

# Multi-circuit Power Monitoring System for AC and DC electrical installations

*DIRIS Digiware*



# DIRIS Digiware

Elevating power monitoring to a new level

**Master your electrical installation and transform your performance with the most versatile and intelligent power monitoring system available.**

The DIRIS Digiware system is a hub of technological innovations that has revolutionised the world of power monitoring - bringing a high degree of flexibility to installations and making connection and configuration easier than ever before. A complete Socomec solution, DIRIS Digiware delivers unrivalled performance in terms of accuracy and functionality – whilst being tailored to your system architecture. The most effective solution for monitoring the performance of your electrical installation – and that's proven.

## Unrivalled intelligence

The most accurate system with unique class 0.5

- Exclusive technologies for maximum reliability.
- Fast RJ45 interconnection of modules (Digiware bus).
- Fast RJ12 current sensor connection.

## Unique versatility

The only system combining power monitoring, power quality and residual current monitoring

- Compatible with AC or DC applications.
- Complete solution from current sensors to software.

## Infinite scalability

The first system to be 100 % customisable to your precise requirements

- Modular concept for multi-circuit applications.
- Interoperable ecosystem, scalable with the evolution of your facility's strategy.

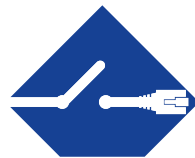
Groundbreaking technologies for greater simplicity and performance\*



### PreciSense

Best-in-class accuracy

- For the global measurement chain.
- Even at low load current.



### VirtualMonitor

Smart monitoring of your protective devices

- Across your entire electrical installation.
- Remotely and in real-time.
- Without additional hardware or wiring.



### AutoCorrect

Guaranteed reliability

- Automatic detection of wiring errors.
- Remote software correction.
- Feature available off-load.

\* Only available with DIRIS Digiware AC.

VirtualMonitor and AutoCorrect are available with:



DIRIS A-40 and DIRIS Digiware I  
Associated with iTR sensors



DIRIS Digiware S




DIRIS Digiware BCM

# Put together your own AC or DC metering and monitoring system

Single point of access to AC and DC measurements for local or remote visualisation and analysis

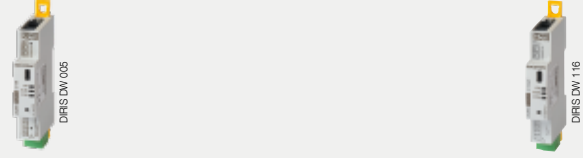
**1**



*DIRIS Digiware D*      *DIRIS Digiware M*      **+**      *WEBVIEW-M*

## Voltage acquisition modules for AC or DC measurements


**2**



*DIRIS Digiware Uac*      *DIRIS Digiware Udc*

## Current acquisition modules for AC or DC measurements

**3**



*DIRIS Digiware S*  
All-in-one with 3 integrated current sensors


*DIRIS Digiware BCM*  
Multi-circuit current measurement module with 18 or 21 integrated sensors

*DIRIS Digiware I*  
To be associated with external AC or DC sensors

*DIRIS Digiware Idc*

## Solid-core and split-core current sensors for AC or DC measurements and residual current transformers


**4**



AC sensors *TE, TR, iTR, TF*      DC sensors      Residual CTs      Bluetooth sensors

## Residual Current Monitoring module

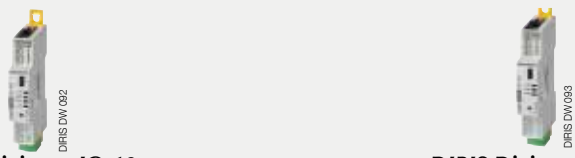
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*DIRIS Digiware R-60*

