

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

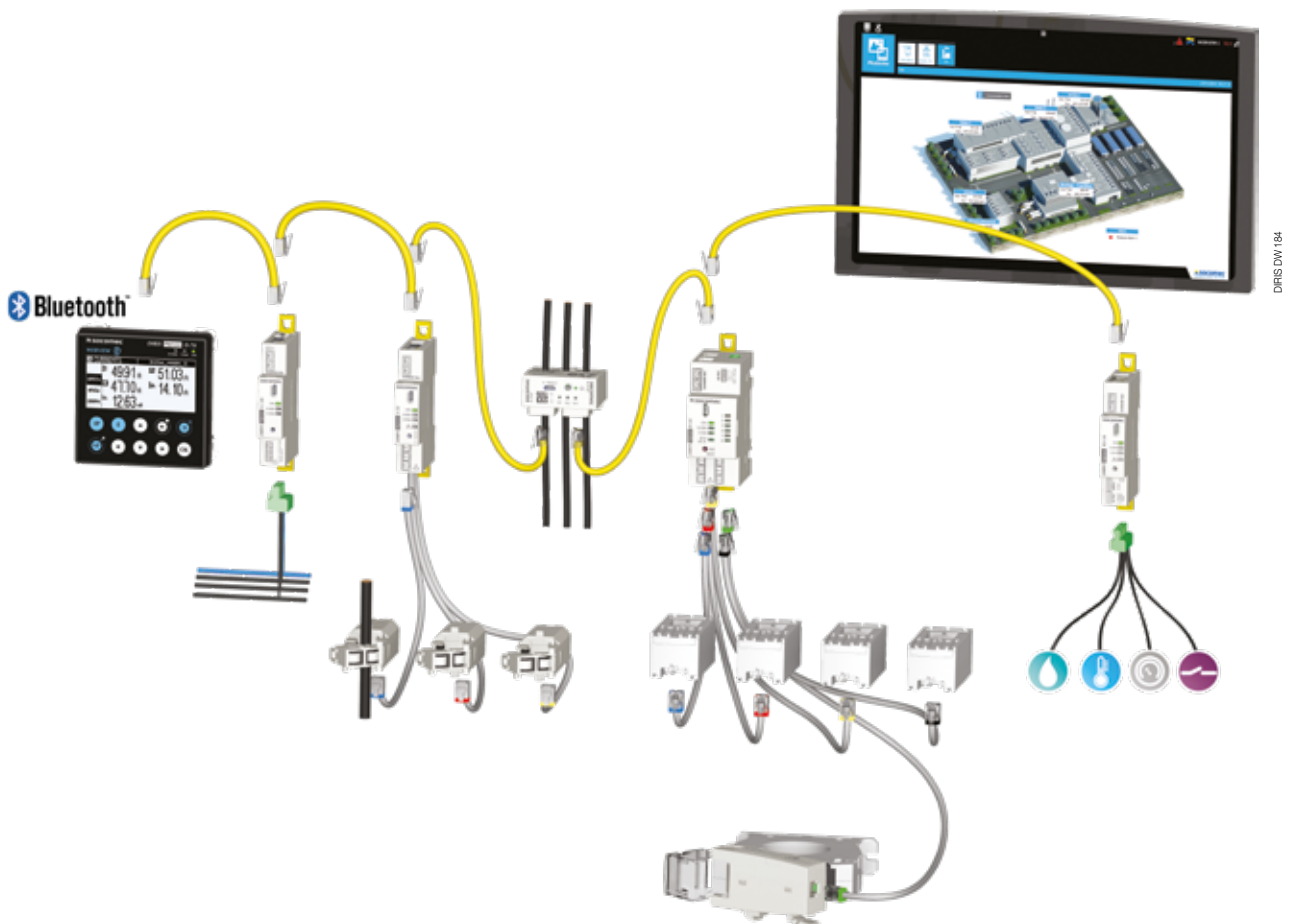
*DIRIS Digiware*



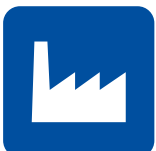
# Elevating power monitoring to a new level.

Infinite scalability. Unique versatility. Unrivalled intelligence.

