# DIRIS MCM

## Multi-circuit Energy & Power meter for retrofit & sub-metering applications

*DIRIS MCM*

### The solution for

> Commercial buildings
> Retail
> Data centers
> Industrial Buildings

### Strong points

> Increased safety
> Easy installation
> Easy commissioning
> Industrial design
> Compact

### Compliance with standards

> UL 61010-1
CSA-C22.22 No. 61010-1
Guide FTRZ/PICQ
File E257746

c UL us LISTED

> ANSI C12.1-2015 Class 0.2

> IEC 62053-22

> IEC 62053-23

IEC

### Wireless Technology

RF system for wireless communication (915 MHz) of meter data.

*RF END-Node*
Transmitter

*RF HUB-Node*
Receiver

## Function

The DIRIS MCM is a revenue grade networked Energy & Power sub-meter promoting a simplified approach to retrofit applications, while ensuring safety and code compliance. It has been designed using industrial best practices providing industry leading durability and ease of installation.

The DIRIS MCM supports 333mV output or Rogowski style current sensors. It has been designed with mechanical, electrical and software features that will appeal to those seeking a simplified approach to installation and setup of energy management applications.

## Advantages

### Increased Safety

The DIRIS MCM is designed to improve installation safety and meets electrical code requirements:

- Built-in optional disconnect provides path to quickly and easily service the meter independently of other circuits.
- mV CT connections, can be connected and disconnected under load.
- No user-direct access to dangerous high voltages, keeping instrumentation engineers safe.
- Retained fasteners, ensuring screws stay securely in place and don't fall inside electrical panels.

### Easy installation

- Wall or top cabinet mounting.
- Built-in 1" conduit holes - (3) at the bottom and (3) at the top of the meter.
- Push-in terminals for current sensors, no tools required!
- Clear visible numbering of CT inputs, with color coded terminals that match CT output lead wires.

### Easy commissioning

- Configuration with a simple and intuitive PC application via a direct USB connection.
- One IP address and Modbus slave address supports the entire meter, simplifying network integration pain points.
- Patented CT configuration correction algorithm helps eliminate user wiring and setup errors while reducing downtime.

### Industrial design

- Aluminum bonded enclosure.
- Internal fuse protection of each hot leg.
- Fuses can be replaced safely for maintenance.

### Compact

- The most compact high density multi-circuit meter on the market, in an enclosed format.
- Ideal for retrofitting electrical distribution centers with limited wall space.

## General Characteristics

- Accepts 333 mV and Rogowski sensors
- Modbus RTU, TCP and BACnet IP communication
- Wireless 915 MHz option
- Class 0.2 accuracy per ANSI C12.1



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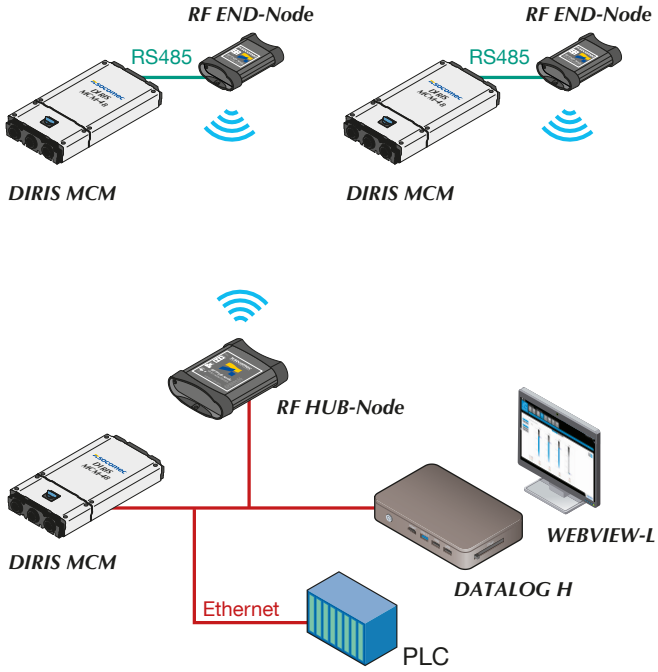
## Typical Architecture




### DIRIS MCM

DIRIS MCM power meters have been designed to be networked from different locations throughout a facility or campus environment. The DIRIS MCM supports Modbus protocol using either RS485 or Ethernet communication making compatibility and integration seamless with most EMS/BMS systems.