## Digital and analogue input/output modules

**6**



*DIRIS Digiware IO-10*      *DIRIS Digiware IO-20*

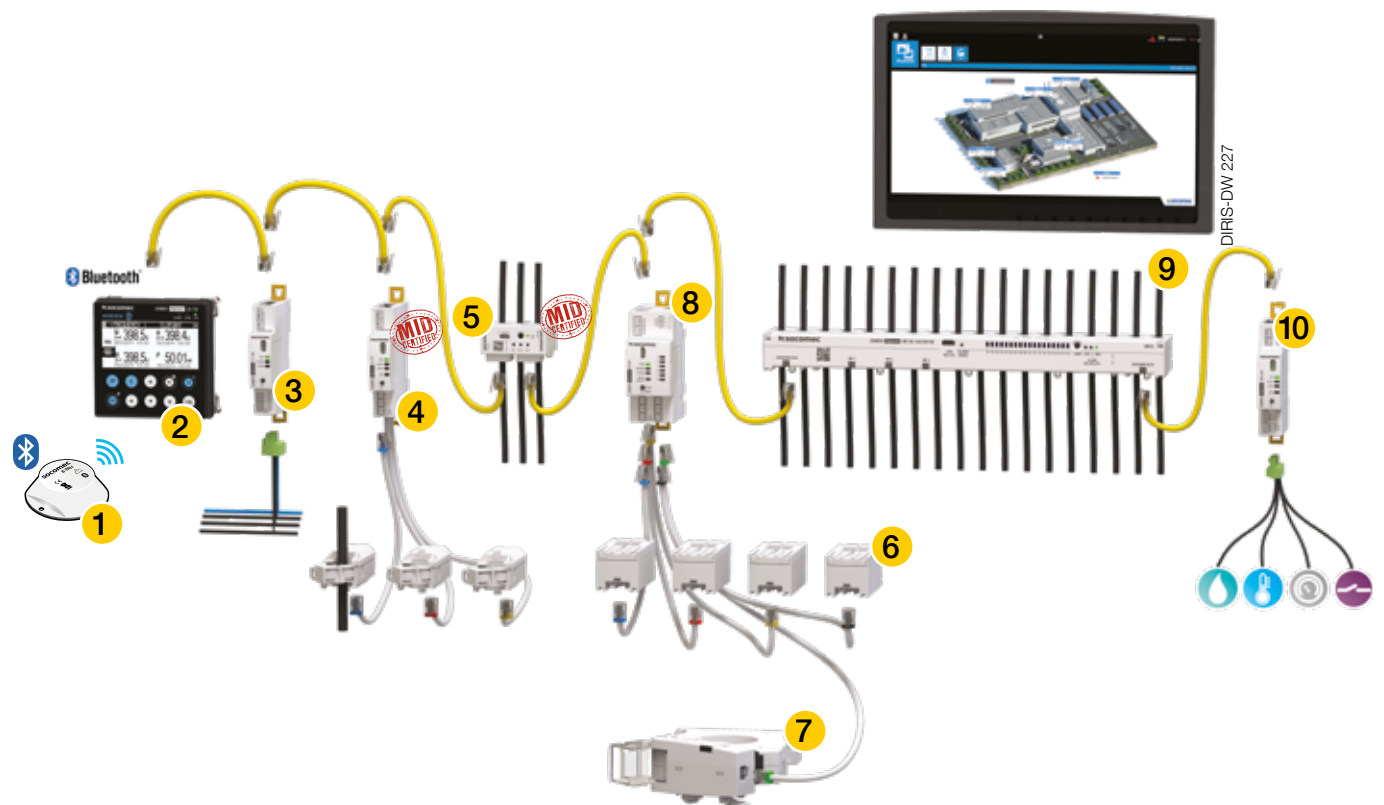
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[www.meter-selector.com](http://www.meter-selector.com)

**METER** SELECTOR   
DIGITAL TOOL AVAILABLE

# Elevating power monitoring to a new level.

Infinite scalability. Unique versatility. Unrivaled intelligence.



- 1** Environmental sensors  
*DIRIS Digiware B-TRH & B-MAG*
- 2** Multipoint display and communication gateway  
*DIRIS Digiware D*
- 3** Voltage measurement module  
*DIRIS Digiware U*
- 4** Current measurement modules  
*DIRIS Digiware I*
- 5** Current measurement module with integrated sensors  
*DIRIS Digiware S*
- 6** Current sensors  
*TE/TR/iTR/TF sensors*
- 7** Differential toroids  
 *$\Delta IC$*
- 8** Residual Current Insulation Monitor (RCM)  
*DIRIS Digiware R-60*
- 9** Current measurement module for power distribution units (PDU)  
*DIRIS Digiware BCM*
- 10** Digital and analogue input/output modules  
*DIRIS Digiware IO-10/IO-20*

# Single point of access to AC and DC measurement data

## DIRIS Digiware D & M

The DIRIS Digiware D and M act as a system interface (24 VDC power supply and communication) for all downstream products. They are your point of access for measurements and can communicate via multiple protocols over serial RS485 or Ethernet.



