

DIRIS A-100 / A-200

Power quality meter

Power quality metering and event analysis - door mounting



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 over Ethernet or BACnet IP. The 4 RJ12 or 333mV independent current inputs of the device allow it to manage several types and number of circuits : For example 4 single-phase loads or 1 three-phase load + 1 singlephase load. A core-balanced toroid can be fit onto the A-200 for additional Residual Current Monitoring. Most type of sensors are compatible : solid-core, split-core or flexible Rogowski coils through quick-connect RJ12 sensors or 333mV current transformers.

Advantages

The ultimate all-purpose power quality meter

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

- Native universal communication and digital inputs/outputs, eliminating the need for additional optional modules.
- Universal power supply and voltage service type up to 690 VAC.
- Compatible with any third party 333mV Current Transformers.
- Multi-load management – the same DIRIS A-100/A-200 can monitor up to 4 balanced loads using 1 CT per load.
- The 4th CT input of the DIRIS A-200 can connect to zero-sequence earth leakage CTs to monitor ground leakage currents.

Alarms can be configured in case of exceeded pre-chosen thresholds for quick preventive or remedial actions before equipment and installation failures can occur.

Plug & play

- Unique RJ12 technology allows a quick, error free and safe connection of current sensors to the power meter, regardless of the current sensor type: solid-core (TE), split-core (TR) and Rogowski (TF).
- Configuration Wizard - Thanks to a step-by-step configuration wizard, configuring a power quality meter, including the most advanced features, has never been simpler and faster.
- Easy Config System is a free of charge configuration software offering numerous dashboards to quickly configure your power quality meter. You can easily save and modify your configurations and duplicate them from one device to another or from one system to another.
- Integrated Virtual Monitor technology allows smart monitoring of protective devices, remotely and in real-time, without using auxiliary contacts or extra wiring.

Fully customizable

- Splash screen and embedded webserver can be easily customized with your own brand logo and pictures.
- Customizable stand-by screen to display the measurement datasets that matter most to you.

Robust North American design

- Manufactured in Denver, CO with local stock in Boston, MA.
- Conformity to local standards – cULus listed, 600V CAT III rating for voltage measurement and power supply according to UL 61010-1 electrical safety standard.

Advanced features

- Waveform capture automatically triggered upon power quality events (voltage sag, swell, interruption, overcurrent) for quickly identifying power system disturbances
- Real-time waveform visualization through scope mode available on both screen and WEBVIEW embedded software (A-200)

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, ACTL-0750 current sensors).

Easy data management

- Webview (compatible with Socomec software)
- Easy to configure and use embedded webview software
- Real-time notification (email alert - on phone)
- Photoview - software (allows the user to see build and visualize customised dashboards).

The solution for

- > Data centre
- > Industry
- > Building

Strong points

- > The ultimate all-purpose power quality meter
- > Plug & play
- > Fully customizable
- > Robust North American design
- > Advanced features
- > Better than revenue grade
- > Easy data management

Conformity to standards

- > ANSI C12.20
- > CEC Revenue grade
- > IEC 61557-12
- > IEC 62053-21 -24
- > UL 61010-1 Guide FTRZ/PICQ File E257746

Integrated technologies



For more information see our website
www.socomec.com

General characteristics

- UL 600V.
- Time of use.
- Waveform captures.
- Up to 4 loads monitoring.
- RCM residual current monitoring.
- Power quality.
- Top-of-the line cybersecurity compliance.
- Webview webserver.

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Application	Local metering	Local analysis
		
SMART SENSORS + 333mV CURRENT TRANSFORMERS	DIRIS A-100 - Modbus RS485	DIRIS A-200 - Modbus RS485 + Modbus TCP Ethernet
Number of current inputs		
Number of loads	1 to 4	
Mounting	96 x 96	
Power supply	AC up to 600V	
All in one	•	
RS485 Modbus RTU	•	•
Ethernet (Modbus TCP/BACnet IP)	-	Dual Ethernet •
Web based software	o	•
Digital inputs	3	
Digital output	1	
Cybersecurity compliant	•	
UL standard compliance	UL 61010-1 600V	
CEC Revenue grade (< 2% accuracy)	•	
Manage energy consumptions		
4-quadrant energy metering	•	
Demand profiles	•	
Revenue grade	•	
Multi-tarif management	4 with full time of use management	
Monitor the electrical installation		
Instantaneous, average, min and max values	•	
Voltage unbalance measurement	•	
Neutral current (measured or calculated)	•	
Residual current monitoring	-	•
Fast metrology RMS values 20 ms	-	•
Check the power quality		
Harmonic analysis (THD/individual)	• / only THDs	•
Sag and swell detection	-	•
Overcurrent detection	-	•
Waveforms (real-time/log upon event)	-	•
Manage the loads		
Operating hours	•	
Number of operations (info/alarm)	•	
Protective device monitoring (on/off/tripped)	•	
Predictive power analysis and load shedding	•	

