DIRIS A-100/A-200

Power quality meter

up to 10000 A via current sensors

DIRIS A-200

Configuration with Easy Config System.

The solution for

- Data centre
- Industry
- Building

Strong points

- The ultimate all-purpose power quality meter
- Plug & play
- Fully customizable
- Advanced features*
- Best-in-class accuracy
- Easy data management

Conformity to standards

- IEC 61557-12
- IEC 62053-22 -24
- UL 61010-1 File E257746
- ISO 14025
- EN50160

Sustainable advantages

- 30-year calibration guarantee to avoid the need for recalibration or product replacement.
- Includes ECO mode to reduce device energy consumption.
- RoHS & REACH compliant.

Function

The **DIRIS A-100 / A-200** are panel-mounted power quality meters that can communicate either via MODBUS RTU over RS485, MODBUS TCP over Ethernet or BACnet IP. The device's four RJ12 independent current inputs enable the management of multiple circuits of several different types: for example, 4 single-phase loads or 1 three-phase load + 1 single-phase load. A core-balance toroid can be fitted onto the A-200 for additional residual current monitoring. Most types of sensors are compatible: solid-core, split-core or flexible Rogowski coils through quick-connect RJ12 sensors.

Advantages

The ultimate all-purpose power quality meter

- Native universal communication and digital inputs/outputs, eliminating the need for additional optional modules.
- Power supply up to 600 VAC and network voltage monitoring up to 690 VAC.
- Multi-load management – up to 4 loads monitored on the same DIRIS A-100/A-200.

Plug & play

- Unique RJ12 technology enables the quick, error-free and safe connection of current sensors.
- Simple and fast configuration through a step-by-step wizard, even for the most advanced features.
- Integrated Virtual Monitor technology enables the smart monitoring of protective devices with no auxiliary contacts and no extra wiring.

Fully customizable

- Splash screen and embedded webserver are easy to customise with your own brand logo and pictures.
- Customisable stand-by screen will display the measurement datasets that matter most to you.

Advanced features *

- Waveform capture automatically triggered upon power quality events (voltage sag, swell, interruption, overcurrent) for the rapid identification of power system disturbances.
- ITIC/CBEMA curves management.
- Residual current monitoring through corebalanced toroids.

**Applies only to the DIRIS A-200 product*

Best-in-class accuracy

PreciSense technology provides industryleading accuracy which exceeds standards for billing, ensuring reliable and repeatable measurements under all conditions:

- Class 0.1 for the meter alone, according to IEC 61557-12 standard.
- Class 0.5 of the CT rating for the global measurement chain.
- Class 0.1s for active energy (Ea), according to standard IEC 62053-22.

Easy data management

- Embedded webview software that's easy to configure and use.
- Real-time notification (email alert - on phone).
- Photoview (allows the user to build and visualise customised dashboards with ease).
- Advanced tariff management through complete and easy to configure calendar function for viewing consumption precisely according to utility contract.

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Application

	Smart RJ12 Current sensors	
DIRIS A	**A-100** **RS485**	**A-200** **RS485 + Ethernet**
Number of sensor inputs	4	4
Mounting	Door mounted, 96 x 96 mm	Door mounted, 96 x 96 mm
Electrical		
Power supply	115 - 600 VAC	115 - 600 VAC
Voltage measurement	50-600 VAC L-N 90-690 VAC L-L	50-600 VAC L-N 90-690 VAC L-L
Communication		
RS485 Modbus RTU	•	•
Ethernet (Modbus TCP/BACnet IP)	-	Dual Ethernet •
Embedded webserver	o	•
Cybersecurity compliant	•	•
I/O		
Digital inputs	3	3
Digital output	1	1
Energy metering		
4-quadrant energy metering (+/-kWh, +/- kvarh, +/- kVAh)s	•	•
Demand and peak demand	•	•
Multi-tarif	4 with full calendar management	4 with full calendar management
Power monitoring		
Instantaneous, average, min and max values	•	•
Voltage unbalance	•	•
Neutral current (measured or calculated)	•	•
Earth 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	-	•
ITIC/CBEMA curves management		•
Load management		
Operating hours	•	•
Number of operations (info/alarm)	•	•
Protective device monitoring (on/off/tripped)	•	•

•: native to the product.
o: optional via DIRIS Digiware M-70 or D-70 gateways.