### Connected

- Equipped with multiple communication protocols: Modbus RTU/TCP, BACnet IP, SNMP v1, v2, v3 & Traps.
- Bluetooth connectivity to collect data from environmental sensors.



### Embedded software

- WEBVIEW-M visualisation software embedded in DIRIS Digiware M-70/D-70.



### IOT ready

- Automatic data export with customisable format via FTP(S) to a remote server.
- Email notifications in case of alarms (SMTP).

### Bonus

**Cybersecurity** is now integrated in all our gateways and displays to protect the confidentiality and integrity of your measurements.



APPLI 637

## Bluetooth sensors **new**






The B-TRH and B-MAG are sensors that communicate with DIRIS Digiware M gateways and DIRIS Digiware D displays wirelessly via Bluetooth.



The B-TRH sensor monitors ambient temperature and humidity and alerts you if high levels are exceeded.



The B-Mag sensor alerts you in case the door of an electrical panel or restricted technical room is opened.

	Panel mounted display		DIN rail mounted interface and gateway		
					
	D-50	D-70	C-31	M-50	M-70
<b>Inputs</b>	Digiware / RS485	Digiware / RS485	Digiware	Digiware / RS485	Digiware / RS485
<b>Outputs</b>	Ethernet / RS485	Ethernet / RS485	RS485	Ethernet / RS485	Ethernet / RS485
<b>Protocols</b>	Modbus RTU	Modbus RTU	Modbus RTU	Modbus RTU	Modbus RTU
	Modbus TCP	Modbus TCP		Modbus TCP	Modbus TCP
	BACnet IP	BACnet IP		BACnet IP	BACnet IP
	SNMP v1, v2, v3	SNMP v1, v2, v3		SNMP v1, v2, v3	SNMP v1, v2, v3
	Bluetooth	Bluetooth		Bluetooth	Bluetooth
<b>Data export</b>	•	•		•	•
<b>Webserver</b>	WEB-CONFIG	WEBVIEW-M		WEB-CONFIG	WEBVIEW-M

# Voltage acquisition modules

## DIRIS Digiware U & Udc

The DIRIS Digiware U and Udc modules measure the voltage reference for the entire DIRIS Digiware AC and DC system. The RJ45 Digiware bus transmits the voltage measurement as well as power supply to all products connected to the Digiware bus.



### Flexible

- Complete, dedicated offer for metering, monitoring and power quality analysis.
- AC or DC electrical installations.







### Safe

- No hazardous voltage on panel doors.

### Bonus

Only **one voltage tap** for the entire system means that cabling and fuse protection are minimised inside electrical panels.

Applications	AC voltage measurement		DC voltage measurement	
	Metering	Analysis	Analysis	Analysis
				
<b>DIRIS Digiware U</b>	<b>U-10</b>	<b>U-30</b>	<b>U-31dc</b>	<b>U-32dc</b>
<b>Measuring range (min-max)</b>	50-300 VAC Ph/N		19.2VDC - 60VDC	48VDC - 180VDC
<b>Multi-measurement AC</b>				
U12, U23, U31, V1, V2, V3, f	•	•		
U system, V system		•		
Ph/N & Ph/Ph unbalance		•		
<b>AC quality</b>				
THD U, THD V		•		
Individual harmonics U/V		•		
Voltage dips, interruptions and swells (EN50160)		•		
<b>Multi-measurement and DC quality</b>				
DC voltage (VDC)			•	•
Ripple voltage (V ripple)			•	•
Vrms			•	•
<b>Alarms (threshold)</b>		•	•	•
<b>History of average values</b>		•	•	•
<b>Format/Number of modules</b>	<b>18 mm/1</b>	<b>18 mm/1</b>	<b>18 mm/1</b>	<b>18 mm/1</b>

## U500dc, U1000dc and U1500dc adaptors

They can be combined with a DIRIS Digiware Udc module

The DC voltage adaptors are optionally used in addition to Udc voltage acquisition modules enabling the measurement of higher voltages up to 1500 VDC.

These adaptors make the DIRIS Digiware DC system suitable for use anywhere along the low voltage DC electrical distribution, regardless of the voltage level.





# 3 Current acquisition modules

## DIRIS Digiware I & Idc

The DIRIS Digiware I and Idc modules are associated with external smart current sensors for energy metering, power monitoring and power quality analysis of AC and DC loads.



### Plug & Play

- Fast RJ45 connection of modules.
- Colour-coded RJ12 cables make wiring easy and error-free.
- Automatic configuration of connected current sensors: type, current rating, orientation and load type.



