7 Line voltage and load connections for RJ12 smart sensors models
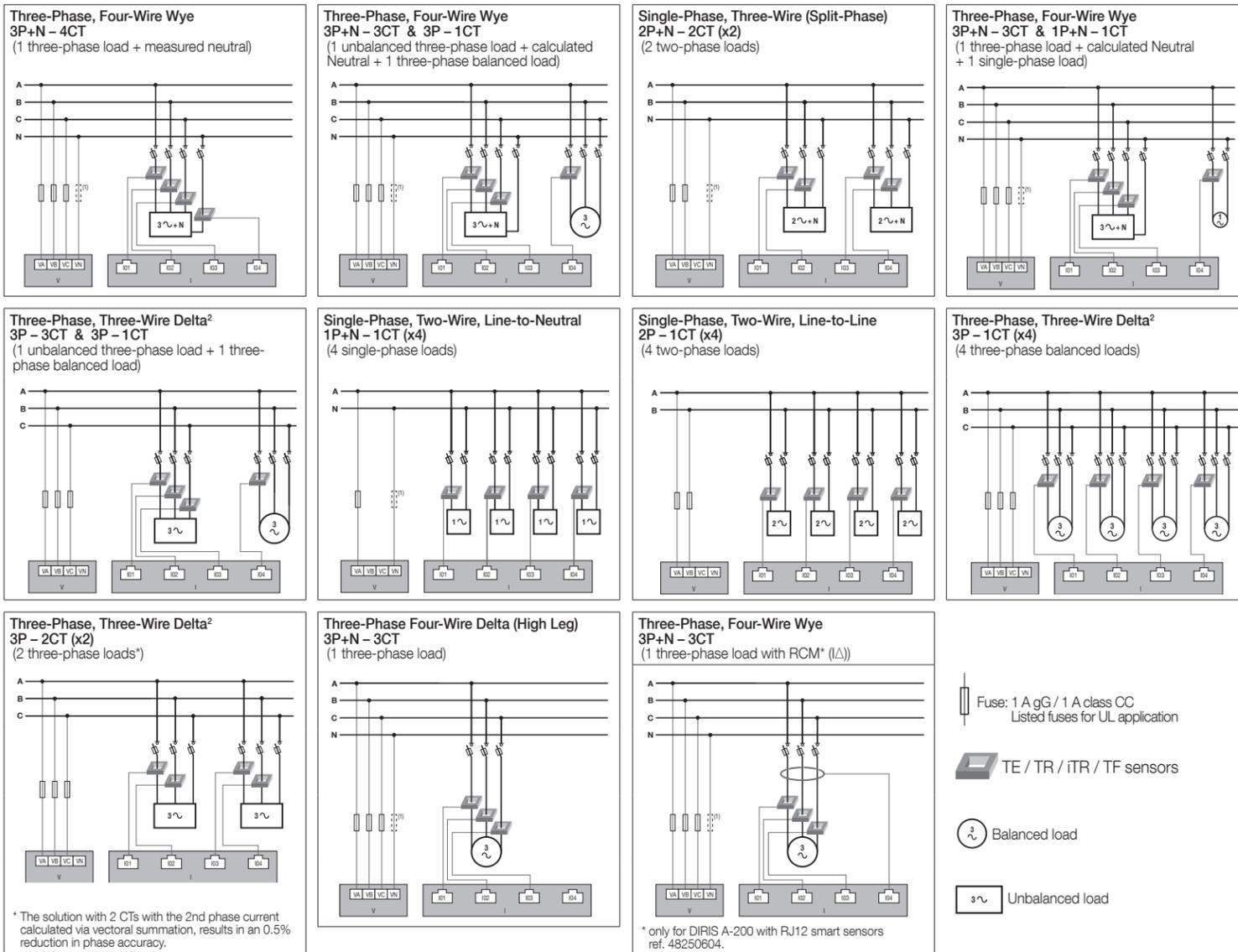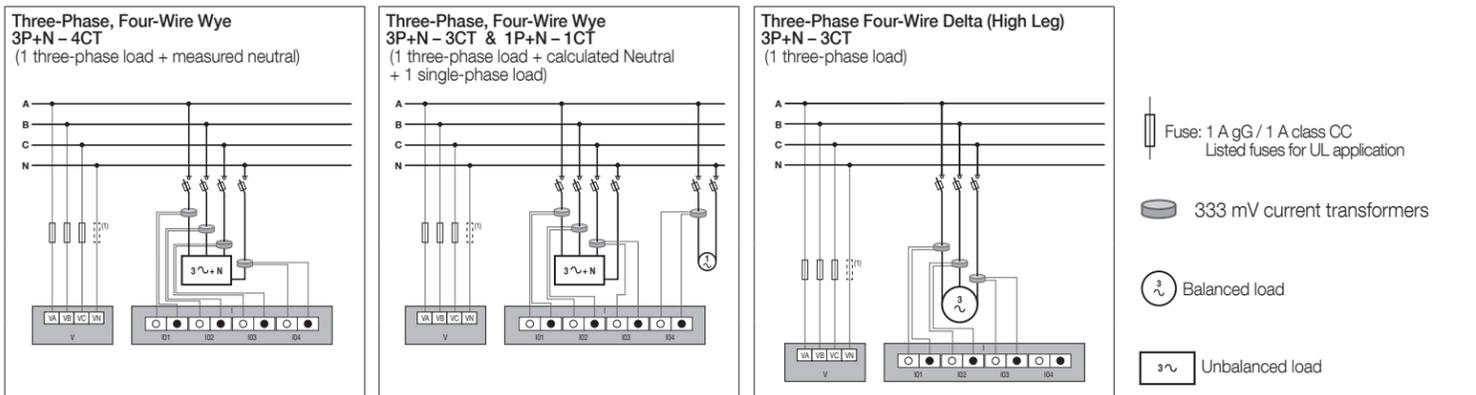
Each current input is independent: see below for some connection examples:

Three-Phase, Four-Wire Wye
3P+N – 4CT
(1 three-phase load + measured neutral)

Three-Phase, Four-Wire Wye
3P+N – 3CT & 3P – 1CT
(1 unbalanced three-phase load + calculated Neutral + 1 three-phase balanced load)

Single-Phase, Three-Wire (Split-Phase)
2P+N – 2CT (x2)
(2 two-phase loads)

Three-Phase, Four-Wire Wye
3P+N – 3CT & 1P+N – 1CT
(1 three-phase load + calculated Neutral + 1 single-phase load)

Three-Phase, Three-Wire Delta²
3P – 3CT & 3P – 1CT
(1 unbalanced three-phase load + 1 three-phase balanced load)

Single-Phase, Two-Wire, Line-to-Neutral
1P+N – 1CT (x4)
(4 single-phase loads)

Single-Phase, Two-Wire, Line-to-Line
2P – 1CT (x4)
(4 two-phase loads)

Three-Phase, Three-Wire Delta²
3P – 1CT (x4)
(4 three-phase balanced loads)

Three-Phase, Three-Wire Delta²
3P – 2CT (x2)
(2 three-phase loads*)

Three-Phase Four-Wire Delta (High Leg)
3P+N – 3CT
(1 three-phase load)

Three-Phase, Four-Wire Wye
3P+N – 3CT
(1 three-phase load with RCM* (IΔ))

Fuse: 1 A gG / 1 A class CC
Listed fuses for UL application

TE / TR / iTR / TF sensors

3~ Balanced load

3~ Unbalanced load

* The solution with 2 CTs with the 2nd phase current calculated via vectorial summation, results in an 0.5% reduction in phase accuracy.

* only for DIRIS A-200 with RJ12 smart sensors ref. 48250604.