DIRIS A-100/A-200

Power quality meter

up to 10000 A via current sensors

Functions

Monitoring

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

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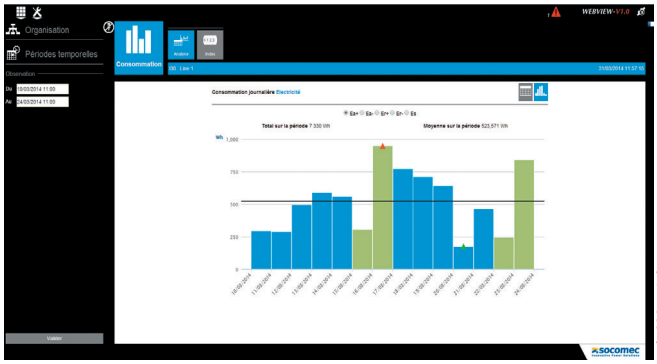
Consumption curves

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



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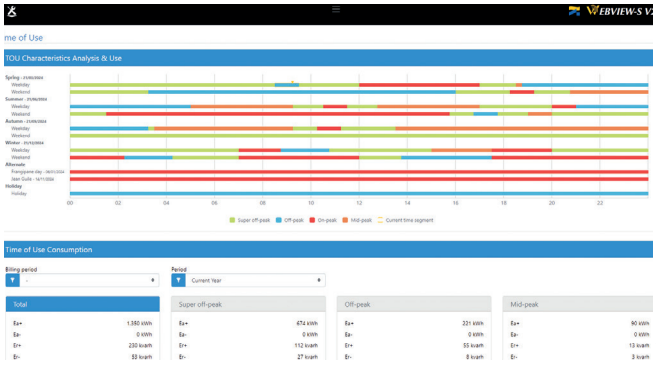
Advanced tariff management

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



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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

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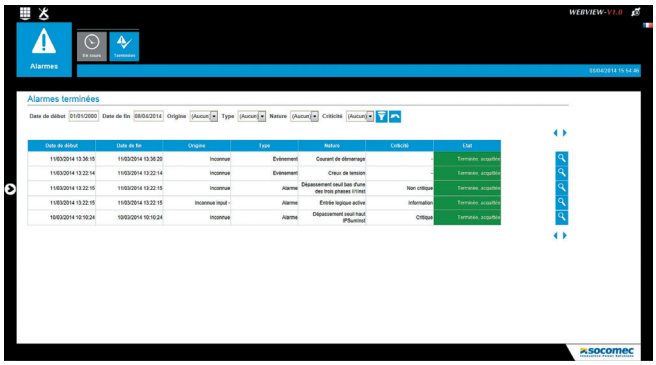
Alarms & Events

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



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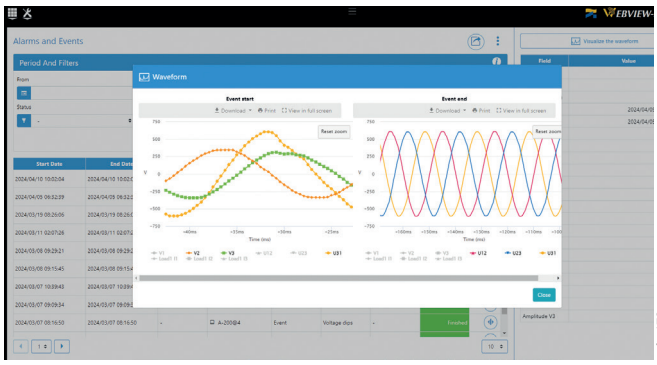
Waveform

- Automatic waveform captures following power quality events.
- Waveform picture and samples can be downloaded from the webserver
- ITIC/CBEMA curves for automatically classifying fast voltage events on a standardized graphic depending on their severity.



