Power quality meter

96 mm x 96 mm - Door mounting







DIRIS A-100

DIRIS A-200

Function

The **DIRIS A-100 / A-200** are UL and CSA 600VAC compliant panel-mounted power quality meters that can communicate either via MODBUS RTU over RS485, MODBUS TCP and BACnet IP over Ethernet. The 4 independent current inputs of the device allow to manage several types and numbers of circuits. The DIRIS A-100 / A-200 are compatible with all types of current sensor technologies: solid-core, split-core and Rogowski coil sensors to match any project requirements and installation constraints.

Advantages

Universal

The DIRIS A-100/A-200 is an all-in-one power quality meter providing a cost-effective answer to all application requirements:

- Native RS485 and dual Ethernet communication and digital inputs/outputs, eliminating the need for additional optional modules.
- Universal power supply 115 600 VAC.
- Wide range voltage service monitoring 90 690 VAC direct without using potential transformers.
- Compatible with any third party 333mv Current Transformers.

Plug & play

- Unique RJ12 technology provides a quick and reliable connection of current sensors to the power meter.
- Using mV output CTs means that no shorting blocks are needed.
- Fast and simple setup thanks to the screen's Configuration Wizard.
- Easy Config System is a free configuration software that allows you to create and save configuration templates which can later be uploaded to other A-100/A-200.
- Smart monitoring of protective devices with VirtualMonitor technology - without the need for auxiliary contacts or extra wiring.

General characteristics

- UL 600V.
- Time of Use.
- · Power Quality.
- Waveform captures.
- 4 current sensor inputs.
- · Ground leakage current monitoring (A-200).
- Cybersecurity compliance.
- Free embedded webserver WEBVIEW-S.

Fully customizable

- Upload your own brand logo to customize the screen and embedded webserver.
- Creation of rolling favorite screens to display the measurement datasets that matter most to you.

Advanced features

- Waveform capture automatically triggered by power quality events to rapidly identify disturbances.
- Time of Use calendar configuration (up to 4 seasons and 4 tariffs) to align consumptions with any local utility contract.
- Ground leakage current monitoring, with alarm thresholds for preventative maintenance and quick remedial action.

Better than revenue grade

PreciSense technology provides industry leading accuracy which exceed revenue grade standards, for reliable and repeatable measurements under all conditions:

- Class 0.2 for the meter alone according to ANSI C12.20 and IEC 61557-12 standard.
- Class 0.5 from 2% to 120% of the CT rating for the global measurement chain (with TE/ITR/TF/ ACTL-1250 current sensors).

The solution for

- > Data center
- > Industry
- > Building

Strong points

- > Universal
- > Plug & play
- > Fully customizable
- > Advanced features
- > Better than revenue grade

Conformity to standards

> UL 61010-1 Guide FTRZ/PICQ File E257746



- > ANSI C12.20
- > PBI Meter per CA Energy Commission



- > IEC 61557-12
- > IEC 62053-21 -24



Integrated technologies







Precisense

For more information see our website www.socomec.us



96 mm x 96 mm - Door mounting

	Socomec Figure 1 to 100 Figure 1 to 100 Figure 2 to 10	ASOCOMEC STATE AND ASSOCIATION OF STATE ASSOCIATION OF STATE AND ASSOCIATION OF STATE ASSOCIATION OF S
DIRIS A	A-100 RS485	A-200 RS485 + Ethernet
	Smart RJ12 + 333r	nV Current sensors
Number of sensor inputs	4	4
Mounting	Door mounted, 96 x 96 mm	Door mounted, 96 x 96 mm
Electrical		
Power supply	110 - 600 VAC	110 - 600 VAC
Voltage measurement	50 - 600 VAC L-N	50 - 600 VAC L-N
Communication		
RS485 Modbus RTU	•	•
Ethernet (Modbus TCP/BACnet IP)	-	Dual Ethernet ●
Embedded webserver	0	•
Cybersecurity compliant	•	•
I/O		
Digital inputs	3	3
Digital output	1	1
Energy metering		
4-quadrant energy metering (+/-kWh, +/- kvarh, +/- kVAh)	•	•
Demand and peak demand	•	•
Revenue grade	•	•
Multi-tarif	4 with full Time of Use management	4 with full Time of Use management
Power monitoring		
Instantaneous, average, min and max values	•	•
Voltage unbalance	•	•
Neutral current (measured or calculated)	•	•
Ground leakage monitoring	-	•
Fast metrology RMS values	-	•
Power quality		
Harmonic analysis (THD/individual) up to 63rd	• / only THDs	•
Power quality events (sags, swells, interruptions, overcurrents)	-	•
Waveform capture	-	•
Load management		
Operating hours	•	•
Number of operations (info/alarm)	•	•
Protective device monitoring (on/off/tripped)	•	•
a marking to the ground set		

