

DIRIS[®] A

The multi-function multi-measurement range
FOR MANAGING YOUR ELECTRICAL NETWORKS

MADE TO MEASURE



DIRIS® system: the reference

Measurement is the key link in managing an energy efficiency project.

With **DIRIS**, SOCOMEC has developed the most advanced Power Measurement Device on the market, dedicated to improving your energy performance.

For over 20 years, thousands of users, installers or integrators have trusted the innovative **DIRIS** solutions for:

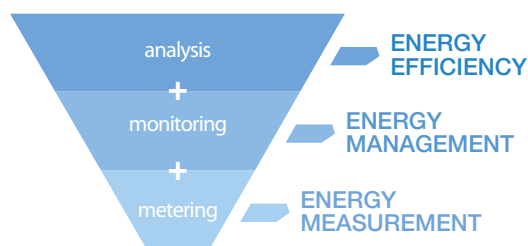
- energy metering and management
- electrical facility monitoring
- power quality analysis.

Follow the leader and run with the pioneers, by opting for the **DIRIS** solution.



A comprehensive range for measuring your energy efficiency

The new **DIRIS & COUNTIS** solutions are tailored to the requirements of industrial or tertiary environments: energy metering, quality monitoring and analysis of electrical networks.



Compliant with the new IEC 61557-12 standard specifically for multi-measurement devices (PMD), they guarantee the operator a product designed and tested in accordance with the functional requirements of its application, ensuring a high performance level.

Measurement precision

DIRIS products have a built-in electronic component (ASIC) developed specifically by SOCOMEC for the measurement function, which can achieve very high measurement precision.



Customised upgradeability

Thanks to the optional modules which you can use to upgrade the product functions at any time, **DIRIS A** has optimum adaptability to the requirements of multi-measurement applications.

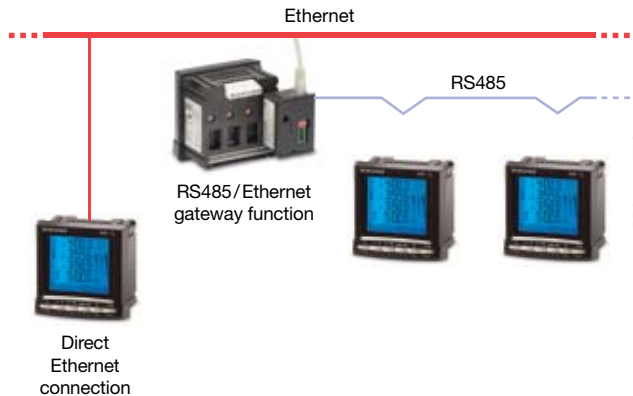
SOCOMEC is once again expanding the field of application of the **DIRIS A**, with the new modules for:

- Ethernet communication
- temperature measurement & monitoring.



Optimised connectivity

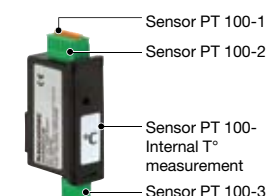
The new communication modules offer direct connectivity to an Ethernet communication network, and the integrated gateway function enabling Ethernet connection of a cluster of products communicating via RS 485.



Expanded monitoring

The new temperature monitoring module:

- enhances energy diagnostics
- improves monitoring of facilities



The embedded web server

The new Ethernet communication modules incorporate the embedded web server function, thereby enabling remote operation and configuration of a product without specific software. Access is via your Internet browser, simply by entering the IP address of the **DIRIS**.

DIRIS[®] A20 and A40

MADE TO MEASURE

The universal multi-function solution

The new **DIRIS A** Power Measurement Devices with extended functionality enabling you to:

- reduce operating costs,
- reduce production costs,
- optimise maintenance costs,
- improve the efficiency of the facility.



