

DIRIS A-40

Multifunction power meter - panel mounted
Works with RJ12 smart current sensors



Function

The **DIRIS A-40** is a panel mounted power monitoring device compatible with TE/TR/ITR/TF smart current sensors, suitable for new or existing electrical installations.

The DIRIS A-40 has 3 native digital inputs and 2 digital outputs for additional versatility and includes RS485 Modbus RTU, Ethernet Modbus TCP and BACnet IP, and Profibus DP communication to report measurements to external management systems.

Advantages

Plug & Play

- Color-coded RJ12 cables for easy phase identification when wiring current sensors to the DIRIS A-40.
- Automatic detection of current sensor type and rating.
- Using low-voltage mV current sensors, no shorting blocks are needed, they can be disconnected safely under load.

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.

Assisted configuration

A configuration wizard guides the user in a step by step process to configure the DIRIS A-40 directly from the screen. It also detects and corrects configuration errors which cuts the commissioning time in half and always delivers a reliable result.

Better than revenue grade

Compliant with the IEC 61557-12 standard, guaranteeing the quality and accuracy of the Power Meter:

- Class 0.2 for the meter alone.
- Class 0.5 from 2% to 120% of the rated current, for the global measurement chain (with TE/ITR/TF current sensors).

The solution for

- > Industry
- > Building
- > Infrastructure
- > Data center



Strong points

- > Plug & Play
- > Assisted configuration
- > Smart sensors
- > Better than revenue grade

Integrated technologies



PreciSense



AutoCorrect



VirtualMonitor

For more information see our website
www.socomec.us

Conformity to standards

- > UL 61010-1
CSA-C22.22
No.61010-1
Guide FTRZ/PICQ
File E257746



- > ANSI 12.20



- > PBI Meter per CA Energy Commission



- > IEC 61557-12

- > ISO 14025

**DIRIS A-40**

	RJ12	RJ12	RJ12
General			
Format	Door Mount	Door Mount	Door Mount
Electrical			
Power supply	110 - 277 VAC	110 - 277 VAC	110 - 277 VAC
Voltage measurement	50 - 300 VAC L-N 87 - 520 VAC L-L	50 - 300 VAC L-N 87 - 520 VAC L-L	50 - 300 VAC L-N 87 - 520 VAC L-L
Communication			
RS485 Modbus RTU	•	•	•
Ethernet (Modbus TCP/BACnet IP)		•	
Profibus DPV1			•
WEBVIEW web interface		•	
Digital Input / Output	3 / 2	3 / 2	3 / 2
Analog Input / Output	- / -	- / -	- / -
Energy metering			
±kWh, ±kvarh, kWh	•	•	•
ΣP (kW), ΣQ (kvar), ΣS (kVA), PF	•	•	•
P (kW), Q (kvar), S (kVA), PF per phase	•	•	•
Predictive Power	•	•	•
Load curves / demand profiles	•	•	•
Peak Demand	•	•	•
Multi-tariff	8	8	8
Multi - measurement			
U12, U23, U31, V1, V2, V3, f	•	•	•
U system, V system	•	•	•
I1, I2, I3, In, I system	•	•	•
Unbalance U, V, I	•	•	•
Phi, cos Phi, tan Phi	•	•	•
Power quality			
THD U, V, I	•	•	•
Individual Harmonics U, V, I (up to 63rd)			•
Crest Factor I1, I2, I3	•	•	•
K-Factor	•	•	•
PQ Events (sags, swells, interruptions, overcurrents)	•	•	•
Alarms			
Measurement thresholds	•	•	•
System alarms	•	•	•
Protective device	•	•	•
Logical (digital input status)	•	•	•
History			
Average Values	•	•	
Reference	4825 0500	4825 0501	4825 0502

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WEBVIEW-S - embedded webserver

Real time

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



Historical

- Consumption curves (kWh, kvarh, kVAh)
- Demand profiles (kW, kvar, kVA) with peak demand
- Graphic display with monthly, weekly, daily or hourly breakdown.