### Comprehensive

- A complete range dedicated to energy metering, power monitoring and power quality analysis applications.
- Available in versions with 3, 4 or 6 current inputs.
- Modules for both AC and DC electrical installations.

### Bonus

The RJ45 connection allows you to **quickly add** up to 32 DIRIS Digiware I or Idc modules, therefore enabling the monitoring of a large number of circuits.

	I-30	I-30MID	I-31	I-35	I-35MID	I-43	I-45	I-60	I-60MID	I-61	I-61MID	I-30dc	I-35dc
Application	Current measurement (AC)											Current measurement (DC)	
	Metering			Analysis		Monitoring	Analysis	Metering				Metering	Analysis
Number of current inputs	3	3	3	3	3	4	4	6	6	6	6	3	3
Metering													
+/- kWh, +/- kVarh, kVAh	•	•	•	•	•	•	•	•	•	•	•	• (+/-) kWh	• (+/-) kWh
Multi-tariff (max. 8)			•	•	•		•			•	•		•
Load curves			•	•	•		•			•	•		•
Maximum demand				•	•		•						•
MID		•			•		•		•		•		
Multi-measurement AC													
I1, I2, I3, In, ΣP, ΣQ, ΣS, ΣPF	•	•	•	•	•	•	•	•	•	•	•		
P, Q, S, PF per phase			•	•	•	•	•			•	•		
Predictive power				•	•		•						
Current unbalance				•	•		•						
Phi, cos Phi, tan Phi				•	•								
AC quality													
THDI				•	•	•	•						
Individual harmonics I				•	•		•						
Overcurrents				•	•		•						
Multi-measurement DC													
DC current and power (I DC, P DC)												•	•
DC predictive power													•
DC quality													
Ripple current (I ripple)													•
I RMS													•
Alarms on thresholds			• (Power)	•	•		•			• (Power)	• (Power)		•
Inputs / outputs						2/2	2/2						
History of average values				•	•		•						•
Format/number of modules	18 mm / 1	18 mm / 1	18 mm / 1	18 mm / 1	18 mm / 1	27 mm / 1.5	27 mm / 1.5	36 mm / 2	36 mm / 2	36 mm / 2	36 mm / 2	18 mm / 1	18 mm / 1

### Removable connector

For busway and MCC drawers

The removable Digiware connector allows you to disconnect a Digiware module from the bus, while ensuring the continued operation of the rest of the DIRIS Digiware system. The accessory is very useful in applications using pullout drawers or for busway distributions in data centres.



DIRIS 0.025



# DIRIS Digiware I & S current measurement modules are now available in MID version

## DIRIS Digiware I-MID & DIRIS Digiware S-MID



DIRIS Digiware I-30MID, I-35MID, I-60MID, I-61MID, S-130MID et S-135MID comply with the MID and guarantee accurate and reliable metering. The certification „module B+D“ means that an external laboratory has certified the design of the meter and its production process.



### MID certified and more

DIRIS Digiware I-MID et S-MID current modules comply with the MID Directive and guarantee accurate and reliable metering. “Module B+D” certification means that an outside laboratory has certified the design of the meter and its production process

They are also fitted with innovative functions that go beyond the standard offerings on the market:

- Innovative tamper-resistance systems: the MID modules have a smart alarm system that is more effective than the standard mechanical seals offered by MID meters.
- Integrated PreciSense Technology: MID modules have a class C energy accuracy measurement, which is the most accurate class under the MID directive. In addition, as with any DIRIS Digiware system, PreciSense technology offers the best accuracy on the market across the chain.



## What is the MID (Measuring Instrument Directive)?

- The **MID (Measuring Instrument Directive)** is an EU directive of the European Parliament and Council of 26 February 2014 (2014/32/EU).
- It applies to **measuring instruments** such as water, gas, electrical energy, thermal energy, weighing or quantities of liquids meters used in a commercial transaction.
- It aims to ensure **consumer protection** and **fair trading** by providing a high level of metrological safety.
- The main objective of the MID is to ensure that all parties involved have confidence in the measurement result.

### How to comply with the requirements for MID

EN 50470-1 & EN50470-3 give presumption of conformity to the MID. They define the requirements in terms of mechanics, electromagnetic compatibility and accuracy. A product designed in accordance with these standards will meet the essential and specific requirements of the MID. The notified body uses these standards and the directive to verify the conformity of the meters.

