

MEASURING METERS AND INTEGRATED SYSTEMS



GENERAL
CATALOGUE 2023

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MULTIFUNCTION METERS

NEMO

Available for flush mounting installation in 96x96mm or 72x72mm formats or in Din35 rail modules, the NEMO multifunction units are able to measure the major electrical parameters and, based on the model, increase versatility, accuracy and functions.

Through the various communication protocols it is possible to integrate the measurements with proprietary (Web server) or third-part supervision systems.





New first level range of multifunction

NEMO available in modular and flush-mounting version, NEW NEMO 96 HD+ with integrated harmonic measure and NEW Network analyser NEMO 96EA

Measures

Simultaneously all the parameters of the electrical network, such as voltages, currents, frequency, power factor, active, reactive and apparent power.

Analysis

The quality of the supply by computing the single harmonics of current and voltage.

Warning

Abnormal events by alarm relays activation, in field programmed.

Comply

With the technical characteristics of the installation thanks to its in field programming mode of the electrical network (single phase or three phase 3/4 wires) and of CT's and VT's ratios.

Transmit

To a remote controller the data and the configuration of the device, through RS232 or RS485 or by pulse outputs. It is compatible with ModBus RTU, Profibus, M-Bus, LonWorks, BACnet and Ethernet networks.

Counting

Active and reactive energy. Run hours.

Computing

Average and max current and average and max power.

Display

All the electrical parameters on a backlit LED screen, easily accessed by keyboard.

New EASYCONNECT multifunction units

The range of NEMO multifunction instruments is completed with the new **EASYCONNECT** solutions, available in 4 DIN modules or for 96x96 mm panel installation.

The new measurement units are fitted with ROGOWSKI measurement coils (closed and openable), which offer a fast and safe fault-proof connection.



DIN version with 63A and 125A closed Rogowski coils

DIN and door version

The measurement units are available in 2 versions:

BASIC:

Backlit display, built-in RS485 Modbus or Mbus communication, Class 1 (EN61557-12).

STANDARD:

Backlit graphic display, integrated RS485 Modbus or MBUS communication, 1 or 2 current sensor triad inputs, Class 1 (EN61557-12).

Measurements:

- Active and reactive energies, positive for each phase
- Total apparent energy
- Active and reactive energies, positive for tariff
- Voltage, current, frequency
- Active and reactive power, positive and negative
- Active and reactive energies (Positive and negative)
- Total and partial energy for tariff (Can be reset)
- Power factor
- Power curve
- Peak value of powers and currents for phases
- Harmonic analysis for voltages and currents up to the 15 (pursuant to EN61557-12).
- Voltage offset when compared with currents
- Hour meter

Closed coil dimensions

CODE	INPUT (A)	MINIMUM CURRENT (A)	MAX CURRENT (A)	CABLE LENGTH (m)	MIN HOLE DIAMETER (mm)	MAX HOLE DIAMETER (mm)
MK...63..	63	0.5	63	0.35	4.8	9.3
MK...125..	125	1	125	0.35	6.4	15.3



96x96 mm version with 63 A and 125 A closed Rogowski coils

INSTALLATION

flexibility

Units with closed coils

To ensure maximum flexibility and quick installation, the available control units are equipped with Rogowsky closed coils, which can easily be connected by means of a connector suitable for currents up to 125 A.



Units with open coils

For current from 630 to 6300A, there are control units with open type Rogowski coils that can easily be installed on copper or aluminium bars or cable bundles. This solution guarantees flexibility of installation in both new and existing systems.

GUIDE TO CHOOSING OPENABLE ROGOWSKI COILS

CODE	DIAMETER (mm)	MINIMUM CURRENT (A)	MAX CURRENT (A)
ROG630M2	50	12.5	750
ROG1600M2	100	32.5	1950
ROG3200M2	150	65	3900
ROG6300M2	240	125	7500



Open Rogowski Coils

Quick and easy WIRING



Quick connections

The connection of the current sensors to the flush-mounted and DIN module measurement units is guaranteed by a practical quick connector. This also avoids having to configure the transformation ratio, as the solution is available in a pre-configured kit.

Open coils

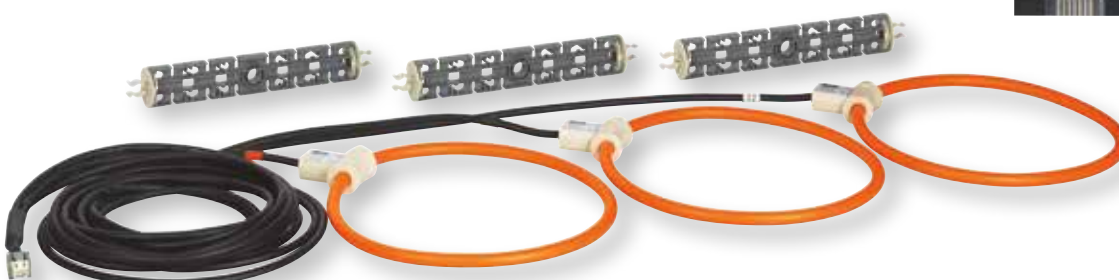
Installing open coils on busbars or cable bundles is extremely quick and easy.

A special spacer supplied with the coils allows the conductor being measured to be mounted in the centre of the sensor, therefore ensuring maximum precision at all times.



Connection flexibility

If the coils need to be connected at a distance greater than the standard cable length, extensions are also available, already fitted with quick connectors, that allow to reach a distance of 5 m.



CONNECTION

safety

Fault-proof connections

The connection between current sensors and measurement units is ensured by a pre-wired connector, which in addition to allowing quick connections, also avoids connection errors.

The system is extremely practical and functional, reducing installation times.



Safety and reliability

The **EASYCONNECT** connection system avoids the common connection error that affects the measurement. The pre-wired connector can only be connected in one direction, therefore ensuring high reliability. In case of connection in the wrong direction with respect to the load, the automatic measurement diagnostic built in the device allows to change the calculation logics without disconnecting the system.

As the sensor output is low voltage, it is not necessary to short the secondary before disconnecting the current sensor from the instrument.



WEBSERVER

For consumption control and management

The combination of the **Webservers** with the **NEMO** multifunction units, the **CONTO** meters and the **NEMO SX** system makes it possible to:

- analyse data and improve processes.
- determine the annual energy demand and define a distribution of consumptions,
- analyse long-term evolutions, to monitor performance,
- manage multi-site electrical installations remotely and/or locally, using smartphones, tablets, PCs, etc.

The **EASYCONNECT** measurement units are used to measure, record and transmit values such as active and reactive energy, power, voltages and currents, and are available with 2 communication protocols: MODBUS for data transmission to the Webserver with chart display, or for integration with third-party display software, and Mbus.

NEMO multifunction instruments



NEMO EASYCONNECT



CONTO energy meters



NEMO SX Ideal for multiple start systems



WEBSERVER

It allows remote configuration, testing, control and display, via a browser on different devices - PCs, smartphones, Web viewers -, of data collected by IME devices: Conto meters, NEMO multifunction unit, NEMO SX measurement system.

Pop-up alarms available with the Telegram App for Smartphones (configuration via the Web Server and only with NEMO SX).



Web server for 255 Modbus addresses or 255 pulse modules (item code SXWS255).



Web server (DIN version) for 10 (item code SXWS10) or 32 Modbus addresses or pulse modules (item code SXWS32).

Web server features:

- data display on smartphone or tablet PC
- billing functions
- multi-tariff function
- multilevel Webserver
- possibility of several currencies

Display and control devices



Smartphone



Tablet



Personal Computer



Easyconnect multifunction units

table of choiche

					
			No com	Basic	Standard
	Model		Din35 rail	Din35 rail	Din35 rail
	Line		LV	LV	LV
Characteristics	N° of current inputs		1 (closed)	1 (closed)	1 (open type)
	Current capacity (A)	Rated current (A)	63 125	63 125	630-1600-3200-6300
	Network connection	Three-phase with neutral	Yes	Yes	Yes
		Three-phase without neutral	Yes	Yes	Yes
	Rated values	Voltage (Vac)	400 (L-L)	400 (L-L)	230 (L-N) - 400 (L-L)
		Voltage range	340+460 V	340+460 V	195+460 V
		Reference current (A)	10 20	10 20	250-650-1300-2500
		Minimum current (A)	0,5 1	0,5 1	12,5-32,5-65-125
		Maximum current (A)			750-1950-3900-7500
	Rated frequency		50-60 Hz	50-60 Hz	50-60 Hz
	Frequency range		45+65 Hz	45+65 Hz	45+65 Hz
	Nominal temperature		-20+60 °C	-20+60 °C	-20+60 °C
	Storage temperature		-25+70° C	-25+70° C	-25+70° C
	Suitable for tropical climates		Si	Si	si
	Max.power dissipation		≤5 W	≤5 W	≤5 W
	Housing		4 modules	4 modules	4 modules
	Self-extinguishing material		polycarbonate	polycarbonate	polycarbonate
	Protection degree (terminals/front frame)		IP20/IP54	IP20/IP54	IP20/IP54
	Current input	Dedicated CT	Yes (LPCT)	Yes (LPCT)	Yes (Rogowski Open type)
		Insulated	Yes	Yes	Yes
Aux	Rated Voltage		230Vac	230Vac	Self-supplied (L1-N)
	Voltage range		195+264 V	195+264 V	
	Frequency		50-60 Hz	50-60 Hz	
	Self-consumption		<2,5 VA	<2,5 VA	
Display	Active energy	Accuracy EN/IEC 62053-21	Cl.1	Cl.1	Cl.1
		Positive and total	Yes	Yes	Yes
		Tariff	No	Yes	Yes
		Negative and total	Yes	Yes	Yes
	Reactive energy	Negative tariff	No	No	
		Accuracy EN/IEC 62053-23	Cl.2	Yes	Yes
		Positive and total	Yes	Yes	Yes
		Tariff	No	Yes	Yes
	Voltage	Negative and total	Yes	Yes	Yes
		Negative tariff	Yes	Yes	
		Accuracy EN/IEC 61557-12	Cl.0,5	Cl.0,5	Cl.0,5
		Phase (min, max, instantaneous)	Yes	Yes	Yes
	Current	Interlinked (instantaneous)	Yes	Yes	Yes
		Accuracy EN/IEC 61557-12	Cl.1	Cl.1	Cl.1
		Phase	Yes	Yes	Yes
		Neutral	Yes	Yes	Yes
	Power factor	Average-maximum average phase	Yes	Yes	Yes
		Accuracy EN/IEC 61557-12	Cl.1	Cl.1	Cl.1
		Three-phase	Yes	Yes	Yes
		Phase	Yes	Yes	Yes
	Power	Active (Accuracy EN/IEC 61557-12)	Cl.1	Cl.1	Cl.1
		Reactive (Accuracy EN/IEC 61557-12)	Cl.2	Cl.2	Cl.2
		Apparent	Cl.1	Cl.1	Cl.1
		Average and maximum average (for tariff)	No	Yes	Yes
	Harmonic distortion	Active e Reactive Phase	Yes	Yes	Yes
		Tariff	No	No	
		Thd Current / Voltage	Yes	Yes	Yes
		Analysis	No	No	Yes (15°)
	Frequency		+/-0,01 Hz	+/-0,01 Hz	+/-0,01 Hz
	Hour meter		Yes	Yes	Yes
	Diagnostic, phase sequence correction		Yes	Yes	Yes
	Type of display		LCD backlighted	LCD backlighted	LCD backlighted
	Digit height		7mm (5 num. energy)	7mm (5 num. energy)	2 inches
Output	Double tariff		No	Yes	No
	Multi-tariffa (4)		No	No	Yes
	M-bus		No	Yes	Yes
	Rs485 modbus RTU		No	Yes	Yes

Easyconnect multifunction units

table of choiche

					
	Model		Basic		Standard
	Line		Flush mounting 96x96mm		Flush mounting 96x96mm
			LV		LV
Characteristics	N° of current inputs		1 (closed)		1 (open type)
	Current capacity (A)	Rated current (A)	63	125	630-1600-3200-6300
	Network connection	Three-phase with neutral	Yes	Yes	Yes
		Three-phase without neutral	No	No	Yes
	Rated values	Voltage (Vac)	400 (L-L)	400 (L-L)	230 (L-N) - 400 (L-L)
		Voltage range	340+460 V		195+460 V
		Reference current (A)	10	20	250-650-1300-2500
		Minimum current (A)	0,5	1	12,5-32,5-65-125
		Maximum current (A)			750-1950-3900-7500
	Rated frequency		50-60 Hz		50-60 Hz
	Frequency range		45+65 Hz		45+65 Hz
	Nominal temperature		-20+60 °C		-20+60 °C
	Storage temperature		-25+70° C		-25+70° C
	Suitable for tropical climates		si		si
	Max.power dissipation		≤5 W		≤5 W
Display	Housing		Incasso 96x96mm (foro 92x92mm)		Incasso 96x96mm (foro 92x92mm)
	Self-extinguishing material		polycarbonate		polycarbonate
	Protection degree (terminals/front frame)		IP20/IP54		IP20/IP54
	Current input	Dedicated CT	Yes (LPCT)	Yes (LPCT)	Yes (Rogowski Open type)
		Insulated	Yes		Yes
Aux	Rated Voltage		Self-supplied (L1-N)		Self-supplied (L1-N)
	Voltage range				
	Frequency				
	Self-consumption				
Display	Active energy	Accuracy EN/IEC 62053-21	Cl.1		CL1
		Positive and total	Yes		Yes
		Tariff	Yes		Yes
		Negative and total	Yes		Yes
		Negative tariff	No		
	Reactive energy	Accuracy EN/IEC 62053-23	Yes		Yes
		Positive and total	Yes		Yes
		Tariff	Yes		Yes
		Negative and total	Yes		Yes
		Negative tariff	Yes		Yes
	Voltage	Accuracy EN/IEC 61557-12	Cl.0,5		Cl.0,5
		Phase (min, max, instantaneous)	Yes		Yes
		Interlinked (instantaneous)	Yes		Yes
	Current	Accuracy EN/IEC 61557-12	Cl.1		Cl1
		Phase	Yes		Yes
		Neutral	Yes		Yes
	Power factor	Average-maximum average phase	Yes		Yes
		Accuracy EN/IEC 61557-12	Cl.1		Cl.1
		Three-phase	Yes		Yes
	Power	Phase	Yes		Yes
		Active (Accuracy EN/IEC 61557-12)	Cl.1		Cl.1
		Reactive (Accuracy EN/IEC 61557-12)	Cl.2		Cl.2
		Apparent	Cl.1		Cl.1
		Average and maximum average (for tariff)	Yes		Yes
		Active e Reactive Phase	Yes		Yes
	Harmonic distortion	Tariff	No		
		Thd Current / Voltage	Yes		Yes
		Analysis	No		Yes (15°)
	Frequency		+/-0,01 Hz		+/-0,01 Hz
	Hour meter		Yes		Yes
	Diagnostic, phase sequence correction		Yes		Yes
	Type of display		LCD backlighted		
	Digit height		7mm (5 num. energy)		
Output	Double tariff		Yes		No
	Multi-tariffa (4)		No		Yes
	M-bus		Yes		Yes
	Rs485 modbus RTU		Yes		Yes

NEMO multifunction units

EASYCONNECT BASIC multifunction units for three-phase networks in AC Low Voltage



Multifunction bidirectional analyser for three or four wires three-phase systems. Thanks to the 63A and 125A mini current sensors being fitted with quick connectors, in addition to the display of the main values of an electrical network, the device also allows to reduce wiring times and the possibility of errors. Measurements completed by the device

- Phase and Interlinked voltage
- Minimum and maximum voltage
- THD voltages
- Phase current
- Neutral current
- Average phase current
- Average phase current peak
- Average of the 3 currents
- THD currents
- Active, reactive, apparent three phase power
- Three phase distortion power
- Average active, reactive, apparent power
- Average active, reactive, apparent power peak
- Active energy, positive and negative
- Reactive energy, positive and negative
- Power factor
- Frequency
- Voltage or power presence start hour meter
- Positive active energy tariff hour meters

