

DIRIS A-100/A-200

Power quality meter

up to 10000 A via current sensors



diris_1045.psd



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 62053-21 -24
- > UL 61010-1
File E257746
- > ISO 14025
- > EN50160



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 600VAC and network voltage monitoring up to 1039VAC.
- 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 industry-leading 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 from 2% to 120% 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	110 - 600 VAC	110 - 600 VAC
Voltage measurement	50 - 1039 VAC L-N	50 - 1039 VAC L-N
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.

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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

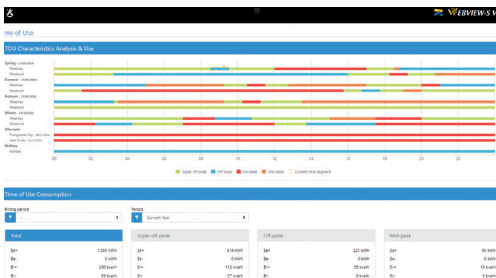
- Recording of active (kWh), reactive (kvarh) and apparent (kVAh) energies
- Graphical view of monthly, weekly, daily or hourly energy consumptions to detect drifts



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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

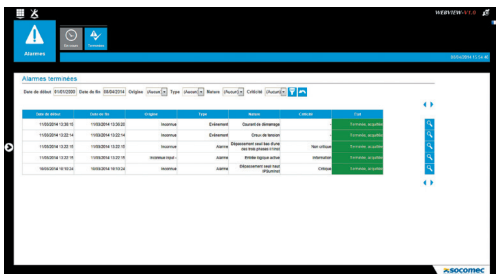
- History of all electrical parameters (V, I, P, Q, S, THD etc.)
- Time period selection (year, month, day etc.)
- Easy correlation, by displaying multiple parameters on the same graph



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Alarms & Events

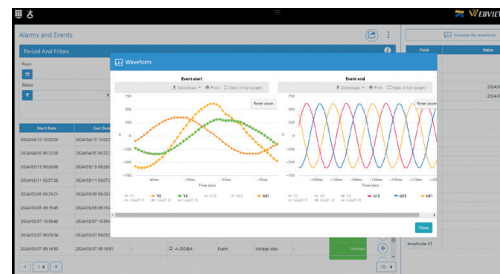
- View active alarms and power quality events
- Access to details (duration, amplitude etc.)
- Log of finished alarms & events



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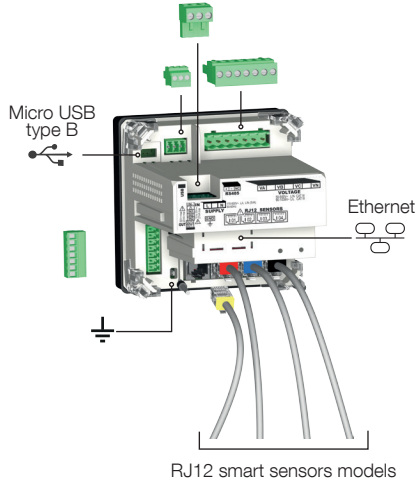
Waveform

- 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



INPUTS:

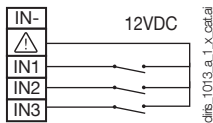
If remote switch contact inputs are passive ('dry' contacts), please use terminal Δ for supplying one of the 3 inputs with 12V.

If remote switch contacts are active ('wet' contacts), please use terminal IN- and make sure the voltage applied is within the 10-30VDC range.