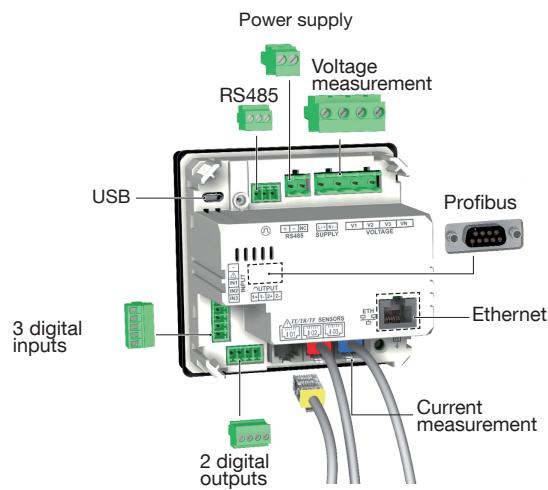
Alarms

- List of active alarms.
- Log of finished alarms

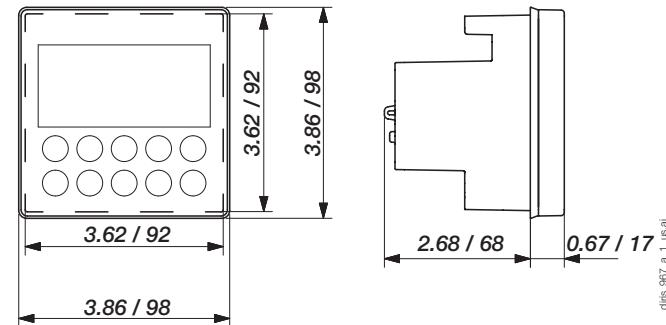


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Terminals

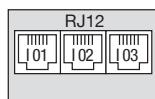


Dimensions (in/mm)



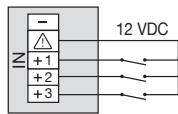
diris_967_a_1_en_cat.ai

Current measurement



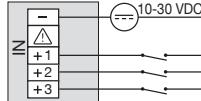
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3 inputs supplied by the product



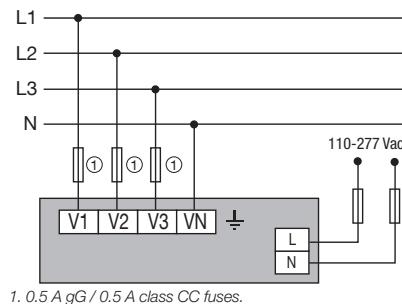
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3 inputs with external power supply



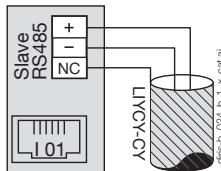
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Voltage measurement and power supply



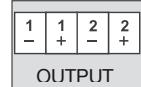
1. 0.5 A gG / 0.5 A class CC fuses.

RS485



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2 outputs



Ground



Current sensors

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 type and rating. This guarantees the accuracy of the overall measurement chain (DIRIS A-40 + current sensors).

For more information on TE, TR/iTR, TF current sensors, refer to pages 348-355.

TE solid-core current sensors



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TR/iTR split-core current sensors



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TF Rogowski current sensors



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TE / TR/iTR / TF current sensors



TF



TR/iTR



TE

DIRIS A-40



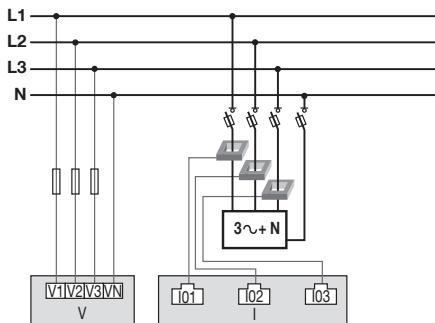
RJ12 Connection

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Voltage and current sensor connection examples

Three phase + Neutral

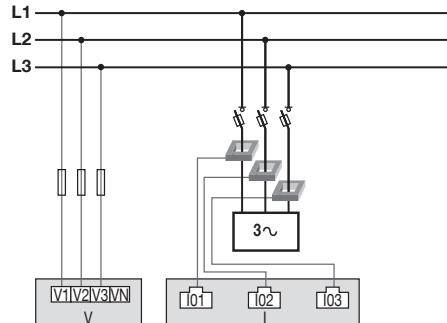
3P+N - 3 CT (1 three-phase load + calculated Neutral)



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Three-phase

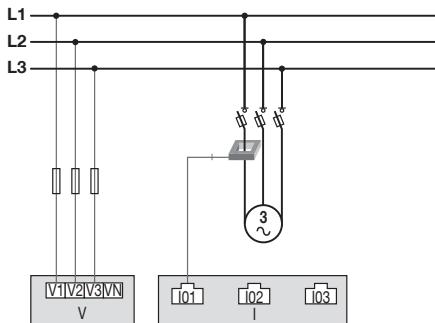
3P - 3CT (1 three-phase load)



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Three-phase

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

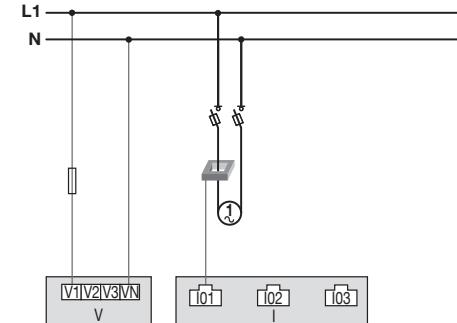


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1.0.5 A class CC fuses.