Outputs

RS485 COMMUNICATION	
Protocol	MODBUS RTU/TCP
Standard	RS485-3-wires
Impedance	120 Ohm (connection programmable from menu)
Transmission speed	Selectionable 4800+38400 bit/s
M-BUS COMMUNICATION	
Protocol	M-BUS
Standard	EN13757
Transmission speed	Selectionable 300+9600 bit/s
Inputs	
Type	Potential-free contact
Contact output	12-24 Vdc-10 mA
Management	Double tariff T1-T2

Item	EASYCONNECT BASIC				
	Input (A)	N° of inputs A	Input (V)	Auxiliary power supply	Communication output
MKD4R63FC001	3x63A	1	400V (L-L)	230Vac	-
MKD4R125FC001	3x125A	1	400V (L-L)	230Vac	-
MKD4R63DT	3x63A	1	400V (L-L)	230Vac	Modbus
MKD4R63MT	3x63A	1	400V (L-L)	230Vac	M-bus
MKD4R125DT	3x125A	1	400V (L-L)	230Vac	Modbus
MKD4R125MT	3x125A	1	400V (L-L)	230Vac	M-bus

Features of the Rogowski min-coils supplied						
	Input (A)	Minimum current (A)	Maximum current (A)	Cable length (m)	Min hole dia- meter (mm)	Max hole dia- meter (mm)
MK÷63÷	63	0,5	63	0,35	4,8	9,3
MK÷125÷	125	1	125	0,35	6,4	15,3

Item	Universal EASYCONNECT BASIC				
	Input (A)	N° of inputs A	Input (V)	Auxiliary power supply	Communication output
MFD4ORFCDT1	3x630/1600/ 3200/6300A *	1	400V (L-L)	230Vac	Modbus
MFD4ORFCMT1	3x630/1600/ 3200/6300A *	1	400V (L-L)	230Vac	M-bus

* openable Rogowski coils to be ordered separately

Rogowski open type coils					
	Input (A)	Minimum current (A)	Current max (A)	Cable length (m)	Diameter (mm)
ROG630M2	630	12.5	750	2	50
ROG1600M2	1600	32.5	1950	2	100
ROG3200M2	3200	65	3900	2	150
ROG6300M2	6300	125	7500	2	240

Extension cable codes

ROGEXTM1	Length 1 m
ROGEXTM3	Length 3 m

NEMO multifunction units

EASYCONNECT BASIC multifunction units with 1 or 2 current inputs for three-phase networks in AC Low Voltage



Multifunction bidirectional analyser for three or four wires three-phase systems. Thanks to the 63A and 125A mini current sensors being fitted with quick connectors, in addition to the display of the main values of an electrical network, the device also allows to reduce wiring times and the possibility of errors. Measurements completed by the device

- Phase and Interlinked voltage
- Minimum and maximum voltage
- THD voltages
- Phase current
- Neutral current
- Average phase current
- Average phase current peak
- Average of the 3 currents
- THD currents
- Active, reactive, apparent three phase power
- Three phase distortion power
- Average active, reactive, apparent power
- Average active, reactive, apparent power peak
- Active energy, positive and negative
- Reactive energy, positive and negative
- Power factor
- Frequency
- Voltage or power presence start hour meter
- Positive active energy tariff hour meters

Outputs

RS485 COMMUNICATION	
Protocol	MODBUS RTU/TCP
Standard	RS485-3-wires
Impedence	120 Ohm (connection programmable from menu)
Transmission speed	Selectable 4800+38400 bit/s
M-BUS COMMUNICATION	
Protocol	M-BUS
Standard	EN13757
Transmission speed	Selectable 300+9600 bit/s
Inputs	
Double tariff T1-T2	Potential-free contact
Contact output	12-24 Vdc-10 mA
Management	Double tariff T1-T2

Item	EASYCONNECT BASIC				
	Input (A)	N° of inputs A	Input (V)	Auxiliary power supply	Communication output
MK96R63DT	3x63A	1	400V (L-L)	Self-supplied	Modbus
MK96R63MT	3x63A	1	400V (L-L)	Self-supplied	M-bus
MK96R125DT	3x125A	1	400V (L-L)	Self-supplied	Modbus
MK96R125MT	3x125A	1	400V (L-L)	Self-supplied	M-bus

Features of the Rogowski min-coils supplied

	Input (A)	Minimum current (A)	Maximum current (A)	Cable length (m)	Min hole diameter (mm)	Max hole diameter (mm)
MK÷63÷	63	0,5	63	0,35	4,8	9,3
MK÷125÷	125	1	125	0,35	6,4	15,3

Item	Universal EASYCONNECT BASIC				
	Input (A)	N° of inputs A	Input (V)	Auxiliary power supply	Communication output
MF96ORFCDT1	3x630/1600/3200/6300A *	1	400V (L-L)	Self-supplied	Modbus
MF96ORFCMT1	3x630/1600/3200/6300A *	1	400V (L-L)	Self-supplied	M-bus

* openable Rogowski coils to be ordered separately

Rogowski open type coils					
	Input (A)	Minimum current (A)	Current max (A)	Cable length (m)	Diameter (mm)
ROG630M2	630	12.5	750	2	50
ROG1600M2	1600	32.5	1950	2	100
ROG3200M2	3200	65	3900	2	150
ROG6300M2	6300	125	7500	2	240
Extension cable codes					
ROGEXTM1	Length 1 m				
ROGEXTM3	Length 3 m				

NEMO multifunction units

EASYCONNECT STANDARD multifunction units with 1 or 2 current inputs for three-phase networks in AC Low Voltage



Multifunction bidirectional analyser for three and four wires systems. Thanks to the 630A to 6300A openable current sensors being fitted with quick connectors, in addition to the display of the main values of an electrical network, the device also allows to reduce wiring times and the possibility of errors. Measurements completed by the device

- Phase and Interlinked voltage
- Minimum and maximum voltage
- THD voltages
- Phase current
- Neutral current
- Average phase current
- Average phase current peak
- Average of the 3 currents
- THD currents
- Active, reactive, apparent three phase power
- Three phase distortion power
- Average active, reactive, apparent power
- Average active, reactive, apparent power peak
- Active energy, positive and negative
- Reactive energy, positive and negative
- Power factor
- Frequency
- Voltage or power presence start hour meter
- Positive active energy tariff hour meters
- Pf Min
- Power average load curve

Item	EASYCONNECT standard universali				
	Input (A)	N° of inputs A	Input (V)	Auxiliary power supply	Communication output
MFD41ORFCDT	3x630/1600/3200/6300A *	1	400V (L-L)	Self-supplied	Modbus
MFD41ORFCMT	3x630/1600/3200/6300A *	1	400V (L-L)	Self-supplied	M-bus
MFD42ORFCDT	3x630/1600/3200/6300A *	2	400V (L-L)	Self-supplied	Modbus
MFD42ORFCMT	3x630/1600/3200/6300A *	2	400V (L-L)	Self-supplied	M-bus

* openable Rogowski coils to be ordered separately

Item	EASYCONNECT standard universali				
	Input (A)	N° of inputs A	Input (V)	Auxiliary power supply	Communication output
MF961ORFCDT	3x630/1600/3200/6300A *	1	400V (L-L)	Self-supplied	Modbus
MF961ORFCMT	3x630/1600/3200/6300A *	1	400V (L-L)	Self-supplied	M-bus
MF962ORFCDT	3x630/1600/3200/6300A *	2	400V (L-L)	Self-supplied	Modbus
MF962ORFCMT	3x630/1600/3200/6300A *	2	400V (L-L)	Self-supplied	M-bus

* openable Rogowski coils to be ordered separately

Rogowski open type coils					
	Input (A)	Minimum current (A)	Current max (A)	Cable length (m)	Diameter (mm)
ROG630M2	630	12.5	750	2	50
ROG1600M2	1600	32.5	1950	2	100
ROG3200M2	3200	65	3900	2	150
ROG6300M2	6300	125	7500	2	240

Extension cable codes

ROGEXTM1 Length 1 m
ROGEXTM3 Length 3 m

NEMO multifunction units

table of choice for multifunction units in Din35 modules

						
Model			NEMO D4-e	NEMO D4 Le	NEMO D4 L+	NEMO D4 Dc
Line			LV	LV	LV/MT	DC
Input	Connection	Single-phase	Yes	Yes	Yes	
		Three-phase balanced/not-balanced load	Yes	Yes	Yes	
	Diagnostic, phase sequence correction		Yes	Yes		
	Rated values	Voltage Single-phase	50÷290V	50÷290V	45÷278V	20÷150Vdc
		Voltage Three-phase	80÷500V	80÷500V	80÷480V	10÷300Vdc
		Current	5A	1 - 5A (20÷1000A, 60÷3000A, 100÷5000A from Rogowski coils)	1 - 5A	10A shunt 60-100-150mV
	Continuous overload		1,2In	1,2In	1,2In	
	Instantaneous overload		20Imax/0,5s	20Imax/0,5s	20Imax/0,5s	10In/0,5s
	Impedance Input	MF6DC4200H - MF6DC42006				> 300kΩ
		MF6DC4206H - MF6DC42066				> 3 MΩ
	Voltage drop					≤ 100mV (In10A)
	Rated frequency		50-60Hz	50-400Hz	50Hz	
	Frequency variation		45÷65Hz	45÷65Hz (fn 50Hz) – 360÷440Hz (fn 400Hz)	47÷63Hz	
	Harmonic content			up to 50a harmonic	up to 31a harmonic	
	Self-consumption Voltage		≤ 0,2VA	≤ 0,2VA	≤ 1VA	≤ 2W
	Self-consumption Current		≤ 1VA	≤ 1VA	≤ 0,5VA	≤ 5VA – 3W
	Max.power dissipation*		≤5W	≤5W	≤6,8W	≤ 4W
	Current input	CT	TA	TA	Insulated	
		Insulated	1÷10	1÷10	1÷400	0÷10A
		Current	max 50kA/5A		max 50kA/5A - 10kA/1A	
		Isn	1÷9'999	1÷9'999	1÷9'999	
		VT	Primary voltage	1200V	40kV	
		Max. kVT x kTA	99'990	99'990	100.000(5A) - 400.000(1A)	
	Shunt					1÷9999
Display	Active energy	Accuracy EN/IEC 61557-12	cl.1	cl.0,5	cl.1	
		Accuracy energy DC				cl.1
		Positive, total and partial	Yes	Yes	Yes	Yes
	Reactive energy	Negative, total	Yes	Yes		Yes
		Accuracy EN/IEC 61557-12	cl.1	cl.1	cl.2	
		Positive, total	Yes	Yes	Yes	
	Voltage	Positive, parziale	Yes	Yes		
		Negative, total	Yes	Yes		
		Phase and interlinked	cl. 0,5	Yes	Yes	
	Current	Phase and Neutral	cl.1	Yes	Yes	
		Neutral (measured)	Yes			
		Average-maximum average phase	Yes	Yes	Yes	
	Power factor	Ah positive and negative				Yes
		Three-phase	Yes	Yes	Yes	
		Phase	Yes	Yes		
	Power	Active, Reactive, Apparent	cl.1	Yes	Yes	
		Average and maximum average	Yes	Yes	Yes	Yes
		Active e Reactive Phase	Yes	Yes	Yes	
	Harmonic distortion	Thd Current / Voltage	cl. 2	Yes	Yes	
		Analysis		Yes		
	Frequency		± 0,1 Hz	Yes	Yes	
Characteristics	DC current measure ³					Yes
	Hour meter		Yes	Yes	Yes	Yes
	Error in the phase sequence		Yes	Yes	Yes	
	Display LCD backlighted		Yes	Yes	Yes	Yes
	Digit height		7mm (5mm num. energy)	7mm (5mm num. energy)	6mm	6mm
	Resolution		ratio of CT**	ratio of CT/VT**	ratio of CT/VT**	
	Housing in polycarbonate		4 modules	4 modules	4 modules	4 modules
	Protection degree (terminals/front frame)		IP20/IP54	IP20/IP54	IP20/IP54	IP20/IP52
	Type of connection		Screw terminals	Screw terminals	Screw terminals	Screw terminals
	Rigid/flexible cable (OUT/IN)		4-6mm ² - 2,5-4mm ²	4-6mm ² - 2,5-4mm ²	4-6mm ² - 2,5-4mm ²	4-6mm ² - 2,5-4mm ²
Aux	Suitable for tropical climates		si	si	si	si
	Nominal temperature		-5÷55°C	-5÷55°C	-5÷55°C	-5÷55°C
	Storage temperature		-25÷70°C	-25÷70°C	-25÷70°C	-25÷70°C
	Rated Voltage (Uaux)		230Vac	80÷265Vac - 48Vac 100÷300Vdc - 20÷60Vdc	48 – 115 - 230V 0,85÷1,15Uaux - 40÷60V	48 - 230V 0,85÷1,15Uaux - 40÷60V
	Rated frequency		50Hz	50-400Hz	50Hz	50Hz
Outputs	Operational frequency		45÷65Hz	45÷65Hz (fn 50Hz) – 360÷440Hz (fn 400Hz)	47÷63Hz	47÷63Hz
	Self-consumption		≤ 2,5VA	≤ 2,5W/VA	≤ 5VA – 2,5W	≤ 5VA – 2,5W
	Pulses		Yes	Yes	Yes	Yes
Com	Alarm relay					Yes
	Alarm relay + Digital inputs			Yes		
	RS485 Modbus RTU		Yes	Yes	Yes	Yes
Com	Bacnet			Yes	Yes	
	Ethernet		Yes ¹	Yes ¹	Yes ¹	Yes ¹

¹ RS485 version + external interface (IF2E or IF4E) ³ Voltage, Current, Power, Ah positive and negative

NEMO multifunction units

Modular solutions for DC networks



NEMO D4-L+: Connection via CT for single and three-phase network, 3 or 4-wires. Phase sequence correction, diagnostic It makes available active or reactive energy counting of the pulse output to integration of consumption supervision systems. For supervision systems, through the model with output RS485 communication ModbusRTU, you can transmitted on the network main electrical parameters in addition to the energy consumption.

NEMO D4-Dc: Direct voltage input by external adapter up to 1500V Direct Current input or from shunt (selectable)

- Direct input up to 10A direct current

- Input from shunt 60 – 100 – 150mV

It makes available active or reactive energy counting of the pulse output to integration of consumption supervision systems. For supervision systems, through the model with output RS485 communication ModbusRTU, you can transmitted on the network main electrical parameters in addition to the energy consumption.

Item	NEMO D4-L+			
	Input (A)	Input* (V)	Auxiliary power supply	Outputs
MF6HT40003	1 + 5	80÷480	115 Vac	Pulses + RS485 ModBus RTU/TCP
MF6HT40006	1 + 5	80÷480	230Vac	Pulses + RS485 ModBus RTU/TCP
MF6HT4000H	1 + 5	80÷480	20÷150 Vdc + 48 Vac	Pulses + RS485 ModBus RTU/TCP
MF6HTU0003	1 + 5	80÷480	115 Vac	Pulses
MF6HTU0006	1 + 5	80÷480	230Vac	Pulses
MF6HTU000H	1 + 5	80÷480	20÷150 Vdc + 48 Vac	Pulses

* Input Three-phase 80÷480V, Input Single-phase 45÷278V

NEMO D4-Dc				
Functions • Voltage • Current • Power • Average power • Peak average power • Positive Energy • Negative Energy • Positive and negative Ah • Run hour meter, count start with voltage present				
	Input (A)	Input* (V)	Auxiliary power supply	Outputs
MF6DC4200H	note 1	10÷.300V	20÷150 Vdc + 48 Vac	Pulses + 2 alarms + RS485 ModBus RTU
MF6DC42006	note 1	10÷.300V	230Vac	Pulses + 2 alarms + RS485 ModBus RTU
MF6DC4206H	note 1	50÷.1500V*	20÷150 Vdc + 48 Vac	2 alarms + RS485 ModBus RTU
MF6DC42066	note 1	50÷.1500V*	230Vac	2 alarms + RS485 ModBus RTU
MF6DC42M66	note 2	50-1500V	230Vac	2 alarms + RS485 Modbus RTU (4-20mA)

* with adaptor AVMD150 2 modules

Note 1 direct input up to 10A Input with voltage drop derivator 60 – 100 – 150mV

Note 2 input 4-20mA

NEMO multifunction units

Modular solutions for AC networks



Connection via CT for single and three-phase network, 3 or 4-wires. Phase sequence correction, diagnostic It makes available active or reactive energy counting of the pulse output to integration of consumption supervision systems. For supervision systems, through the model with output RS485 communication ModbusRTU, you can transmitted on the network main electrical parameters in addition to the energy consumption. 2 active digital inputs for tariff counting (4 registers) or external pulse counting.