## *DIRIS Digiware* system



The solution for



Industry



Building



Data Centre



Infrastructure



Telecoms



Renewable  
Power

# Build your own AC or DC power monitoring system

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

**1**

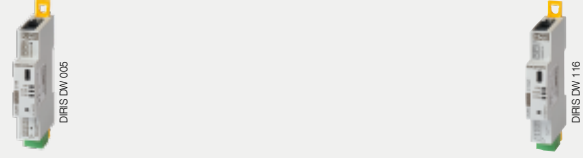


DIRIS DW 151 Bluetooth DIRIS DW 165 + SOFT 082

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

## Voltage acquisition modules for AC or DC measurements

**2**

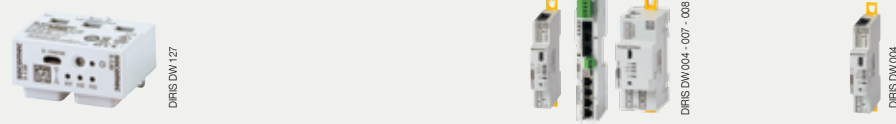


DIRIS DW 005      DIRIS DW 116

**DIRIS Digiware U**      **DIRIS Digiware Udc**

## Current acquisition modules for AC or DC measurements

**3**



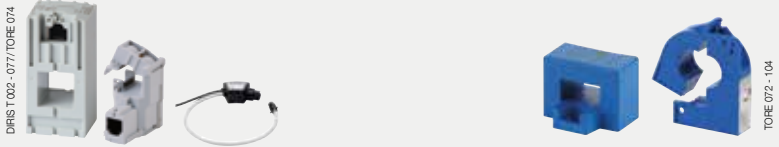
DIRIS DW 127      DIRIS DW 004 - 007 - 008      DIRIS DW 004

**DIRIS Digiware S**      **DIRIS Digiware I**      **DIRIS Digiware Idc**

All-in-one with 3 integrated current sensors      To be associated with external AC or DC sensors

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

**4**




DIRIS T 002 - 017 / TORE 014      TORE 072 - 104

AC sensors **TE, TR, iTR, TF**      DC sensors

## Residual Current Monitoring module and residual current transformers

**5**

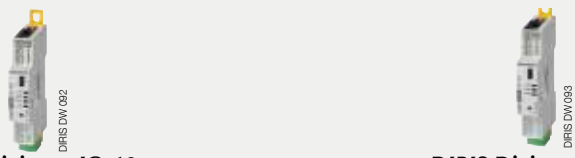


DIRIS DW 173      DIRIS T 001      TORE 061 - 102

**DIRIS Digiware R-60**      Residual CTs

## Digital and analogue input/output modules

**6**



DIRIS DW 082      DIRIS DW 083

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

Create your project

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

**METER SELECTOR**   
DIGITAL TOOL AVAILABLE

# DIRIS Digiware

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.



## Smart

### Innovation you can rely on

- Fast RJ45 interconnection of modules (Digiware bus).
- Fast RJ12 current sensor connection.
- Unique class 0.5 system accuracy.
- Exclusive technologies for maximum reliability.



## Versatile

### A complete solution – with just one system

- Compatible with AC or DC applications.
- The only system combining power monitoring, power quality and residual current monitoring.
- Complete solution from current sensors to software.



## Scalable

### Evolving with you, for you – at your pace

- The first system to be 100% customisable to your precise requirements.
- Modular concept for multi-circuit applications.
- An interoperable ecosystem, scalable with the evolution of your facility's strategy.



Now available with DIRIS Digiware: stay one step ahead with **Residual Current Monitoring**

## What is Residual Current Monitoring?

Residual Current Monitors (RCMs) are defined in the IEC 62020 standard. Used with TN-S and TT earthing systems, their role is to measure the leakage current flowing to earth by enclosing all live conductors in a residual current transformer. They send an alarm when the leakage current exceeds a preset threshold.

## What are leakage currents?

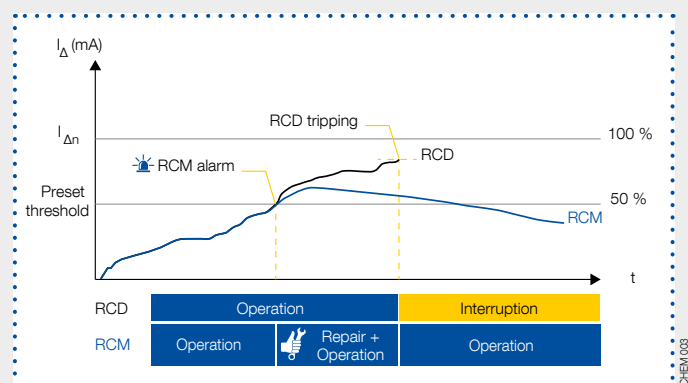
The leakage current to earth (also called residual current) is a natural phenomenon in any electrical installation. It's a very low current flowing from live parts of the installation to earth in the absence of an insulation fault.