Single-phase

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



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CT: Current sensor

Load

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DIRIS A-40 characteristics

Mechanical characteristics

Type of screen	Capacitive touch-screen technology, 10 keys
Screen resolution	350 x 160 pixels
Ingress Protection	IP65, front face

Electrical characteristics

Power supply input	110-277 VAC L-N / 277-400 VAC L-L - CAT III 120-300 VDC - CAT III
Power consumption	5 VA AC / 1.5 VA DC (4825 0500) 8 VA AC / 2.5 VA DC (4825 0501 & 4825 0502)
Connection	Removable screw terminal block, 2 positions, AWG 14 ... AWG 20 / 0.5 ... 2.5 mm ² solid cable or stranded cable with ferrule
Voltage measurement input	50-300 VAC (Ph/N) - 87-520 VAC (Ph/Ph) - CAT III
Electrical Network (Service) type	Single-Phase - Two-Wire, Line-to-Neutral Single-Phase - Two-Wire, Line-to-Line Single-Phase - Three-Wire (Split-Phase) Three-Phase - Three-Wire (Delta) Three-Phase - Four-Wire (Wye)
Frequency range	45 ... 65 Hz
Input consumption	≤ 0.1 VA
Connection	Removable screw terminal block, 4 positions, AWG 14 ... AWG 24 / 0.25 ... 2.5 mm ² solid cable or stranded cable with ferrule

Measuring characteristics

Voltage measurement

Sampling rate	9.6 kHz
Voltage measurement accuracy	Class 0.2
Frequency measurement accuracy	Class 0.02

Current measurement

Number of current inputs	3
Associated current sensors	Solid-core TE, split-core TR/iTR, flexible TF current sensors
Connection type	Socomec RJ12 cables
Current measurement accuracy	Class 0.2 DIRIS A-40 alone Class 0.5 with TE, iTR, TF sensors Class 1 with TR sensors

Current measurement

Active Power/Energy accuracy	Class 0.2 DIRIS A-40 alone Class 0.5 with TE, iTR, TF sensors Class 1 with TR sensors
Reactive Power accuracy	Class 1 with TE, iTR, TF sensors Class 2 with TR sensors
Reactive Energy accuracy	Class 2 with TE, TR/iTR, TF sensors

Digital inputs

Number of digital inputs	3
Digital input type	Optocoupler with internal (12 VDC ± 10%) or external (12-24 VDC ± 20%) polarisation
Function	Logical status, pulse meter, multi-tariff
Connection	Removable screw terminal block, 5 positions, stranded or solid AWG 15 to AWG 24 / 0.2 to 1.5 mm ² cable

Digital outputs

Number of digital outputs	2
Relay type	Optocoupler 30 VDC, 20 mA max. - SELV
Function	Manual command, pulse output, load shedding, alarm report
Connection	Removable screw terminal block, 4 positions, stranded or solid AWG 15 to AWG 24 / 0.2 to 2.5 mm ² cable

Communication characteristics

RS485

Connection type	Half-Duplex, 2-3 wires
Protocol	Modbus RTU
Baudrate	9600 bds - 115200 bds

Ethernet

Connection type	RJ45 10/100 Mbs
Protocol	Modbus TCP/IP, BACnet IP, HTTP, FTP, SMTP

USB

Connection type	USB Type Micro-B
Protocol	Modbus RTU over USB
Function	Firmware upgrade and configuration

Environmental characteristics

Storage temperature	-13 to +185 °F / -25 to +85°C
Operating temperature	+14 to +158 °F / -10 to +70°C
Humidity	0% to 97% RH / +131°F/+55°C, non condensing
Operating altitude	≤ 6560 ft / 2000 m

Expert Services

Our service engineers are an essential part of our team, and they are dedicated to ensuring your power monitoring system provides accurate and reliable measurements to your EPMS software or SCADA system.

Our services include:

- > Site audits to verify the proper wiring of your system
- > Personnel training on how to configure, operate and maintain power monitoring equipment and associated software
- > Remote and on-site commissioning to ensure that your system is up and running quickly, with peace of mind.

