**V1, V2, V3 & VN:** voltage inputs

**S1-S2:** Current inputs

### Communication terminals

- **13 15 17:** 0 V + -
- **DIRIS A10:** RS485 link

### Pulse or alarm output terminals

- **4 6:** OUT 1
- **DIRIS A10:** 4-6: Output

### Input terminals

- **8 10:** IN 1
- **DIRIS A10:** 8-10: Input

For latest prices, please check AutomationDirect.com.
DIRIS A10
Multifunction Meter

Connection

**CAUTION:**
- For IT grounding systems, it is recommended that the CT secondary is not connected to ground.
- When disconnecting the DIRIS, the secondary of each current transformer must be short-circuited. This operation can be carried out using AutomationDirect’s KN-2JM10 shorting jumpers and KN-KBD10 terminal blocks.
- It is recommended that the grounding point for DIRIS A10 and the current transformer secondaries are not grounded at the same time.

**Low voltage balanced network**

3/4 wires with 1 CT

![Diagram showing connection for 3/4 wires with 1 CT]

1. Fuses 0.5A gG / 0.5A class CC

Single-phase

![Diagram showing connection for single-phase]

1. Fuses 0.5A gG / 0.5A class CC

Two phase

![Diagram showing connection for two phase]

1. Fuses 0.5A gG / 0.5A class CC

**Low voltage unbalanced network**

3/4 wires with 3 CTs

![Diagram showing connection for 3/4 wires with 3 CTs]

1. Fuses 0.5A gG / 0.5A class CC

3 wires with 2 CTs

![Diagram showing connection for 3 wires with 2 CTs]

Use of 2 CTs reduces by 0.5% the accuracy of the phases, the current of which is worked out by vector calculation.
1. Fuses 0.5A gG / 0.5A class CC

3 wires with 2 CTs

![Diagram showing connection for 3 wires with 2 CTs]

Use of 2 CTs reduces by 0.5% the accuracy of the phases, the current of which is worked out by vector calculation.
1. Fuses 0.5A gG / 0.5A class CC

**Additional information**

**Communication via RS485 link**

![Diagram showing RS485 connection]

**AC auxiliary power supply**

![Diagram showing AC auxiliary power supply]

1. Fuses 0.5A gG / 0.5A class CC
DIRIS A20
Multifunction Meter

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 Iₚ for 1 s

### Voltage Measurement (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%
- **Permanent 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**: 110-240 VAC
- **AC tolerance**: +/-10%
- **Direct voltage**: 120-250 VDC
- **DC tolerance**: +/-20%
- **Frequency**: 50/60 Hz
- **Consumption**: 10 VA

### Digital Output, optional module (Pulse or Alarm)
- **Number**: 1
- **Type**: 100 VDC; 0.5 A; 10 VA
- **Max. number of operations**: ≤ 10⁶

### Communication
- **Link**: RS485
- **Type**: 2-3 half duplex wires
- **Protocol**: Modbus RTU
- **MODBUS® speed**: 1400-38400 baud

### Operating Conditions
- **Operating temperature**: +14 to +131°F / -10 to +55°C
- **Storage temperature**: -4 to +185°F / -20 to +85°C
- **Relative humidity**: 95%

### Case dimensions

**Inches [mm]**

1. Backlit LCD display.
2. Direct access for currents (instantaneous and max. values), current THD and test function.
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, hour meter and programming menu.

Please see our website www.AutomationDirect.com for complete engineering drawings.

### Physical characteristics

<table>
<thead>
<tr>
<th>Type</th>
<th>Panel mounting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Case degree of protection</td>
<td>IP30</td>
</tr>
<tr>
<td>Front degree of protection</td>
<td>IP52</td>
</tr>
<tr>
<td>Display type</td>
<td>Backlit LCD display, blue background</td>
</tr>
<tr>
<td>Character size and type</td>
<td>4 characters, black, 15mm (0.59 in.)</td>
</tr>
<tr>
<td>Terminal block type</td>
<td>Fixed or plug-in</td>
</tr>
<tr>
<td>Voltage and other connection cross-section</td>
<td>AWG 24-14 (0.2-2.5 mm²)</td>
</tr>
<tr>
<td>Current connection cross-section</td>
<td>AWG 20-10 (0.5-6 mm²)</td>
</tr>
<tr>
<td>Weight</td>
<td>14.11 oz / 400 g</td>
</tr>
</tbody>
</table>
DIRIS A20 Multifunction Meter

Plug-in Modules

1 Output
1 output assignable to:
• Pulses: configurable (type, weight, duration) in kWh or kvarh
• Monitoring: 3I, ln, 3V, 3U, f, ΣP, ΣQ, ΣS, ΣPFL/C, THD 3I, THD 3V, THD 3U and timer
• Remote command of device

Communication
• RS485 link with JBUS/Modbus RTU protocol (speed up to 38400 baud)

DIRIS A20 (4825U200) Plug-in Modules

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
<th>Module Type</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>48250080</td>
<td>Optional configurable output module for the DIRIS A20</td>
<td>Output</td>
<td>$50.50</td>
</tr>
<tr>
<td>48250082</td>
<td>Optional Modbus RTU (RS485) communications module for the DIRIS A20</td>
<td>Communication</td>
<td>$88.50</td>
</tr>
</tbody>
</table>

Note: Diris A20 can accept a maximum of two plug-in modules.

Terminals

S1, S2: Current inputs
AUX: Auxiliary power supply U₅
V1, V2, V3 and Vn: voltage inputs

Communication module

Pulse output or alarm module

RS485 link
R = 120Ω: Selectable internal resistance for RS485 end of line termination

18-19: Output
DIRIS A20
Multifunction Meter

Connection

**CAUTION:**
- For IT grounding systems, it is recommended that the CT secondary is not connected to ground.
- When disconnecting the DIRIS, the secondary of each current transformer must be short-circuited. This operation can be carried out using AutomationDirect’s **KN-2JM10** shorting jumpers and **KN-KBD10** terminal blocks.

### Low voltage balanced network

**3/4 wires with 1 CT**

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

1. Fuses 0.5A gG / 0.5A class CC

**Single-phase**

1. Fuses 0.5A gG / 0.5A class CC

**Two phase**

1. Fuses 0.5A gG / 0.5A class CC

### Low voltage unbalanced network

**3/4 wires with 3 CTs**

1. Fuses 0.5A gG / 0.5A class CC

**3 wires with 2 CTs**

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

1. Fuses 0.5A gG / 0.5A class CC

### Additional information

**Communication via RS485 link**

**AC & DC auxiliary power supply**

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

1. Fuses 0.5A gG / 0.5A class CC
DIRIS Multifunction Meters

Dimensions
Inches [mm]

4825U01x DIRIS A10 DIN Rail Mount Multifunction Meter (inches [mm])

4825U200 DIRIS A20 Panel Mount Multifunction Meter (inches [mm])

Please see our website www.AutomationDirect.com for complete engineering drawings.
DIRIS Multifunction Meters

Dimensions
Inches [mm]

48250080 Optional Output Module for DIRIS A20

48250082 Optional RS485 Module for DIRIS A20

Please see our website www.AutomationDirect.com for complete engineering drawings.