Item	NEMO D4-e		
	Input (A)	Input* (V)	Auxiliary power supply
MFD45A00	5	80÷500	230Vac

* Input three-phase 80÷500V, input single-phase 50÷290V

* For the thermal calculation for switchboards

NEMO D4-Le				
	Input (A)	Input* (V)	Auxiliary power supply	Outputs
MFD4411	1 + 5	80÷500	80÷265Vac 100÷300Vdc	Pulses or alarm
MFD4421	1 + 5	80÷500	80÷265Vac 100÷300Vdc	Pulses or alarm + RS485 ModBus RTU/TCP
MFD44B1	1 + 5	80÷500	80÷265Vac 100÷300Vdc	Pulses or alarm + RS485 BACnet
MFD4412	1 + 5	80÷500	20÷60 Vdc	Pulses or alarm
MFD4422	1 + 5	80÷500	20÷60 Vdc	Pulses or alarm + RS485 ModBus RTU/TCP
MFD44B2	1 + 5	80÷500	20÷60 Vdc	Output Pulses or alarm + RS485 BACnet
MFD4421/F1500	1 + 5	80÷500 (P-P)	80÷265Vac	Pulses or alarm + RS485 100÷300Vdc ModBus RTU/TCP
MFD4421/F1501	1 + 5	80÷500 (P-N)	80÷265Vac	Pulses or alarm + RS485 100÷300Vdc ModBus RTU/TCP
MFD4422/F1500	1 + 5	80÷500	20÷60Vdc	Pulses or alarm + RS485 ModBus RTU/TCP

** kTA*kVT	Maximum display
1÷.9	999999,99kWh/kvarh
10÷.99	9999999,9kWh/kvarh
100÷.999	99999999kWh/kvarh
1000÷.9999	999999,99MWh/Mvarh
10000÷.99999	9999999,9MWh/Mvarh

Outputs

PULSES ENERGY S0 EN/IEC 62053-31	
Type	Optorelay with potential-free
Contact output	27 Vac/dc-50mA
Assignable energy	Active or reactive energy
Pulse weight	Selectionable 10Wh/varh÷10MWh/Mvarh
Pulse duration	Selectionable from 50 to 500ms
ALARMS	
Type	Optorelay with potential-free
Contact output	27 Vac/dc-50mA
Type alarm	min or max
RS485 COMMUNICATION	
Protocol	MODBUS RTU/TCP
Standard	RS485-3-wires
Transmission speed	Selectionable 4800÷38400 bit/s
BACNET RS485 COMMUNICATION	
Protocol	BACNET MS-TP
Standard	RS485-3-wires
Transmission speed	Selectionable 9600÷76800 bit/s

NEMO multifunction units

table of choiche for multifunction units in flush mounting version

									
Model			NEMO 72-b	NEMO 72 Le	NEMO 96HDe	NEMO 96HDLe	NEMO 96HD	NEMO 96HD+	NEMO 96 EA
Line			LV	LV	LV	LV	LV	LV/MT/AT	LV/MT/AT
Input	Connection	Single-phase	Yes	Yes	Yes	Yes	Yes	Yes	Yes
		Three-phase balanced load		Yes		Yes	Yes	Yes	Yes
		Three-phase balance/not-balanced load	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	Diagnostic, phase sequence correction			Yes	Yes	Yes	Yes	Yes	Yes
	Rated values	Voltage Single-phase	195÷260	50÷290V	50÷290V	50÷290V	50÷290V	50÷400V	50÷400V
		Voltage Three-phase	340÷450V	80÷500V	80÷500V	80÷500V	80÷500V	80÷690V	80÷690V
		Current	1 - 5A	1 - 5A	5A	1 - 5A	5A	1 - 5A	1 - 5A
	Continuous overload		1,2In	1,2In	1,2In	1,2In	1,2In	1,2In	1,2In
	Instantaneous overload		20Imax/0,5s	20Imax/0,5s	20Imax/0,5s	20Imax/0,5s	20Imax/0,5s	20Imax/0,5s	20Imax/0,5s
	Rated frequency		50Hz	50Hz - 400Hz	50Hz	50Hz - 400Hz	50Hz	50Hz	50Hz
	Frequency variation		47÷63Hz	45÷65Hz 360÷440Hz	45÷65Hz	45÷65Hz 360÷440Hz	45÷63Hz	45÷63Hz	45÷63Hz
	Harmonic content		21a harmonic	50a harmonic		50a harmonic			
	Self-consumption Voltage		≤0,5VA	≤0,2VA	≤0,2VA	≤0,1VA	≤0,1VA	≤0,1VA	≤0,1VA
	Self-consumption Current		≤0,5VA	≤1VA (per fase)	≤0,4VA	≤1VA (per fase)	≤1VA (per fase)	≤0,2VA (per fase)	≤0,2VA (per fase)
	Max.power dissipation*		≤6,8W	≤5W	≤5W	≤5W	≤5W	≤5W	≤5W
Current	Input		Yes	Yes	Yes	Yes	Yes		
	CT	Insulated						Yes	Yes
		Portate	5÷8000A	50kA/5A - 10kA/1A	50kA/5A - 10kA/1A	50kA/5A - 10kA/1A	50kA/5A - 10kA/1A	50kA/5A - 10kA/1A	50kA/5A - 10kA/1A
		Isn		1÷9'999	1÷9'999	1÷9'999	1÷9999	1÷9999	1÷9999
	VT Primary voltage			1200V			1200V	150kV	
	Max. kVT x kTA			99'990		99'990	99'990	2.000.000 (5A) 10.000.000 (1A)	2.000.000 (5A) 10.000.000 (1A)
Display	Active energy	Accuracy EN/IEC 61557-12		cl.0,5	cl.1	cl.0,5	cl.0,5	cl.0,5	cl.0,5
		Positive, total and partial		Yes	Yes	Yes	Yes	Yes	Yes
		Negative, total		Yes	Yes	Yes	Yes	Yes	Yes
	Reactive energy	Accuracy EN/IEC 61557-12		cl.1	cl.1	cl.1	cl.1	cl.1	cl.1
		Positive, total		Yes	Yes	Yes	Yes	Yes	Yes
		Positive, parziale		Yes	Yes	Yes	Yes	Yes	Yes
		Negative, total		Yes	Yes	Yes	Yes	Yes	Yes
	Voltage	Phase and interlinked	Yes	Yes	Yes	Yes	Yes	Yes	Yes
		Phase e Neutral	Yes	Yes	Yes	Yes	Yes	Yes	Yes
		Neutral (measured)					IF96006	IF96006	IF96006
	Current	Average-maximum average phase	Yes	Yes	Yes	Yes	Yes	Yes	Yes
		Three-phase	Yes	Yes	Yes	Yes	Yes	Yes	Yes
		Phase		Yes	Yes	Yes	Yes	Yes	Yes
	Power factor	Active, Reactive, Apparent	Yes	Yes	Yes	Yes	Yes	Yes	Yes
		Media e media maximum	Yes	Yes	Yes	Yes	Yes	Yes	Yes
		Active e Reactive Phase	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	Power	Thd Current / Voltage		Yes	Yes	Yes	Yes	Yes	Yes
		Analysis		Yes	Yes	Yes	Yes	Yes	Yes
		Harmonic distortion		Yes	Yes	Yes	Yes	Yes	Yes
	Frequency		Yes	Yes	Yes	Yes	Yes	Yes	Yes
	Hour meter			Yes	Yes	Yes	Yes	Yes	Yes
	Error in the phase sequence			Yes (RS485)	Yes	Yes	Yes	Yes	Yes
	Display LCD backlighted		Yes	Yes	Yes	Yes	Yes	Yes	Yes
	Digit height		6mm	6mm	6/9mm	8/12mm	8/12mm	8/12mm	8/12mm
	Ratio resolution of CT/VT**			Yes	Yes	Yes	Yes	Yes	Yes
Characteristics	Housing		72x72x81mm	72x72x81mm	96x96x62mm	96x96x62mm	96x96x62mm	96x96x62mm	96x96x62mm
	Flush mounting panel cutout		68x68mm	68x68mm	92x92mm	92x92mm	92x92mm	92x92mm	92x92mm
	Self-extinguishing material		polycarbonate	polycarbonate	polycarbonate	polycarbonate	polycarbonate	polycarbonate	polycarbonate
	Protection degree (terminals/front frame)		IP20/IP54	IP20/IP54	IP20/IP54	IP20/IP54	IP20/IP54	IP20/IP54	IP20/IP54
	Type of connection		Screw terminals	Screw terminals	Screw terminals	Screw terminals	Screw terminals	Screw terminals	Screw terminals
	Rigid/flexible cable (OUT/IN)		4mm ² - 2,5mm ²	4-6mm ² - 2,5-4mm ²	4,5mm ² - 2,5mm ²	4,5mm ² - 2,5mm ²	4,5mm ² - 2,5mm ²	4,5mm ² - 2,5mm ²	4,5mm ² - 2,5mm ²
	Suitable for tropical climates		si	si	si	si	si	si	si
	Nominal temperature		-5÷55°C	-5÷55°C	-5÷55°C	-5÷55°C	-5÷55°C	-5÷55°C	-5÷55°C
	Storage temperature		-25÷70°C	-25÷70°C	-25÷70°C	-25÷70°C	-25÷70°C	-25÷70°C	-25÷70°C
Aux	Rated Voltage (Uaux)		Self-supplied	80÷265Vac - 48Vac 100÷300Vdc - 20÷60Vdc	Self-supplied	80÷265Vac	80÷265Vac 100÷300Vdc - 60Vdc	80÷265Vac 100÷300Vdc - 60Vdc	80÷265Vac
	Rated frequency			50Hz - 400Hz		50Hz - 400Hz	50Hz	50Hz	50Hz
	Self-consumption		≤ 2VA - ≤ 2,5VA (with alarms)	≤ 2,5VA/W	≤ 2,5VA/W	≤ ,5VA/W	≤ 2,5VA (3,5W without modules)	≤ 2,5VA (3,5W without modules)	≤ 2,5VA (3,5W without modules)
Outputs	Pulses			Yes	Yes	Yes	IF96003	IF96003	IF96003
	Alarm relay		only MF7GM2÷/MF7GT2÷.	Yes			IF96005	IF96005	IF96005
	Alarm relay + Digital inputs						IF96010+IF96011	IF96010+IF96011	IF96010+IF96011
	Analogic						IF96004	IF96004	IF96004
COMUNICAZIONE	RS232					IF96002	IF96002	IF96002	IF96002
	RS485 Modbus RTU			Yes	Yes	Yes	IF96001	IF96001	
	RS485 + Memoria					IF96012	IF96012	IF96012	Yes ²
	Profibus					IF96007A	IF96007A	IF96007A	
	Lonworks					IF96009	IF96009	IF96009	
	M-bus					IF96013	IF96013	IF96013	
	Bacnet			Yes		IF96014	IF96014	IF96014	
	Ethernet			Yes ¹	Yes ¹	IF96015	IF96015	IF96015	IF96015
	Comunicazione radio 868MHz							IF96018	

NEMO multifunction units

Flush mounting 72x72mm multifunction units



Connection via CT for single and three-phase network, 3 or 4-wires. Phase sequence correction, diagnostic It makes available active or reactive energy counting of the pulse output to integration of consumption supervision systems. For supervision systems, through the model with output RS485 communication ModbusRTU, you can transmitted on the network main electrical parameters in addition to the energy consumption.

Item NEMO 72-b

Item	Input (A)	Line	Auxiliary power supply	Outputs
MF7GM0009A	5	1L+N - 3L+N	Self-supplied	-
MF7GM2009A	5	1L+N - 3L+N	Self-supplied	2 alarms
MF7GM0008A	1	1L+N - 3L+N	Self-supplied	-
MF7GM2008A	1	1L+N - 3L+N	Self-supplied	2 alarms
MF7GT0009A	5	3L - 3L+N	Self-supplied	-
MF7GT2009A	5	3L - 3L+N	Self-supplied	2 alarms
MF7GT0008A	1	3L - 3L+N	Self-supplied	-
MF7GT2008A	1	3L - 3L+N	Self-supplied	2 alarms

NEMO 72-Le

Item	Input (A)	Input* (V)	Auxiliary power supply	Outputs
MF72411	1 + 5	80÷500	80÷265Vac 100÷300Vdc	Output Pulses or alarm
MF72421	1 + 5	80÷500	80÷265Vac 100÷300Vdc	Output Pulses or alarm + RS485 ModBus RTU/TCP
MF724B1	1 + 5	80÷500	80÷265Vac 100÷300Vdc	Output Pulses or alarm + RS485 BACnet
MF72412	1 + 5	80÷500	20÷60 Vdc	Output Pulses or alarm
MF72422	1 + 5	80÷500	20÷60 Vdc	Output Pulses or alarm + RS485 ModBus RTU/TCP
MF724B2	1 + 5	80÷500	20÷60 Vdc	Output Pulses or alarm + RS 485 BACnet

* Input three-phase 80÷500V, input single-phase 50÷290V

** kTA*kVT	Maximum display
1÷.9	999999,99kWh/kvarh
10÷.99	9999999,9kWh/kvarh
100÷.999	99999999kWh/kvarh
1000÷.9999	999999,99MWh/Mvarh
10000÷.99999	9999999,9MWh/Mvarh

PULSES ENERGY S0 EN/IEC 62053-31

Type	Optorelay with potential-free with contact SPST-NO
Contact output	27 Vac/dc-50mA
Assignable energy	Active or reactive energy
Pulse weight	Selectionable 10Wh/varh÷10MWh/Mvarh
Pulse duration	Selectionable from 50 to 500ms

ALARMS

Type	Optorelay with potential-free
Contact output	27 Vac/dc -50mA
Typical alarm	min or max

RS485 COMMUNICATION

Protocol	MODBUS RTU/TCP
Standard	RS485-3-wires
Transmission speed	Selectionable 4800÷38400 bit/s

BACNET RS485 COMMUNICATION

Protocol	BACNET MS-TP
Standard	RS485-3-wires
Transmission speed	Selectionable 4800÷76800 bit/s

NEMO multifunction units

Flush mounting 96x96mm multifunction units



Connection via CT for single and three-phase network, 3 or 4-wires. Phase sequence correction, diagnostic It makes available active or reactive energy counting of the pulse output to integration of consumption supervision systems. For supervision systems, through the model with output RS485 communication ModbusRTU, you can transmitted on the network main electrical parameters in addition to the energy consumption.