The accuracy of the active energy measured by the meter is defined as Class A, B or C.

Class C being most accurate and most widely used for fair trade.

### How to assess compliance with the MID?

The conformity assessment of measuring instruments is carried out by a notified body. For electricity meters, **different assessment procedures** are possible. Most manufacturers choose the B+D procedure:

**Module B → Product design assessment**

**Module D → Production quality assurance**

# 4 Current sensors

## TE, TR, iTR & TF sensors

A wide range of solid-core, split-core and flexible current sensors is available to meet any integration requirements from 5 to 6000 A. Totally flexible, they measure the current in new or existing installations.



### Did you know?

Current sensors integrate exclusive technologies.



#### Best-in-class accuracy

- For the global measurement chain.
- Even at low load current.



#### Guaranteed reliability

- Automatic detection of wiring errors.
- Remote software correction.
- Feature available off-load.



### Smart sensors

- Automatic rating detection.
- Safe disconnection of the current sensor under load.
- Fast connection via RJ12 and identification of cables by colour-coding.




### Compact


- The most compact current sensors on the market.
- Linear or staggered assembly to match the pitch of protective devices.

### Bonus


**Class 0.5 system accuracy** on a wide measurement chain (2 – 120 % I<sub>n</sub>) with TE, iTR and TF current sensors.

TE solid-core sensors	Rated currents (A)										Real range covered (A)	Pitch (mm)	Aperture (mm)	Dimensions (mm)		
	5	20	25	40	63	160	250	400	600	630					1000	2000
													12 ... 2400	90	64 x 64	126 x 90 x 24.6
													8 ... 1200	55	41 x 41	100 x 55 x 32.5
													3.2 ... 756	45	31 x 31	86 x 45 x 32.5
													1.26 ... 300	35	21 x 21	71 x 35 x 32.5
													0.8 ... 192	25	13.5 x 13.5	65 x 25 x 32.5
													0.5 ... 75	18	Ø 8.6	45 x 28 x 20
													0.1 ... 24	18	Ø 8.6	45 x 28 x 20

TR/iTR split-core sensors	Rated currents (A)						Real range covered (A)	Aperture (mm)	Dimensions (mm)
	25	40	63	160	250	600			
							3.2 ... 720	Ø 32	53 x 86 x 47
							1.26 ... 300	Ø 21	37 x 65 x 43
							0.8 ... 192	Ø 14	29 x 67 x 28
							0.5 ... 75	Ø 10	26 x 44 x 28

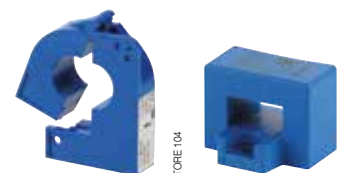
TF flexible sensors	Rated currents (A)								Real range covered (A)	Aperture (mm)
	100	150	400	600	1600	2000	4000	6000		
									32 ... 7200	Ø 600
									32 ... 7200	Ø 300
									12 ... 4800	Ø 200
									8 ... 2400	Ø 120
									3 ... 720	Ø 80
									2 ... 480	Ø 40

## DC current sensors

DC current sensors measure the load currents of a DC electrical installation and transmit the information to DIRIS Digiware Idc modules via a fast RJ12 connection with colour-coded cables for the easy identification of circuits.

The range comprises solid-core and split-core sensors, from 50 to 5000 A in various sizes, suitable for new or retrofit applications.

