

DIRIS MCM

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



DIRIS MCM

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

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



- > ANSI C12.1-2015 Class 0.2

- > IEC 62053-22



- > IEC 62053-23

Wireless Technology

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

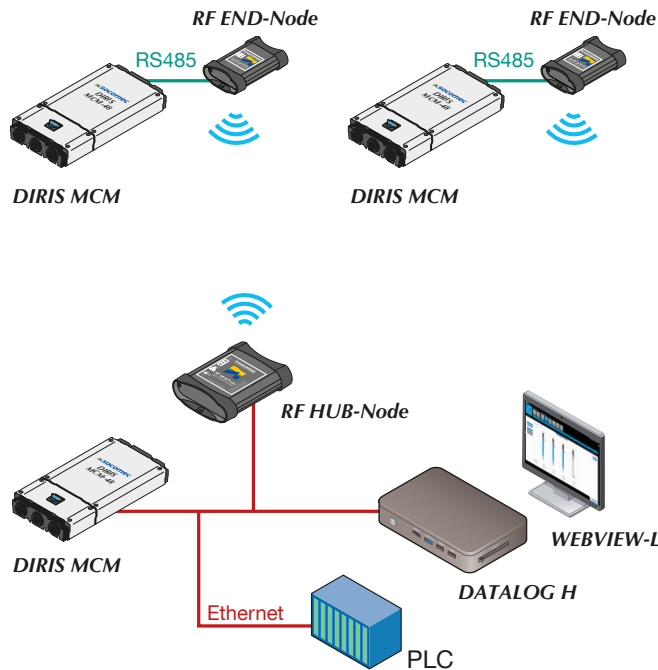


RF END-Node
Transmitter



RF HUB-Node
Receiver

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.

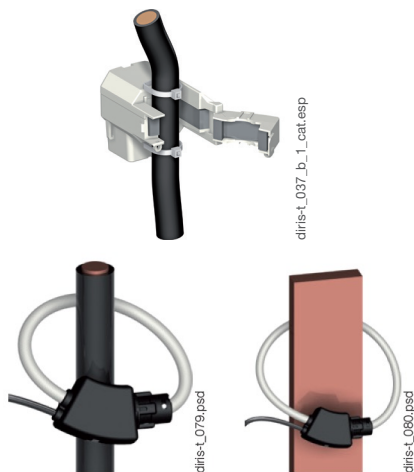
Current sensors

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



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 131 mV Rogowski	333 mV 131 mV Rogowski	333 mV 131 mV Rogowski	333 mV 131 mV Rogowski	333 mV 131 mV Rogowski	333 mV 131 mV Rogowski	333 mV 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 BACnet IP	Modbus TCP BACnet IP	Modbus TCP BACnet IP	Modbus TCP BACnet IP	Modbus TCP BACnet IP	Modbus TCP BACnet IP	Modbus TCP BACnet IP
Wireless	•	•	•	•	•	•	•
Electrical							
Number of voltage inputs	2	2	2	2	2	2	2
Energy metering							
±kWh, ±kvarh, kVAh	•	•	•	•	•	•	•
ΣP (kW), ΣQ (kvar), ΣS (kVA), ΣPF	•	•	•	•	•	•	•
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

Technical characteristics

Mechanical characteristics

Enclosure material	- Extruded anodized aluminium body - 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: - Main voltage input: 90-600 VAC L-N / L-L - CAT III - 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 mm ² cable - Secondary voltage input: Removable screw terminal block, 4 positions, stranded or solid AWG 12...AWG 18 / 0.75 ... 4 mm ² cable
Electrical Network (Service) type	Single-Phase - Two-Wire, Line-to-Neutral Single-Phase - Two-Wire, Line-to-Line Single-Phase - Three-Wire (Split-Phase) Three-Phase - Three-Wire (Delta) Three-Phase - Four-Wire (Wye)
Frequency range	45 ... 65 Hz
Power supply	- Line powered (any two lines 90 - 600 VAC), - 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

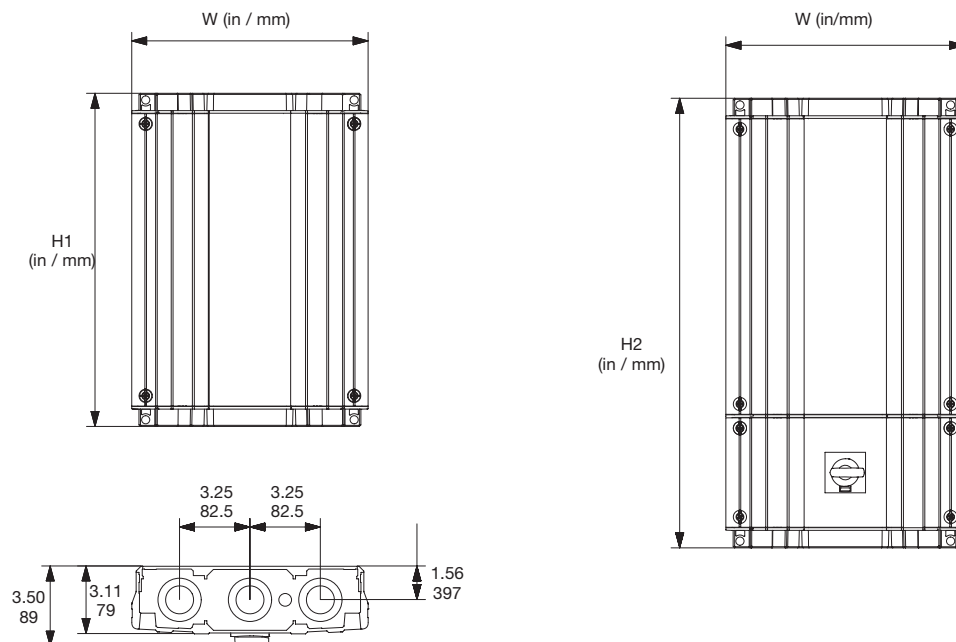
Measuring characteristics

Voltage measurement	
Sampling rate	1.8 kHz
Voltage measurement accuracy	Class 0.2
Current measurement	
Number of current inputs	MCM-16: 16 MCM-48: 48
Associated current sensors	- 333 mV current sensors - Rogowski coil sensors (131 mV / kA @ 60 Hz)
CT connection	Board mounted push-in spring terminal block AWG 16 ... AWG 24 / 0.5 ... 1.5 mm ² 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

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 Max. 4000 A	10 ... 4000	0.50%	Ø 3.15 / 80	22 ft / 7 m	194S 1080
ROG-120	131mV / kA @ 60Hz Max. 4000 A	10 ... 4000	0.50%	Ø 4.72 / 120	22 ft / 7 m	194S 1120
ROG-200	131mV / kA @ 60Hz Max. 4000 A	10 ... 4000	0.50%	Ø 7.87 / 200	22 ft / 7 m	194S 1200
ROG-300	131mV / kA @ 60Hz 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

DIRIS MCM

Multi-circuit Energy & Power meter

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.