^{•:} native to the product.



o: optional via DIRIS Digiware M-70 or D-70 gateways.

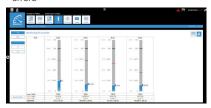
Power quality meter

96 mm x 96 mm - Door mounting

Functions

Monitoring

- Real-time visualization of all electrical parameters, available under several formats (bar graphs, tables)
- Phasor diagram to identify potential CT wiring errors



Measurement history

- History of all electrical parameters (V, I, P, Q, S, THD etc.)
- Time period selection (year, month, day etc.)
- Easy correlation, by displaying multiple parameters on the same graph



Consumption curves

- Recording of active (kWh), reactive (kvarh) and apparent (kVAh) energies
- Graphical view of monthly, weekly, daily or hourly energy consumptions to detect drifts



Alarms & Events

- View active alarms and power quality events
- Access to details (duration, amplitude etc.)
- Log of finished alarms & events



Time of Use

- Custom calendar management
- Energy consumption displayed according to the utility's daily rates, weekdays, seasons and holiday schedules

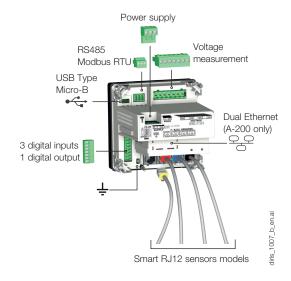


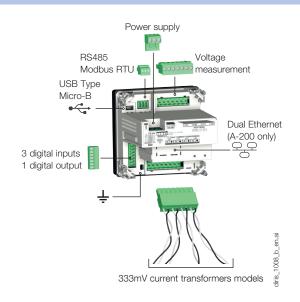
Waveform

- Automatic waveform captures following power quality events.
- Waveform picture and samples can be downloaded from the webserver



Terminals

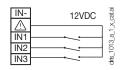




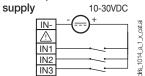
Power quality meter

96 mm x 96 mm - Door mounting

3 Digital inputs Self-supplied by PMD



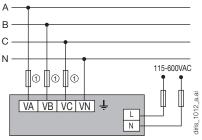
External power



1 digital output



Voltage and power supply connections



1. 1 A gG / 1 A class CC Listed fuses for UL application.

Ground Power supply



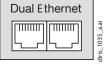


RS485



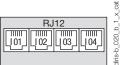




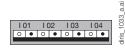


Current measurement

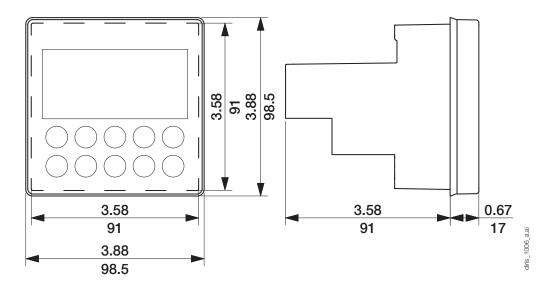
RJ12 version



333mV version



Dimensions (in/mm)





Power quality meter

96 mm x 96 mm - Door mounting

Current sensors

Various types of current sensors are connected to the DIRIS A-100 / A-200: solid-core (TE), split-core (TR, iTR) or flexible (TF) for A-100/A-200 RJ12 models, or 333mV current transformers on A-100/A-200 333mV models. It is also possible to fit zero sequence ΔIC/ΔIP-R CTs for ground leakage monitoring on the DIRIS A-200 RJ12 model (reference 4825 0604). The variety between these sensors means they can be adapted to any type of new, existing or high-current existing installation