Item	NEMO 96HDe			
	Stator alarm			
	Input (A)	Input (V)	Auxiliary power supply	Outputs
MF96E06	5	500	Self-supplied	Output Pulses + RS485

* Input three-phase 500V, input single-phase 230-240V

	NEMO 96HDL			
	Input (A)	Input* (V)	Auxiliary power supply	Outputs
MF96411	1 + 5	80÷500	80÷265Vac 100÷300Vdc	Output Pulses + 1 additional module
MF96412	1 + 5	80÷500	16÷60Vdc	Output Pulses + 1 additional module
MF96421	1 + 5	80÷500	80÷265Vac 100÷300Vdc	Output Pulses + RS485 ModBus RTU/TCP + 1 additional module
MF96422	1 + 5	80÷500	16÷60Vdc	Output Pulses + RS485 ModBus RTU/TCP + 1 additional module

* Input three-phase 80÷500V, input single-phase 50÷290V

**33 selectable current range: 20÷1000A, 60÷3000A, 100÷5000A

Item	NEMO 96HD			
	Input (A)	Input* (V)	Auxiliary power supply	Outputs
MF96001	1 + 5	80÷500	80÷265Vac 100÷300Vdc	up 4 additional modules
MF96002	1 + 5	80÷500	16÷60Vdc	up 4 additional modules

	NEMO 96HD+			
	Input (A)	Input* (V)	Auxiliary power supply	Outputs
MF96021A	1 + 5	80÷690	80÷265Vac 100÷300Vdc	up 4 additional modules
MF96022A	1 + 5	80÷690	16÷60Vdc	up 4 additional modules

	NEMO 96 EA			
	Quality of the energy: • Harmonics (U&I) up to 40° • Overvoltages • Network interruption			
	• Quick variation of voltage • Instability • Memory included (8Mb) • RTC (Real time clock)			
	Input (A)	Input* (V)	Auxiliary power supply	Outputs
MFQ96021	1 + 5	80÷690	80÷265Vac 100÷300Vdc	RS485 Modbus RTU/TCP + up to up 4 additional modules
MFQ96022	1 + 5	80÷690	16÷60Vdc	

* Input three-phase 80÷690, input single-phase 230V

NEMO multifunction units

Additional modules for multifunction units



IF96001



IF96012



IF96002



IF96007A



IF96009



IF96013



IF96014



IF96015



IF96003



IF96004



IF96005



IF96006



IF96016



IF96010



IF96011

Item

Additional modules

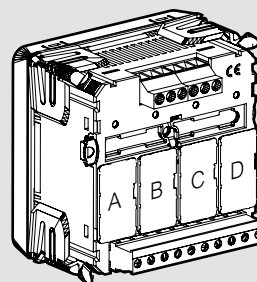
Description

IF96001	Module RS485 Modbus RTU/TCP
IF96012	Module RS485 Modbus RTU/TCP + memory
IF96002	Module RS232 Modbus RTU/TCP
IF96007A	Module Profibus EN50170 - DP0
IF96009	Module LonWorks
IF96013	Module M-Bus EN1434-3
IF96014	Module RS485 BACnet MS-TP
IF96015	Module Ethernet
IF96003	Module with 2 outputs pulses optorelay SPST-NO
IF96004	Module analogic outputs 0/4÷20mA
IF96005	Module with 2 Outputs relè SPST-NO
IF96006	Module for current Neutral measure via CT, 1A or 5A programmable
IF96016	Module for temperature measure, 2 Inputs from Pt100 sensor
IF96010	Module I/O, 2 Inputs SPST-NO, 2 Outputs relays SPST-NO
IF96011	Module I/O, 2 Inputs 12/24Vdc, 2 Outputs relays SPST-NO

Outputs

ADDITIONAL MODULES

N. of modules fittable	4
Position of installation	A-B-C-D



Outputs

PULSES ENERGY S0 EN/IEC 62053-31

Type	Optorelay with potential-free with contact SPST-NO
Contact output	27 Vac/dc-50mA
Assignable energy	Active or reactive energy
Pulse weight	Selectionable 10Wh/varh÷.10MWh/Mvarh
Pulse duration	Selectionable from 50 to 500ms

RS485 COMMUNICATION

Protocol	MODBUS RTU/TCP
Standard	RS485-3-wires
Transmission speed	Selectionable 4800÷19200 bit/s

** kTA	Maximum display
1÷.9	999999,99kWh/kvarh
10÷.99	9999999,9kWh/kvarh
100÷.999	99999999kWh/kvarh
1000÷.9999	999999,99MWh/Mvarh



CONTO ENERGY STATIC METERS

The main features of the range are:

- 9-digit backlit graphic display
- Measurement on 4 uni-bidirectional quadrants
- Multi-measurement
- Active energy accuracy:
 - Class B according to EN50470 (MID version)
 - Class 1 according to EN/IEC 62053-23
- Standard sealable terminal blocks
- Versions with pulse output or Modbus or M-bus communication. Through the dedicated interfaces it is possible to communicate with Ethernet or KNX protocols
- 1 measurement input for other quantities such as water or gas or alternatively double tariff input



CONTO

New energy meters

The CONTO range of energy meters is renewed with new, more performing and modern devices. The new devices, completely modernized from an aesthetic point of view, offer state-of-the-art performance and new functions, which meet the different needs in measuring electrical parameters.



Main features

The main features of the range are:

- Backlit graphic display
- Measurement on 4 quadrants
- Multi-size
- MID certified versions
 - Class B according to EN50470 (MID version)
 - Class 1 according to EN / IEC 62053-23
- Standard sealable terminal blocks
- Versions with pulse output or Modbus or Mbus communication. Through dedicated interfaces it is possible to communicate with Ethernet or KNX protocols.
- 1 measurement input of other quantities such as water or gas or alternatively double tariff entry.

Application

- Industrial application for the division of energy consumption by cost center
- On board the machine for precise control of consumption
- Residential to share main meter consumption (residences, camping, etc.)
- Applications for fiscal use (UTF certifications) to obtain reimbursements or incentives for the energy produced by generators or renewable energy.



CONTO

More functions...
New design

New features are available for the CONTO static energy meters.

The interfaces are intuitive and simple. indications on the display are clear and easy to manage. The new range includes devices with Mbus or RS485 Modbus communication and in this case it is possible to integrate the catalog webservers.

NEW DISPLAY AND NEW DESIGN

- Backlit display
- Simplified reading mode, preview of the next page, settings
- Bidirectional measurement (E + and E-)
- 9-digit display
- Partial measurement of the active and reactive energy



COMMUNICATION

Modbus or Mbus or impulse

Built-in 120 Ω termination resistance in prog menu

INTEGRATED IMPULSE INPUT

1 inlet for measuring gas or water or the like.

Alternatively, the entrance can be used to manage the double tariff



Main functions

The main functions of the range are:

Three-phase network

Choice of the wiring in base to the needs.
The same device can be programmed and installed in different kind of networks.

Energy management

Easy and quick installation with WebServers (10, 32 and 255 measure points) with direct and integrated Modbus port on board.

Memory

All the new CONTO meters save the data of total energies (actives and reactivities; positives and negatives) to a not-volatile memory on board to the device. The value of partial energies can be resetted in function to the needs.

MID certification

CONTO Static meter offer guarantees accuracy and reliability of measurement.
Thanks to European directive homologation 2004/22/CE MID can be used for tax purpose.
The static meter are equipped by tamper-proof component in order to prevent fraud.

Display

The energy values are all shown with 9 digits allowing a longer duration of the device.



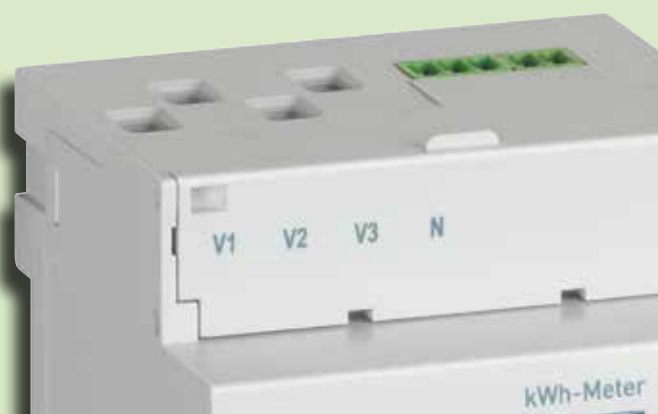
SIMPLIFIED HMI

- Press 1 button to navigate or enter the setup mode



NEW CONNECTORS

Same section for phase and neutral terminals



WEBSERVER

For control and manage of the consumptions

With the web server integrated with the new range of **ENERGY METERS**, is possible:

- analyze data and improve process
- determine the annual energy needs to define the consumption distribution,
- analyze the evolution over time to control the performances,
- manage multisite electrical installations remotely and / or locally using smartphone, tablet, PC, etc.

The energy meters are mainly used for measure, record and transmit values like active and reactive energy or power, voltages and currents. The new CONTO are able to collect pulse from water or gas meters to have a complete view of the consumption of the building. To do this, the new CONTO meters are equipped by different protocols pulse, Modbus or Mbus.



Allow **remote configuration, test, control and visualization**, via a **web browser** on several devices; PCs, Smartphone, web viewers, data collected from IME devices: Meters Conto, Multifunction NEMO, NEMO SX Measure system.

Pop-up alarms available with Telegram Smartphone app (configuration through the Web Server and only with Nemo SX)



Web server for 255 Modbus addresses or 255 pulse modules (item code **SXWS255**)



Web server (DIN version) for 10 (item code **SXWS10**) or 32 Modbus addresses or pulse modules (item code **SXWS32**)

Web Server Features:

- data display on smartphone tablet or PC
- billing function
- multitarrifs
- webserver multi-level
- possibility to setup all the world currencies

DEVICES FOR VISUALIZATION AND CONTROL



Smartphone



I-Pad or Tablet



Personal Computer

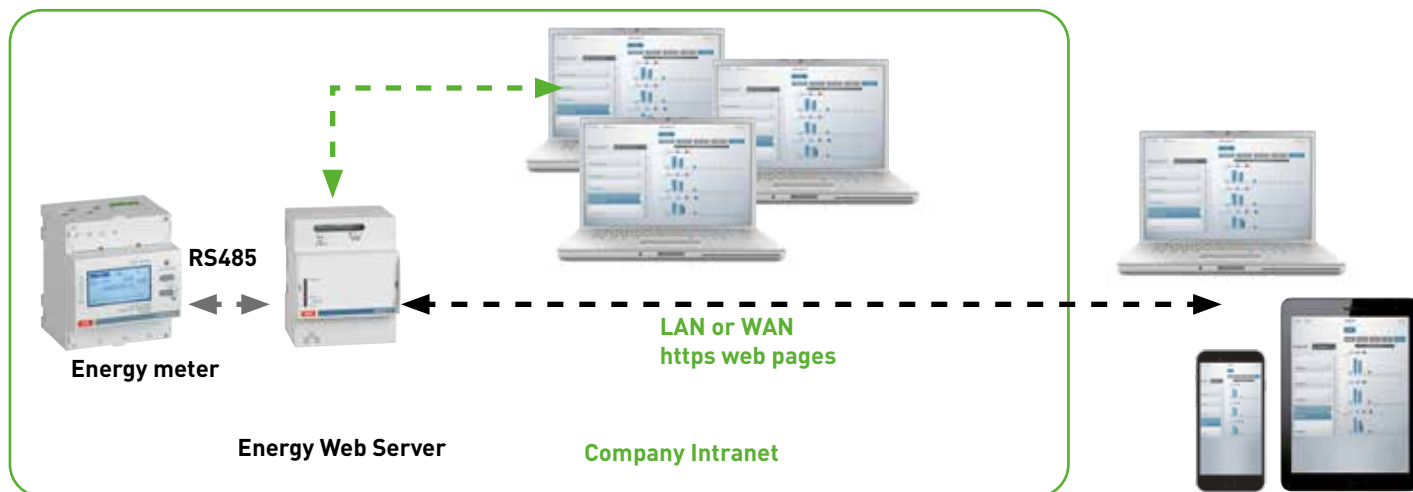


WEBSERVER Application

ARCHITECTURE: EXAMPLE 1



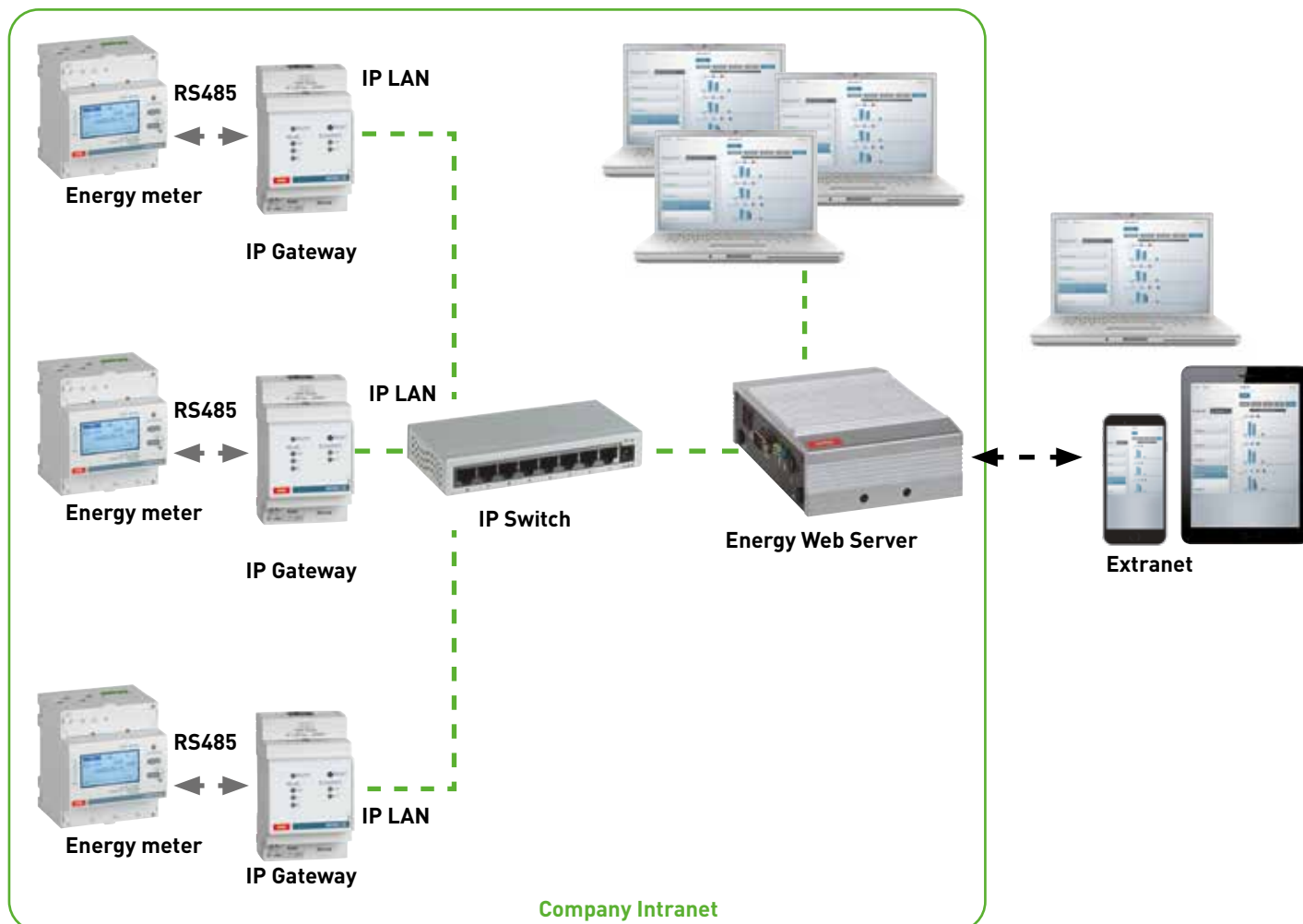
1 SITE WITH 1 PANEL AND THE NEED TO VIEW LOCALLY AND / OR REMOTELY



