

DIRIS A-40

Power Monitoring Device - PMD

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



DIRIS A-40

Function

The **DIRIS A-40** is a performance monitoring device (PMD) in a 96 x96 format for door mounting. It is designed for measuring, monitoring and managing electrical energy.

The DIRIS A-40 offers a range of functions for measuring voltage, current, power, energy and quality. It enables analysis of a single-phase or three-phase load.

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.

Integration made easy

Three current sensor formats (solid-core TE, split-core TR/ITR and Rogowski coil TF) enable integration into new and existing electrical installations.

Connected to the Cloud

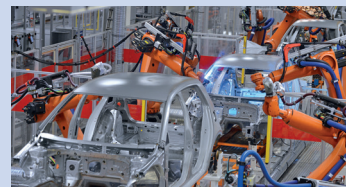
The range comprises IoT ready connected products that enable data to be exported automatically for remote operation without any limit on time, distance and time in storage.

IEC 61557-12 compliant

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

The solution for

> Buildings



Strong points

- > Assisted configuration
- > Integration made easy
- > Connected to the Cloud
- > IEC 61557-12 compliant

Integrated technologies



For further information, please visit our website www.socomec.com

Conformity to standards

- > IEC 61557-12
- > EN 50160
- > UL61010 E257746



Functions

Multi-measurement

- Currents
 - I1, I2, I3, In, Isystem
- Voltages & frequency
 - V1, V2, V3, VN, Vsystem, U12, U23, U31, Usystem, f
- Power
 - P1, P2, P3, ΣP, Q1, Q2, Q3, ΣQ, S1, S2, S3, ΣS
 - Predictive power ΣP, ΣQ, ΣS
- Power factor
 - PF1, PF2, PF3, ΣPF
- Cos φ & tangent φ
 - Instantaneous values per phase

Metering

- Active energy: +/- kWh
- Reactive energy: +/- kVarh
- Apparent energy: kVAh
- Multi-tariff (max. 8)
- 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: I1h, I2h, I3h, INh
 - Phase-to-neutral voltage: HV1, HV2, HV3
 - Phase-to-phase voltage: HU12, HU23, HU31
- Quality events
 - Voltage dips, interruptions and overvoltages according to EN 50160
 - Kfactor & Crest factor
- Events according to EN 50160
 - Voltage dips, interruptions and overvoltages
- Waveform capture
 - Automatic waveform captures when an event occurs and/or manual waveform recording
 - Available via communication

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 by DIRIS A-40 or an external source
 - Function: logic status, circuit breaker status, pulse metering or multi-fluid measurement synchronisation
- 2 logical outputs
 - Function: Command, energy pulse output, load shedding, alarm

Functions

Monitoring

- Real-time measurement of electrical values.
- Graphical display, suitable for the data analysed.
- Quality analysis of power grid and loads.



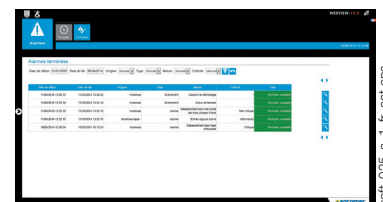
Metering

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

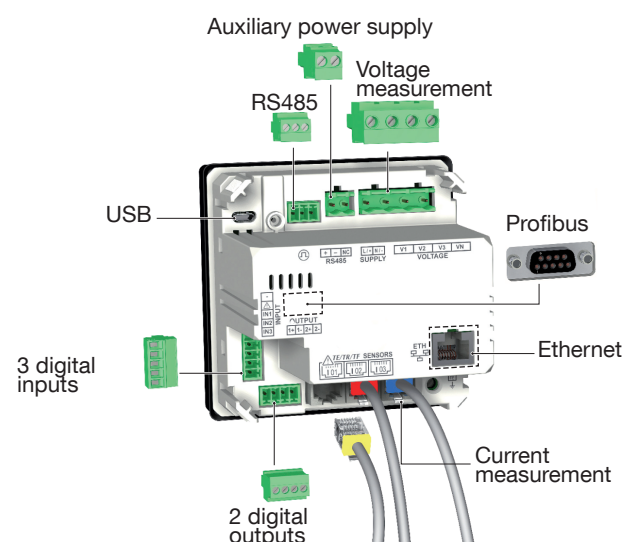


Alerting

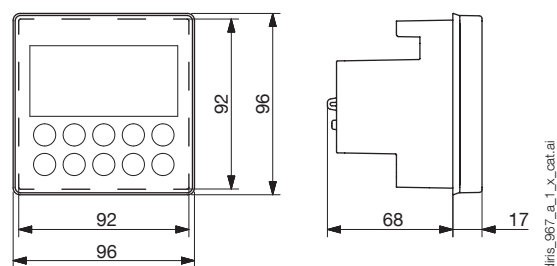
- Display of device alarms.
- History of alarms.