•: integrated in the product. o: optional via DIRIS M-70 or DIRIS D-70 gateways.

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Functions

Monitoring

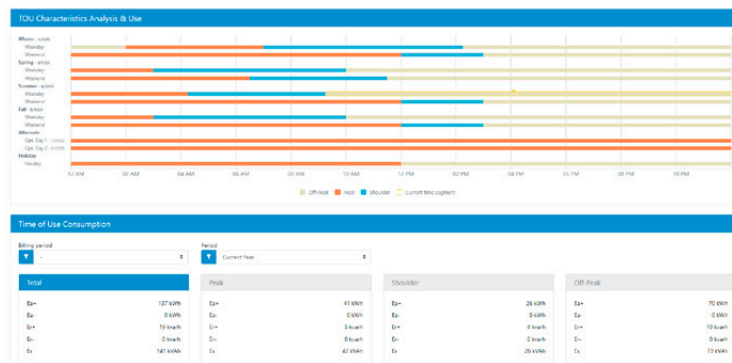
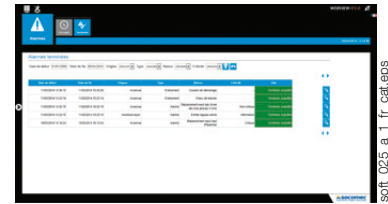
- Real-time measurement of electrical values.
- View data as graphs or tables.
- Power quality analysis of the utility supply and of loads.

Metering

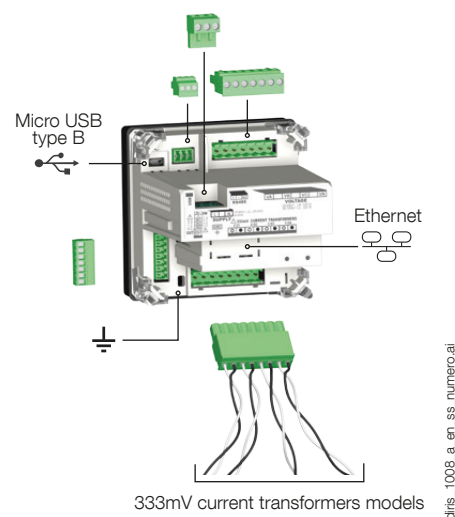
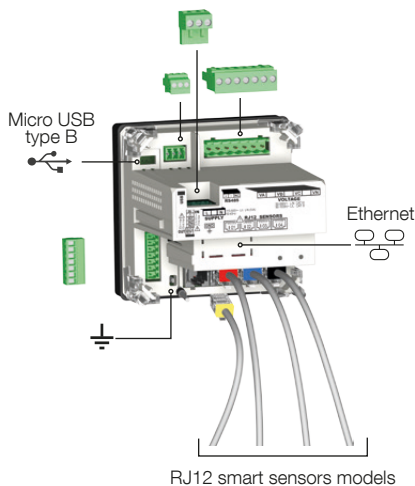
- Measurement of active, reactive and apparent energies.
- Historical record of measurements.
- Graphic display on monthly, weekly, daily or hourly basis.

Alarming

- Display of alarms.
- History of alarms.