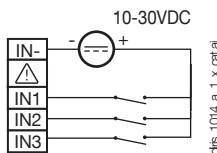
OUTPUT:

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

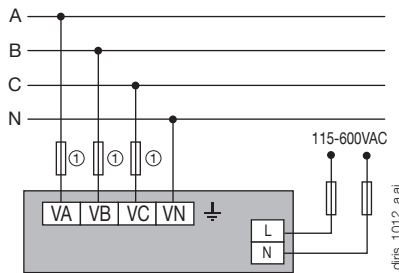
3 Digital inputs Self-supplied by PMD



External power supply

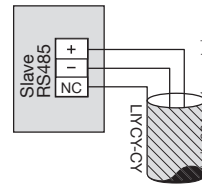


Voltage and power supply connections

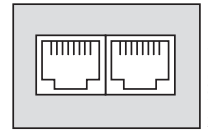


1. 1 A gG / 1 A class CC Listed fuses for UL application.

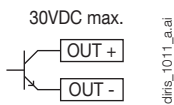
RS485



Dual ethernet



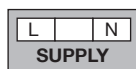
1 digital output



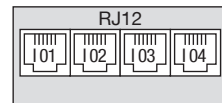
Ground



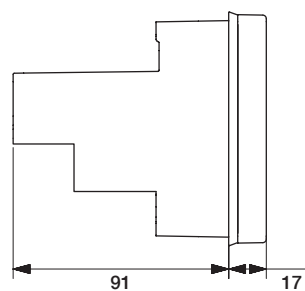
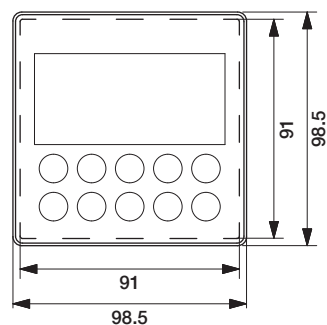
Power supply



Current measurement RJ12 version



Dimensions (mm)



