

# DIRIS<sup>®</sup> A

The multi-function measurement range  
FOR YOUR ELECTRICAL NETWORK INSTALLATION

MADE TO MEASURE



## DIRIS® system: the reference

Electrical installations are becoming more and more complex whilst at the same time maintenance times are becoming tighter and the resources allocated to maintenance more and more limited...

**DIRIS®** is a complete system developed by SOCOMEC over the last 10 years, consisting of products and software to control the operation of all electrical networks, and offering:

- measurement and monitoring of electrical values
- energy metering and management (electricity, water and gas)
- remote control and command of equipment
- network protection.

Now thousands of users, systems integrators, electrical panel builders and operators are optimising the costs and service of their installations by using the innovative **DIRIS®** system.



## Energy control and management: a complete range

SOCOMEC, the market leader, offers a range of energy control and management equipment which can be used on all types of electrical networks, in industrial or commercial environments.



The **DIRIS® A** new generation of multi-function meters (**DIRIS® A20**), or control relays (**DIRIS® A40** or **A41**) with new features giving:

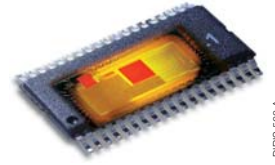
- easier installation
- greater accuracy
- optimised visibility
- easier access to data.

These products can communicate remotely using **CONTROL VISION** software or other systems (e.g. programmable logic controller, centralised building management systems).

For further information: [www.socomec.com](http://www.socomec.com)

## ACCURATE MEASUREMENT

The equipment now includes a significant innovation: an electronic component (ASIC) specifically designed for the **DIRIS®** multi-function measurement range to improve the quality and accuracy of measurements.



## OPTIMISED VISIBILITY

The display showing the electrical values of the installation has been optimised on the **DIRIS® A** products. They have a large easy-to-read configurable backlit LCD display.



## DIRECT ACCESS

The large keys give quick, direct access to the data you want, without having to navigate through menus.



## PLUG & DISPLAY MODULES

Requirements change over time. So the **DIRIS® A** products have optional modules which can be used to add additional functions at any time: these functions include digital and analogue communication, harmonic spectrum analysis, alarm management, costs control and mechanization of voltage surges, voltage dips and out-age, equipment control and command and pulse transfer.



## EASY TO INSTALL

The **DIRIS® A** products have been designed to make them as easy as possible to fit into all types of panel with:

- compact 96 x 96 x 60 mm dimensions (80 mm with options)
- easy-to-use terminal blocks for fast cabling
- simple fixing using retaining clips
- neat appearance which means it can be used anywhere
- a self test diagnostic menu to identify incorrect connection.



### STANDARD FUNCTIONS

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



	DIRIS® A20	DIRIS® A40/A41
<b>INSTANTANEOUS, RMS VALUES</b>		
Current (3I, In)	•	•
Neutral current sensing transformer for highly pertubated networks (harmonics)		<b>A41</b>
Phase to neutral and phase to phase voltage (3V, 3U)	•	•
Frequency (F)	•	•
Total active, reactive and apparent power (+ΣP, +ΣQ, ΣS)	•	
Total and per phase active, reactive and apparent power (±3P, ±3Q, 3S, ±ΣP, ±ΣQ, ΣS)		•
Total power factor (ΣPF)	•	
Total and per phase power factor (3PF <sup>LC</sup> , ΣPF <sup>LC</sup> )		•
<b>AVERAGE AND MAXIMUM VALUES</b>		
Current (3I, In)	•	•
Phase-to-neutral and phase-to-phase voltage and frequency (3U, 3V, F)		•
Total active power (ΣP+)	•	
Total active, reactive and apparent power (±ΣP, ±ΣQ, ΣS)		•
<b>POWER - QUALITY VALUES</b>		
Voltage and current harmonic distorsion level up to row 51 (THD 3I, In, 3V, 3U)		•
<b>METERS</b>		
Active and reactive energy 4 quadrants (+ kWh, + kvarh)	•	
Active, reactive and apparent energy 4 quadrants (± kWh, ± kvarh, kVAh)		•

### OPTIONAL FUNCTIONS

For specific requirements, plug-in modules can be used to give the following additional functions (maximum 4 for **A40** and 3 for **A41**).