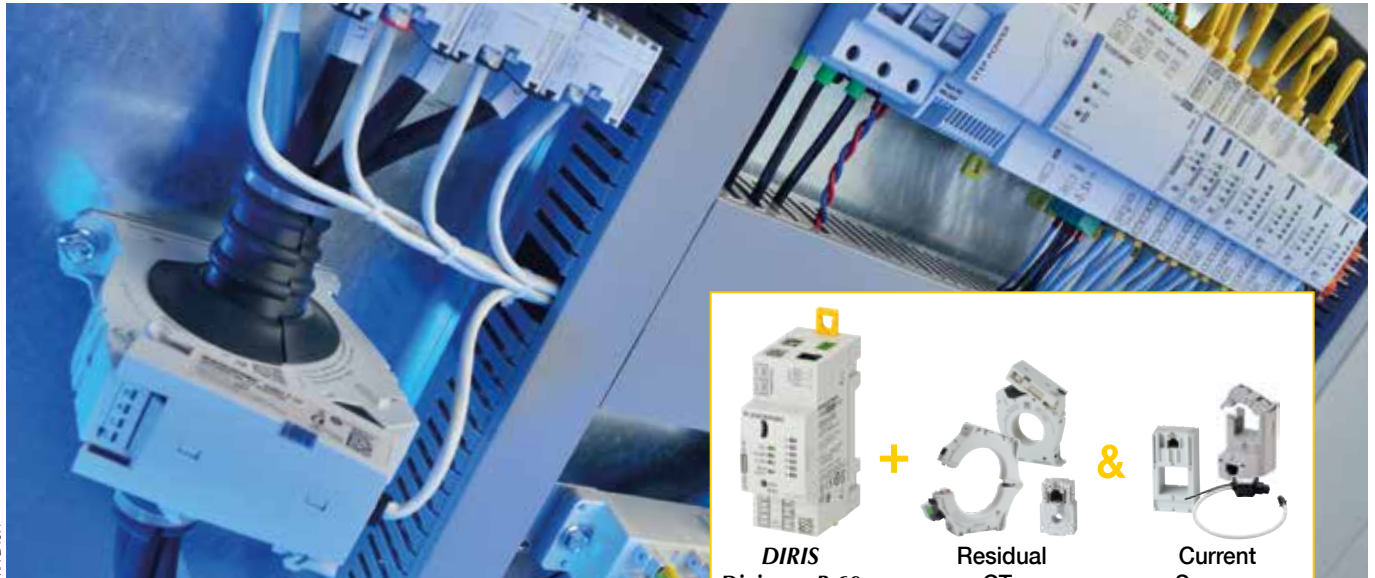
- Easy connection to prevent wiring errors.
- Up to 3 sensors on each DIRIS Digiware Idc measurement module.



# Residual Current and Power Monitoring module

## DIRIS Digiware R-60

DIRIS Digiware R-60 modules combine residual current monitoring (RCM) with power metering and monitoring functions, for any combination of 1-phase, 2-phase or 3-phase circuits used in TN-S and TT earthing systems. The module has 6 RJ12 inputs which can be connected to residual CTs and current sensors.



### Multi-circuit

- Measuring the residual current at the incomer level only is not representative of the sum of residual currents of individual circuits.
- A multi-circuit system is the only effective solution to know the insulation level throughout your facility.



### High sensitivity

- Residual currents as low as 3 mA can be measured for the early detection of potential issues.
- Patented centering tool eliminates disturbances and improves measurement accuracy.



### 2 in 1

- One module combines both functions: power and residual current monitoring.



### Smart alarming

- Automatic learning sequence.
- 6 dynamic alarm thresholds for  $I_{\Delta}$  and  $I_{PE}$  residual currents.

### Bonus

The DIRIS Digiware RCM system complies with the IEC 62020 standard, and hence allows you to **eliminate the periodic verification** of the insulation resistance while still complying with the IEC 61364 installation standard. Substantial cost savings will be made.



### Did you know?

DIRIS Digiware R-60 comes with integrated technologies as standard.



### Smart monitoring of your RCDs

- Notification if the RCD has tripped.
- Analysis of the cause of tripping (overcurrent or high residual current).
- Notification if the RCD is defective.

DIRIS Digiware R-60	
<b>Applications</b>	<b>Residual Current Monitoring (RCM)</b>
$I_{\Delta}$	•
$I_{PE}$	•
<b>Energy and Power Monitoring</b>	
Energies +/- kWh, +/- kvarh, kVAh	•
$I_1, I_2, I_3, I_n$	•
$\Sigma P, \Sigma Q, \Sigma S, \Sigma PF$	•
P, Q, S, PF per phase	•
Load curves	•
<b>Alarms</b>	
Dynamic $I_{\Delta}$ and $I_{PE}$ thresholds	•
Protection (VirtualMonitor)	•
Overloaded neutral	•
Format/number of modules	36 mm/2

# Input/output modules

## DIRIS Digiware IO

The IO-10 modules have 4 digital inputs and 2 digital outputs to monitor the status of protective devices (ON/OFF/TRIP) or to collect pulses from multi-utility meters (gas, water...).

The IO-20 modules have 2 analogue inputs allowing the collection of measurements from analogue sensors (pressure, humidity, temperature) and the monitoring of levels by setting up alarms on preset thresholds.