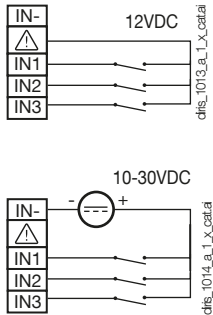


Terminals

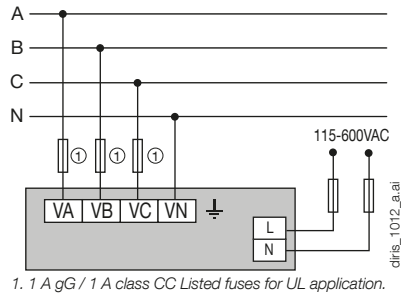


Terminals

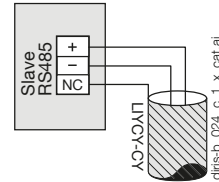
3 inputs supplied by the product or with external power supply



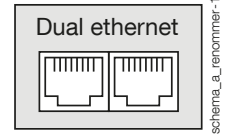
Voltage and power supply connections



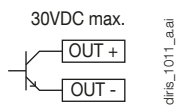
RS485



Dual ethernet



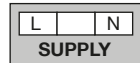
1 output



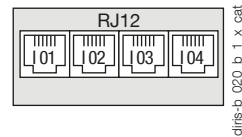
Ground



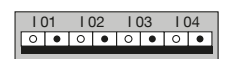
Auxiliary power supply



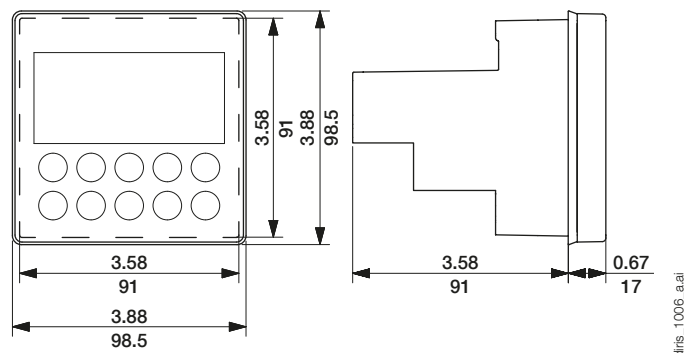
Current measurement RJ12 version



333mV version



Dimensions (in/mm)



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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). In case of RJ12 sensors models, or 333mV current transformers on the other models. It is also possible to fit core balanced deltaC toroids on DIRIS A-20 RJ12 versions reference 4825 0602 and 4825 0604. The variety between these sensors means they can be adapted to any type of new, existing or high-current existing installation. The DIRIS A-100 / A-200 recognizes the sensor size and type. In addition, combining them means the overall accuracy of the DIRIS A-100 / A-200 + current sensor measurement chain can be guaranteed over a large measurement range.