DIRIS A-100/A-200

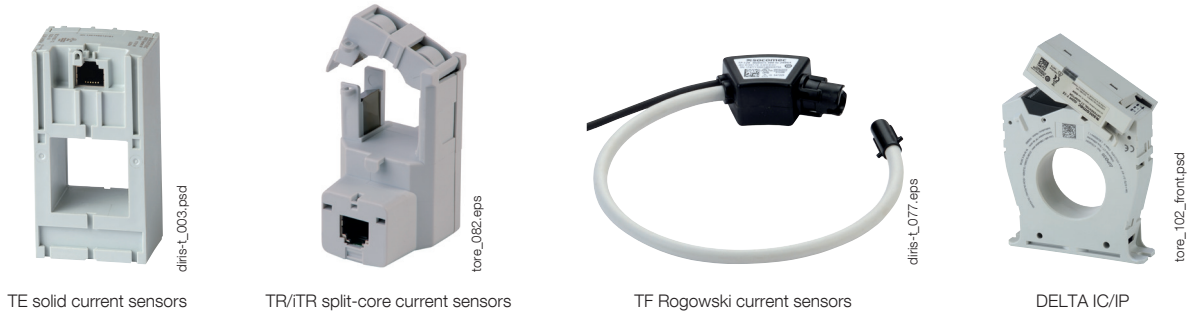
Power quality meter

up to 10000 A via current sensors

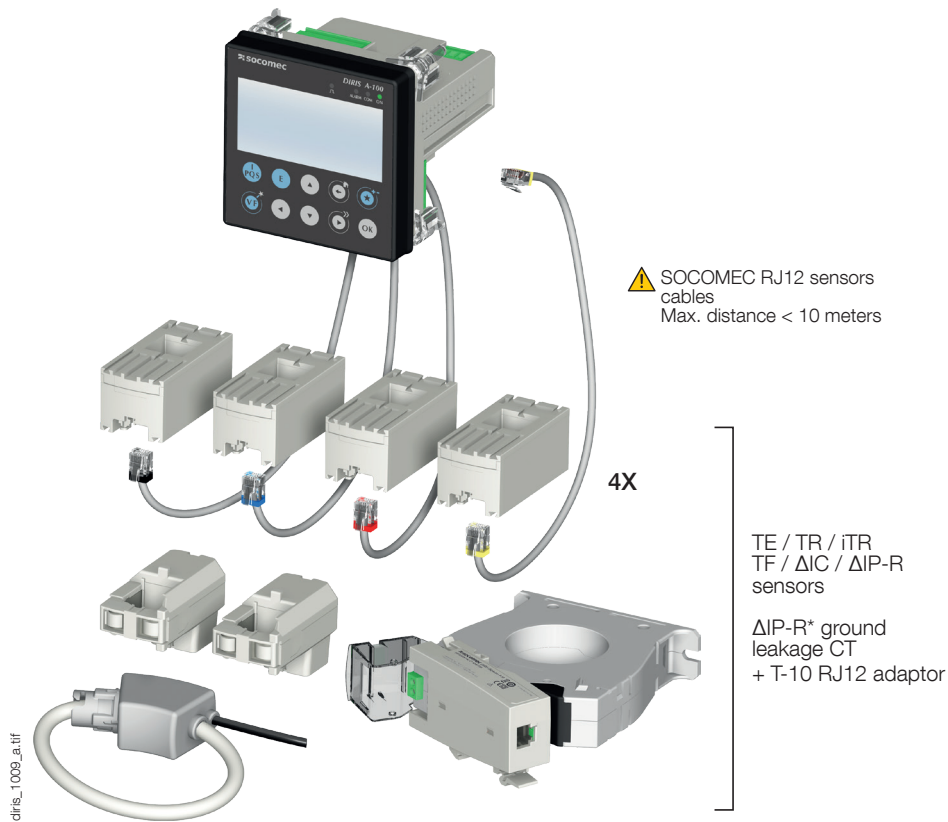
Current sensors

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 Δ IC/ Δ IP-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.



RJ12 smart current sensors

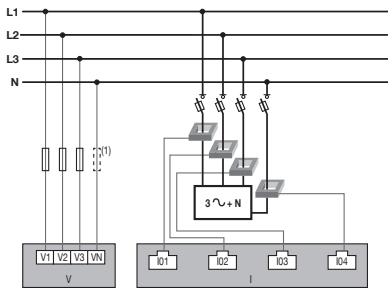


(*) Notes regarding the use of core-balanced toroids :

1. Δ IC / Δ IP-R core-balanced toroids for earth leakage monitoring are only compatible with the DIRIS A-200 (part no 48250604).
2. Only one Δ IC / Δ IP-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 Δ IC / Δ IP-R to the DIRIS A-200 power meter.

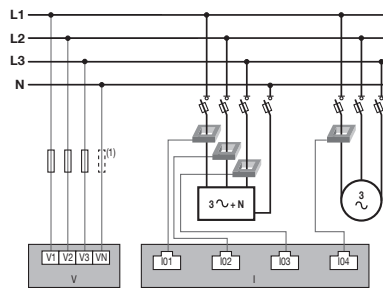
Current sensor connections

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



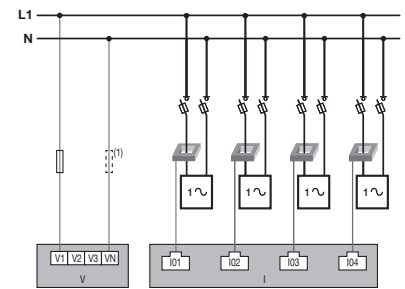
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Three-Phase, Four Wires
3P+N – 3CT & 3P – 1CT
(1 unbalanced three-phase load + calculated Neutral + 1 three-phase balanced load)



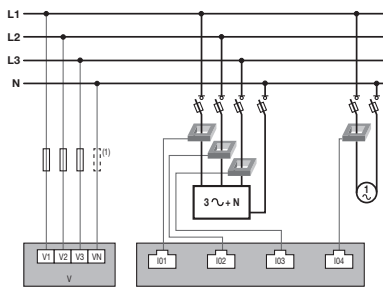
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Single-Phase, Two-Wires
1P+N – 1CT (x4)
(4 single-phase loads)