DIRIS® A20/A40



DIRIS® A41



	DIRIS® A20	DIRIS® A40/A41
<b>PULSE OUTPUTS</b>		
1 configurable pulse output (type, weight and duration)	•	
2 configurable pulse outputs (type, weight and duration)		•
<b>PULSE OUTPUTS AND HARMONICS</b>		
2 configurable pulse outputs (type, weight and duration)		•
Harmonics spectral analysis per rating and per phase for 3I, In, 3V and 3U up to rate 25		•
<b>COMMUNICATION</b>		
RS485 link with JBUS/MODBUS protocol (speed up to 38400 bauds): 1 module	•	•
RS485 link with PROFIBUS DP protocol (speed up to 1.5 Mbauds): 2 modules		•
<b>ANALOGUE OUTPUTS</b>		
2 configurable outputs on 3I, In, 3V, 3U, F, ±ΣP, ±ΣQ, ΣS and ΣPF <sup>LC</sup>		•
Maximum 2 modules connection for 4 analogue outputs		•
<b>2 INPUTS - 2 OUTPUTS</b>		
• 2 to 6 outputs for monitoring of 3I, In, 3V, 3U, F, ±ΣP, ±ΣQ, ΣS, ΣPF <sup>LC</sup> , THD 3I, THD In, THD 3V, THD 3U and hours run or remote control		•
• 2 to 6 inputs for pulse metering		
<b>MEMORY</b>		
• Storing P+, P-, Q+, Q- values with internal/external synchronisation signal (5, 8, 10, 15, 20 and 30 minutes during 31 and 62 days)		
• Storing last 10 time-stamped alarms		
• Storing min/max instantaneous values for 3U, 3V, 3I, In, F, ±ΣP, ±ΣQ, ΣS, THD3U, THD3V, THD3I, THDIn		
• Storing last 10 time-stamped voltage dips, surges and outage		
• Storing average values according to synchronisation signal for 3U, 3V and F		

### IM CODE



	DIRIS® A20	DIRIS® A40/A41
IM 110 to IM 210*	•	
IM 110 to IM 774*		•

\*consult us.

# DIRIS® A20 and A40

MADE TO MEASURE

## A universal multi-function solution

The DIRIS® A are multi-function measurement devices which optimise the operation of your electrical networks by:

- reducing operating costs
- cutting down production losses
- optimising maintenance costs
- improving the performance of the installation.



### Measure

all electrical values to check that your network is functioning properly.

### Monitor

your electrical networks using alarms for feeder load levels or loss of phase, voltage surges, voltage dips and outage.

### Analyse

energy quality by breaking down the harmonics by phases to prevent cable overheating, transformer overload or equipment ageing.

### Meter

the energy used by buildings or production processes so that you can spread and optimise energy costs.

### Control

to open or close feeder control gear (lighting, motor, production line, heating, air conditioning...).

### Centralise

all data using digital (RS 485 JBUS/MODBUS or PROFIBUS-DP) or analogue communication.



### CHARACTERISTICS



	DIRIS® A20	DIRIS® A40/A41
<b>TYPE OF MEASUREMENT</b>		
Network (3 P, 3P+N, and single phase)	LV	LV/HV
True RMS value up to harmonic	51	
<b>ACCURACY OF MEASUREMENTS*</b>		
Current and voltage	0.2 %	
Power	0.5 %	
Frequency	0.1 %	
Active energy	IEC 62053-22 class 0.5S	
Reactive energy	IEC 62053-23 class 2	
<b>DISPLAY REFRESH RATE</b>		
Time	1 s	
<b>CURRENT INPUTS</b>		
Primary CT	5 to 10000 A	
Secondary CT	5 A	5 A and 1 A
Sensing range	5 mA to 6 A	10 mA to 10 A
Permissible overload	50 A - 1 s	
Consumption	< 0.6 VA	< 0.1 VA
Galvanic insulation	2.5 kV	
CT earth connection (secondary)	yes	
<b>VOLTAGE INPUTS</b>		
Direct measurement	50 to 500 V AC	50 to 700 V AC
Voltage sensing transformer (secondary 60, 100, 110, 115, 120, 173 and 190 V)	n/a	up to 500 kV AC
Frequency	45 to 65 Hz	
Galvanic insulation	2.5 kV	
<b>AUXILIARY POWER SUPPLY</b>		
Standard	110 to 400 V AC ±10 % 120 to 350 V DC ±20 %	
Others	n/a	12 to 48 V DC -6/+20%
<b>INPUTS</b>		
Type	n/a	Optocouplers (10 to 30 V DC)
<b>MONITORING OR COMMAND OUTPUTS</b>		
Type	n/a	REED relays (230 V AC - 5 A - 1150 VA)
<b>PULSE OUTPUT/S</b>		
Type	REED relays (100 V DC - 0.5 A - 10 VA)	
<b>ANALOGUE OUTPUTS 0/4 - 20 MA</b>		
Load resistance	n/a	0 to 600 Ohms
Response time	n/a	1 s
<b>MEMORY</b>		
Memory size	512 ko	