TE solid current sensors



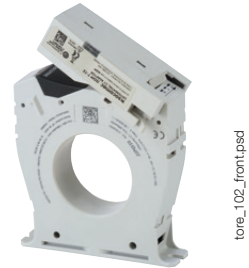
TR/iTR split-core current sensors



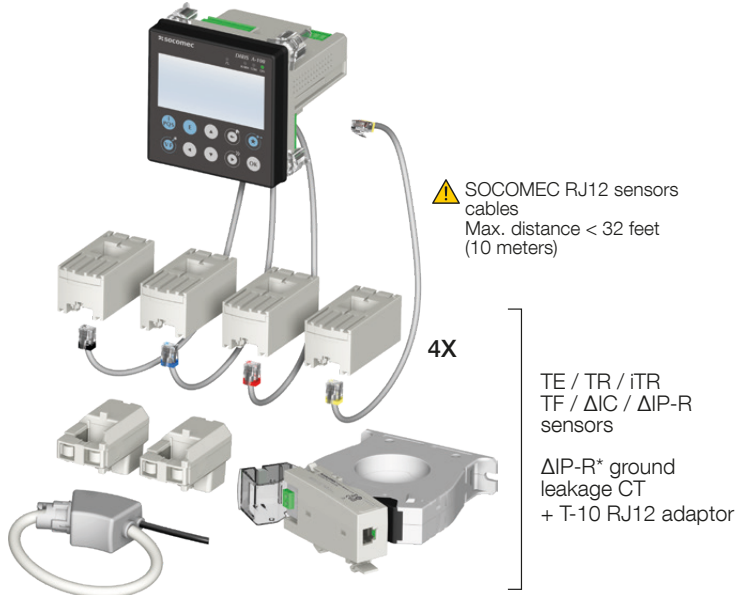
TF Rogowski current sensors



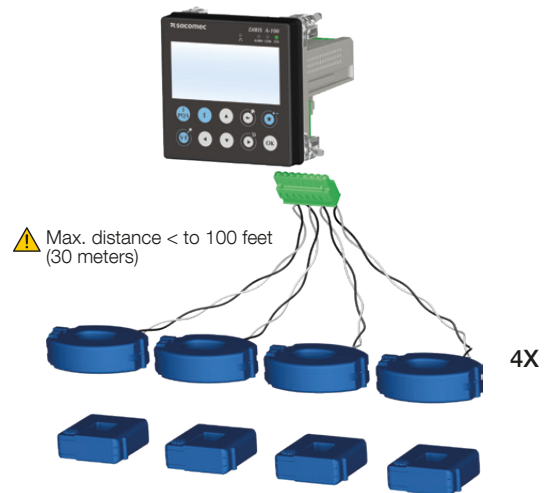
DELTA IC



RJ12 smart current sensors



Current transformers with 333 mV outputs

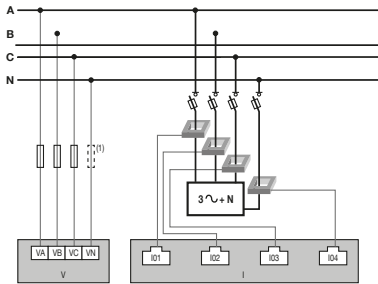


*ΔIC / ΔIP-R ground leakage monitoring sensors are only compatible with the DIRIS A-200 with RJ12 sensors, model 48250604; only one ΔIC sensor per DIRIS A-200.

Line voltage and load connections for RJ12 smart current sensors

Three-Phase, Four-Wire Wye 3P+N – 4CT

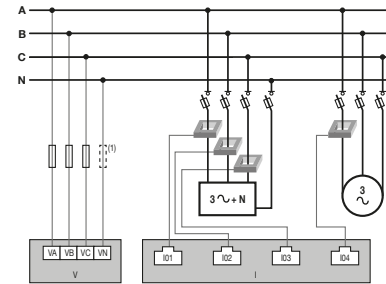
(1 three-phase load + measured neutral)



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

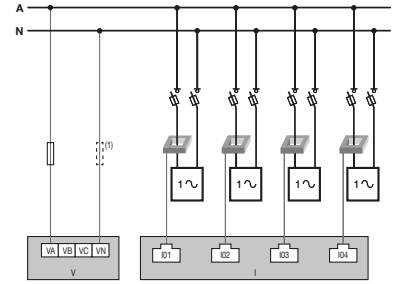
(1 unbalanced three-phase load + calculated Neutral + 1 three-phase balanced load)



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

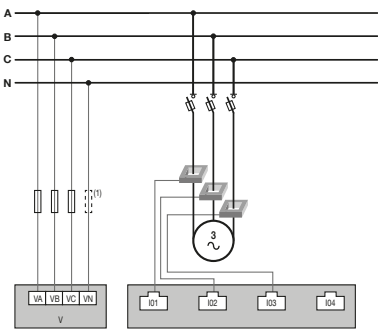
(4 single-phase loads)



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

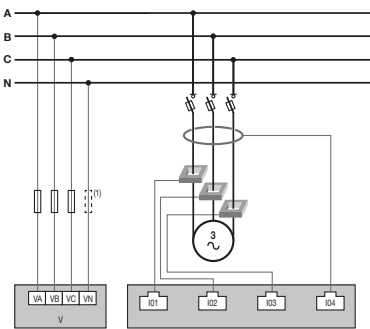
(1 three-phase load)



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Three-Phase, Four-Wire Wye 3P+N – 3CT

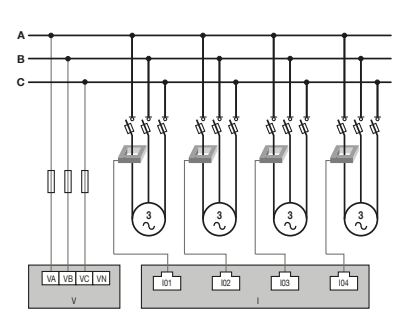
(1 three-phase load with RCM* (ΔΔ))



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

(4 three-phase balanced loads)



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Fuse: 1 A gG / 1 A class CC
Listed fuses for UL application