### Need Wireless ?

For isolated metering points where it may be impractical or costly to bring a wired communication bus, the DIRIS MCM has been designed to be plug and play compatible with the RF system for wireless communication (915 MHz) of measurements.

The RF END-Node is connected via RS485 to the power meter (DIRIS MCM) and sends measurement via wireless link to the RF HUB-Node. No external power supply is required, as the END-Node is self-powered by the DIRIS MCM.

Each HUB-Node can communicate wirelessly with up to (8) END-Nodes.

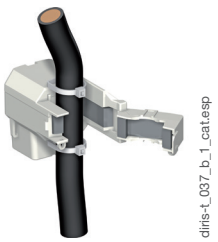
The HUB-Node offers RS485 (Modbus RTU) and Ethernet (Modbus TCP) communication capabilities to any third-party EMS/BMS system.

### WEBVIEW software

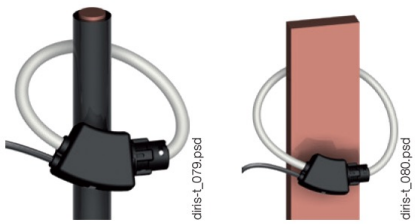
The DATALOG H80 provides data logging of measurements and the embedded web based application WEBVIEW-L allows to visualize real time and historical measurement data.

## Current sensors

Various types of current sensors can be connected to the DIRIS MCM power meter.
Socomec provides a range of split-core and Rogowski flexible sensors which make installation easy with minimum intrusion in retrofit applications.
Our split-core sensors allow to measure up to 600 A, while our Rogowski sensors are ideal for busbar or high current applications up to 4000 A.
*Refer to page 4 for references, ratings and window sizes of current sensors.*




**TR-W Split-core**
**63-600 A**




**ROG Rogowski**
**Up to 4000 A**

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# DIRIS MCM

Multi-circuit Energy & Power meter

## Selection Guide

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| ***DIRIS MCM*** | ***MCM-16-N-N*** | ***MCM-16-D-N*** | ***MCM-16-D-D*** | ***MCM-48-N-N*** | ***MCM-48-N-D*** | ***MCM-48-D-N*** | ***MCM-48-D-D*** |
| General | | | | | | | |
| Number of current sensor inputs | 16 | 16 | 16 | 48 | 48 | 48 | 48 |
| Type of current sensors | 333 mV<br>131 mV Rogowski | 333 mV<br>131 mV Rogowski | 333 mV<br>131 mV Rogowski | 333 mV<br>131 mV Rogowski | 333 mV<br>131 mV Rogowski | 333 mV<br>131 mV Rogowski | 333 mV<br>131 mV Rogowski |
| Disconnect Switch | | | • | | • | | • |
| Display | | • | • | | | • | • |
| Communication | | | | | | | |
| RS485 | Modbus RTU | Modbus RTU | Modbus RTU | Modbus RTU | Modbus RTU | Modbus RTU | Modbus RTU |
| Ethernet | Modbus TCP<br>BACnet IP | Modbus TCP<br>BACnet IP | Modbus TCP<br>BACnet IP | Modbus TCP<br>BACnet IP | Modbus TCP<br>BACnet IP | Modbus TCP<br>BACnet IP | Modbus TCP<br>BACnet IP |
| Wireless | • | • | • | • | • | • | • |
| Electrical | | | | | | | |
| Number of voltage inputs | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Energy metering | | | | | | | |
| ±kWh, ±kvarh, kVAh | • | • | • | • | • | • | • |
| ∑P (kW), ∑Q (kvar), ∑S (kVA), ∑PF | • | • | • | • | • | • | • |
| P (kW), Q (kvar), S (kVA), PF per phase | • | • | • | • | • | • | • |
| Demand & Peak Demand | • | • | • | • | • | • | • |
| Multi - measurement | | | | | | | |
| U12, U23, U31, V1, V2, V3, f | • | • | • | • | • | • | • |
| U system, V system | • | • | • | • | • | • | • |
| I1, I2, I3, In | • | • | • | • | • | • | • |
| I system | • | • | • | • | • | • | • |
| Power quality | | | | | | | |
| THD U, V, I | • | • | • | • | • | • | • |
| Reference | 4827 **16NN** | 4827 **16DN** | 4827 **16DD** | 4827 **0548** | 4827 **0549** | 4827 **48DN** | 4827 **48DD** |