TE solid current sensors



TR/iTR split-core current sensors

TF Rogowski current sensors



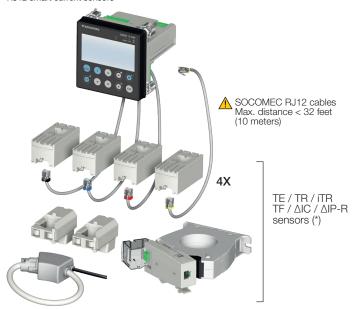
333mV current sensors



ΔIC/ΔIP-R zero sequence CTs



RJ12 smart current sensors



Current transformers with 333 mV outputs



(*) Notes regarding the use of zero sequence CTs:

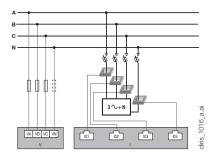
- $1.\ \Delta IC/\Delta IP-R\ zero\ sequence\ CTs\ for\ ground\ leakage\ monitoring\ are\ only\ compatible\ with\ the\ DIRIS\ A-200\ RJ12\ model\ (part\ no\ 48250604).$
- 2. Only one ΔIC / ΔIP -R may be connected on the DIRIS A-200 power meter.
- 3. DIRIS T-10 RJ12 adaptor (part no 48290620) must be used and ordered separately to connect ΔIC / ΔIP-R to the DIRIS A-200 power meter.



Current sensor connections (RJ12 models)

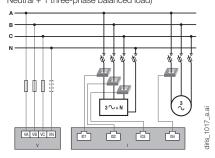
Three-Phase, Four-Wire Wye 3P+N - 4CT

(1 three-phase load + measured neutral)



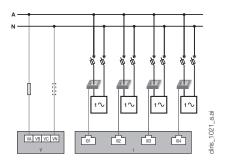
Three-Phase, Four-Wire Wye 3P+N - 3CT & 3P - 1CT

(1 unbalanced three-phase load + calculated Neutral + 1 three-phase balanced load)



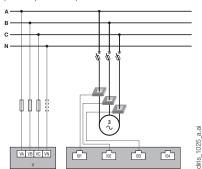
Single-Phase, Two-Wire, Line-to-Neutral 1P+N - 1CT (x4)

(4 single-phase loads)



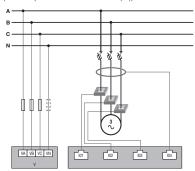
Three-Phase Four-Wire Delta (High Leg) 3P+N - 3CT

(1 three-phase load)



Three-Phase, Four-Wire Wye 3P+N - 3CT

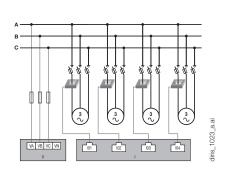
(1 three-phase load with RCM* ($I\Delta$))



* only for DIRIS A-200 RJ12 model (ref. 48250604).

Three-Phase, Three-Wire Delta 3P - 1CT (x4)

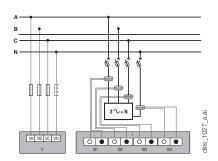
(4 three-phase balanced loads)



Current sensor connections (333mV models)

Three-Phase, Four-Wire Wye 3P+N - 4CT

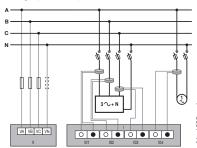
(1 three-phase load + measured neutral)



Three-Phase, Four-Wire Wye 3P+N - 3CT & 1P+N - 1CT

(1 three-phase load + calculated Neutral

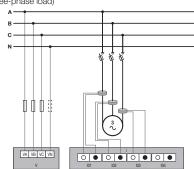
+ 1 single-phase load)



Three-Phase Four-Wire Delta (High Leg) 3P+N - 3CT

(1 three-phase load)

diris_1026_a.ai



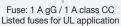














333 mV current transformers



Unbalanced load

Zero sequence CT

Power quality meter

96 mm x 96 mm - Door mounting

DIRIS A-100 / A-200 characteristics

Electrical characteristics

Power supply	
Voltage	115-600 VAC L/N L/L, Overvoltage category III
Frequency	50-60 Hz
Power consumption	A-100: 5VA, A-200: 7VA
Connection (Use copper conductors only)	Removable spring-cage terminal block, 2 positions, 28-12 AWG (1-2.5 mm²) solid or stranded cable with ferrule