Metering

energy consumed by each building or process, in order to allocate and optimise energy costs (multi-fluid management)

Measuring

all electrical or analogue values (temperature, etc.) to verify that your facilities are functioning properly

Monitoring

your electrical networks via alarm management, secure monitoring of distribution parameters and remote control of electrical equipment

Analysing

energy quality via detailed breakdown of harmonics and identification of troughs, outages and voltage surges on the electrical network

Communicating

all available information via a network tailored to your facility:

- ETHERNET (Modbus TCP, Jbus/Modbus RTU over TCP)
- RS485 (Jbus/Modbus, Profibus DP)



Standard functions

The following functions are standard on *DIRIS A* products:



DIRIS A20 DIRIS A40/A41

INSTANTANEOUS, RMS VALUES

Current (3I, In)	•	•
4 th CT for measuring neutral current (In) on networks with harmonic disturbances		A41
Phase-neutral and phase-phase voltage (3V, 3U)	•	•
Frequency (F)	•	•
Active, reactive and apparent power, per phase and total ($\pm 3P$, $\pm 3Q$, $3S$, $\pm \Sigma P$, $\pm \Sigma Q$, ΣS)	•	•
Power factor, per phase and total ($3PF^{L/C}$, $\Sigma PF^{L/C}$)	•	•

AVERAGE AND MAXIMUM VALUE MEASUREMENTS

Current (3I, In)	•	•
Phase-neutral & phase-phase voltages and frequency (3U, 3V, F)		•
Total active, reactive and apparent power ($\pm \Sigma P$, $\pm \Sigma Q$, ΣS)		•

POWER QUALITY MEASUREMENTS

Harmonic distortion rate on current and voltage integrated up to the 51st harmonic (THD 3I, 3V, 3U)	•	
Harmonic distortion rate on current and voltage integrated up to the 63rd harmonic (THD 3I, 3V, 3U)		•



Spectral analysis of individual current and voltage harmonics up to the 63rd harmonic (HI, HU, HV)

METERS

Active and reactive energy on 4 quadrants ($\pm$ kWh, $\pm$ kvarh)	•	
Active, reactive and apparent energy on 4 quadrants ($\pm$ kWh, $\pm$ kvarh, kVAh)		•

Optional functions

For your specific requirements, additional functions may be added via plug-in modules (maximum 4 for *DIRIS A40* and 3 for *DIRIS A41*).

DIRIS A20 DIRIS A40/A41

PULSE OUTPUTS

• 2 configurable pulse outputs (type, weight and duration)		•
1 OUTPUT ALLOCATED TO		
• Pulses: configurable (type, weight, time) in kWh or kvarh	•	
• Monitoring: 3I, In, 3V, 3U, F, ΣP , ΣQ , ΣS , $\Sigma PF^{L/C}$, THD 3I, THD 3V, THD 3U and timer	•	

COMMUNICATION

• RS485 connection with JBUS/MODBUS protocol (speed up to 38,400 bauds): 1 module	•	•
• RS485 connection with PROFIBUS DP protocol (speed up to 12 Mbauds): 1 module		•
• Ethernet connection with Modbus RTU or JBUS/MODBUS RTU over TCP protocol		•
• Ethernet connection with RS485 gateway with Modbus RTU or JBUS/MODBUS RTU over TCP protocol		•

ANALOGUE OUTPUTS

• 2 outputs configurable to all values measured by DIRIS Maximum of 2 modules can be connected, i.e. 4 analogue outputs		•
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2 INPUTS - 2 OUTPUTS

• 2 to 6 outputs allocated to monitoring of 3I, In, 3V, 3U, F, $\pm \Sigma P$, $\pm \Sigma Q$, ΣS , $\Sigma PF^{L/C}$, to all values measured by DIRIS or to remote control		•
• 2 to 6 inputs for pulse counting		•