ARCHITECTURE: EXAMPLE 2

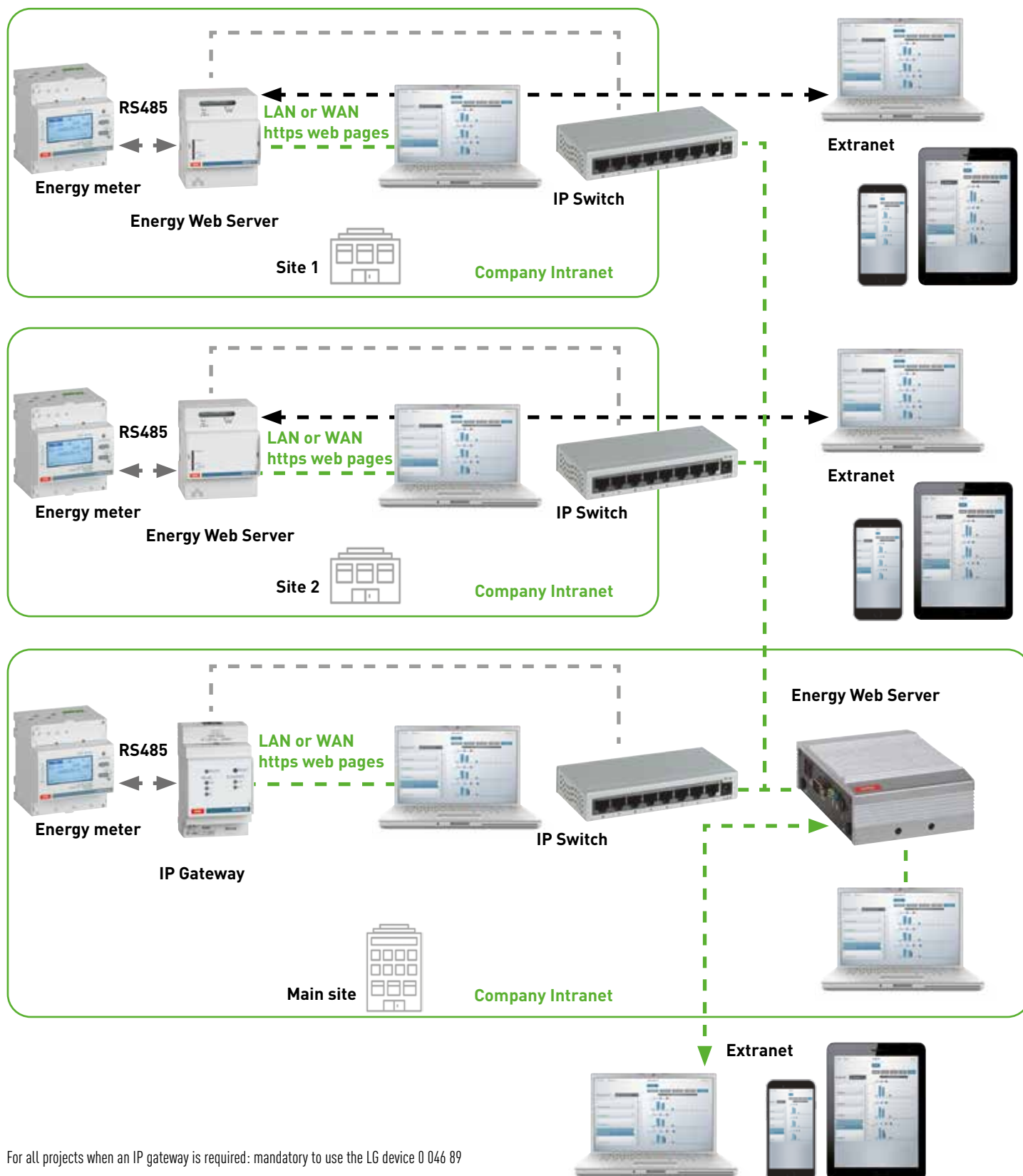


1 SITE WITH 2 PANELS AND THE NEED TO VIEW LOCALLY AND / OR REMOTELY



ARCHITECTURE: EXAMPLE 3

SEVERAL SITES



For all projects when an IP gateway is required: mandatory to use the LG device 0 046 89

Energy meters

table of choice



*For the thermal dimensioning of switchboards
1- kVT / kCT are the transformation ratios of the VTs and CTs defined as the mathematical ratio between the primary value and the secondary value.

Example: the kVT of a 1000/100V transformer = 1000:100 = 10 the kCT of a 800/5A transformer = 800:5 = 160

2- with external interface code IF1KNX

3 - with external interface code IF4E011 or SXIIP

Model		CONTO D1 MID	CONTO D2 MID	CONTO D4-Pd MID	CONTO D6-Pd MID	CONTO D4-Pt MID	
Type		Unidirectional	Bidirectional	Bidirectional	Unidirectional	Bidirectional	
Connection/line		Direct - LV					TA - BT/MT
INPUT	Connection	Single-phase L1+N	yes	yes	-	-	-
		Three-phase 3L balanced load	-	-	yes	yes	-
		Three-phase 3L unbalanced load	-	-	yes	yes	yes
		Three-phase 3L+N unbalanced load	-	-	yes	yes	yes
		Direct single phase voltage	230V	230V	-	-	-
		VT single/three phase voltage	-	-	-	-	100V
		Direct three-phase voltage	-	-	400V	400-415V	400V
	Rated values	Functional limit	±15%	±10%	±15%	±15%	±15%
		Base current (Ib)	5A	5A	5A	10A	5A
		Short-time overcurrent	30Imax/10ms	30Imax/10ms	30Imax/0,5s - 20Imax/0,5s	30Imax/10ms	30Imax/10ms
		Power consumption	10VA/2W	4VA/1,5W	2,2VA /1,5W	1,5W per fase	0,3W/0,2VA per fase
		Rated frequency	50-60Hz	50-60Hz	50-60Hz	50-60Hz	50-60Hz
		Frequency range	49÷51-59÷61Hz	49÷51-59÷61Hz	49÷51-59÷61Hz	47÷63Hz	49÷51-59÷61Hz
		Minimum current (Imin)	250mA	250mA	250mA	500mA	50mA
		Maximum current (Imax)	45A	63A	63A	125A	6A
		Starting current (Ist)	20mA	20mA	20mA	40mA	10mA
		Nominal temperature	-5÷55°C	-25÷55°C	-25÷55°C	-25÷55°C	-25÷55°C
		Storage temperature	-25÷70°C	-40÷70°C	-40÷70°C	-40÷70°C	-40÷70°C
		Suitable for tropical climates	si	si	si	si	si
		Max.power dissipation*	≤1W	≤4W	≤6W	≤6W	≤4W
	Programmable Ratio	VT (kVT) ¹	-	-	-	-	1.00÷300.00
		CT (kCT) ¹	-	-	-	-	1÷9999
		max. kVT x kCT	-	-	-	-	3000000.00
DISPLAY	Active energy	Accuracy EN/IEC62053-21	-	-	-	-	-
		Accuracy EN50470	cl.B	cl.B	cl.B	cl.B	cl.B
		Total to terminals	yes MID	yes MID	yes MID	yes MID	yes MID
		Total to primary side	-	-	-	-	yes
		Partial resettable	-	yes	yes	yes	yes
	Reactive energy	Double tariff	-	yes	yes	yes	yes
		Accuracy EN/IEC62053-23	-	cl.2	cl.2	cl.2	cl.2
		Total to terminals	yes	yes	yes	yes	yes
		Total to primary side	-	-	-	-	yes
		Partial resettable	-	yes	yes	yes	yes
	Voltage	Double tariff	-	yes	yes	yes	yes
		Phase	-	yes	yes	yes	yes
		Interlinked	-	-	yes	yes	yes
	Current	Phase	-	yes	yes	yes	yes
		Neutral	-	-	-	-	-
	Power factor	Power factor	-	yes	yes	yes	yes
		Active	-	yes	yes	yes	yes
		Reactive	-	yes	yes	yes	yes
		Apparent	-	yes	yes	yes	yes
		Phase Active, reactive and apparent	-	-	yes	yes	yes
		Peak max. demand	-	yes	yes	yes	yes
		Peak max. demand per tariff	-	yes	yes	yes	yes
	Frequency		-	yes	yes	yes	yes
	Run hour meter		-	yes	yes	yes	yes
IN/OUT	Input		-	-	-	-	-
	Pulses		yes	yes	yes	yes	yes
	RS485 Modbus RTU		-	yes	yes	yes	yes
	RS232		-	yes ²	yes ²	yes ²	yes ²
	M-BUS		-	yes	yes	-	yes
	Ethernet		-	yes ³	yes ³	yes ³	yes ³
CHARACTERISTICS	Self-supplied (by measure)		yes	yes	yes	yes	yes
	Type of display		Backlit LCD	Backlit LCD	Backlit LCD	Backlit LCD	LCD retroilluminato
	Digit height		6mm	1	2	6mm	2
	Energy resolution		999999,9 kWh/kvarh	999999,99 kWh	999999,99 kWh	999999,99 kWh/kvarh	in fuction of CT ratio**
	Certification MID/UTF		yes (MID only)	yes	yes	yes	yes
	Housing material (self-extinguishing)		polycarbonate	polycarbonate	polycarbonate	polycarbonate	polycarbonate
	Protection degree (terminals/front frame)		IP20	IP20/IP54	IP20/IP54	IP20/IP54	IP20/IP54
	Screw terminals		yes	yes	yes	yes	yes
	Cable with lag (IN/OUT)		7 - 10mm ²	1-16mm ²	1-16mm ²	1-50mm ²	4mm ²
	Flexible cable (IN/OUT)		4 - 7mm ²	2,5-10mm ²	2,5-10mm ²	2,5-35mm ²	2,5mm ²
	Dimensions		1 module	2 modules	4 modules	6 modules	4 modules

Energy meters

table of choiche

							
CONTO D1 Unidirectional	CONTO D1 Unidirectional	CONTO D2-b Unidirectional	CONTO D2 Bidirectional	CONTO D4-Pd Bidirectional	CONTO D6-Pd Unidirectional	CONTO D4-Pt Bidirectional TA - BT/MT	CONTO D4-Sh Bidirectional TA - BT
Direct - LV							
yes	yes	yes	yes	-	-	yes	yes
-	-	-	-	-	-	yes	yes
-	-	-	-	yes	-	yes	yes
-	-	-	-	yes	yes	yes	yes
230V	230V	230-240V	230-240V	230-240V	-	230-240V	230-240-254V
-	-	-	-	-	-	100-110V	-
-	-	-	-	400-415V	400-415V	400-415V	400-415-440V
196÷264V	196÷264V	207÷264V	196÷264V±20%	196÷480V	±15%	210÷264V e 90÷140V	110÷244V e 220÷275V 196÷440V e 380÷440V
5A	5A	5A	5A	5A	10A	1-5A	1-5A
30Imax/10ms	30Imax/10ms	30Imax/10ms	30Imax/10ms	30Imax/10ms	30Imax/10ms	20Imax/0,5s	30Imax/0,5s
9,7VA/0,5W	7,5VA/0,6W	9,7VA/1,3W	4VA/1,9W	2VA	1,5W per fase	4,5VA /1,85W	4,5VA /1,85W
50-60Hz	50-60Hz	50-60Hz	50-60Hz	50-60Hz	50-60Hz	50Hz	50Hz
47÷63Hz	47÷63Hz	47÷63Hz	49÷61Hz	47÷63Hz	47÷63Hz	47÷63Hz	47÷63Hz
500mA	500mA	250mA	250mA	250mA	500mA	500mA	500mA
32A	45A	36A	63A	63A	125A	6A	6A
20mA	20mA	20mA	20mA	20mA	40mA	20mA	10mA
-5÷55°C	-5÷55°C	-10÷45°C	-25÷55°C	-25÷55°C	-25÷55°C	-25÷55°C	-5÷55°C
-25÷70°C	-25÷70°C	-25÷70°C	-40÷70°C	-40÷70°C	-40÷70°C	-40÷70°C	-25÷70°C
si	si	si	si	si	si	si	si
≤1W	≤1W	≤2,3W	≤4W	≤6W	≤6W	≤2,8W	≤4W
-	-	-	-	-	-	1.00÷300.00	-
-	-	-	-	-	-	1÷9999	1÷1999
-	-	-	-	-	-	3.000.000 (1-5A)	5.000.000 (1A) 1.000.000 (5A)
cl.1	cl.1	cl.1	cl.1	cl.1	cl.1	cl.1	cl.1
-	-	-	-	-	-	-	-
yes	yes	yes	yes	yes	-	yes	-
-	-	-	-	-	-	yes	yes
-	-	-	yes	yes	yes	yes	yes
-	-	-	yes	yes	yes	-	-
-	-	-	cl.2	cl.2	cl.2	cl.2	cl.2
-	-	-	yes	yes	yes	yes	yes
-	-	-	-	yes	yes	yes	yes
-	-	-	yes	yes	yes	yes	yes
-	yes	-	yes	-	yes	-	-
-	-	-	-	yes	yes	yes	yes
-	yes	-	yes	yes	yes	yes	yes
-	-	-	-	-	-	-	-
-	yes	-	yes	yes	yes	yes	yes
-	yes	-	yes	yes	yes	yes	yes
-	yes	-	yes	yes	yes	yes	yes
-	-	-	-	yes	yes	yes	-
-	-	-	yes	yes	yes	yes	-
-	-	-	yes	yes	yes	yes	yes
-	-	-	yes	yes	yes	yes	-
-	-	-	-	-	-	-	-
-	-	-	yes	yes	-	yes	-
yes	-	-	yes	yes	yes	yes	yes
-	yes	-	yes	yes	yes	yes	yes
-	yes ²	-	yes ²	yes ²	yes ²	yes ²	yes ²
-	-	-	-	yes	-	yes	-
-	yes ³	-	yes ³	yes ³	yes ³	yes ³	yes ³
yes	yes	yes	yes	yes	yes	yes	yes
LCD	LCD retroilluminato	LCD	LCD retroilluminato	Backlit LCD	Backlit LCD	Backlit LCD	LCD
6mm	6mm	6mm	1	2	6mm	2	6mm
99999,99 kWh	99999,99 kWh	99999,9 kWh	999999,99 kWh	999999,99 kWh	999999,99 kWh/ kvarh	in fuction of CT ratio**	in fuction of CT ratio**
-	-	-	-	-	yes	yes	-
polycarbonate	polycarbonate	polycarbonate	polycarbonate	polycarbonate	polycarbonate	polycarbonate	polycarbonate
IP20	IP20	IP20/IP51	IP20/IP54	IP20/IP54	IP20/IP54	IP20/IP51	IP20/IP54
yes	yes	yes	yes	yes	yes	yes	yes
6- 10mm ²	6- 25mm ²	16mm ²	1-16mm ²	1-16mm ²	1-50mm ²	4mm ²	1-16mm ²
4- 6mm ²	4- 6mm ²	10mm ²	2,5-10mm ²	2,5-10mm ²	2,5-35mm ²	2,5mm ²	2,5-10mm ²
1 module	1 modules	2 modules	2 modules	4 modules	6 modules	4 modules	4 modules

Energy meters

Energy meters with certification MID



CONTO D1 MID



CONTO D2 MID



CONTO D4-Pd MID



CONTO D6-Pd MID



CONTO D4-Pt MID

Item	Conto D1 MID		
CE1DMID12	Energy meter for direct connection of single-phase lines up to 45A. Active energy metering via pulse output for consumption control. Total active energy		
	Line	Output	
	1L+N	Pulses	

Item	Conto D2 MID		
CE2DF3DTMID CE2DF30PMID CE2DF3MTMID	Direct connection for single-phase lines up to 63A Use in supervisory systems Positive and negative active energy Tariff 1 and tariff 2 active and reactive energy Indication of the tariff in use Current/Voltage/Frequency Power factor Active, reactive and apparent power Phase active and apparent power Average and maximum active power Programmable hour counter Display on 9 digits and 4 quadrants Double tariff or pulse input Pulse output, M-Bus or RS485 Modbus RTU (depending of the versions)		
	Line	Output	Input
	1L+N	RS485 Modbus RTU	Double tariff or pulses
	1L+N	Pulses	Pulses
CE2DF3DTMIDUTF CE2DF30PMIDUTF	Line	Output	Input
	1L+N	RS485 Modbus RTU	Double tariff or pulses

Conto D2 MID UTF			
CE2DF3DTMIDUTF CE2DF30PMIDUTF	Line	Output	Input
	1L+N	RS485 Modbus RTU	Double tariff or pulses
	1L+N	Pulses	Pulses

NOTE: UTF DC13 certificate

Conto D6-Pd MID			
CE6DMID56 CE6DMID52	Direct connection for three-phase line up to 125A, 4 wires. Use in supervisory systems Total active energy, tariff 1 and tariff 2 active energy Total reactive energy, tariff 1 and tariff 2 reactive energy Instantaneous current Instantaneous power and maximum average power Voltage Frequency Power factor Hour counter (start count 0.4...50% rated power) Pulse output or RS485 Modbus RTU (depending on the versions)		
	Line	Output	Input
	3L + N	RS485 Modbus RTU	Double tariff or pulses
	3L + N	Pulse	Double tariff or pulses

Conto D6-Pd MID UTF			
CE6DMID56UTF CE6DMID52UTF	Line	Output	Input
	3L + N	RS485 Modbus RTU	Double tariff
	3L + N	Pulse	Double tariff