(1) For connection to IT system earthing, adapt the insulation monitoring and/or earth fault protection in accordance with the installation requirements. IT systems 600V~ CAT III maximum.
(2) Delta systems 600V~ CAT III maximum

8 Line voltage and load connections for 333mV current transformers models

Each current input is independent: see below for some connection examples:

Three-Phase, Four-Wire Wye
3P+N – 4CT
(1 three-phase load + measured neutral)

Three-Phase, Four-Wire Wye
3P+N – 3CT & 1P+N – 1CT
(1 three-phase load + calculated Neutral + 1 single-phase load)

Three-Phase Four-Wire Delta (High Leg)
3P+N – 3CT
(1 three-phase load)

Fuse: 1 A gG / 1 A class CC
Listed fuses for UL application

333 mV current transformers

3~ Balanced load

3~ Unbalanced load

(1) For connection to IT system earthing, adapt the protection in accordance with the installation standards currently in force.
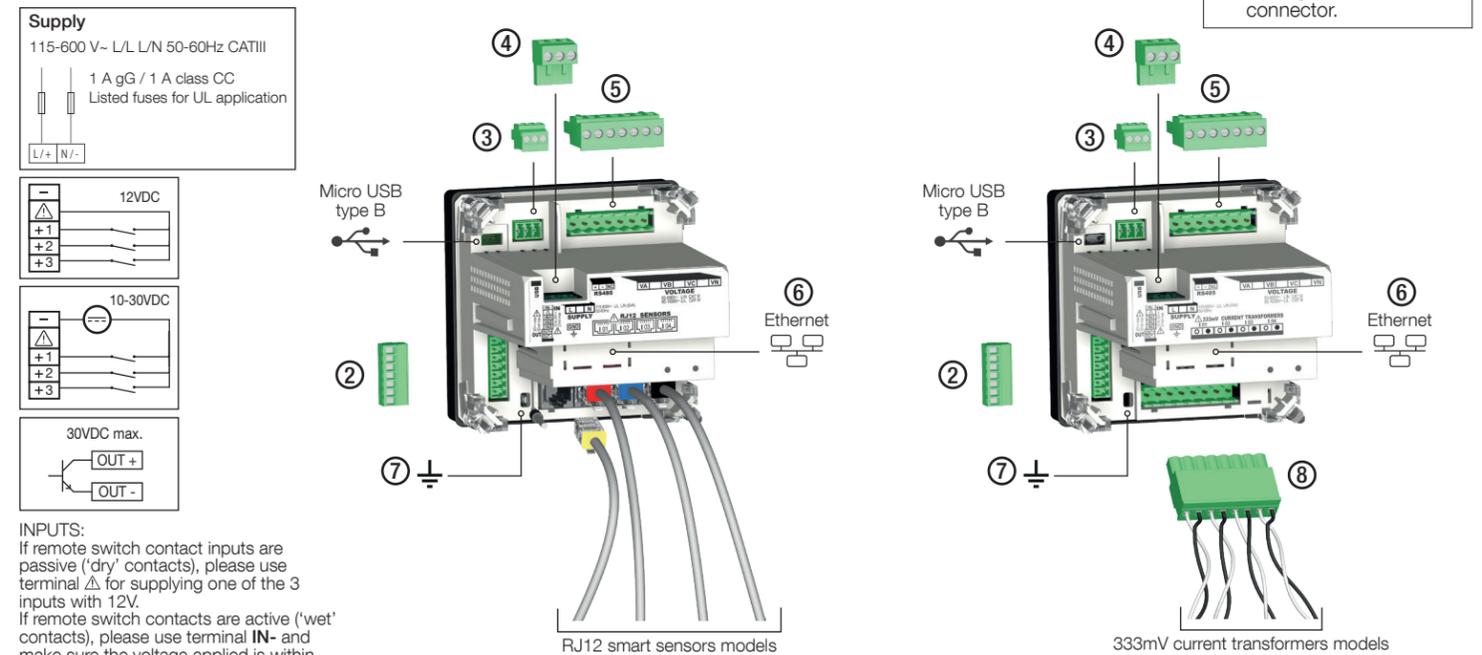
socomec
Innovative Power Solutions