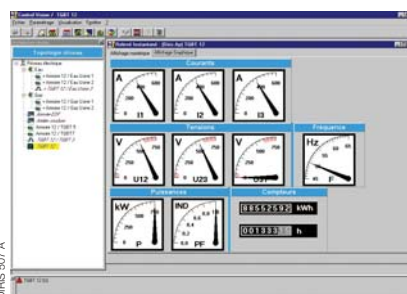
### REFERENCES

<b>DIRIS® A20</b>	
DIRIS® A20 supply 110 to 400 V AC and 120 to 350 V DC	4825 0A20
Pulse output (DIRIS® A20)	4825 0080
Communication module JBUS/MODBUS (DIRIS® A20)	4825 0082
<b>DIRIS® A40 / A41</b>	
DIRIS® A40 supply 110 to 400 V AC and 120 to 350 V DC	4825 0A40
DIRIS® A40 supply 12 to 48 V DC	4825 1A40
DIRIS® A41 supply 110 to 400 V AC and 120 to 350 V DC	4825 0A41
DIRIS® A41 supply 12 to 48 V DC	4825 1A41
Pulse outputs module (DIRIS® A40 / 41)	4825 0090
Pulse outputs module + Harmonics (DIRIS® A40 / 41)	4825 0091
Communication module JBUS/MODBUS, (DIRIS® A40 / 41)	4825 0092
Communication module PROFIBUS-DP, (DIRIS® A40 / 41)	4825 0096
Analogue outputs module (DIRIS® A40 / 41)	4825 0093
2 inputs / 2 outputs module (DIRIS® A40 / 41)	4825 0094
Memory module (DIRIS® A40 / 41)	4825 0097
<b>ACCESSORY</b>	
IP65 protection	4825 0089

### DEDICATED MONITORING

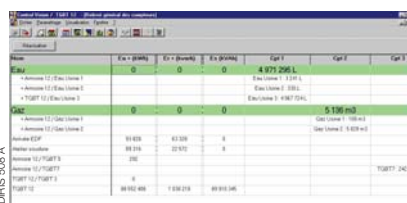
The **DIRIS® A** products can be communicated with remotely using **CONTROL VISION** software to:

- centralise and display all electrical values
- create demand curves
- historical trend analysis of measured values
- manage alarm logs.



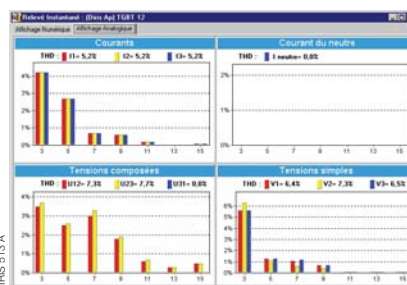
DIRIS 507 A

Display showing numerical values or indicators for all electrical values.



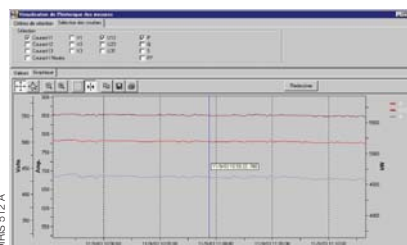
DIRIS 508 A

All **DIRIS®** equipment can display tables of energy consumption (electricity, water, gas) or pulses counted.



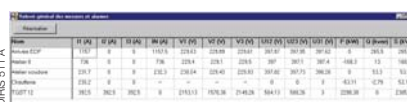
DIRIS 513 A

3<sup>rd</sup> order to 25<sup>th</sup> order harmonics displayed in table form or as bar charts.



DIRIS 512 A

All electrical values permanently scanned by **DIRIS®** are stored in the data base in a table which can be displayed for a selected time period.



DIRIS 511 A

Every **DIRIS®** present on the network can be viewed in the form of a table showing all electrical values.

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