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

Conformity to standards

> IEC 61557-12
> EN 50160
> UL61010 E257746

Integrated technologies

PreciSense AutoCorrect VirtualMonitor

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

Sustainable advantages

> 30-year calibration guarantee to avoid the need for recalibration or product replacement.
> Includes ECO mode to reduce device energy consumption.
> RoHS & REACH compliant.

socomec Innovative Power Solutions

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, Iinv, 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


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


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


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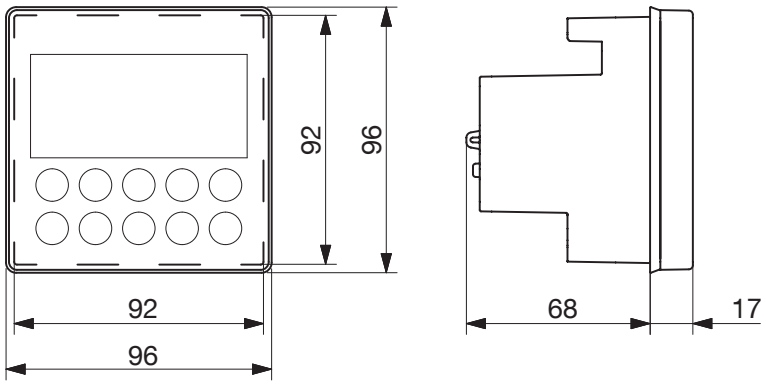
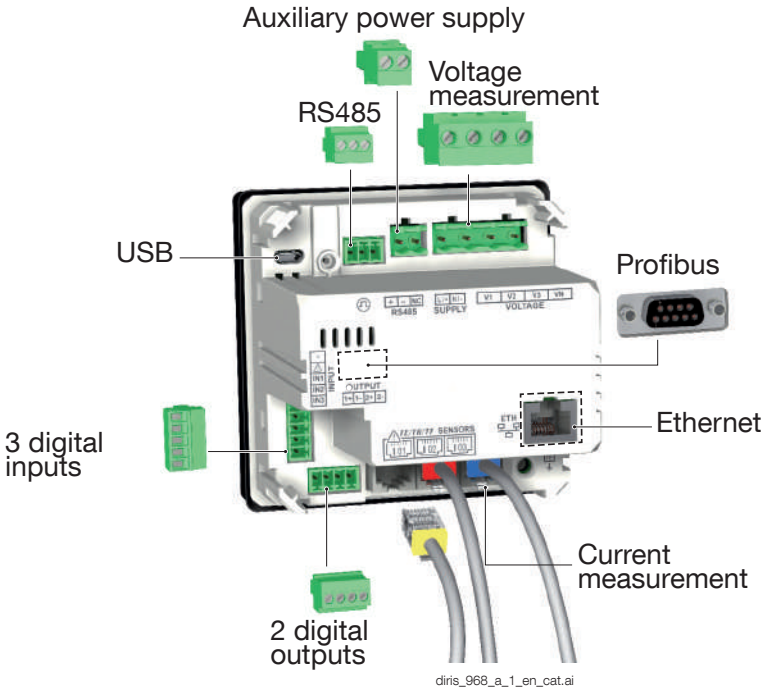
Alerting
- Display of device alarms.
- History of alarms.

Dimensions (mm)



Terminal blocks



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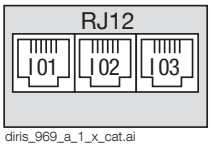
Current measurement



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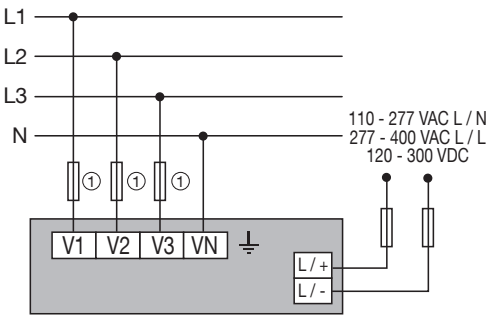
Separate power supply



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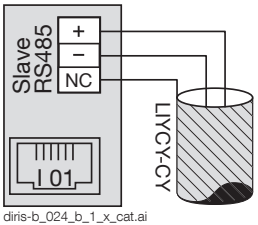
RS485



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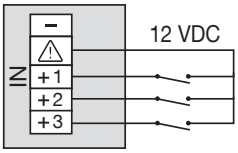
3 inputs supplied by the product



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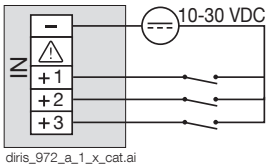
3 inputs with external power supply



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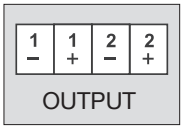
2 outputs



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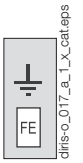
Earth



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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.