Measurement characteristics

Standards		
Active energy	ANSI C12.20	Class 0.2 DIRIS A-100/A-200 alone
accuracy	IEC 61557-12	Class 0.2 DIRIS A-100/A-200 alone Global accuracy class from 2% to 120% of In (meter + sensors): - Class 0.5 system accuracy with TE, iTR, TF, ACTL-1250 current sensors - Class 1 system accuracy with TR or ACTL-0750 current sensors
Reactive energy accuracy	IEC 62053-24	Class 1 DIRIS A-100/A-200 alone Class 2 system accuracy with TE, TR/iTR or TF current sensors

Voltage measurement

Voltage range	50-600 VAC L-N UL CAT III 90-690 VAC L-L UL CAT III 50-1039 VAC L-L IEC CAT III
Frequency range	45 to 65 Hz
Electrical 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, Three-Phase Four-Wire Delta (High Leg)
Measurement by voltage transformer	Primary: 400 000 VAC Secondary: 60, 100, 110, 173, 190 VAC
Input consumption	≤ 0.1 VA
Connection (Use copper conductors only)	Removable spring-cage terminal block, 4 positions, 28-12 AWG (1-2.5 mm²) solid or stranded cable with ferrule
Current measurement	

Current measurement	
Number of current inputs	4
Associated current sensors	- Smart RJ12 sensors: solid-core TE, split-core TR and iTR, flexible TF current sensors - 333 mV current sensors: split-core ACTL 0750- xxx, ACTL-1250-xxx - ΔIC circular solid-core and ΔIP-R circular split-core zero-sequence CT with T-10 RJ12 adaptor

Input/output characteristics

Inputs	
Number	3
Type / Power supply	Optocoupler with internal (12 VDC \pm 10%) or external (10-30 VDC) polarisation 27 mA max.
Input function	Logical state, pulse meter, breaker status or sync. pulse signal (input 1)
Connection	Removable screw terminal block, 5 positions, stranded or solid 18-16 AWG (0.5-1.5 $\rm mm^2)$
Outputs	
Number	1
Туре	Optocoupler 30 VDC max 20 mA max - SELV
Output function	Configurable alarm signal (current, power, etc.) when threshold is exceeded or remote control through communication command
Connection	Removable screw terminal block, 4 positions, stranded or solid 18-16 AWG (0.5-1.5 $\mathrm{mm^2})$

Communication characteristics

RS485			
Link	RS485		
Connection type	Half-Duplex, 2 wires		
Protocol	Modbus RTU		
Baud rate	9600 to 115200 bauds		
Ethernet (A-200 only)			
Link	Ethernet		
Connection type	RJ45 10/100 Mbs		
Protocol	Modbus TCP/IP, BACnet IP		
USB			
Link	USB Type Micro-B		
Purpose	Configuration via Easy Config System and firmware upgrade via Product Upgrade Tool		
E C C C C C C C C C C C C C C C C C C C			

Environmental characteristics

Storage temperature	-40 +85°C / -40 +185°F (ANSI C12.1)
Operating temperature	-25 +70°C / -13 +158°F (ANSI C12.1)
Humidity	5 to 95% RH non condensing (ANSI C12.1)
Degree of pollution	2

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.





References

DIRIS A-100 / A-200 Power meters				
Model	Description		Reference	
DIRIS A-100 RS485 - Smart RJ12 current sensors			4825 0600	
DIRIS A-100 RS485 - 333 mV current sensors			4825 0601	
DIRIS A-200 RS485 + Dual Ethernet - Smart RJ12 current sensors		4825 0604		
DIRIS A-200 RS485 + Dual Ethernet - 333 mV current sensors			4825 0605	
Accessories To be ordered in multiples of		Reference		
Fuse disconnect switches to protect voltage inputs (RM type) 4		5701 0018		
Fuse disconnect switches to protect the 1-pole + neutral auxiliary power supply (RM type) 6		5701 0017		