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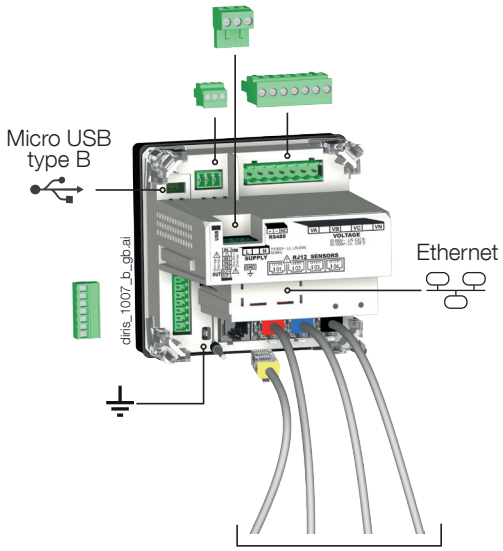
Terminals

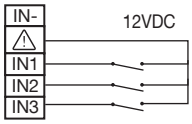


RJ12 smart sensors models

INPUTS:
If remote switch contact inputs are passive ('dry' contacts), please use terminal ⚠ for supplying one of the 3 inputs with 12V. If remote switch contacts are active ('wet' contacts), please use terminal IN- and make sure the voltage applied is within the 10-30VDC range.

OUTPUT:
optocoupler, apply max 30VDC and 20 mA of current.

3 Digital inputs Self-supplied by PMD



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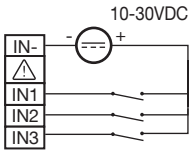
External power supply



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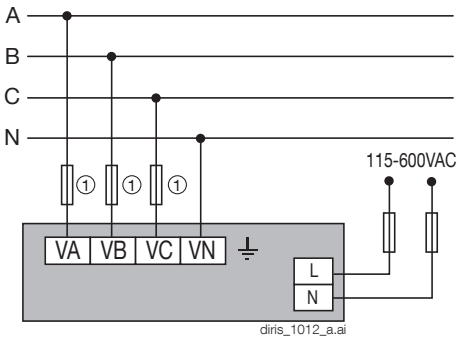
Voltage and power supply connections



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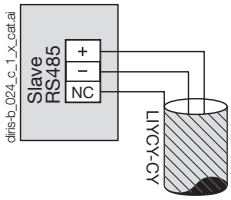
RS485



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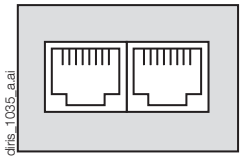
Dual ethernet



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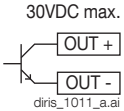
External power supply



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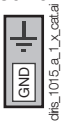
Ground



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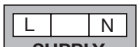
Power supply



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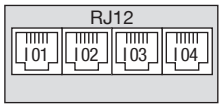
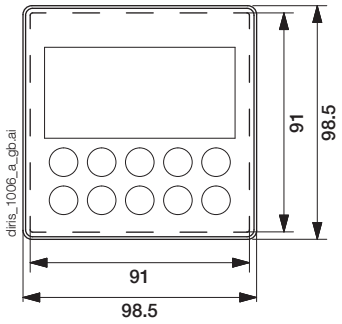
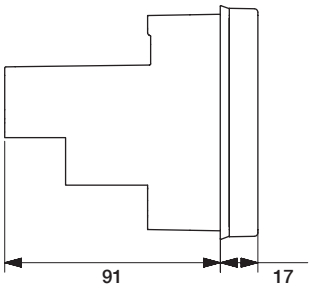
Current measurement RJ12 version



diris-b_020_b_1_x_cat.ai

Dimensions (mm)





Dimensions (mm)

Associated 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. It is also possible to fit core-balanced ΔIC/ΔIP-R CTs for earth 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.