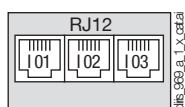
Terminal blocks



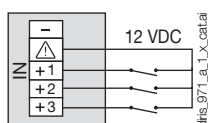
Dimensions (mm)



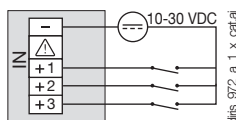
Current measurement



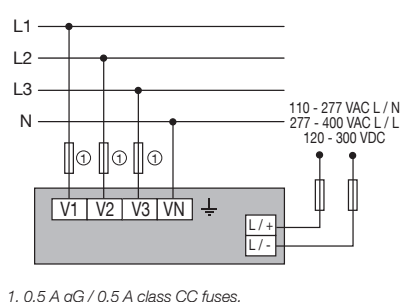
3 inputs supplied by the product



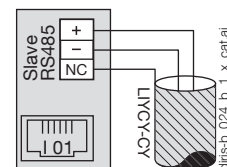
3 inputs with external power supply



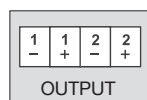
Separate power supply



RS485



2 outputs



Earth



DIRIS A-40

Power Monitoring Device - PMD

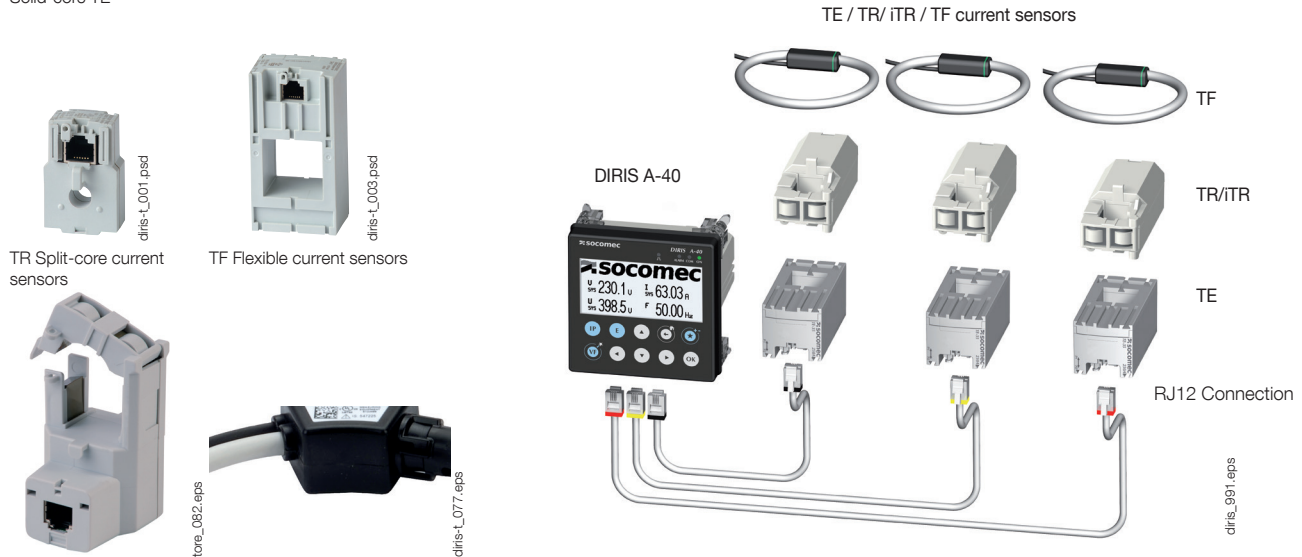
measurement, monitoring and event analysis with smart sensors - door mounting

Connections

Associated current sensors

Various types of current sensor are associated with the DIRIS A-40: solid-core (TE), split core (TR) or flexible (TF). This range of sensors can be adapted to 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 recognises the sensor rating and type. This guarantees the overall accuracy of the DIRIS -40 + current sensor measurement chain. For further information, see the page on "TE, TR/iTR, TF sensors".

