

# 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.



APPU 047 B

## 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.



GAWME 028 B

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

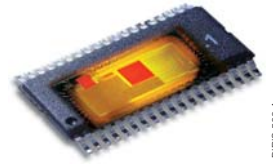
- easier installation
- greater accuracy
- optimised visibility
- easier access to data.

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.



DIRIS 565 A

## 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.



DIRIS 561 B

## DIRECT ACCESS

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



DIRIS 561 B

## 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 outage, equipment control and command and pulse transfer.



DIRIS 565 A

## 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.



DIRIS 562 B

# DIRIS<sup>®</sup> A20 and A40

MADE TO MEASURE

## A universal multi-function solution

The DIRIS<sup>®</sup> 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.



### STANDARD FUNCTIONS

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



DIRIS 561 B

	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>L/C</sup> , ΣPF <sup>L/C</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 distortion level up to row 51 (THD 3I, In, 3V, 3U)		•
<b>METERS</b>		
Active and reactive energy 2 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 563 A



#### DIRIS® A41

DIRIS 564 A



	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>L/C</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>L/C</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 (EN 50160)		
• Storing average values according to synchronisation signal for 3U, 3V and F		

### 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
CT earth connection (secondary)	yes	
<b>VOLTAGE INPUTS</b>		
Direct measurement	50 to 500 V AC	18 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	
<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% (not UL)
<b>INPUTS</b>		
Type	n/a	Optocouplers (10 to 30 V DC)
<b>MONITORING OR COMMAND OUTPUTS</b>		
Type	n/a	Relays (230 V AC - 5 A - 1150 VA)
<b>PULSE OUTPUT/S</b>		
Type	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	1024 kbits (512 ko)	
<b>CERTIFICATION</b>		
UL 61010-1 / N° file: E257746	yes	only A40

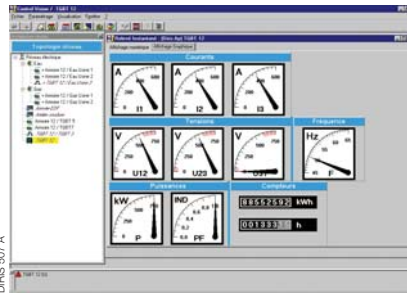
### REFERENCES

<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 (not UL)		4825 1A40
DIRIS® A41 supply 110 to 400 V AC and 120 to 350 VDC (not UL)		4825 0A41
DIRIS® A41 supply 12 to 48 VDC (not UL)		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 (not UL)		4825 0089

### DEDICATED MONITORING

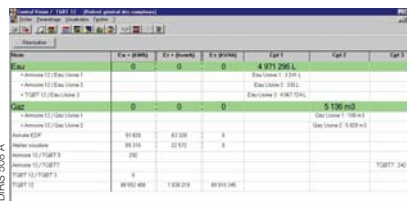
The **DIRIS® A** products can be communicated with remotely using **CONTROL VISION** software to:

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



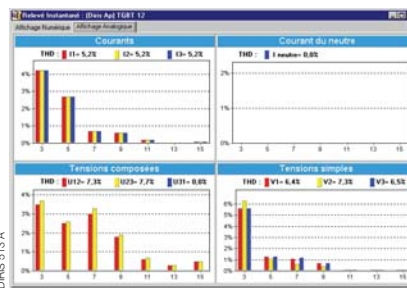
DIRIS 507 A

Display showing numerical values or indicators for all electrical values.



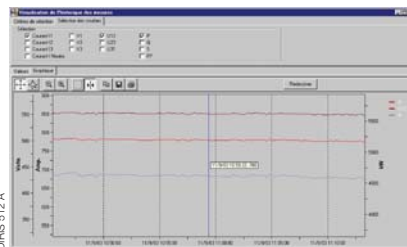
DIRIS 509 A

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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