552004F

Multi-function power and energy meter
DIRIS A-100 / A-200

Full user manual and documents available online

www.socomec.us

	Models			
	DIRIS A-100	DIRIS A-100	DIRIS A-200	DIRIS A-200
RJ12 smart current sensors	•		•	
333mV current transformers		•		•
RS485 Modbus RTU	•	•	•	•
Ethernet Modbus TCP			•	•
Webview software			•	•
Part No.	48250600	48250601	48250604	48250605

1 System wiring - Exploded view

⚠ Use SOCOMEC RJ-12 unshielded twisted pair (UTP) cables, stranded 24 AWG, 600V, -4 to +158°F (-20 to +70°C).

⚠ Do not put USB or RJ45 connectors in contact with hazardous voltage.

⚠ Do not connect RJ12 sensor cables into an RJ45 connector to avoid any risk of mechanical damage to this connector.

Supply
115-600 V~ L/L L/N 50-60Hz CATIII
1 A gG / 1 A class CC
Listed fuses for UL application
L/+   N/-

12VDC
– / +1 / +2 / +3

10-30VDC
– / +1 / +2 / +3

30VDC max.
OUT +
OUT -

Micro USB type B

Ethernet

RJ12 smart sensors models

333mV current transformers models

INPUTS:
If remote switch contact inputs are passive ('dry' contacts), please use terminal ⚠ for supplying one of the 3 inputs with 12V.
If remote switch contacts are active ('wet' contacts), please use terminal **IN-** and make sure the voltage applied is within the 10-30VDC range.

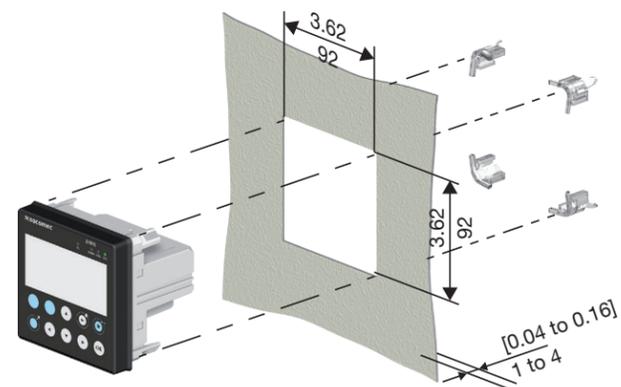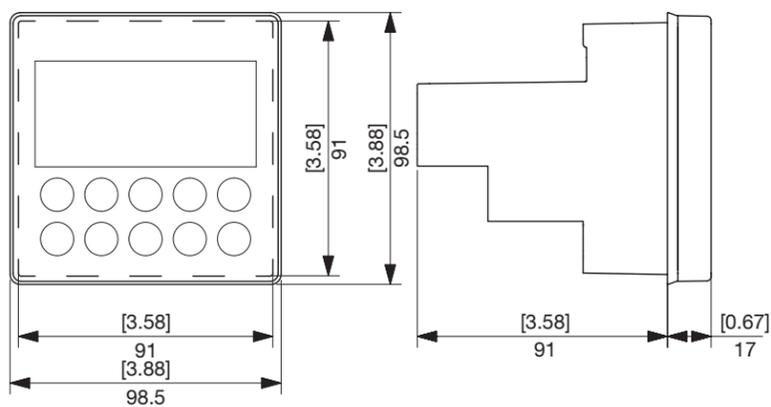**OUTPUT:** optocoupler, apply max 30VDC and 20 mA of current.