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## Technical characteristics

### Mechanical characteristics

| | |
|---|---|
| Enclosure material | - Extruded anodized aluminium body<br>- Glass filled nylon end caps |
| Mounting | Wall mounting (2 or 3 fastener locations) |
| Ingress Protection | IP40 |
| Conduit connections | Sized for 1-inch EMT conduit connection |

### Electrical characteristics

| | |
|---|---|
| Voltage range | 2 voltage inputs:<br>- Main voltage input: 90-600 VAC L-N / L-L - CAT III<br>- Secondary voltage input: 90-250 VAC L-N / L-L CAT III |
| Voltage connection | - Main Voltage input: Board mounted terminal block, 5 positions, stranded or solid AWG 12…AWG 14 / 2.5 … 4 mm² cable<br>- Secondary voltage input: Removable screw terminal block, 4 positions, stranded or solid AWG 12…AWG 18 / 0.75 … 4 mm² cable |
| Electrical Network (Service) type | Single-Phase - Two-Wire, Line-to-Neutral<br>Single-Phase - Two-Wire, Line-to-Line<br>Single-Phase - Three-Wire (Split-Phase)<br>Three-Phase - Three-Wire (Delta)<br>Three-Phase - Four-Wire (Wye) |
| Frequency range | 45 … 65 Hz |
| Power supply | - Line powered (any two lines 90 - 600 VAC),<br>- 5VDC 500 mA from USB port (offline configuration mode) |

### Environmental characteristics

| | |
|---|---|
| Storage temperature | -13 to +158 °F / -25 to +70°C |
| Operating temperature | -4 to +140 °F / -20 to +60°C |
| Humidity | 5% to 95% RH / +131°F/+55°C, non condensing |
| Operating altitude | ≤ 6560 ft / 2000 m |

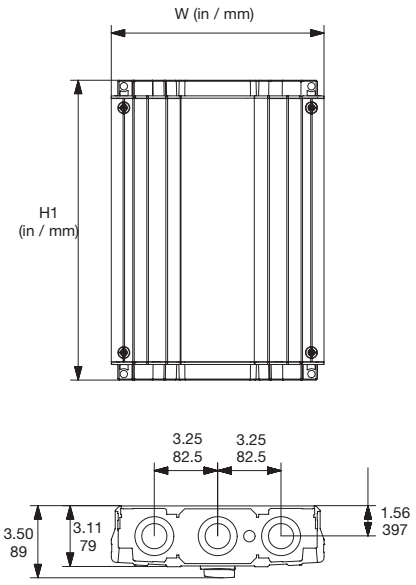
### Measuring characteristics

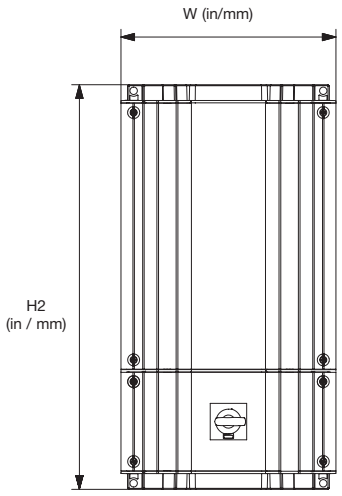
| | |
|---|---|
| **Voltage measurement** | |
| Sampling rate | 1.8 kHz |
| Voltage measurement accuracy | Class 0.2 |
| **Current measurement** | |
| Number of current inputs | MCM-16: 16<br>MCM-48: 48 |
| Associated current sensors | - 333 mV current sensors<br>- Rogowski coil sensors (131 mV / kA @ 60 Hz) |
| CT conntection | Board mounted push-in spring terminal block<br>AWG 16 … AWG 24 / 0.5 … 1.5 mm² cable, 600 VAC, twisted pair |
| Current measurement accuracy | Class 0.1 |
| **Power and Energy measurement** | |
| Active Power/Energy accuracy | Class 0.2 |

### Communication characteristics

| | |
|---|---|
| **RS485** | |
| Connection type | Half-Duplex, 2-3 wires |
| Protocol | Modbus RTU |
| Baudrate | 9600 bds - 115200 bds |
| **Ethernet** | |
| Connection type | RJ45 10/100 Mbs |
| Protocol | Modbus TCP/IP, BACnet IP, MQTT |
| **USB** | |
| Connection type | USB Type C |
| Function | Firmware upgrade and configuration |