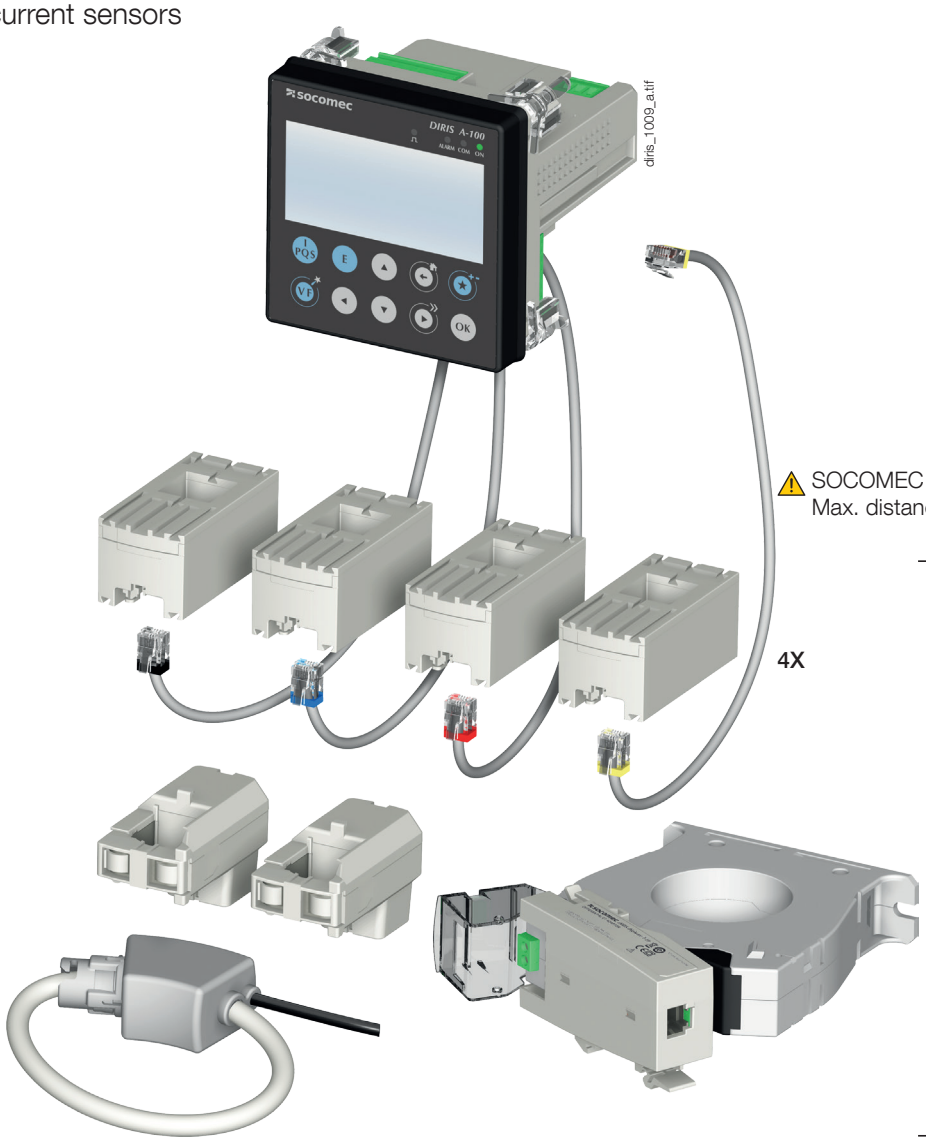
TE solid current sensors

TR/iTR split-core current sensors

TF Rogowski current sensors

DELTA IC/IP

RJ12 smart current sensors



⚠ SOCOMEC RJ12 sensors cables
Max. distance < 10 meters

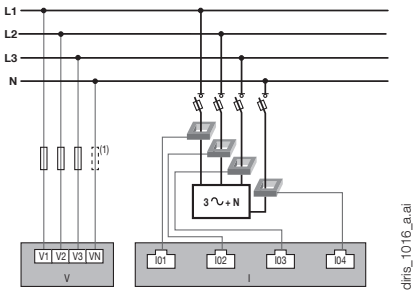
TE / TR / iTR / TF /
ΔIC / ΔIP-R sensors

ΔIP-R* ground
leakage CT
+ T-10 RJ12 adaptor

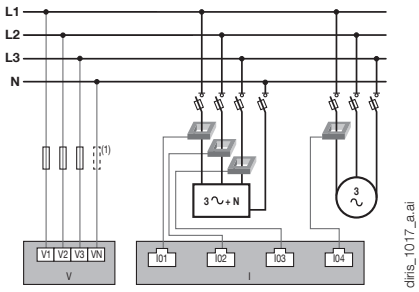
(*) Notes regarding the use of core-balanced toroïds :
1. ΔIC / ΔIP-R core-balanced toroïds for earth leakage monitoring are only compatible with the DIRIS A-200 (part no 48250604).
2. Only one ΔIC / ΔIP-R may be connected on the DIRIS A-200 power meter.