### Load shedding

- IO-10 modules automatically send output signals when an alarm is activated on any other Digiware module.  
Example: automatic load shedding if a power consumption alarm is configured on a Digiware I module.

### Bonus

Extra I/O functions within the same ecosystem provide a truly comprehensive solution.

		
Applications	Monitoring	Metering
<b>DIRIS Digiware IO</b>	<b>IO-10</b>	<b>IO-20</b>
Number of digital inputs/outputs	4/2	-
Number of analogue inputs	-	2
Multi-tariff (max. 8)	•	•
Alarms (threshold)	•	•
Alarms (change of status)	•	•
History of average values	•	•
Format/number of modules	18 mm/1	18 mm/1

# Energy server solution embedded in the communication gateways

## WEBVIEW



### WEBVIEW-L focus

- High storage capacity (64 GB).
- Compatible with third-party Modbus devices.
- Display of measurement trends from multiple devices on a single graph.
- Data export through 3G connection.



### Monitoring

- Visualisation of real-time measurements.
- Power quality analysis of the electrical network and loads.
- Visualisation of measurements on a user-customisable dashboard.

### Alarming

- Overview of active alarms.
- Log of finished alarms.
- Email notification when a new alarm is activated.

### Analysis

- High storage capacity of consumption and measurement trends.
- Breakdown of consumption by location, usage and utility type.
- Automatic export of stored data in CSV format.



### Embedded web based software

- No installation required and no licence free: WEBVIEW-M is embedded in DIRIS Digiware M-70 and D-70. WEBVIEW-L is embedded in DATALOG H80 dataloggers.



### Cyber security

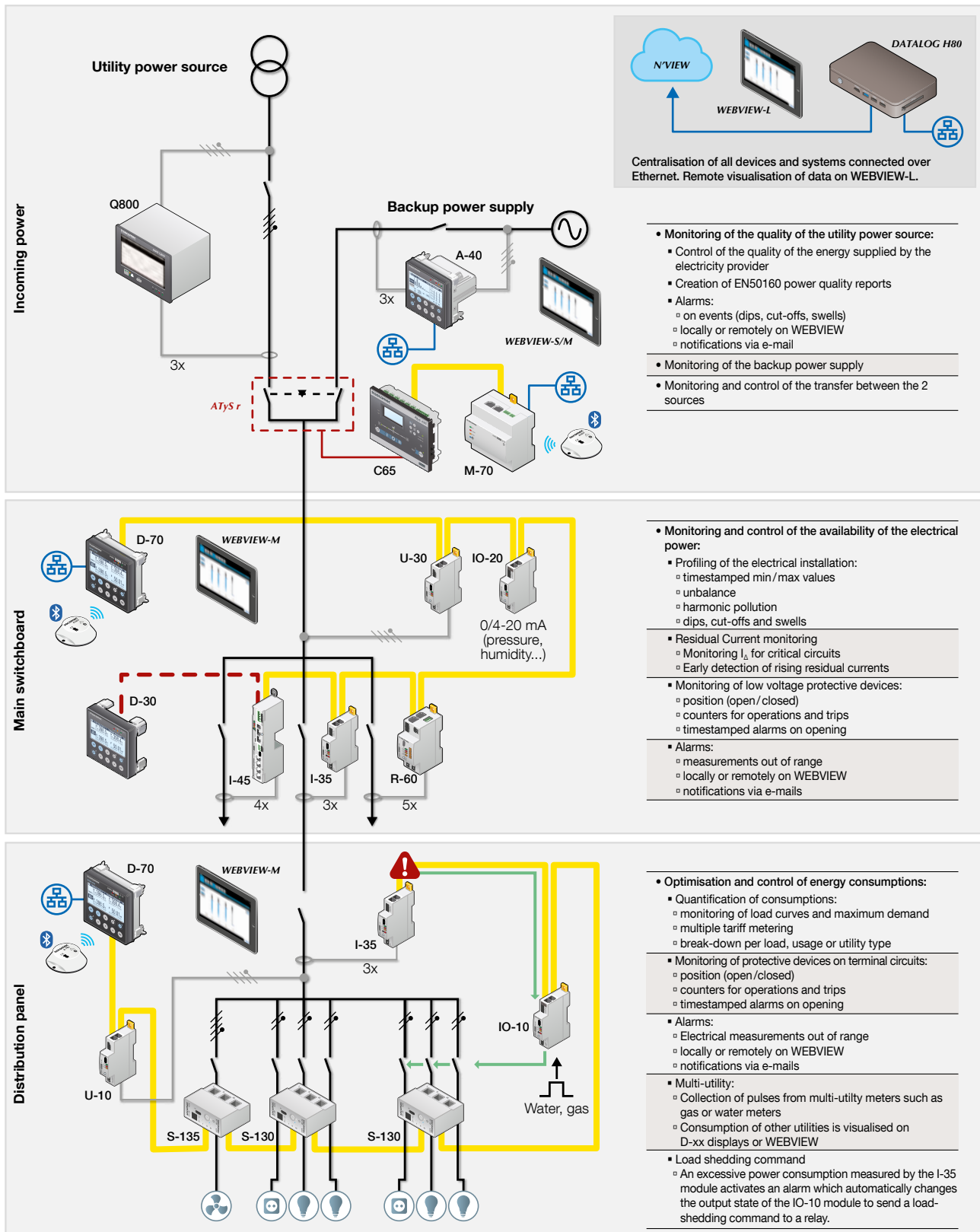
- New cyber security features secure the confidentiality, integrity and availability of data.