## Dimensions (in/mm)




| Model | W (in / mm) | H1 (in / mm) | H2 (in / mm) |
|---|---|---|---|
| MCM-16 | 10.9 / 277 | 12.4 / 314 | - |
| MCM-16 with disconnect | 10.9 / 277 | - | 17.5 / 444 |
| MCM-48 | 10.9 / 277 | 15.4 / 390 | - |
| MCM-48 with disconnect | 10.9 / 277 | - | 20.5 / 521 |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## References

| DIRIS MCM enclosed power meters | | |
|---|---|---|
| DIRIS MCM-16-N-N | Enclosed 16-circuit power meter | 4827 **16NN** |
| DIRIS MCM-16-D-N | Enclosed 16-circuit power meter with display | 4827 **16DN** |
| DIRIS MCM-16-D-D | Enclosed 16-circuit power meter with display and disconnect switch | 4827 **16DD** |
| DIRIS MCM-48-N-N | Enclosed 48-circuit power meter | 4827 **0548** |
| DIRIS MCM-48-N-D | Enclosed 48-circuit power meter with disconnect switch | 4827 **0549** |
| DIRIS MCM-48-D-N | Enclosed 48-circuit power meter with display | 4827 **48DN** |
| DIRIS MCM-48-D-D | Enclosed 48-circuit power meter with display & disconnect switch | 4827 **48DD** |

| 333 mV split-core current sensors | | | | | | |
|---|---|---|---|---|---|---|
| **Model** | **Primart** | **Accuracy** | **Accuracy** | **Window size (in / mm)** | **Output Lead Length** | **Reference** |
| TR-10W | 63 | 3 ... 75.6 | 0.50% | Ø 0.39 / 10 | 22 / 7 | 194S **5010** |
| TR-14W | 160 | 8 ... 192 | 0.50% | Ø 0.55 / 14 | 22 / 7 | 194S **5014** |
| TR-21W | 250 | 12.5 ... 300 | 0.50% | Ø 0.83 / 21 | 22 / 7 | 194S **5021** |
| TR-32W | 600 | 30 … 720 | 0.50% | Ø 1.26 / 32 | 22 / 7 | 194S **5032** |
| ACTL-0750-20 | 20 | 0.2 … 24 | 0.75% | 0.78 x 0.78 / 20 x 20 | 8 / 2.4 | **USACTL0750020** |
| ACTL-0750-20-C06 | 20 | 0.2 … 24 | 0.50% | 0.78 x 0.78 / 20 x 20 | 8 / 2.4 | **USACTL0750020C06** |
| ACTL-0750-50 | 50 | 0.5 … 60 | 0.75% | 0.78 x 0.78 / 20 x 20 | 8 / 2.4 | **USACTL0750050** |
| ACTL-0750-50-C06 | 50 | 0.5 … 60 | 0.50% | 0.78 x 0.78 / 20 x 20 | 8 / 2.4 | **USACTL0750050C06** |
| ACTL-0750-100 | 100 | 1 … 120 | 0.75% | 0.78 x 0.78 / 20 x 20 | 8 / 2.4 | **USACTL07500100** |
| ACTL-0750-100-C06 | 100 | 1 … 120 | 0.50% | 0.78 x 0.78 / 20 x 20 | 8 / 2.4 | **USACTL07500100C06** |
| ACTL-0750-150 | 150 | 1.5 … 180 | 0.75% | 0.78 x 0.78 / 20 x 20 | 8 / 2.4 | **USACTL07500150** |
| ACTL-0750-150-C06 | 150 | 1.5 … 180 | 0.50% | 0.78 x 0.78 / 20 x 20 | 8 / 2.4 | **USACTL07500150C06** |
| ACTL-0750-200 | 200 | 2 … 240 | 0.75% | 0.78 x 0.78 / 20 x 20 | 8 / 2.4 | **USACTL07500200** |
| ACTL-0750-200-C06 | 200 | 2 … 240 | 0.50% | 0.78 x 0.78 / 20 x 20 | 8 / 2.4 | **USACTL07500200C06** |
| ACTL-0750-250 | 250 | 2.5 … 300 | 0.75% | 0.78 x 0.78 / 20 x 20 | 8 / 2.4 | **USACTL07500250** |
| ACTL-0750-250-C06 | 250 | 2.5 … 300 | 0.50% | 0.78 x 0.78 / 20 x 20 | 8 / 2.4 | **USACTL07500250C06** |
| ACTL-1250-250 | 250 | 2.5 ... 300 | 0.75% | Ø 1.77 x 1.26 / 45 x 32 | 8 / 2.4 | **USACTL1250250** |
| ACTL-1250-250-C06 | 250 | 2.5 ... 300 | 0.50% | Ø 1.77 x 1.26 / 45 x 32 | 8 / 2.4 | **USACTL1250250C06** |
| ACTL-1250-250-C02 | 250 | 2.5 ... 300 | 0.20% | Ø 1.77 x 1.26 / 45 x 32 | 8 / 2.4 | **USACTL1250250C02** |
| ACTL-1250-400 | 400 | 4 ... 480 | 0.75% | Ø 1.77 x 1.26 / 45 x 32 | 8 / 2.4 | **USACTL1250400** |
| ACTL-1250-400-C06 | 400 | 4 ... 480 | 0.50% | Ø 1.77 x 1.26 / 45 x 32 | 8 / 2.4 | **USACTL1250400C06** |
| ACTL-1250-400-C02 | 400 | 4 ... 480 | 0.20% | Ø 1.77 x 1.26 / 45 x 32 | 8 / 2.4 | **USACTL1250400C02** |
| ACTL-1250-600 | 600 | 6 ... 720 | 0.75% | Ø 1.77 x 1.26 / 45 x 32 | 8 / 2.4 | **USACTL1250600** |
| ACTL-1250-600-C06 | 600 | 6 ... 720 | 0.50% | Ø 1.77 x 1.26 / 45 x 32 | 8 / 2.4 | **USACTL1250600C06** |
| ACTL-1250-600-C02 | 600 | 6 ... 720 | 0.20% | Ø 1.77 x 1.26 / 45 x 32 | 8 / 2.4 | **USACTL1250600C02** |