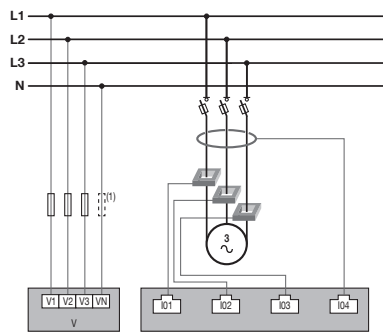
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Three-phase + Neutral
3P+N – 3CT & 1P+N – 1CT
(1 three-phase load + calculated Neutral + 1 single-phase load)



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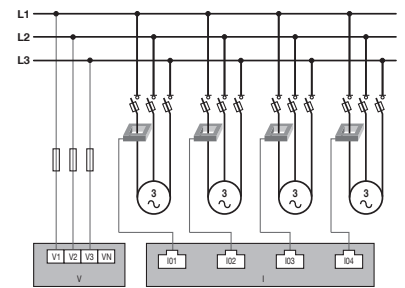
Three-Phase, Four Wires
3P+N – 3CT
(1 three-phase load with RCM * (IA))



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

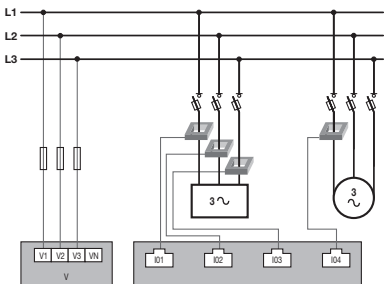
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Three-Phase, Three Wires
3P – 1CT (x4)
(4 three-phase balanced loads)



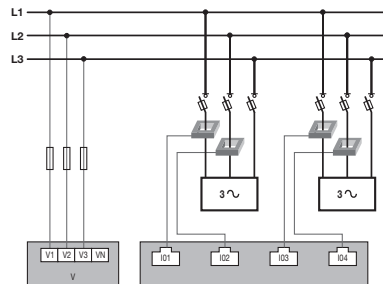
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Three-phase
3P – 3CT & 3P – 1CT
(1 unbalanced three-phase load + 1 three-phase balanced load)



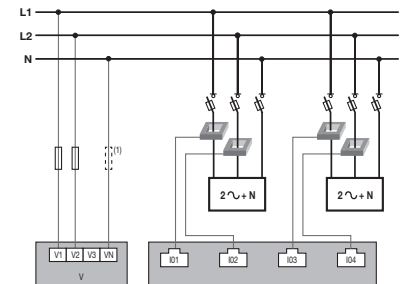
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Three-phase
3P – 2CT (x2)
(2 three-phase loads*)

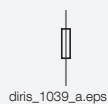


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Two-phase + Neutral
2P+N – 2CT (x2)
(2 two-phase loads)



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Fuse: 1 A gG / 1 A class CC



TE / TR / iTR / TF
current sensors



Balanced load



Unbalanced load



Core-balanced toroids

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

DIRIS A-100/A-200

Power quality meter

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DIRIS A-100 / A-200 characteristics

Electrical characteristics

Power supply	
Voltage	115-600 VAC L/N L/L, Overvoltage category III
Frequency	45 to 65 Hz
Power consumption	A-100: 5VA, A-200: 7VA
Connection (Use copper conductors only)	Removable spring-cage terminal block, 2 positions, 1-2.5 mm ² 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 I _n (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	50-1039 VAC L-L IEC 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 mm ² solid or stranded cable with end piece

Current measurement	
Number of current inputs	4
Associated current sensors	- RJ12 100mV 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 toroids 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 mm ²

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 mm ²

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, SNMP, 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							
<i>(1) TF Rogowski sensors come with a 2 meters lead with RJ12 male connector</i>											
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	-	-	-	-	-
<i>(2) The maximal length between the sensor and the current module = 10m.</i>											
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

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