For further information, please contact your nearest SOCOMEC branch.



References

DIRIS A power meters		
DIRIS A-40	RS485 Modbus RTU	4825 0500
DIRIS A-40	RS485 Modbus RTU + Ethernet Modbus TCP & BACnet IP	4825 0501
DIRIS A-40	RS485 Modbus RTU + Profibus DPV1	4825 0502

Accessories	Sold in multiples of	Reference
3-pole RM Class CC fuse holder to protect voltage inputs	4	5705 0003
2-pole RM Class CC fuse holder to protect power supply input	6	5701 0002
1A/5A secondary CT adapter with RJ12 output	1	4829 0599
6.5-ft USB Cable for configuration - Type A to Type Micro-B	1	4829 0050

RJ12 Solid-core current sensors ⁽¹⁾				
Model	Nominal current range (A)	Real range covered (A)	Window size (in/mm)	Reference
TE-18	5 ... 20	0.1 ... 24	Ø 0.33 / 8.6	4829 0500
TE-18	25 ... 63	0.5 ... 75	Ø 0.33 / 8.6	4829 0501
TE-25	40 ... 160	0.8 ... 192	0.53 x 0.53 / 13.5 x 13.5	4829 0502
TE-35	63 ... 250	1.26 ... 300	0.82 x 0.82 / 21 x 21	4829 0503
TE-45	160 ... 630	3.2 ... 756	1.22 x 1.22 / 31 x 31	4829 0504
TE-55	400 ... 1000	8 ... 1200	1.61 x 1.61 / 41 x 41	4829 0505
TE-90	600 ... 2000	12 ... 2400	2.52 x 2.52 / 64 x 64	4829 0506

(1) Refer to pages 348-351 for more information on TE current sensors

RJ12 Split-core current sensors ⁽²⁾				
Model	Nominal current range (A)	Real range covered (A)	Window size (in/mm)	Reference
TR-10 / iTR-10	25 ... 63	0.5 ... 75.6	Ø 0.39 / 10	4829 0555 / 4829 0655
TR-14 / iTR-14	40 ... 160	0.8 ... 192	Ø 0.55 / 14	4829 0556 / 4829 0656
TR-21 / iTR-21	63 ... 250	1.26 ... 300	Ø 0.83 / 21	4829 0557 / 4829 0657
TR-32 / iTR-32	160 ... 600	3.2 ... 720	Ø 1.26 / 32	4829 0558 / 4829 0658

(2) Refer to pages 352-353 for more information on TR/iTR current sensors

RJ12 Flexible Rogowski current sensors ⁽³⁾⁽⁴⁾				
Model	Nominal current range (A)	Real range covered (A)	Window size (in/mm)	Reference
TF-40	100 ... 400	2 ... 480	Ø 1.57 / 40	4829 0573
TF-80	150 ... 600	3 ... 720	Ø 3.15 / 80	4829 0574
TF-120	400 ... 2000	8 ... 2400	Ø 4.72 / 120	4829 0575
TF-200	600 ... 4000	12 ... 4800	Ø 7.87 / 200	4829 0576
TF-300	1600 ... 6000	32 ... 7200	Ø 11.81 / 300	4829 0577
TF-600	1600 ... 6000	32 ... 7200	Ø 23.62 / 600	4829 0578
Set of 3 RJ12 female/female connectors for RJ12 lead extension between power meter and TF sensor				4829 0670

(3) TF Rogowski sensors come with a 6-ft cable lead with RJ12 male connector

(4) Refer to pages 354-355 for more information on TF current sensors

RJ12 sensor lead cables	Cable length (ft / m)										
	0.32/0.1	0.64/0.2	0.96/0.3	1.64/0.5	3.3/1	6.5/2	9.84/3	16.4/5	22.9/7	32.8/10	164/50 reel + 100 connectors
Number of cables	Reference	Reference	Reference	Reference	Reference	Reference	Reference	Reference	Reference	Reference	Reference
1	-	-	-	-	-	-	-	4829 0602	-	4829 0603	4829 0601
3	4829 0580	4829 0581	4829 0582	4829 0595	4829 0583	4829 0584	4829 0606	4829 0607	4829 0608	4829 0609	-
4	-	-	-	4829 0596	4829 0588	4829 0589	-	-	-	-	-
6	4829 0590	4829 0591	4829 0592	4829 0597	4829 0593	4829 0594	-	-	-	-	-

Commissioning										Reference
1/2 day remote commissioning										9230100027
1/2 day on-site commissioning										923010004