

DIRIS A-40

Multifunction measuring unit - PMD

measurement, monitoring and event analysis with smart sensors - door mounting



DIRIS A-40

Function

The **DIRIS A-40** is a panel-mounted power monitoring device (PMD). It is designed for measuring, monitoring and reporting electrical energy.

Advantages

Assisted configuration

The configuration wizard guides the user step by step. It also detects and corrects configuration errors. This cuts the commissioning time in half and always delivers a reliable result.

Smart sensors

Three current sensor formats (solid-core TE, split-core TR/iTR and Rogowski coil TF) allow integration of the DIRIS A-40 into new and existing electrical installations.

The DIRIS A-40 offers a range of functions for measuring voltage, current, power, energy and quality.

It allows the analysis of a single-phase or three-phase load.

Connected to the Cloud

The range comprises IoT ready connected products that enable data to be exported automatically for remote operation without any limit on time, distance and time in storage.

Compliant with IEC 61557-12

Reference standard for PMDs (Performance metering & monitoring devices), IEC 61557-12 standard guarantees performance levels and satisfactory performance from the PMDs under the environmental conditions typical of industrial and tertiary applications.

The solution for

- > Industry
- > Building
- > Infrastructure



Strong points

- > Assisted configuration
- > Connected to the Cloud
- > Compliant with IEC 61557-12
- > Smart sensors

Integrated technologies



For more information see our website www.socomec.com



Functions

Multi-measurement

- Currents
- 11, 12, 13, In, Isystem
- Voltages & frequency
- V1, V2, V3, VN, Vsystem, U12, U23, U31, Usystem, f
- Powers
- P1, P2, P3, ΣP, Q1, Q2, Q3, ΣQ, S1, S2, S3, ΣS - Predictive powers ΣP, ΣQ, ΣS
- Power factor
- PF1, PF2, PF3, ΣPF
- Cos φ & tangent φ
- Instantaneous values per phase

Metering

414

- Active energy: +/- kWh
- Reactive energy: +/- kvarhApparent power: kVAh
- Multi-tariff (8 max.)
- Hour Meter

- Quality
- Voltage Unbalance
- Vdir, Vinv, Vhom, Udir, Uinv, Unba, Vnba, Vnb, Unb
 Current unbalance
- Idir, linv, Ihom, Inba, Inb
- Total harmonic distortion
 Currents THDi1, THDi2, THDi3, THDiN, TDDI
 Phase-to-neutral voltage THDv1, THDv2, THDv3
 Phase-to-phase voltage THDu12, THDu23, THDu31
- Individual harmonics up to 63rd
 Currents: HI1, HI2, HI3, HIn
- Phase-to-neutral voltage: HV1, HV2, HV3
- Phase-to-phase voltage: HU12, HU23, HU31
- Kfactor & Crest factorEvents according to EN 50160
- Voltage dips, outages, interruptions, swells

Monitoring of protection

- Auxiliary contact monitoring
- Report and alarm on trips
- Number of operations
- Load curves and historical records (max. 130 days)
- Active, reactive and apparent power
- Currents, voltages and frequency
- Alarms
- Alarms for all electrical values, events and input status changes, possibility of logical combination
 Time-stamping of events
- Communication
- DIRIS A-40 RS485 Modbus as standard
- DIRIS A-40 Ethernet Modbus
- DIRIS A-40 PROFIBUS DPV1
- Inputs
- 3 digital inputs
 - Power supplied from DIRIS A-40 or an external source
 Function: logic status, status of circuit breaker, counting of pulses or synchronization multifluid metering
- 2 logical outputs
- Function: Command, energy pulse output, load shedding, alarm



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Functions

Monitoring

- Real-time measurement of electrical values.
- View data as graphs or tables.
- Power quality analysis of the utility supply and of loads.

Metering

- Measurement of active, reactive and apparent energies.
- Historical record of measurements.
- · Graphic display on monthly, weekly, daily or hourly basis.



- Display of alarms.
- · History of alarms.







Terminals



Dimensions (mm)



Current measurement



3 inputs supplied by the product

	-	12 VDC	<_cat.ai
Z	+1	;	С
	+2 +3	; ;	liris_971

3 inputs with external power supply

z	- 	1	10-30 VDC	_1_x_catai
	+1 +2 +3			liris_972_a

Voltage connections inc auxiliary power supply



Earth

÷ FE

2 outputs



RS485



Connections

Associated current sensors

Various types of current sensors can be connected to the DIRIS A-40: solid-core (TE), split-core (TR/ITR) or Rogowski (TF). This range of sensors is suitable for all types of new or existing installations. A quick RJ12 connection makes wiring easy and reliable and prevents wiring errors. The DIRIS A-40 automatically recognizes the sensor size and type. This guarantees the overall accuracy of the DIRIS A-40 + current sensor measurement chain. For more information: see "TE, TR/ITR, TF sensors" pages.