3. DIRIS T-10 RJ12 adaptor (part no 48290620) must be used and ordered separately to connect ΔIC / ΔIP-R to the DIRIS A-200 power meter.

Current sensor connections

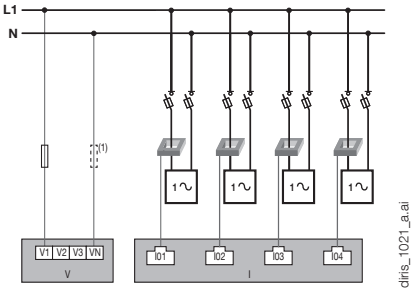
Three-Phase, Four Wires
3P+N – 4CT
(1 three-phase load + measured neutral)



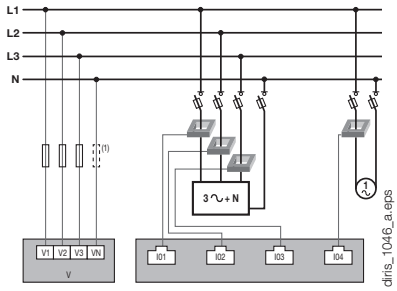
Three-Phase, Four Wires
3P+N – 3CT & 3P – 1CT
(1 unbalanced three-phase load + calculated Neutral + 1 three-phase balanced load)



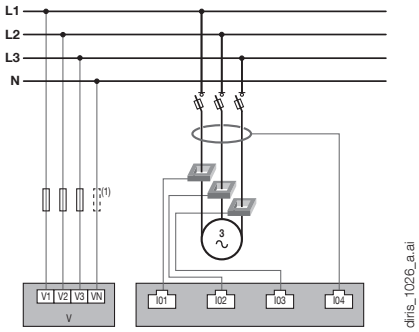
Single-Phase, Two-Wires
1P+N – 1CT (x4)
(4 single-phase loads)



Three-phase + Neutral
3P+N – 3CT & 1P+N – 1CT
(1 three-phase load + calculated Neutral + 1 single-phase load)

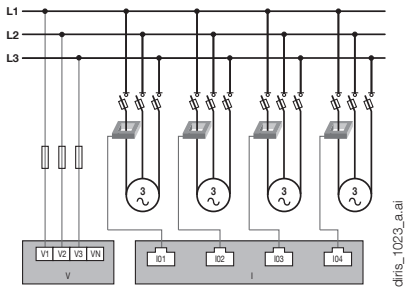


Three-Phase, Four Wires
3P+N – 3CT
(1 three-phase load with RCM * (IΔ))