### Photoview functionality

- Display of electrical parameters from multiple devices on a customised background picture such as an electrical diagram, a site map or drawing.

# Example of *DIRIS Digiware* system architecture



Centralisation of all devices and systems connected over Ethernet. Remote visualisation of data on WEBVIEW-L.

• **Monitoring of the quality of the utility power source:**

- Control of the quality of the energy supplied by the electricity provider
- Creation of EN50160 power quality reports
- Alarms:
  - on events (dips, cut-offs, swells)
  - locally or remotely on WEBVIEW
  - notifications via e-mail

• **Monitoring of the backup power supply**

- Monitoring and control of the transfer between the 2 sources

• **Monitoring and control of the availability of the electrical power:**

- Profiling of the electrical installation:
  - timestamped min/max values
  - unbalance
  - harmonic pollution
  - dips, cut-offs and swells
- Residual Current monitoring
  - Monitoring  $I_n$  for critical circuits
  - Early detection of rising residual currents
- Monitoring of low voltage protective devices:
  - position (open/closed)
  - counters for operations and trips
  - timestamped alarms on opening
- Alarms:
  - measurements out of range
  - locally or remotely on WEBVIEW
  - notifications via e-mails

• **Optimisation and control of energy consumptions:**

- Quantification of consumptions:
  - monitoring of load curves and maximum demand
  - multiple tariff metering
  - break-down per load, usage or utility type
- Monitoring of protective devices on terminal circuits:
  - position (open/closed)
  - counters for operations and trips
  - timestamped alarms on opening
- Alarms:
  - Electrical measurements out of range
  - locally or remotely on WEBVIEW
  - notifications via e-mails
- Multi-utility:
  - Collection of pulses from multi-utility meters such as gas or water meters
  - Consumption of other utilities is visualised on D-xx displays or WEBVIEW
- Load shedding command
  - An excessive power consumption measured by the I-35 module activates an alarm which automatically changes the output state of the IO-10 module to send a load-shedding command to a relay.

**Legend:**

- Heat pump
- Receptacles
- Lighting

# Socomec: our innovations supporting your energy performance

**1** independent manufacturer

**3,900** employees  
worldwide

**8** % of sales revenue  
dedicated to R&D

**400** experts  
dedicated to service provision

## Your power management expert



POWER  
SWITCHING



POWER  
MONITORING



POWER  
CONVERSION



ENERGY  
STORAGE



EXPERT  
SERVICES

## The specialist for critical applications

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- Safety of persons and assets
- Measurement of electrical parameters
- Energy management
- Energy quality
- Energy availability
- Energy storage
- Prevention and repairs
- Measurement and analysis
- Optimisation
- Consultancy, commissioning and training

## A worldwide presence

**12** production sites

- France (x3)
- Italy (x2)
- Tunisia
- India
- China (x2)
- USA (x2)
- Canada

**30** subsidiaries and commercial locations

- Algeria • Australia • Austria • Belgium • China
- Canada • Dubai (United Arab Emirates) • France
- Germany • India • Indonesia • Italy • Ivory Coast
- Netherlands • Poland • Portugal • Romania • Serbia
- Singapore • Slovenia • South Africa • Spain • Sweden
- Switzerland • Thailand • Tunisia • Turkey • UK • USA

**80** countries

where our brand is distributed

### HEAD OFFICE

#### SOCOMECC GROUP

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