This leakage current is normally very low but increases over time due to the ageing of an electrical installation, the accumulation of dust or other environmental conditions and it can be transformed into a fault current.

The fault current value depends on the earthing system type and should be monitored.

## What is the difference between RCM and RCD?

Contrary to RCDs (Residual Current Devices) which switch off when the residual current can affect the safety of people and assets, RCMs (Residual Current Monitors) contribute to safety by warning the user of an increasing leakage current without disconnecting faulty circuits.



## Benefits of Residual Current Monitoring



### Early detection of anomalies

With an alarm notification of increasing residual currents, pre-emptive action can be taken before RCDs trip. This means that maintenance operations – and clean shutdowns - can be planned in advance in order to avoid costly downtime.



### Enhanced safety – protecting people and assets

The alarm notification safeguards people and assets - without interrupting the supply. The monitoring of PE conductors provides additional protection, ensuring that there are no breaks and that connection is safely maintained.



### Reduced fire hazards

As soon as residual currents exceed 250 mA – whereby they become a fire hazard to the property – maintenance personnel are alerted.



### 24/7 availability

Thanks to the early detection of increasing residual currents, RCM can be used as a passive protection method to avoid the risk of nuisance tripping. Furthermore, there is no need for periodic insulation resistance verification - which is both intrusive and inconvenient as it usually requires circuits to be disconnected.



### Better decision making

Weak spots can be identified within the electrical installation and anomalies can be remedied - before they present a problem. With more accurate data, decision making becomes better informed and the justification of investments and repairs is straightforward.



A permanent RCM system eliminates the need for periodic insulation resistance verification while still complying with the IEC 60364-6 installation standard and national transpositions. The continuous monitoring of residual currents also ensures that the insulation resistance is maintained at a high value.





# A 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

**Cyber security** 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.



# All-in-one current acquisition modules

## DIRIS Digiware S



DIRIS Digiware S combines a Power Monitoring Device and current sensors to deliver the ultimate all-in-one solution. The DIRIS Digiware S module has 3 integrated current sensors for the measurement of three-phase or single-phase circuits up to 63 A with class 0.5 accuracy.



### Did you know?

DIRIS Digiware S comes with integrated technologies as standard.



#### Smart monitoring of your protective devices

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



### Compact

- Power meter and the current sensors become one.
- Best compactness/performance ratio on the market.
- Delivers practical solutions to space constraints inside electrical panels.




### Powerful

- DIRIS Digiware S goes beyond standard meters in terms of measurement capabilities and accuracy.
- Advanced monitoring of critical loads - even in the terminal distribution.

### Bonus

The module can be **directly mounted** onto a protective device for electrical panels with minimal space available.

		
	S-130	S-135
<b>DIRIS Digiware S</b>		
<b>Number of current inputs</b>	3	3
<b>Application</b>	<b>Metering</b>	<b>Analysis</b>
<b>Metering</b>		
+/-kWh, +/-kvarh, kvah	•	•
Multi-tariff (max. 8)		•
Load curves		•
Maximum demand		•
<b>Multi-measurement</b>		
I1, I2, I3, In, ΣP, ΣQ, ΣS, ΣPF	•	•
P, Q, S, PF by phase		•
Predictive power		•
Current unbalance		•
Phi, cosPhi, tanPhi		•
<b>Quality</b>		
THD I		•
Individual harmonics I		•
Overcurrents		•
<b>Alarms (threshold)</b>		•
<b>History of average values</b>		•