TE / TR / ITR / TF sensors



Balanced load



Unbalanced load



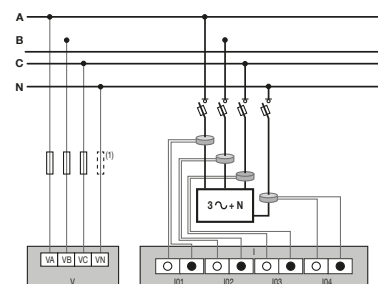
Zero sequence CT

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

Line voltage and load connections for 333mV current transformers models

Three-Phase, Four-Wire Wye 3P+N – 4CT

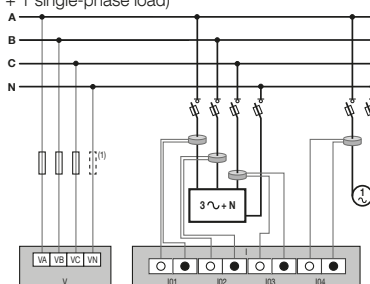
(1 three-phase load + measured neutral)



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

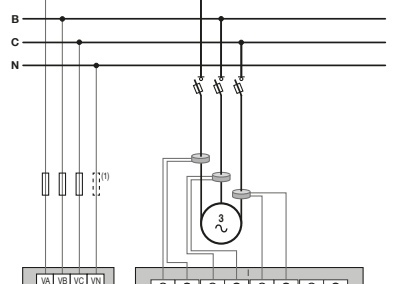
(1 three-phase load + calculated Neutral + 1 single-phase load)



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

(1 three-phase load)



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Fuse: 1 A gG / 1 A class CC
Listed fuses for UL application



333 mV current transformers



Balanced load



Unbalanced load

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DIRIS A-100 / A-200 characteristics

Electrical characteristics

Control power supply	
Voltage	115-600 VAC L/N L/L, Overvoltage category III
Frequency	50-60 Hz
Power consumption	5 VA
Connection (Use copper conductors only)	Removable spring-cage terminal block, 2 positions, 28-12 AWG (1-2.5 mm ²) solid or stranded cable with end piece

Measurement characteristics

Standards		
Active energy accuracy	ANSI C12.20	Class 0.2 DIRIS A-100/A-200 alone
	CEC Revenue grade	CEC Revenue grade (<2% accuracy), listed on California Energy Commission's solar equipment list
	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, TCL-B sensors - Class 1 system accuracy with TR or ACTL-0750 sensors
	IEC 62053-21 -24	Class 0.2 active energy meter alone, class 1 reactive energy meter alone

Voltage measurement

Measurement range	50-830V L-L (Wye) or 50-600 V L-L (Delta) or 50-960V L-L (split-phase), 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 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 - 333 mV current transformers : split-core ACTL 0750- xxx, ACTL-1250-xxx - ΔIC circular solid-core and ΔIP-R circular split-core ground leakage CT with T-10 RJ12 adaptor
Connection	Socomec RJ12 cables in case of DIRIS A-100 A-200 RJ12 input version

Input/output characteristics

Inputs	
Number	3
Type / Power supply	Optocoupler with internal (12 VDC ± 10%) or external (10-30 VDC) polarisation
Input function	Logical state, pulse meter, circuit breaker status or synchronisation pulse (input 1)
Connection	Removable screw terminal block, 5 positions, stranded or solid 18-16 AWG (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, 4 positions, stranded or solid 18-16 AWG (0.5-1.5 mm ²)

Communication characteristics

DIRIS A-100 / A-200 RS485	
Link	RS ETH 485
Connection type	2 to 3 half duplex wires - SELV
Protocol	Modbus RTU
Baud rate	9600 to 115200 bauds
USB	Configuration of DIRIS A-100 / A-200

Environmental specifications

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

References

DIRIS A-100 / A-200 Power quality meters		Reference
DIRIS A-100	RS485 Modbus – RJ12 smart sensors	4825 0600
DIRIS A-100	RS485 Modbus - 333 mV current transformers	4825 0601
DIRIS A-200	Ethernet Modbus TCP + Webview - RJ12 smart sensors	4825 0604
DIRIS A-200	Ethernet Modbus TCP + Webview – 333 mV current transformers	4825 0605
Accessories		Reference
Fuse disconnect switches to protect voltage inputs (RM type)		5701 0018
Fuse disconnect switches to protect the 1-pole + neutral auxiliary power supply (RM type)		5701 0017

Expert Services

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