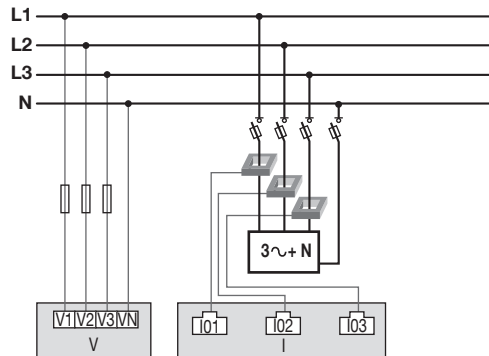
Solid-core TE



Networks and connection examples

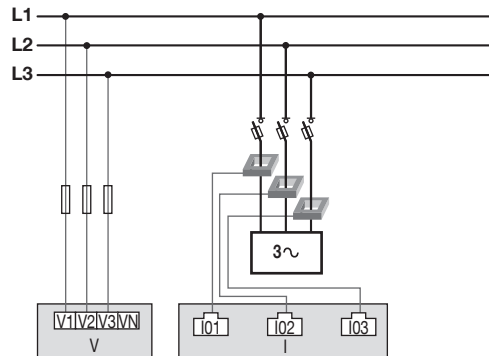
Three phase + Neutral

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



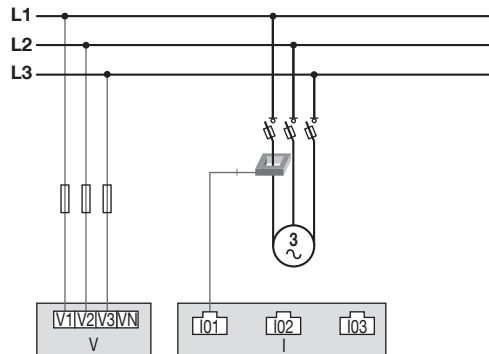
Three-phase

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



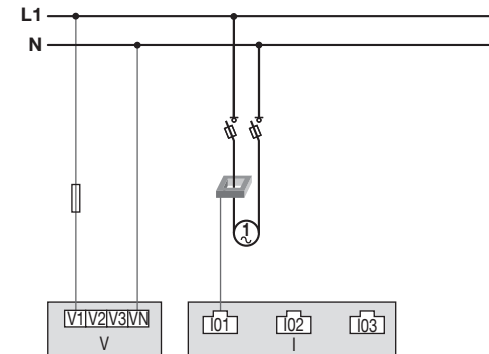
Three-phase

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



Single-phase

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



1. 0.5 A gG / 0.5 A class CC fuses.

If self-powered, a fuse must always be added to the Neutral.

CT: Current transformer 3~ Load

DIRIS A-40 characteristics

Electrical characteristics

Auxiliary power supply	
AC voltage	110/400 VAC or 120/300 VDC - Cat III
Frequency	50/60 Hz
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 active energy and active power	Class 0.2 DIRIS A-40 alone Class 0.5 with TE, TF or ITR sensors Class 1 with TR sensors
Reactive energy accuracy	Class 2 with TE, TR or TF sensors

Power factor measurement	
Accuracy	Class 0.5 with TE, TF or ITR sensors Class 1 with TR sensors

Voltage measurement	
Characteristics of the network measured	50-300VAC (Ph/N) - 87-520VAC (Ph/Ph) - CAT III
Frequency range	45 ... 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
Voltage measurement accuracy	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-core TE, split-core TR, flexible TF sensors
Accuracy	Class 0.2 DIRIS A-40 alone Class 0.5 with TE, TF or ITR sensors Class 1 with TR sensors
Connection	Specific Socomec cable with RJ12 connectors

Input characteristics

Number	3
Type / Power supply	Optocoupler with internal (12 VDC ±10%) or external (12-24 VDC ±20%) bias - SELV
Input functions	Logic status, circuit breaker status, synchronisation signal, multi-fluid metering
Connection	Removable screw terminal block, 5 positions, stranded or solid 0.14 - 1.5 mm ² cable

Output characteristics

Number	2
Type	Optocoupler 30 Vd.c. max 20mA max - SELV
Output functions	Command, energy pulse output, load shedding, alarm
Connection	Removable screw terminal block, 4 positions, stranded or solid 0.14 - 1.5 mm ² cable

Communication characteristics

DIRIS A-40 RS485	
Link	RS485
Link type	2 ... 3 fils half duplex
Protocol	Modbus RTU
Speed	1200 ... 115200 bauds
USB	Configuration DIRIS A-40 RS485

References

DIRIS A-40 Power Monitoring Devices		Reference
DIRIS A-40	RS485 - Modbus - 3 inputs / 2 outputs	4825 0500
DIRIS A-40	Ethernet Modbus TCP or BACnet IP - Web server - RS485 Modbus - 3 inputs / 2 outputs	4825 0501
DIRIS A-40	Profibus DPV1 - RS485 Modbus - 3 inputs / 2 outputs	4825 0502
Accessories		Reference
Fused disconnect switches to protect the voltage inputs (RM type)		5701 0018
Fused disconnect switches to protect the 1 pole + neutral auxiliary power supply (RM type)		5701 0017
0.5 A 10x38 gG fuses		6012 0000

Expert Services



EXPERT
SERVICES

Socomec offers a wide range of services to continuously ensure a functional and accurate energy monitoring system. Ideal for ISO 50001 sites (periodic verification).

- Commissioning.
- Measurement consistency check to 3%.
- Measurement accuracy check to 0.2%.

For further information, please talk to your Socomec contact.