			Screw Torques
②	**3x INPUT** 10 to 30 VDC - 27 mA max. - SELV **1x OUTPUT** 30 VDC max - 20 mA max. - SELV	x = 6 - 7 mm 24~15 AWG 0,2 to 1,65 mm²	0.147 lbf·in (0.2 Nm)
③	**RS485 MODBUS RTU** SELV	x = 6 - 7 mm 24~15 AWG 0,2 to 1,65 mm²	0.147 lbf·in (0.2 Nm)
④	**SUPPLY** 115-600 V~ L/L L/N 50-60 Hz CAT III A-100: 5VA, A-200: 7VA	x = 7 mm 24~14 AWG 0,2 to 2 mm²	0.486 lbf·in (0.66 Nm)
⑤	**VA, VB, VC, and VN** 50-600 V~ L/N CAT III 90-690 V~ L/L CAT III	x = 7 mm 24~13 AWG 0,2 to 2,6 mm²	0.486 lbf·in (0.66 Nm)

			Screw Torques
⑥	**ETHERNET (A-200)** Modbus® TCP - BACnet® IP	-	-
⑦	**GROUND**	24~13 AWG 0,2 to 2,6 mm²	0.486 lbf·in (0.66 Nm)
⑧	**333 mV current transformers**	x = 7 mm 28~12 AWG 0,08 to 3,31 mm²	0.486 lbf·in (0.66 Nm)

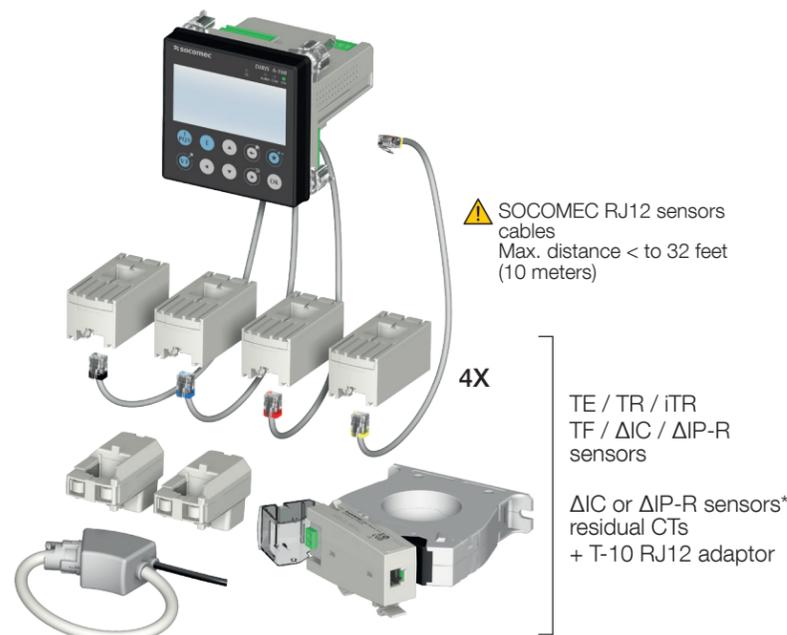SELV : Safety Extra Low Voltage

(*) Use Copper conductors only.

2 Dimensions [in]/mm and mounting

[3.58] 91
[3.88] 98.5

[3.58] 91
[0.67] 17

91 [3.58]
[3.88] 98.5

3.62 92
3.62 92
[0.04 to 0.16] 1 to 4

3 Sensors connection

RJ12 smart current sensors

⚠ SOCOMEC RJ12 sensors cables
Max. distance < to 32 feet (10 meters)

4X

TE / TR / iTR
TF / ΔIC / ΔIP-R sensors

ΔIC or ΔIP-R sensors* residual CTs
+ T-10 RJ12 adaptor

Current transformers with 0.333 Vac outputs

⚠ Max. distance < to 100 feet (30 meters)

4X

*ΔIC or ΔIP-R residual current monitoring sensors are only compatible with the DIRIS A-200 with RJ12 sensors, model 48250604; a maximum of 2 residual CT can be used per DIRIS A-200 ref. 48250604.