NOTE: UTF DC15 certificate

Item	Conto D4-Pd MID		
CE4DF3DTMID CE4DF30PMID CE4DF3MTMID	Direct connection for three-phase line up to 63A with 3 or 4 wires Use in supervisory systems Positive and negative active energy Tariff 1 and tariff 2 active and reactive energy Indication of the tariff in use Current/Voltage/Frequency Power factor Active, reactive and apparent power Phase active and apparent power Average and maximum active power Programmable hour counter Display on 9 digits and 4 quadrants Double tariff or pulse input Pulse output, M-Bus or RS485 Modbus RTU (depending of the versions)		
	Line	Output	Input
	3L / 3L + N	RS485 Modbus RTU	Double tariff or pulses
	3L / 3L + N	Pulse	Pulses
CE4DF3DTMIDUTF CE4DF30PMIDUTF	Line	Output	Input
	3L / 3L + N	M-bus	Double tariff or pulses

Conto D4-Pd MID UTF			
CE4DF3DTMIDUTF CE4DF30PMIDUTF	Line	Output	Input
	3L / 3L + N	RS485 Modbus RTU	Double tariff or pulses
	3L / 3L + N	Pulse	Pulses

NOTE: UTF DC15 certificate

Conto D4-Pt MID			
CE4TBDTMID CE4TBMTMID	Connection via CT for single-phase and three-phase line up to 63A, 3 or 4 wires. Use in supervisory systems Positive and negative active energy at the terminals Primary side active and reactive energy (CT/VT) Tariff 1 and tariff 2 active and reactive energy Indication of the active tariff Current/Voltage/Frequency Power factor Active, reactive and apparent power Phase active and apparent power Average and maximum active power Programmable hour meter visualization on 9 digits and 4 dials Double entrance fee M-Bus or RS485 Modbus RTU output (depending on the version)		
	Line	Output	Input
	3L / 3L + N	RS485 Modbus RTU	Double tariff or pulses
	3L / 3L + N	M-bus	Double tariff or pulses

Conto D4-Pt MID UTF			
CE4TBDTMIDUTF CE4TBDTMIDUTF1	Line	Output	Input
	3L / 3L + N	RS485 Modbus RTU	Double tariff or pulses
	3L / 3L + N	M-bus	Double tariff or pulses

NOTE: UTF DC15 certificate

Energy meters

standard energy meters



CONTO D1

CONTO D2-b

CONTO D2

CONTO D4-Pd

CONTO D6-Pd

CONTO D4-Pt

CONTO D4-Sh

Item	Conto D1		
CE11165A0 CE11165A2	Direct connection for single-phase line up to 32A Active energy metering via pulse output for consumption control. Active energy		
	Line	Output	
	1L+N	-	
	1L+N	Pulses	
CE11165A4	Direct connection for single-phase line up to 45A Use in supervisory systems Active and reactive energy Current / Voltage Power factor Active, reactive and apparent power		
	Line	Output	
	1L+N	RS485 Modbus RTU	
CE2DF3DTCL1 CE2DF30PCL1	Conto D2 Direct connection for single-phase lines up to 63A Use in supervisory systems Positive and negative active energy Tariff 1 and tariff 2 active and reactive energy Indication of the tariff in use Current/Voltage/Frequency Power factor Active, reactive and apparent power Phase active and apparent power Average and maximum active power Programmable hour counter Display on 9 digits and 4 quadrants Double tariff or pulse input Pulse output, M-Bus or RS485 Modbus RTU (depending on the versions)		
	Line	Output	Input
	1L+N	RS485 Modbus RTU	Double tariff or pulses
	1L+N	Pulses	Pulses
CE21175A0	Conto D2-b Direct connection for single-phase line up to 36A. The active energy data can be read through the display measured (Cl.1). Active energy. Metrological LED: 1imp/Wh. Resolution: 0.1KWh		
	Line	Output	
	1L+N	-	

CE6DT1256 CE6DT1252	Conto D6-Pd Direct connection for three-phase network, 4-wires. It makes available active or reactive energy counting of the pulse output to integration of consumption supervision systems. For supervision systems, through the model with output RS485 communication Modbus RTU, you can transmitted on the network main electrical parameters in addition to the energy consumption. Total active and reactive energy (positive) Partial active and reactive energy (resettable) Instantaneous current, voltage and frequency Active and reactive power (three-phase and single phase) Power Factor Run hour meter (count start 0.4÷50% rated power)		
	Line	Output	Input
	3L + N	RS485 Modbus RTU	Double tariff or pulses
	3L + N	Pulse	Double tariff or pulses

CE4DF3DTCL1 CE4DF30PCL1 CE4DF3MTCL1	Conto D4-Pd Direct connection for three-phase line up to 63A with 3 or 4 wires Use in supervisory systems Positive and negative active energy Tariff 1 and tariff 2 active and reactive energy Indication of the tariff in use Current/Voltage/Frequency Power factor Active, reactive and apparent power Phase active and apparent power Average and maximum active power Programmable hour counter Display on 9 digits and 4 quadrants Double tariff or pulse input Pulse output, M-Bus or RS485 Modbus RTU (depending on the versions)		
	Line	Output	Input
	3L / 3L + N	RS485 Modbus RTU	Double tariff or pulses
	3L / 3L + N	Pulse	Pulses
	3L / 3L + N	M-bus	Double tariff or pulses
CE4TBDTCL1 CE4TB0PCL1 CE4DF3MTCL1	Conto D4-Pt Connection via CT for single-phase and three-phase line up to 63A, 3 or 4 wires. Use in supervisory systems Positive and negative active energy at the terminals Primary side active and reactive energy (CT/VT) Tariff 1 and tariff 2 active and reactive energy Indication of the active tariff Current/Voltage/Frequency Power factor Active, reactive and apparent power Phase active and apparent power Average and maximum active power Programmable hour meter Visualization on 9 digits and 4 dials Double entrance fee M-Bus or RS485 Modbus RTU output (depending on the versions)		
	Input (V)	Output	Input
	100 -110	RS485 Modbus RTU	Double tariff or pulses
	100 -110	Pulse	Pulses
	100 -110	M-bus	Double tariff or pulses

CE4ST14A4 CE4ST14A2	Conto D4-Sh Connection via CT for single-phase and three-phase line, 3 or 4 wires. Active or reactive energy metering via pulse output for consumption control. For supervisory systems, through the model with RS485 Modbus RTU or M-BUS communication output, is possible to transmit all the main electrical parameters of the line in addition to energy consumption. Total active and reactive energy Partial active and reactive energy Current / Voltage Frequency Power factor Active, reactive and apparent power, average active power and maximum average active power		
	Input (V)	Output	
	400 -415	RS485 Modbus RTU	
	400 -415	Pulse	



AV201



AV202



AVKIT4



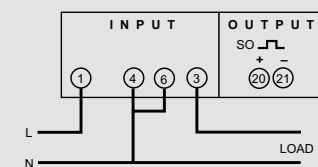
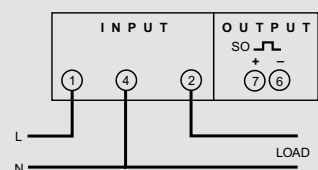
AVKIT4Q

Item	AV terminal blocks
	Insertion on three-phase meters 2 or 3 systems Allows the replacement or verification of the meters (using a standard instrument), without interrupting the current circuit Maximum voltage 500V Maximum current 57A Protective cover, sealable Case : insulating base + sealable cover Insulating base material: self-extinguishing Kelon (Keramic + Nylon) Sealable lid material: cellulose acetates Sealable terminals Weight : 700gr (AV201) - 1100gr (AV202) Connection via screw terminals Rigid/flexible cable: max 6mm² Description
AV201	3-phase Aron 2 CT connection, input/output rear connection cables (holes on insulating base)
AV202	3-phase + neutral 3 CT connection, input/output rear connection cables (holes on insulating base)
AV204	3-phase + neutral 3 CT connection, input /output front connection cables (holes on transparent cover)
	Accessories Door adapters for meters, 4 DIN modules Description
AVKIT4	Wall mounting adapter (103x72mm)
AVKIT4Q	Wall mounting adapter (96x96mm)

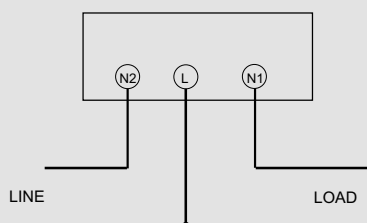
Energy meters

connection schemes

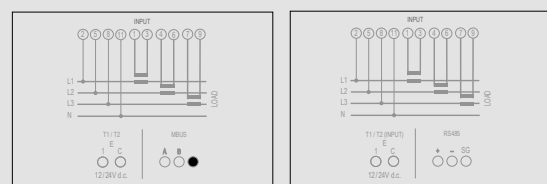
CONTO D1



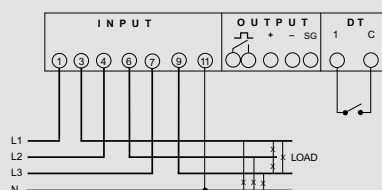
CONTO D2-b



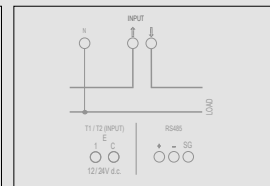
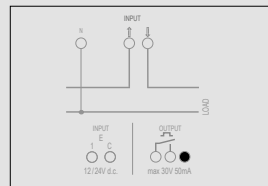
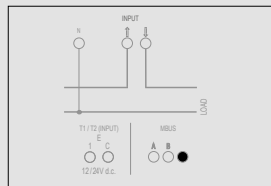
CONTO D4-Pt



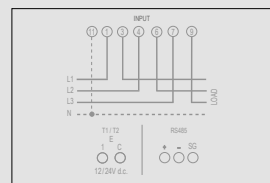
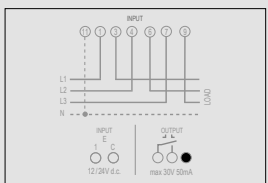
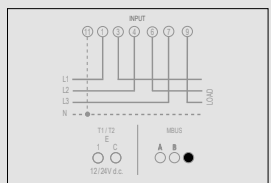
CONTO D6-Pd



CONTO D2



CONTO D4-Pd



OUTPUT

RS485	CONTO D1	CONTO D1 MID
Protocol	Modbus RTU	-
Standard	RS485-3-wires	-
Baud rate	selectable 1200÷9600 bit/s	-
ENERGY PULSES S0 EN/IEC 62053-31		
Type	Free contact (voltage)	
Contact range	12÷27Vdc-10÷27mA	
Assignable energy	Active energy	
Pulse weight	1 imp/Wh	
Pulse duration	700ms	70ms

* For switchboard thermal calculation

** kTA*kTV	Maximum display
1÷9	9999999,99kWh/kvarh
10÷99	99999999,9kWh/kvarh
100÷999	999999999kWh/kvarh
1000÷9999	9999999,99MWh/Mvarh
10000÷99999	99999999,9MWh/Mvarh
≥100000	999999999MWh/Mvarh

OUTPUT

ENERGY PULSES S0 EN/IEC 62053-31	
Type	Free contact (voltage)
Contact range	27Vdc/ac – 50mA
Assignable energy	Active energy Positive or negative (MID versions)
Pulse weight	selectable 1Wh/varh÷10kWh/kvarh
Pulse duration	selectable 50÷500ms
RS485	
Protocol	Modbus RTU
Standard	RS485-3-wires
Impedance	120 Ohm (programmable by menu)
Baud rate	selectable 4800÷38400 bit/s
M-BUS	
Protocol	M-BUS
Standard	EN13757
Baud rate	selectable 300÷9600 bit/s



NEMO SX MEASUREMENT AND MANAGEMENT SYSTEM

The NEMO SX IME energy management system allows for the precise management and use of energy within a building. It allows full control of all activities in order to improve their functioning by anticipating possible breakdowns. NEMO SX is the new simplified supervision system able to display, measure and control the installation from remote or local position. An autonomous system able to be integrated, which, thanks to the innovative automatic connection system, simplifies the assembly stages and requires no change in the wiring of existing panels.





A COMPLETE AND UNIVERSAL SOLUTION

NEMO SX is an independent and integrable system which, thanks to its type of automatic connection, simplifies the assembling step and does not require any modification of existing panels. Its mechanical features mean that it can be used with a wide range of protection devices or all type of other devices in all distribution panels and cabinets.

Moreover system monitoring is allowed, using on 1 dedicated PC via USB licence key on on several devices: PC, tablet and smartphone through https page issued by Energy Web Servers.



MEASURE



INFORM



CONTROL



MONITOR

New NEMO SX measurement and energy management system completes the already existing IME measurement offers, by also offering possibilities of:

- CHECK IF THE SYSTEM IS RUNNING PROPERLY
- DIRECTLY CONTROL THE SYSTEM
- MONITOR THE SYSTEM IN THE INSTALLATION OR REMOTELY

Elements of Energy efficiency



Making energy efficiency means
reduce operating costs in a system.

Today this is mandatory in several applications.



Costs reduction



- Reduce the consumption
- Save the energy
- Maintain the productive levels



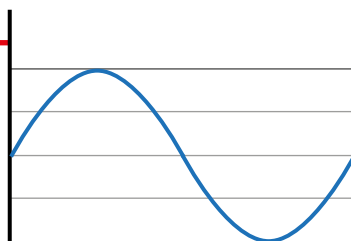
- Optimize the consumption of water, gas and electric energy



- Consume when the costs are less
- Avoid penalties

Service & production

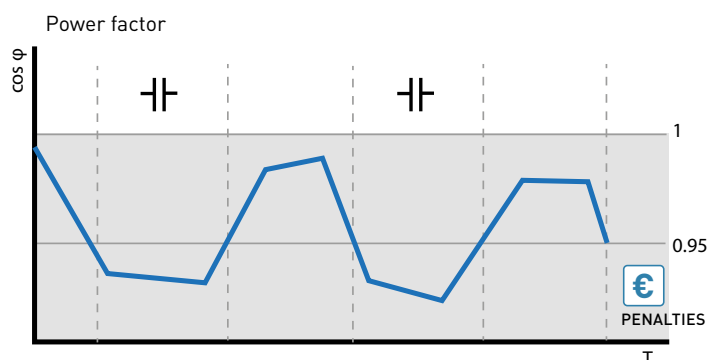
Ensure the quality of energy and service continuity



Monitoring & analysis

Penalties

The energy provider applies additional costs if the user works with a power factor lower than the predefined values (costs for excessive reactive energy). Low values are determined by inductive loads and / or harmonic disturbances that require specific corrective actions, usually implemented by power factor correction regulators.

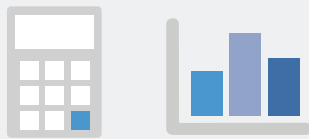




Energy management advantages

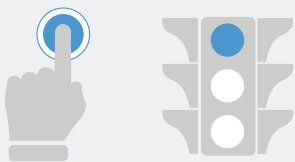
The **NEMO SX IME** energy management system allows for the precise management and use of energy within a building. It allows full control of all activities in order to improve their functioning by anticipating possible breakdowns.

Counting and measuring consumptions to
reduce costs



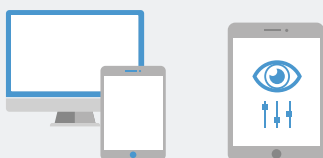
- **be aware** of its consumption;
- **control** consumptions;
- **adopt** a constant operating regime to smooth consumption over time.

Monitor and control the installation status to
ensure continuity of service



- **visualize** and assess technical alarms in real time;
- **know** installation status;
- **prevent** damage to parts of the installation.

Analyse data to
improve processes



- **determine** annual energy needs to define a distribution of consumption;
- **analyse** the trend over time to control performance;
- **log** events to prevent critical issues.

The actions and the functions

The **NEMO SX IME** energy management system allows you to control your installation in only a few steps.

actions...



set

Set the system with functions that are customised to your needs.



configure

Programme all devices, locally and remotely, to be able to dialogue both with them and with other external systems.



supervise

Monitor and control all processes by means of IT instruments to optimise energy consumption any time, anywhere.

... and functions



register

Register the consumption of all the users of the installation.



measure

Measure analogue or electrical magnitudes (current, voltage, power, etc...).



signalling

Display the status of electrical protection devices or circuits, both locally and remotely.



control

Operate electrical protection devices or motorized controls, both locally or remotely, by means of manual or automatic actions.



communicate

Send all information remotely, out of the electrical switchboard.



display

Display the data locally or remotely, on built-in screens or on PCs, smartphones or tablets with an Internet connection.