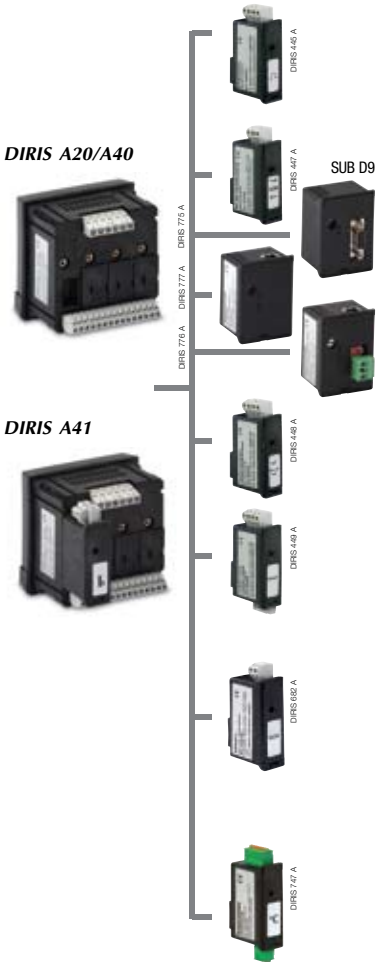
MEMORY

• Memorisation of P+, P-, Q+, Q- with an internal or external synchronisation signal of 5, 8, 10, 15, 20 and 30 minutes for 31 or 62 days		•
• Memorisation of the last 10 time-stamped alarms		•
• Memorisation of minimum and maximum instant values for 3U, 3V, 3I, In, F, $\pm \Sigma P$, $\pm \Sigma Q$, ΣS , THD3U, THD3V, THD3I, THDIn		•
• Time-stamped memorisation of the last 10 voltage troughs, voltage surges, outages (EN 50160)		•
• Memorisation of average values according to the synchronisation signal for 3U, 3V and F		•



TEMPERATURE INPUTS (SENSOR PT100)

• Internal temperature indication		•
• Temperature indication via external sensor (T°1)		•
• Temperature indication via external sensor (T°2)		•
• Temperature indication via external sensor (T°3)		•



Specification and software

Characteristics



DIRIS A20 DIRIS A40/A41

TYPE OF MEASUREMENT		
Application network (3 P, 3 P+N and single-phase)	LV	LV / HV
Real effective up to harmonic	51	63
MEASUREMENT PRECISION		
Current and voltage	0.2%	
Application	0.5%	
Frequency	0.1%	
Active energy	Class 0.5S IEC 62053-22	
Reactive energy	Class 2 IEC 62053-23	
REFRESH PERIOD		
Display	1 second	
CURRENT INPUTS		
Current transformer primary	5 to 10,000 A	
Current transformer secondary	5 A	5 A and 1 A
CT secondary earthed	Yes	
VOLTAGE INPUTS		
Direct measurement	50 to 500 V AC	50 to 700 V AC
Measurement from PT (secondary 60, 100, 110, 115, 120, 173 and 190 V)	n/a	up to 500 kV AC
Frequency	45 to 65 Hz	
AUXILIARY POWER SUPPLY		
Standard	110 to 400 V AC $\pm 10\%$ 120 to 350 V DC $\pm 20\%$	
Other	n/a	12 to 48 V DC -6/+20 %

References

> **DIRIS A20**

DIRIS A20 supply 110 to 400 V AC and 120 to 350 V DC	4825 0200
Module 1 output	4825 0080
JBUS/MODBUS communication module	4825 0082

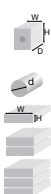
> **DIRIS A40 / A41**

DIRIS A40 supply 110 to 400 V AC and 120 to 350 V DC	4825 0201
DIRIS A40 supply 12 to 48 V DC	4825 1201
DIRIS A41 supply 110 to 400 V AC and 120 to 350 V DC	4825 0202
DIRIS A41 supply 12 to 48 V DC	4825 1202
Pulse outputs module	4825 0090
JBUS/MODBUS communication module	4825 0092
PROFIBUS-DP communication module	4825 0205
Ethernet Module	4825 0203
Ethernet module with RS485 gateway	4825 0204
Temperature module	4825 0206
Analogue outputs module	4825 0093
Monitoring or control/command module	4825 0094
Memory module	4825 0097

ACCESSORY

IP65 protection	4825 0089
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Associated current transformers

[illegible]

Dedicated supervision

For remote monitoring and supervision of **DIRIS A**, the **CONTROL VISION** software enables you to:

- centralise and display all electrical values,
- create load curves,
- perform measurement campaigns,
- manage alarm history.



Display of all electrical quantities in the form of numeric values or indicators.



Energy consumption table
(electricity, water, gas...) or
pulses counted by all the
DIRIS

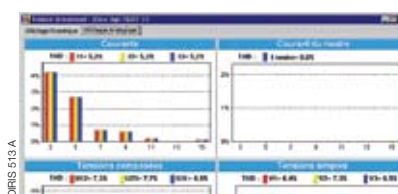
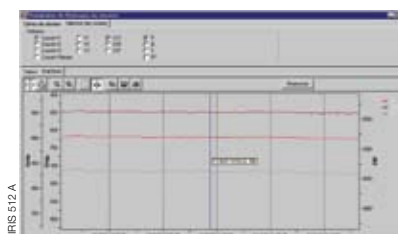


Table or bar graph display
of 3rd to 25th harmonics.



Memorisation of all electrical values on **DIRIS** units defined as "constant scanning" in a table (displayed according to a chosen period) stored on the database.



Display in table form of all electrical values of every **DIRIS** present on the network.

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