4 HMI

|	FIXED	BLINKING
ALARM MAINS (Red)	Ongoing alarm (measurement value, over / under range protection)	Ongoing system alarm (disconnected CT, V/I association, incorrect CT rating)
COM (Orange)	N/A	Device is communicating
ON (Green)	Product powered and operating normally	N/A
Pulse LED	Ongoing RCM alarm (if pulse set to RCM, in which case this LED doesn't display consumptions pulses anymore)	Energy consumed or produced pulses, pulse weight : 0.1 Wh (default, configurable)

5 Technical characteristics

Measurement characteristics	
Number of current inputs	4 current sensors or 3 current sensors + 1 residual current monitoring sensor
Current sensor inputs	RJ12 100mV smart sensors : solid-core TE, split-core TR and iTR, flexible TF current sensors, ΔIC circular solid-core and ΔIP-R circular split-core residual current transformers, T-10 adaptor. 333 mV current transformers : split-core ACTL-0750-xxx, ACTL-1250-xxx, solid-core TCL-B-xxx.
Electrical / Voltage	Line frequency : 45 to 65 Hz Voltage measurement : 50-600V~ L/N CAT III, 90-690V~ L/L CAT III, Delta and IT systems 600V~ CAT III maximum Power supply : 115-600VAC L/N L/L

Communication characteristics	
Ethernet dual-port 10/100 Base-T – SELV	Modbus TCP (port 502), Modbus RTU over TCP (port 503), BACnet IP (UDP port 47808)
RS485 2 to 3 half duplex wires – SELV	Modbus RTU 9600 to 115200 bauds
Micro USB Type B	Configuration via Easy Config System software and firmware upgrade via Product Upgrade Tool software

Environmental characteristics	
Storage temperature	-40 ... +85°C / -40 to +185°F (ANSI C12.1)
Operating temperature	-25 ... +70°C / -13 to +158°F (ANSI C12.1)
Humidity	5 to 95% RH non condensing (ANSI C12.1)
Operating altitude	Up to 3000 m (9842 ft)
Pollution degree	2
Protection index	Housing : NEMA 250 Type 1, Front side : NEMA 250 Type 3R*
Overvoltage category	CAT III

Mechanical characteristics	
Location	Indoor
Vibration	30 … 350 Hz, 0.5g (ANSI C12.1)
Shock	Half-sine pulse, 15 g, 11ms (ANSI C12.1)

Standards		
Measurement accuracy	ANSI C12.20	Class 0.2 for active energy, meter alone
	CEC Revenue grade	CEC Revenue grade (<2% accuracy), listed on California Energy Commission's solar equipment list
	IEC 61557-12	Class 0.2 for active energy, meter alone Global accuracy class of In (meter + sensors): - Class 0.5 , in case of use with TE, iTR, TF, ACTL-1250, TCL-B sensors - Class 1, in case of use with TR or ACTL-0750 sensors
	IEC 62053-22 -24	Class 0.1s active energy meter alone, class 1 reactive energy meter alone
Safety	UL 61010-1 & UL 61010-2-030 CAN/CSA-C22.2 No. 61010-1 & CSA C22.2 No. 61010-2-030 IEC 61010-1 & IEC 61010-2-030 + CB Scheme	
EMC	FCC Part 15, Class A (Radiated and Conducted Emissions) IEC 61326-1, Table 2 (for Industrial Electromagnetic Environment)	

* Front face only. The use of a silicone seal may be required to ensure sufficient sealing of the junction between DIRIS A-xxx display and the panel door.

6 Configuration with Easy Config System or display

USB connection between device and computer

USB

Easy Config System software

Diris A-100 / A-200
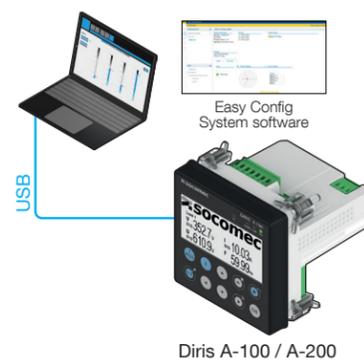
Ethernet connection, either direct or through a LAN connection

Ethernet

Easy Config System software

Diris A-100 / A-200

Display

Wizard starts automatically at first power on or by long press of the «V F» button

Wizard

Diris A-100 / A-200