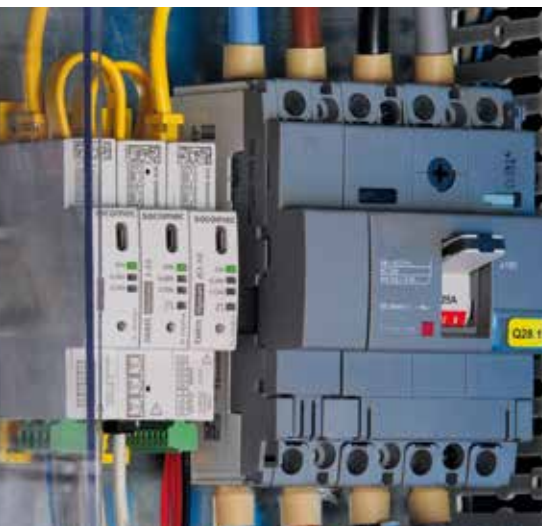




# 3 Current acquisition modules

## 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-31		I-35		I-43		I-45		I-60		I-61		I-30dc		I-35dc			
	Current measurement (AC)																Current measurement (DC)			
Application	Metering				Analysis				Monitoring				Analysis				Metering		Analysis	
Number of current inputs	3	3	3	3	4	4	6	6	3	3										
Metering	•	•	•	•	•	•	•	•	•	•										
+/- kWh, +/- kVarh, kVAh	•	•	•	•	•	•	•	•	•	•										
Multi-tariff (max. 8)		•	•	•	•	•	•	•	•	•										
Load curves		•	•	•	•	•	•	•	•	•										
Maximum demand		•	•	•	•	•	•	•	•	•										
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)	•	•							
Inputs/outputs					2/2	2/2														
History of average values			•	•	•	•	•	•	•	•	•	•	•							
Format/number of modules	18 mm/1	18 mm/1	18 mm/1	27 mm/1.5	27 mm/1.5	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

# 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
									3 ... 720	Ø 55
									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.