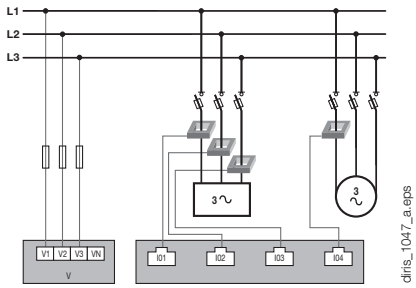


(*) only for DIRIS A-200 ref. 48250604.

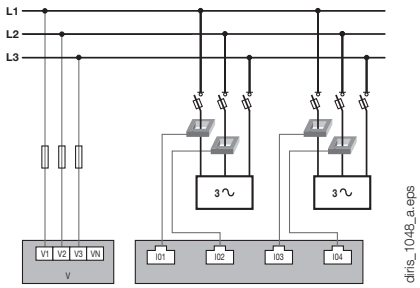
Three-Phase, Three Wires
3P – 1CT (x4)
(4 three-phase balanced loads)



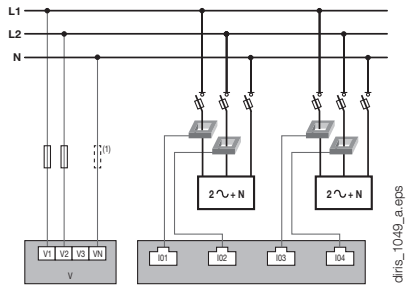
Three-phase
3P – 3CT & 3P – 1CT
(1 unbalanced three-phase load + 1 three-phase balanced load)



Three-phase
3P – 2CT (x2)
(2 three-phase loads*)



Two-phase + Neutral
2P+N – 2CT (x2)
(2 two-phase loads)



diris_1039_a.eps
Fuse: 1 A gG / 1 A class CC

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TE / TR / iTR / TF current sensors

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Balanced load

diris_1037_a.eps
Unbalanced load

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Core-balanced toroïds

(1) For connection to IT system earthing, adapt the protection in accordance with the installation standards currently in force.

DIRIS A-100 / A-200 characteristics

ELECTRICAL CHARACTERISTICS		
Power supply		
Voltage	115-600 VAC L/N L/L, Overvoltage category III	
Frequency	50 à 60 Hz	
Power consumption	A-100: 5 VA, A-200: 7 VA	
Connection (Use copper conductors only)	Removable spring-cage terminal block, 2 positions, 1-2.5 mm² solid or stranded cable with end piece	
MEASUREMENT CHARACTERISTICS		
Standards		
Active energy accuracy	IEC 61557-12	Class 0.1 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 - Class 1 system accuracy with TR
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 CAT III 90-690 VAC L-L CAT III	
Frequency range	45 to 65 Hz	
Network type	Single-phase/ Two-phase / Two-phase with neutral / Three-phase / Three-phase with neutral	
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,1-2.5 mm² solid or stranded cable with end piece	
Current measurement		
Number of current inputs	4	
Associated current sensors	- RJ12 100 mV smart sensors : solid-core TE, split-core TR and iTR, flexible TF current sensors - ΔIC circular solid-core and ΔIP-R circular split-core core-balanced toroïds with T-10 RJ12 adaptor	
INPUT/OUTPUT CHARACTERISTICS		
Inputs		
Number	3	
Type / Power supply	Optocoupler with internal (12 VDC ± 10%) or external (10-30 VDC) polarisation 27 mA max.	
Input function	Logical state, pulse meter, circuit breaker status or synchronisation pulse (input 1)	
Connection	Removable screw terminal block, 5 positions, stranded or solid 0.5-1.5 mm²	
Outputs		
Number	1	
Type	Optocoupler 30 VDC max 20 mA max - SELV	
Output function	Configurable alarm signal (current, power, etc.) when threshold is exceeded or remote controlled through communication command	
Connection	Removable screw terminal block, 2 positions, stranded or solid 0.5-1.5 mm²	
COMMUNICATION CHARACTERISTICS		
RS485		
Link	RS485	
Connection type	2 to 3 half duplex wires - SELV	
Protocol	Modbus RTU	
Baud rate	9600 to 115200 bauds	
Environmental specifications		
Storage temperature	-40 ... +85°C	
Operating temperature	-25 ... +70°C	
Humidity	5 to 95% RH non condensing	
Degree of pollution	2	
Ethernet		
Link	Ethernet RJ45	
Connection type	Dual Ethernet (2 ports) 10/100 Base-T - SELV	
Protocol	Modbus TCP (port 502), Modbus RTU over TCP (port 503) BACnet, SNTP, SMTP(S), FTP(S), HTTP(S), BACNet IP, DHCP	
USB		
Connection type	USB 2 - Micro USB	
Protocol	Modbus RTU over USB	
Function	Configuration and data reading, Firmware upgrade	