TE solid current sensors





TR/iTR split-core current TF Rogowski current sensors



Network and connection examples

Three-phase + Neutral

3P+N - 3 CT (1 three-phase load + calculated Neutral)



Three-phase

3P - 1CT (1 balanced three-phase load)



1. 0.5 A gG / 0.5 A class CC fuses. If self-supplied, a fuse must always be added to the Neutral.

ΤF DIRIS A-40 TR/iTR socomec 230.1. 1.63.03. 398.5. ' 50.00. ΤE 0 0 . 0 0 . . -RJ12 Connection 18 eps diris_991.

TE / TR/iTR / TF current sensors

Three-phase

3P - 3CT (1 three-phase load)



Single-phase

1P+N - 1CT (1 single-phase load)



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Input characteristics

DIRIS A-40 characteristics

Electrical characteristics

Auxiliary power supply				
Alternative voltage	110/400 VAC or 120/300 VDC - Cat III			
Frequency	50/60 Hz			
Power consumption	5VA AC / 1,5VA DC (48250500) 8VA AC / 2,5VA DC (48250501 & 48250502)			
Connection	Removable spring-cage terminal block, $2x 2$ positions, $0.5 - 2.5$ mm ² solid cable or $0.25 - 1.5$ mm ² stranded cable with end piece			

Measurement characteristics

Power and energy measurement				
Accuracy Class 0.2 [Active energy Class 0.5 v and active power Class 1 wit		DIRIS A-40 only with TE, TF or iTR sensors th TR sensors		
Accuracy of reactive energy Class 2 with		th TE, TR/iTR or TF sensors		
Power factor measuren	nent			
Accuracy	Class 0.5 Class 1 w	with TE, TF or iTR sensors /ith TR sensors		
Voltage measurement				
Characteristics of the network measured		50-300VAC (Ph/N) - 87-520VAC (Ph/Ph) - CAT III		
Frequency range		45 to 65Hz		
Frequency accuracy		Class 0.02		
Network type		Single-phase/ Two-phase / Two-phase with neutral / Three-phase / Three-phase with neutral		
Measurement by voltage transformer		Primary: 400 000 VAC Secondary: 60, 100, 110, 173, 190 VAC		
Input consumption		≤ 0,1 VA		
Accuracy of voltage measurement		Class 0.2		
Connection		Removable spring-cage terminal block, 4 positions, 0.5 - 2.5 mm ² solid cable or 0.25 - 1.5 mm ² stranded cable with end piece		
Current measurement				
Number of current inputs 3				
Associated current sensors Solid TE		E, split-core TR/iTR, flexible TF current sensors		
Accuracy 0.2 DIRI Class 0. Class 1		IIS A-40 class only .5 with TE, TF or iTR sensors with TR sensors		
Connection Specific		Socomec cable with RJ12 connectors		

Number 3 Type / Power Optocoupler with internal (12 VDC ± 10%) or external $(12-24 \text{ VDC} \pm 20\%)$ polarisation supply Input function Logic status, status of circuit breaker, synchronization topography, multifluid pulse metering Removable screw terminal block, 5 positions, stranded Connection or solid 0.14 - 1.5 mm² cable Output characteristics Number 2 Туре Optocoupler 30 Vd.c. max 20mA max - SELV Output function Command, energy pulse output, load shedding, alarm Connection Removable screw terminal block, 4 positions, stranded or solid 0.14 - 1.5 mm² cable Communication characteristics DIRIS A-40 RS485 RS485 Link 2 to 3 half duplex wires Connection type Protocol Modbus RTU Baud rate 1200 to 115 200 baud

Configuration of DIRIS A-40

Relefences					
DIRIS A-40 monitoring devices					
DIRIS A-40 RS485 Modbus - 3 inputs / 2 outputs			4825 0500		
DIRIS A-40	DIRIS A-40 Ethernet Modbus TCP or BACnet IP - webserver - RS485 Modbus - 3 inputs / 2 outputs		4825 0501		
DIRIS A-40	IIS A-40 Profibus DPV1 - RS485 Modbus - 3 inputs / 2 outputs				
Accessories To be ordered in multiples of			Reference		
Fuse disconnect switches to protect voltage inputs (RM type) 4		5701 0018			
Fuse disconnect switches to protect the 1-pole + neutral auxiliary power supply (RM type) 6			5701 0017		
gG 10x38 0.5 A fuses 10		6012 0000			

USB