| 131mV Rogowski current sensors | | | | | | |
|---|---|---|---|---|---|---|
| **Model** | **Output Signal** | **Real range covered (A)** | **Accuracy** | **Window size (in / mm)** | **Output Lead Length (ft/m)** | **Reference** |
| ROG-80 | 131mV / kA @ 60Hz<br>Max. 4000 A | 10 ... 4000 | 0.50% | Ø 3.15 / 80 | 22 ft / 7 m | 194S **1080** |
| ROG-120 | 131mV / kA @ 60Hz<br>Max. 4000 A | 10 ... 4000 | 0.50% | Ø 4.72 / 120 | 22 ft / 7 m | 194S **1120** |
| ROG-200 | 131mV / kA @ 60Hz<br>Max. 4000 A | 10 ... 4000 | 0.50% | Ø 7.87 / 200 | 22 ft / 7 m | 194S **1200** |
| ROG-300 | 131mV / kA @ 60Hz<br>Max. 4000 A | 10 ... 4000 | 0.50% | Ø 11.81 / 300 | 22 ft / 7 m | 194S **1300** |

| Wireless System (*) | Description | Reference |
|---|---|---|
| RF END-Node | Wireless transmitter with RS485 input (one RF END-Node per DIRIS MCM power meter) | 4899 **0800** |
| RF HUB-Node | Wireless Hub with Ethernet output (supports up to 8 RF END-Node interfaces) | 4899 **0801** |

*(*) Refer to RF catalog pages for more information*

| Commissioning | Description | Reference |
|---|---|---|
| 1/2-day remote commissioning | Remote commissioning including installation verification, programming and communication testing | **9230100027** |
| 1/2-day on-site commissioning | On-site commissioning including installation verification, programming and communication testing | **9230100004** |



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## Expert Services

Our service engineers are an essential part of our team, and they are dedicated to ensuring your power monitoring system provides accurate and reliable measurements to your EPMS software or SCADA system.

Our services include:

- Site audits to verify the proper wiring of your system
- Personnel training on how to configure, operate and maintain power monitoring equipment and associated software
- Remote and on-site commissioning to ensure that your system is up and running quickly, with peace of mind.

For further information, please contact your nearest SOCOMEC branch.

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