References

DIRIS A-100 / A-200 Power quality meters		Reference
DIRIS A-100	RS485 Modbus – RJ12 smart sensors	4825 **0600**
DIRIS A-200	RS485 Modbus + Ethernet Modbus TCP - RJ12 smart sensors	4825 **0604**

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**

Solid-core current sensors				Reference
Model	**Nominal current range (A)**	**Real range covered (A)**	**Window size (in/mm)**	
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**
Split-core current sensors				**Reference**
Model	**Nominal current range (A)**	**Real range covered (A)**	**Window size (in/mm)**	
TR-10	25 … 63	0.5 … 75.6	Ø 0.39 / 10	4829 **0555**
iTR-10	25 … 63	0.5 … 75.6	Ø 0.39 / 10	4829 **0655**
TR-14	40 … 160	0.8 … 192	Ø 0.55 / 14	4829 **0556**
iTR-14	40 … 160	0.8 … 192	Ø 0.55 / 14	4829 **0656**
TR-21	63 … 250	1.26 … 300	Ø 0.83 / 21	4829 **0557**
iTR-21	63 … 250	1.26 … 300	Ø 0.83 / 21	4829 **0657**
TR-32	160 … 600	3.2 … 720	Ø 1.26 / 32	4829 **0558**
iTR-32	160 … 600	3.2 … 720	Ø 1.26 / 32	4829 **0658**
Flexible Rogowski current sensors (1)				**Reference**
Model	**Nominal current range (A)**	**Real range covered (A)**	**Window size (in/mm)**	
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 DigiBOX A and TF sensors				4829 **0670**

(1) TF Rogowski sensors come with a 2 meters lead with RJ12 male connect

RJ12 connection cables	Cable length (m)										
	0.1	**0.2**	**0.3**	**0.5**	**1**	**2**	**3**	**5**	**7**	**10**	**50 m reel + 100 connectors**
Number of cables	**Reference**	**Reference**	**Reference**	**Reference**	**Reference**	**Reference**	**Reference**	**Reference**	**Reference**	**Reference**	**Reference**
1	-	-	-	-	-	-	-	4829 **0602**	-	4829 **0603**	4829 **0601** (2)
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**	-	-	-	-	-
6	4829 **0590**	4829 **0591**	4829 **0592**	4829 **0597**	4829 **0593**	4829 **0594**	-	-	-	-	-

(2) The maximal length between the sensor and the current module = 10m.

Commissioning		Reference
1/2-day remote commissioning	Remote commissioning including installation verification, programming and communication testing	9230 **100027**
1/2-day on-site commissioning	On-site commissioning including installation verification, programming and communication testing	9230 **100004**

Expert Services

EXPERT SERVICES

Our local team offers complete support to ensure the success of your project,from consultation to implementation of your metering system.