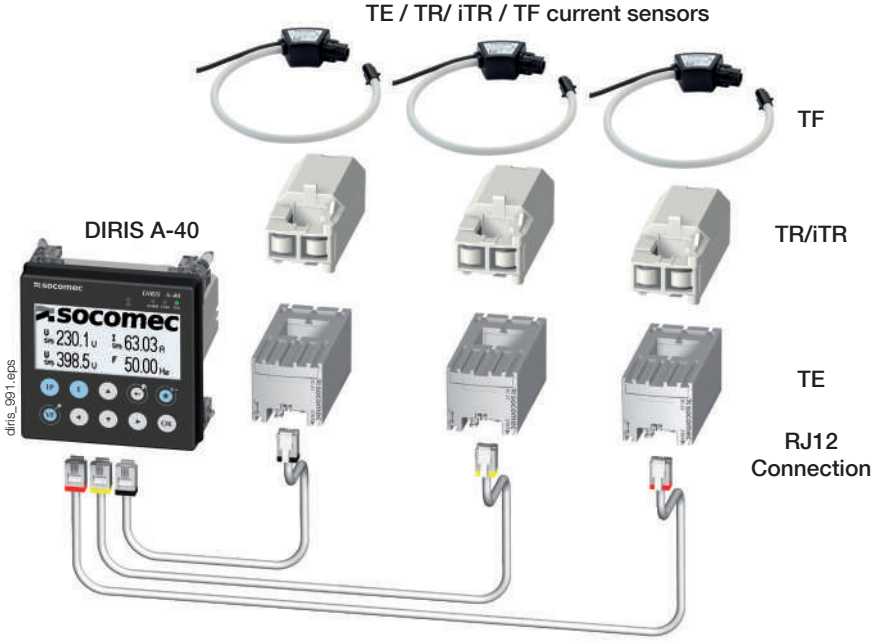
For further information, see the page on “TE, TR/iTR, TF sensors”.

Solid-core TE

TR Split-core current sensors

TF Flexible current sensors

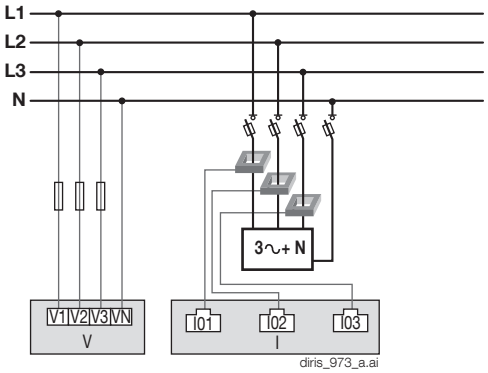
TE / TR/ iTR / TF current sensors



Networks and connection examples

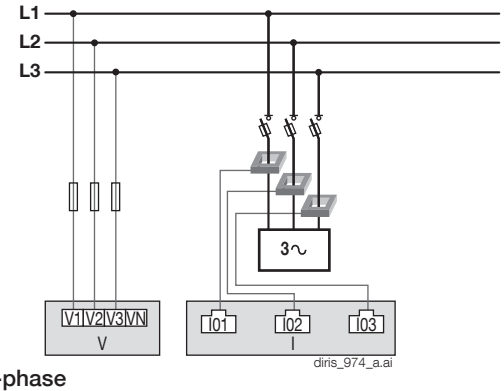
Three phase + Neutral

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



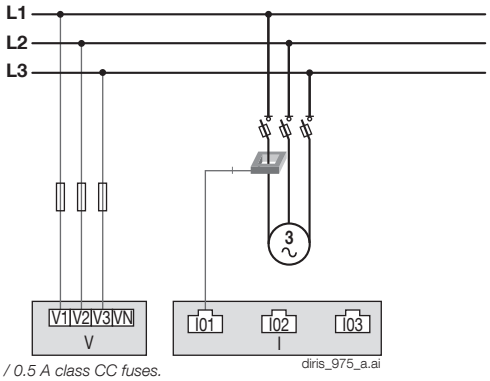
Three-phase

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



Three-phase

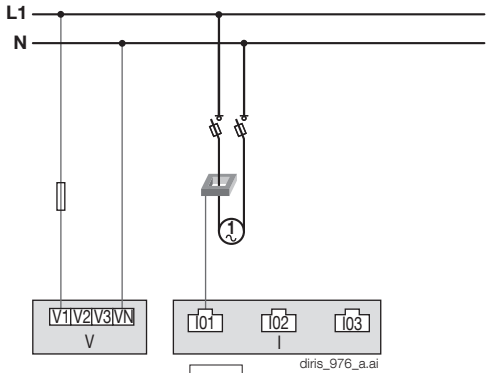
3P - 1CT (1 balanced three-phase load)



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

Single-phase

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



CT: Current transformer
Load

Terminal blocks

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 mm² solid cable or 0.25 - 1.5 mm² 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 mm² solid cable or 0.25 - 1.5 mm² 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 mm² 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 mm² 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	Available for order in multiples of	Reference
Fused disconnect switches to protect the voltage inputs (RM type)	4	5701 **0018**
Fused disconnect switches to protect the 1 pole + neutral auxiliary power supply (RM type)	6	5701 **0017**
0.5 A 10x38 gG fuses	10	6012 **0000**

Expert Services

SERVICES EXPERTS

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%.

For further information, please talk to your Socomec contact.