NEMO SX

Supervision system

NEMO SX is the new simplified supervision system

able to display, measure and control the installation from remote or local position. An autonomous system able to be integrated, which, thanks to the innovative automatic connection system, simplifies the assembly stages and requires no change in the wiring of existing panels.



Complete and compact

The **NEMO SX** supervision system, with its extremely compact design, can offer all functions to allow for complete installation supervision:

- measurement
- status (ON/OFF/fault)
- control
- pulse count
- serial communication
- display
- precision class 0,5

Simple

Simple to choose

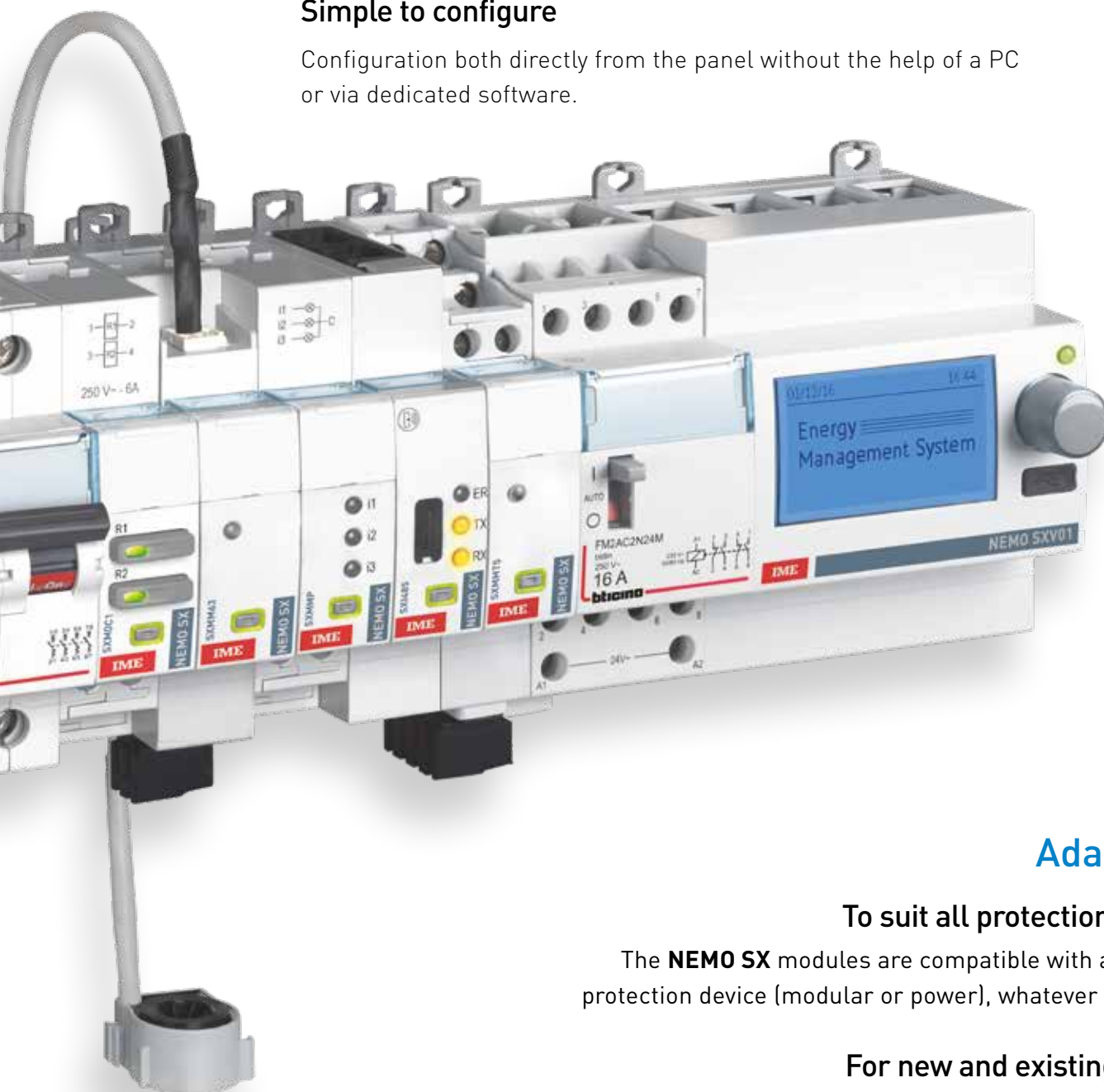
Only 8 modules with dedicated functions to supervise all installations.

Simple to install

Quick, pre-cabled connections on rail or with patch cords that do not hinder electrical switchboard cabling.

Simple to configure

Configuration both directly from the panel without the help of a PC or via dedicated software.



Adaptable

To suit all protection devices

The **NEMO SX** modules are compatible with any type of protection device (modular or power), whatever the brand.

For new and existing panels

The compact dimensions and the possibility of connecting the system via 2 different solutions make it easy to install in new or existing switchboards.

Advantages of the NEMO SX system



Very small dimensions:

- All the measuring, load status and control modules occupy 1 DIN module
- The NEMO SX system is suitable for mounting in solutions with limited spaces
- Current sensor range:
 - Thanks to the measuring module with external CT inputs, it is easily adaptable to any type of traditional current transformer
 - Micro current sensors with mV output for 63 A primary currents (available for single-phase and three-phase and three-single-phase) and 125 A (available in three-phase)
 - Opening current sensors with mV output for currents from 630 A up to 6300 A.



Flexibility

- Centralized display of measurements on DIN module easily adaptable to the door
- Acquisition of the voltage measurement for each measurement module so that Voltages and Currents (V and I) can be compared for each measurement point
- System auxiliary power supply from dedicated power supply (networks from 95 to 240 Va.c.)

Multi-departure:

- System suitable for measuring panels where there are multiple starts. Thanks to the measuring sensors, high flexibility is possible Precision
- Measurements made by the NEMO SX system comply with IEC / EN 61557-12
- Accuracy class of active Energy measurement: 0.5 (Ea, IEC / EN 61557-12)
- Accuracy class of active power measurement: 0.5

NEMO SX

Complete, compact and multifunctional



MEASUREMENT



SIGNALLING



With the same performance as the "classic" models of measuring units, the NEMO SX measuring modules can be used to measure the electrical energy consumed by a single-phase or three-phase circuit and the different electrical values:

- Active (kW), reactive (kVAR) and apparent (kVA) power on all phases or cumulative
- Simple and compound voltages
- Current consumption on each phase
- Frequency and $\cos\phi$
- Harmonics

Concentrator module for energy count by means of pulses: collects data from meters with pulse output like electrical energy meters or water and gas meters.... Up to 3 pulse circuits.

Compact modules indicating the status of the associated device:

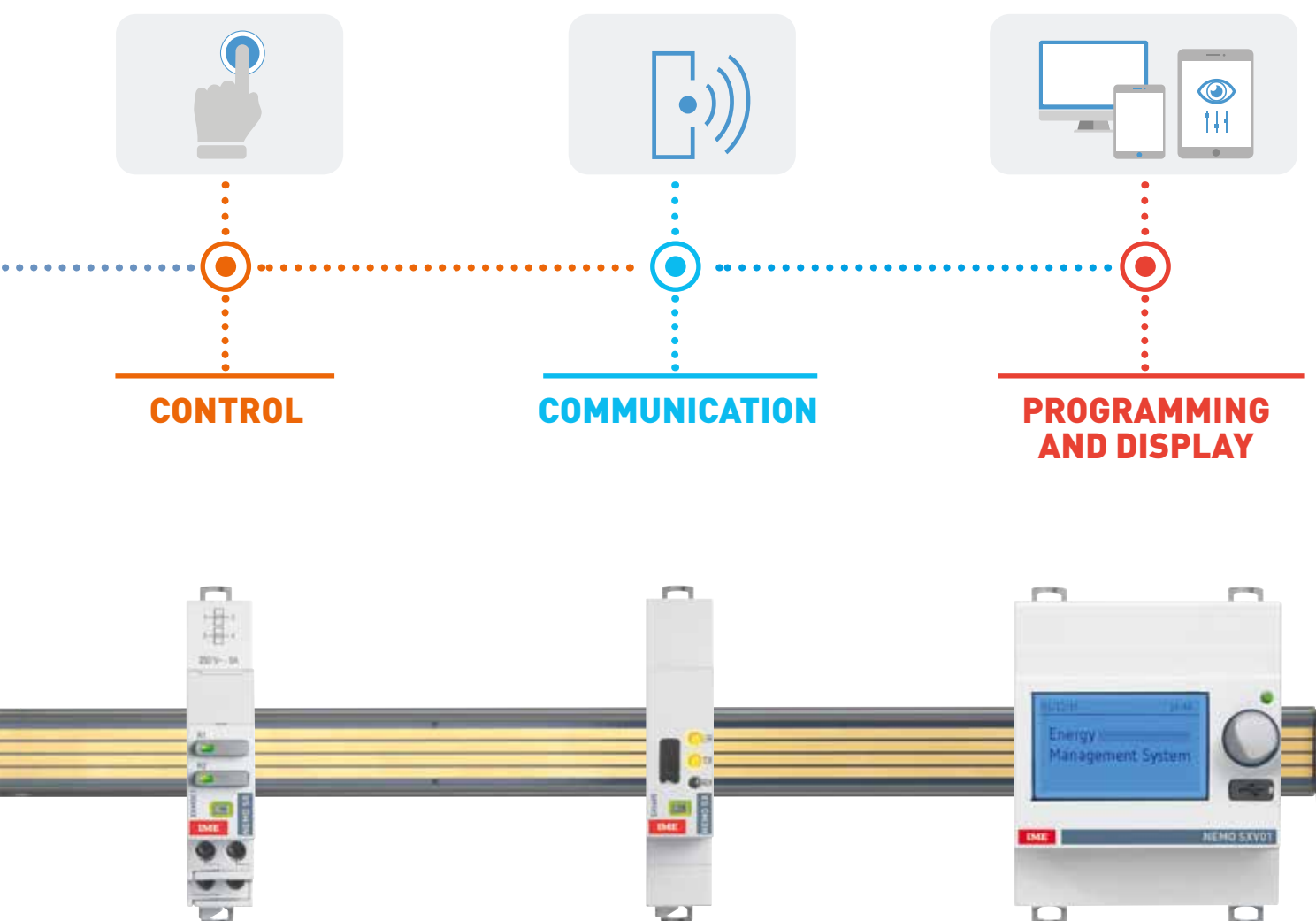
Contacts:

- open
- closed
- triggered

In addition, for the LED version:

- MCCB plugged-in / drawn-out
- springs loaded for opening / closing of ACBs

All the modules of the new **NEMO SX** supervision system have compact dimensions, in order to limit as much as possible the space used in the electrical switchboard.



Universal control module. Enables to remotely control different electrical loads such as relays, contactors, and motorised controls of modular or power circuit breakers, whatever their brand.

The NEMO SX / RS 485 communication interface allows the conversion of data from the NEMO SX network to the MODBUS RS 485 network, in order to display and operate the data outside the electrical enclosure.

Stand alone configuration module for the control of the entire installation, locally, in the enclosure:

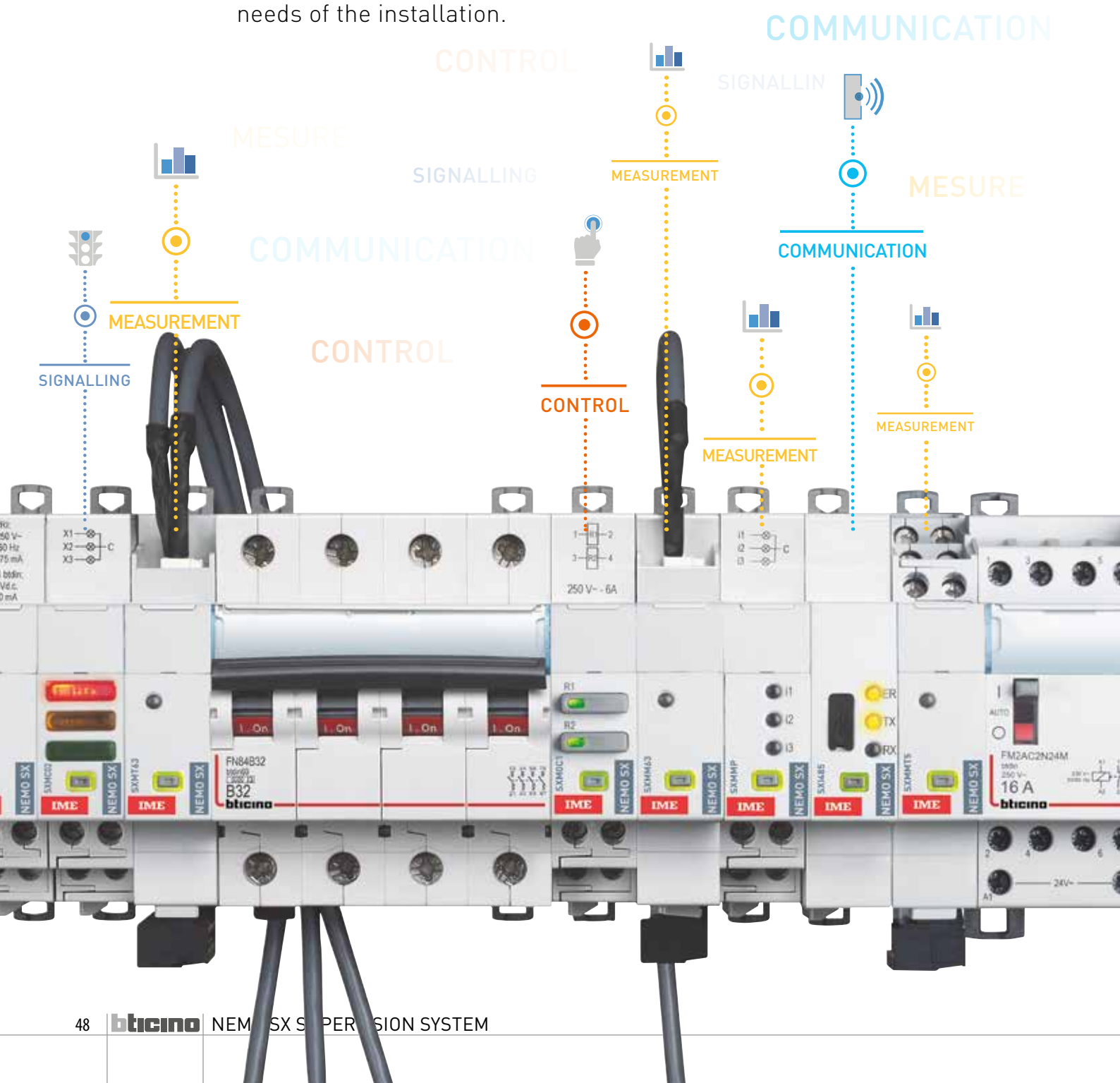
- system configuration
- test
- consumption display
- alarm control
- device control
- memory storage of the alarms

NEMO SX

simple to choose...

The **NEMO SX** system consists of DIN rail mounting modules.

The **NEMO SX** system does not require a minimum number of modules and it also allows very simple monitoring. Thanks to its scalability, new functions can be added at any time depending on the needs of the installation.



...simple to install

The **NEMO SX** system is powered at safety extra low voltage (SELV) and has 2 types of connection:

- by means of the innovative **communication rail** system
- by means of the quick fit **patch cords**.

Quick and simple data connection

In both cases, the data connection is simple and immediate and **does not require any other additional space in the electrical enclosure**. In the case of the communication rail, the connection is made automatically via the rear contacts, when the NEMO SX modules are fixed on the DIN rail of the electrical panel.

COMMUNICATION RAIL

Connection is made automatically with the connectors at the back side of the NEMO SX modules.