TORE 104

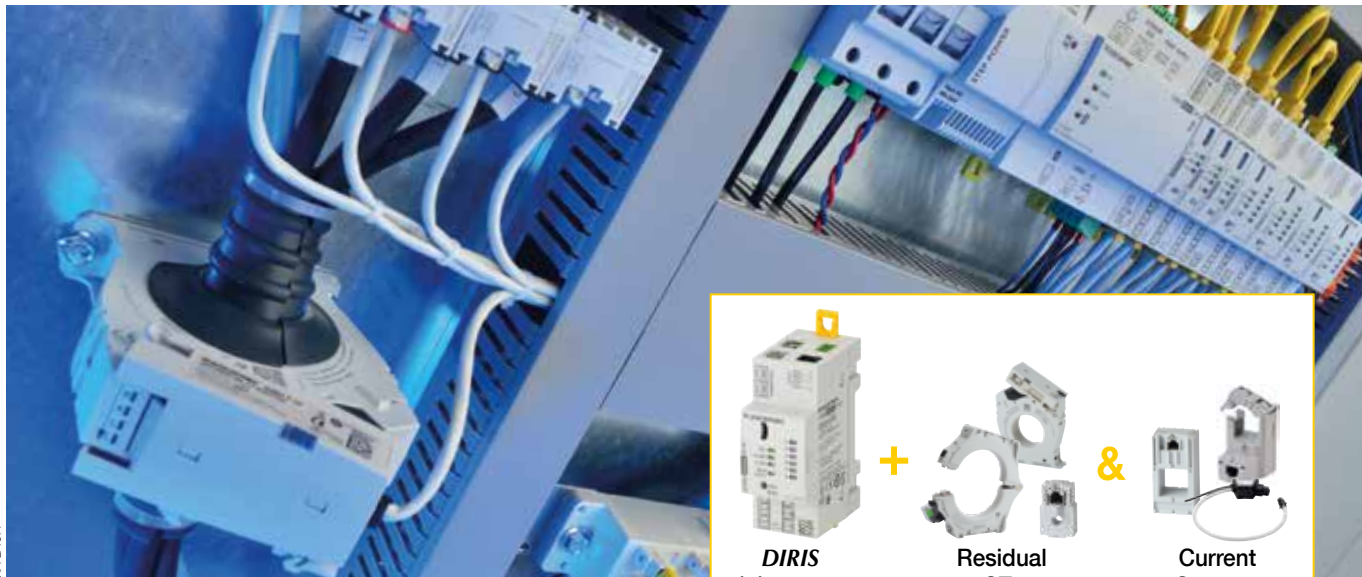


TORE 072

# 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

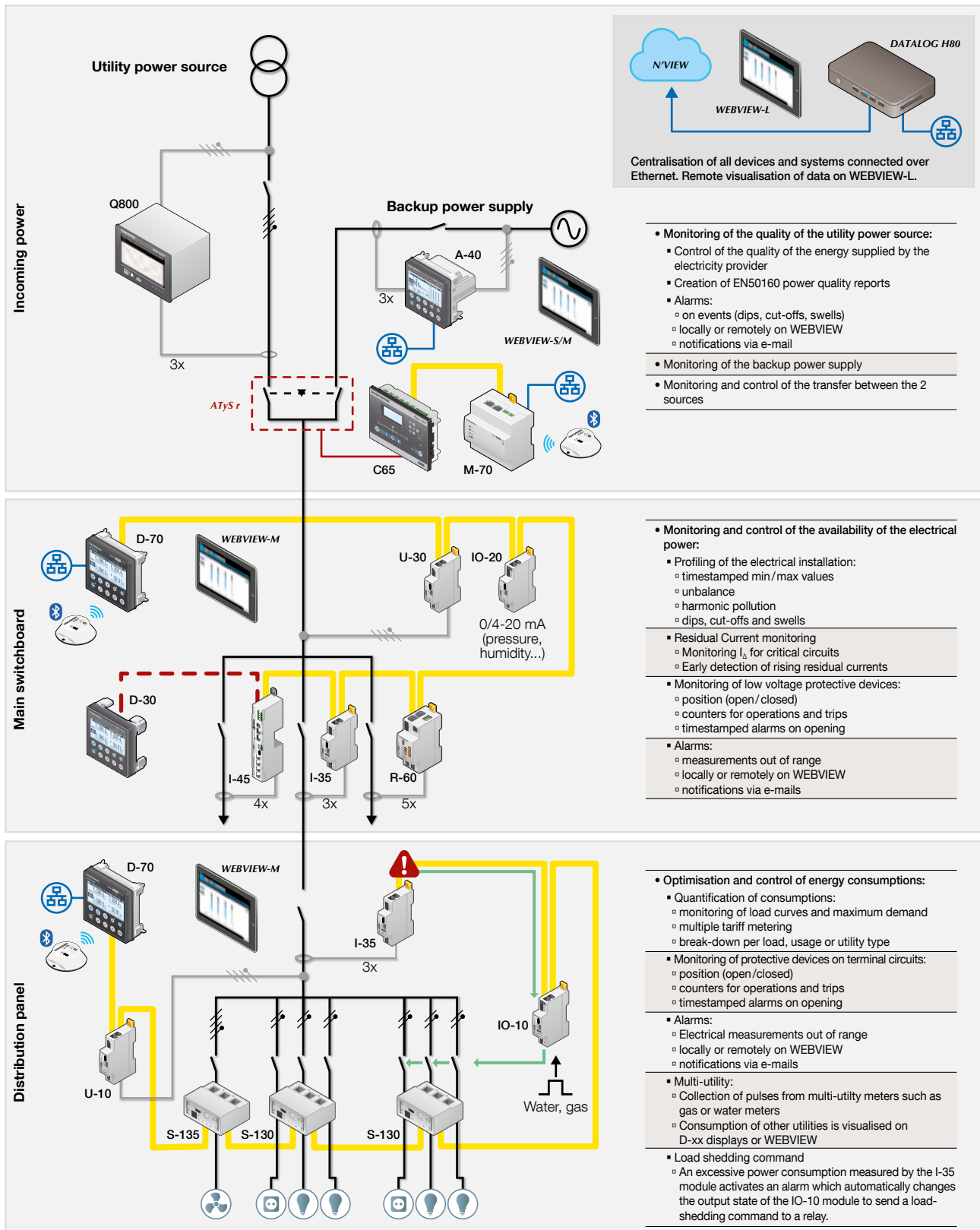
- New cyber security features secure the confidentiality, integrity and availability of data.



### 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



**Legend:**

- Heat pump
- Receptacles
- Lighting



# Socomec: our innovations supporting your energy performance

**1** independent manufacturer

**3,600** employees  
worldwide

**10** % 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

- Control, command of LV facilities
- 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 (x3)

**28** subsidiaries and commercial locations

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

**80** countries

where our brand is distributed

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