RJ12 Solid-core current sensors				
Model	Nominal current range (A)	Real range covered (A)	Window size (in/mm)	Reference
TE-18	5 20	0.1 24	Ø 0.33 / 8.6	4829 0500
TE-18	25 63	0.5 75	Ø 0.33 / 8.6	4829 0501
TE-25	40 160	0.8 192	0.53 x 0.53 / 13.5 x 13.5	4829 0502
TE-35	63 250	1.26 300	0.82 x 0.82 / 21 x 21	4829 0503
TE-45	160 630	3.2 756	1.22 x 1.22 / 31 x 31	4829 0504
TE-55	400 1000	8 1200	1.61 x 1.61 / 41 x 41	4829 0505
TE-90	600 2000	12 2400	2.52 x 2.52 / 64 x 64	4829 0506

RJ12 Split-core current sensors				
Model	Nominal current range (A)	Real range covered (A)	Window size (in/mm)	Reference
TR-10 / iTR-10	25 63	0.5 75.6	Ø 0.39 / 10	4829 0555 / 4829 0655
TR-14 / iTR-14	40 160	0.8 192	Ø 0.55 / 14	4829 0556 / 4829 0656
TR-21 / iTR-21	63 250	1.26 300	Ø 0.83 / 21	4829 0557 / 4829 0657
TR-32 / iTR-32	160 600	3.2 720	Ø 1.26 / 32	4829 0558 / 4829 0658

RJ12 Rogowski current sensors (*)				
Model	Nominal current range (A)	Real range covered (A)	Window size (in/mm)	Reference
TF-40	100 400	2 480	Ø 1.57 / 40	4829 0573
TF-80	150 600	3 720	Ø 3.15 / 80	4829 0574
TF-120	400 2000	8 2400	Ø 4.72 / 120	4829 0575
TF-200	600 4000	12 4800	Ø 7.87 / 200	4829 0576
TF-300	1600 6000	32 7200	Ø 11.81 / 300	4829 0577
TF-600	1600 6000	32 7200	Ø 23.62 / 600	4829 0578
Set of 3 RJ12 female/female connectors for RJ12 lead extension between Diris A-100/A-200 and TF sensor				4829 0670

^(*) TF Rogowski sensors come with a 6-ft cable lead with RJ12 male connector

RJ12 sensor lead cables											
	Cable length (ft/m)										
P.M.O	0.00/0.4	0.04/0.0	0.00/0.0	4.04/0.5	0.04	0.5/0	0.04/0	40.4/5	00.0/7	00.0/40	164 / 50 reel
RJ12 connection cables	0.32/0.1	0.64/0.2	0.96/0.3	1.64/0.5	3.3/1	6.5/2	9.84/3	16.4/5	22.9/7	32.8/10	+ 100 connectors
Number of cables	Reference	Reference	Reference	Reference	Reference	Reference	Reference	Reference	Reference	Reference	Reference
1	-	-	-	-	-	-	-	4829 0602	-	4829 0603	4829 0601
3	4829 0580	4829 0581	4829 0582	4829 0595	4829 0583	4829 0584	4829 0606	4829 0607	4829 0608	4829 0609	-
4	-	-	-	4829 0596	4829 0588	4829 0589	-	-	-	-	-

333mV Split-core current sensors							
Model	Primary rating (A)	Real range covered (A)	Window size (in/mm)	Reference			
ACTL-0750	20	0.2 24	Ø 0.78 / 20	USACTL0750020C06			
ACTL-0750	50	0.5 60	Ø 0.78 / 20	USACTL0750050C06			
ACTL-0750	100	1 120	Ø 0.78 / 20	USACTL07500100C06			
ACTL-0750	150	1.5 180	Ø 0.78 / 20	USACTL07500150C06			
ACTL-0750	200	2 240	Ø 0.78 / 20	USACTL07500200C06			
ACTL-0750	250	2.5 300	Ø 0.78 / 20	USACTL07500250C06			
ACTL-1250	250	2.5 300	Ø 1.77 / 46	USACTL1250250C02			
ACTL-1250	400	4 480	Ø 1.77 / 46	USACTL1250400C02			
ACTL-1250	600	6 720	Ø 1.77 / 46	USACTL1250600C02			

Commissioning		
1/2-day remote conditioning	Remote commissioning ncluding installation verification, programming and communication testing	9230100027
1/2-day on-site conditioning	On-site commissioning neluding installation verification, programming and communication testing	9230100004