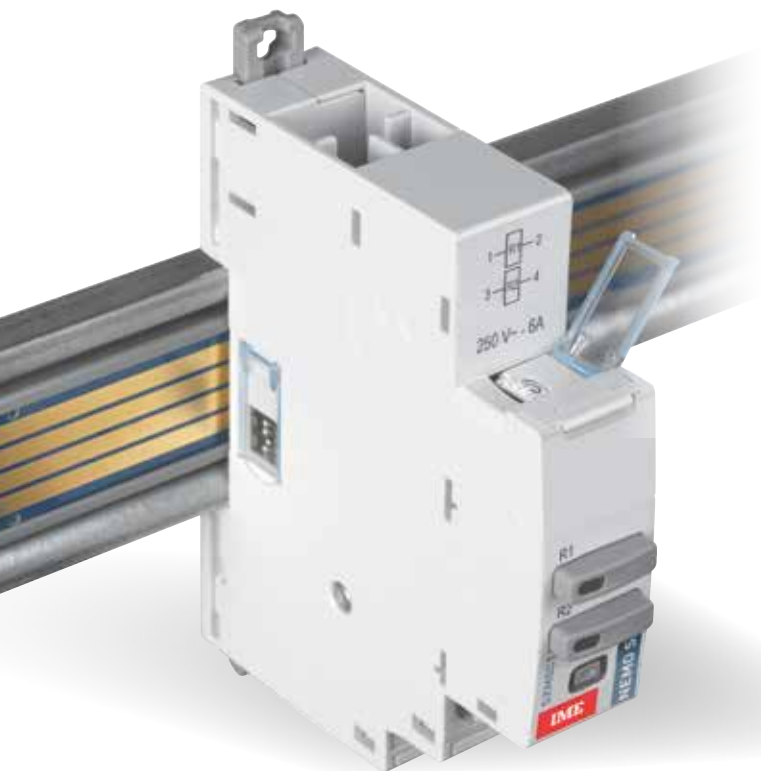
PATCH CORDS

All NEMO SX modules are equipped at the bottom with ports for connection to the bus via dedicated patch cords.

NEMO SX

simple to configure

The **NEMO SX** system has been developed in order to be able to manage, simply and immediately, all functions, both from the electrical panel without using a PC and by means of a free of charge software with external devices.



Programming and display

The stand alone NEMO SX configuration module allows to configure the system and to visualize all installed modules, without need of any ip or pc connection.



Function configuration

The universal signalling and control modules include 4 DIP switches that enable different function types to be set.



Address configuration

All modules are equipped with a selector for configuring the address locally. This configuration can also be done remotely via PC.



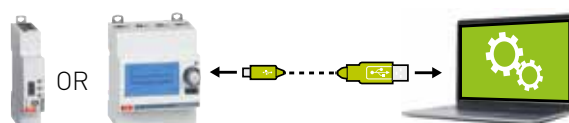
Function

All modules are also equipped with a multifunction 3-colour LED button to instantly identify the operating status: correct operation, stand-by, being programmed, being updated, no NEMO SX communication, etc.



Connection

The PC (With pre-installed software) and the **NEMO SX interface** Cat. No SXI485 or miniconfigurator Cat. No SXV01 can be connected directly using a USB/USB micro cable, or remotely via an IP network and a MODBUS/IP gateway Cat. No SXIIP.



Configuring the address

The software can be used to detect all NEMO SX modules in the system and assign them an address automatically. The numerical selector switches must be in position "0".



Configuring functions

The software can be used to assign different operating types to the universal modules. The micro-switches must be in position "0".



NEMO SX

adaptable for all installations

The **NEMO SX** modules are optimised for installation on DIN rail associated with MCBs, but can also manage power circuit breakers.



Signalling

The universal, configurable signalling module can be associated with all type of signalling auxiliaries of DIN rail mounting MCBs or power circuit breakers.



Control

Enables to locally or remotely control different electrical loads or motorised controls associated to DIN rail mounting protection devices or head equipment. Equipped with DIP switches (on the side) allowing product configuration:

- the contact type
- the function (maintained or momentary contact).



Measurement

The high current measurement module with external CTs enables the measurement by means of CT with KTA ratio of up to 6400 A, which can therefore also be used in large power centre panels.

up to 6300 A

NEMO SX measurement modules with flexible open Rogowski coils or with current transformers are ideal for the needs of installations **up to 6300 A**

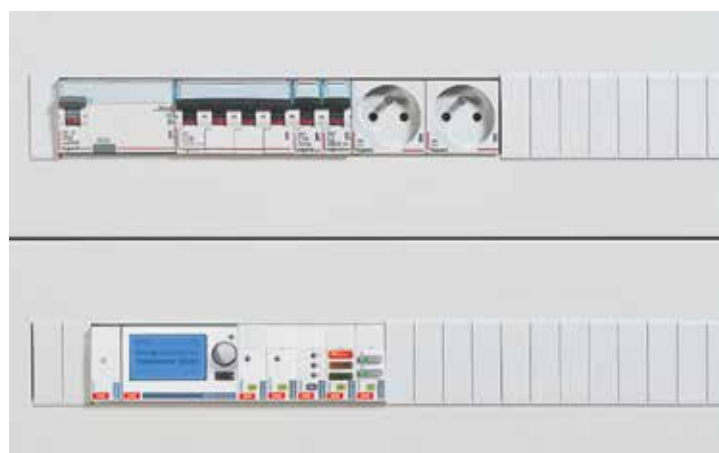
Measurement with open coils

Three-phase measurement modules with flexible open Rogowski coils can be used to measure currents up to 630 A, 1600 A, 3200 A and 6300 A, depending on the size chosen. They have been specially designed for quick and easy installation. The supports provided are used to fix and centre the coils on the busbars horizontally or vertically.



Measurement with CT

High-current measurement modules for current transformers can be used to take measurements using conventional current transformers (5 A). They can therefore be used in large distribution panels.



ONLY 4 STEPS

to manage the energy in your installation

1

Select
the functions

Measure
and counting,
inform and
control

MEASURE



Single-phase $\leq 63A$
1 Rogowski coil



Three-phase $\leq 63A$
3 Rogowski coils

2

Connect
the functions

Supply and
connections



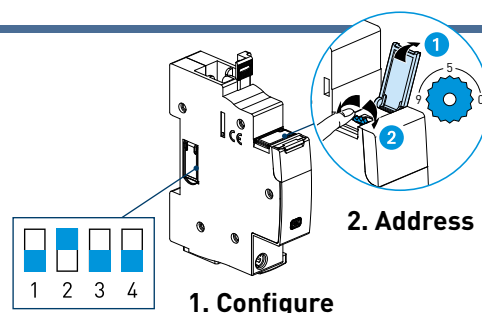
Power supply
module

3

Configure
the modules
and the system

Manually
With no IP or PC connection;
Thanks to a simple screwdriver.

- 1. Configure:** move the side micro-switches
- 2. Address:** for all modules, turn the rotary wheel to address
- 3. Program:** with the Mini modular configurator



1. Configure

2. Address

4

Supervise
the system

Locally:
directly accessible in the electric panel



Modular mini configurator
- Display consumptions,
alarms...
- Control the modules



INFORM



CONTROL



For CT (1F/3F)
with a 5A secondary



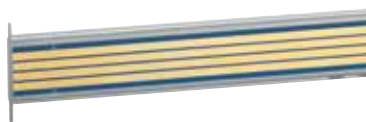
Impulse concentrator
module



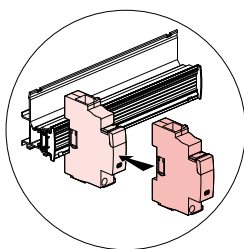
Multifunction status signal
module



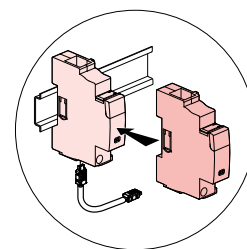
Multifunction control
module



Communicating rail



Communicating cables



3. Program Program the system: with the Mini modular configurator

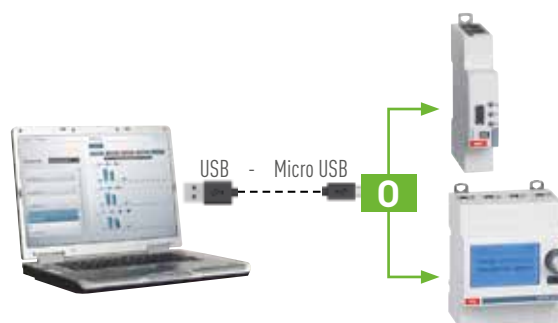
- Define the alarms
- Rename the circuits
- Test...



With a PC

1. Configure & 2. Address 3. Load the configurations in the system

- Access more technical configurations: timing, tripping thresholds
- Define the alarms
- Rename circuits...



Remote: by PC, Smartphone, through web pages tablet...

On 1 PC only With the licence key

Energy Manager software)
can be displayed on 1 PC only

On several PC remotely With the Web Server to display on 1 or more PC, tablet, smartphone



Communication
gateway
NEMO SX to RS 485

Communication
gateway
RS 485 to IP



0



Connection to the IP network via WEB https pages

NEMO SX

application examples



Example 1 “STAND-ALONE” CONFIGURATION

IDEAL FOR INDIVIDUAL INSTALLATIONS WHERE THERE IS A LOCAL NEED TO:

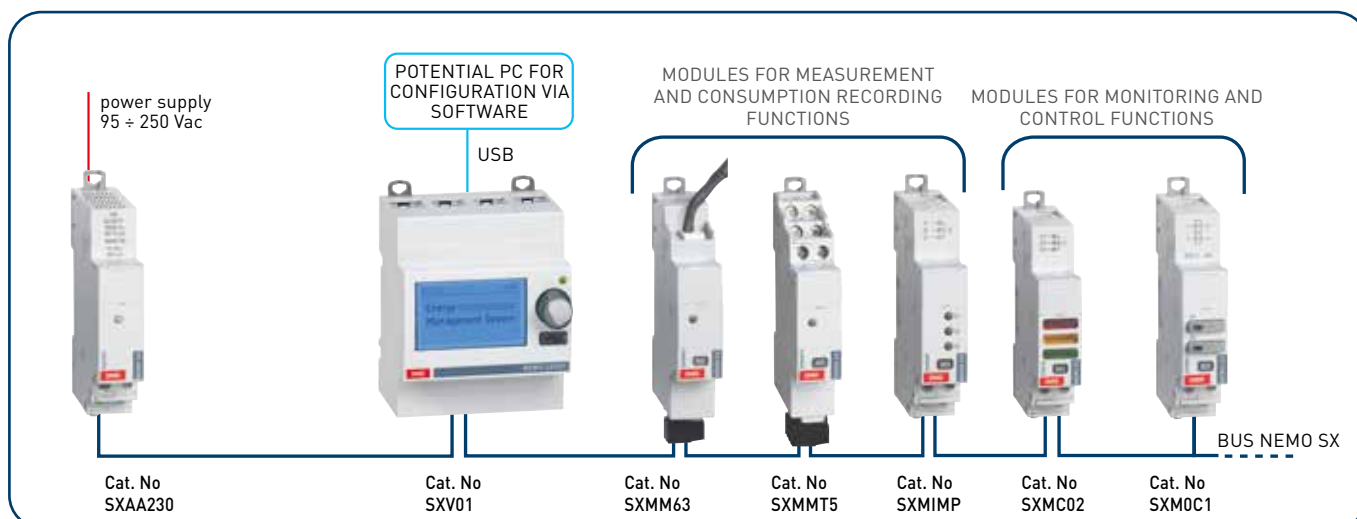
- monitor parameters (electricity, water, gas, calories, etc.) of consumption and/or production
- check the status of various devices (switches, contactors, relays, end runs, etc.)
- locally control various devices (switches, contactors, relays, etc.)
- register alarms (up to 20)
- generate simple load control automations
- configure the installation simply

Scope of application:

Residential buildings and small commercial businesses potentially with photovoltaic and/or thermal solar energy production plants.

Installation

- maximum capacity for expansion: 32 devices
- maximum distance between two devices: 3 m
- maximum consumption of the entire system: 1500 mA, divided up into 3 inter-connected groups
- maximum consumption of each group: 500 mA supplied by a single power supply (Cat.No SXAA230)





Example 2 CONNECTED CONFIGURATION

IDEAL FOR INDIVIDUAL INSTALLATIONS WHERE, IN ADDITION TO THE SERVICES DESCRIBED IN EXAMPLE 1, THE FOLLOWING IS REQUIRED:

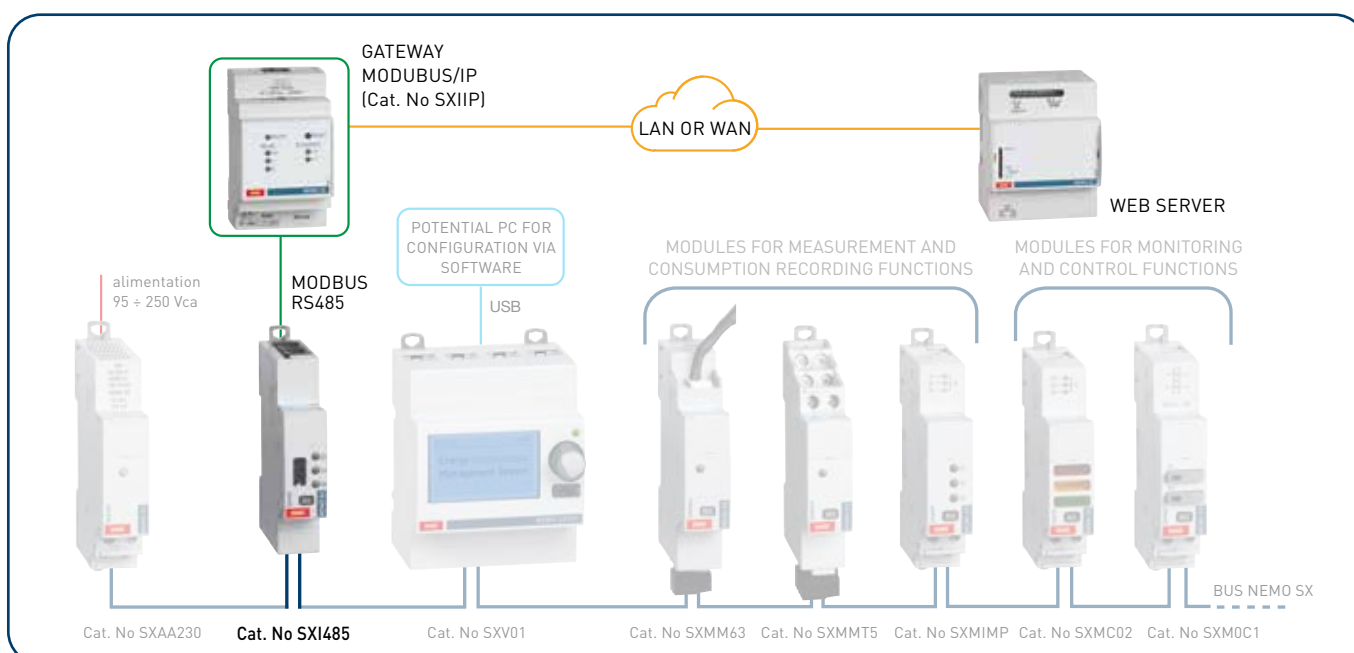
- record the trend of various electrical parameters (voltage, current, power, power factor, frequency, harmonic distortion rate, etc.)
- create histograms and energy reports
- record events and alarms
- save data to files and automatically send out e-mails/text messages
- implement automation and load management systems
- access the system via various devices (smartphones, tablets, PCs, etc.)

Scope of application:

Residential buildings and small commercial businesses where the need, above all, is to make installation monitoring and control possible from a remote position.

Installation

- maximum expansion possible: 32 devices
- maximum distance between two devices: 3 m
- maximum consumption of the system: 1500 mA, divided up into 3 inter-connected groups
- maximum consumption of each individual group: 500 mA supplied by a single power supply (Cat.No SXAA230)



NEMO SX

application examples



Example 3 “ON-LINE” CONFIGURATION

IDEAL FOR INSTALLATIONS WHERE, IN ADDITION TO THE SERVICES DESCRIBED IN EXAMPLE 2, IT IS POSSIBLE TO INTEGRATE INDIVIDUAL BUS NEMO SX SYSTEMS BETWEEN THEM AND OTHER MODBUS DEVICES ABLE, FOR EXAMPLE, TO:

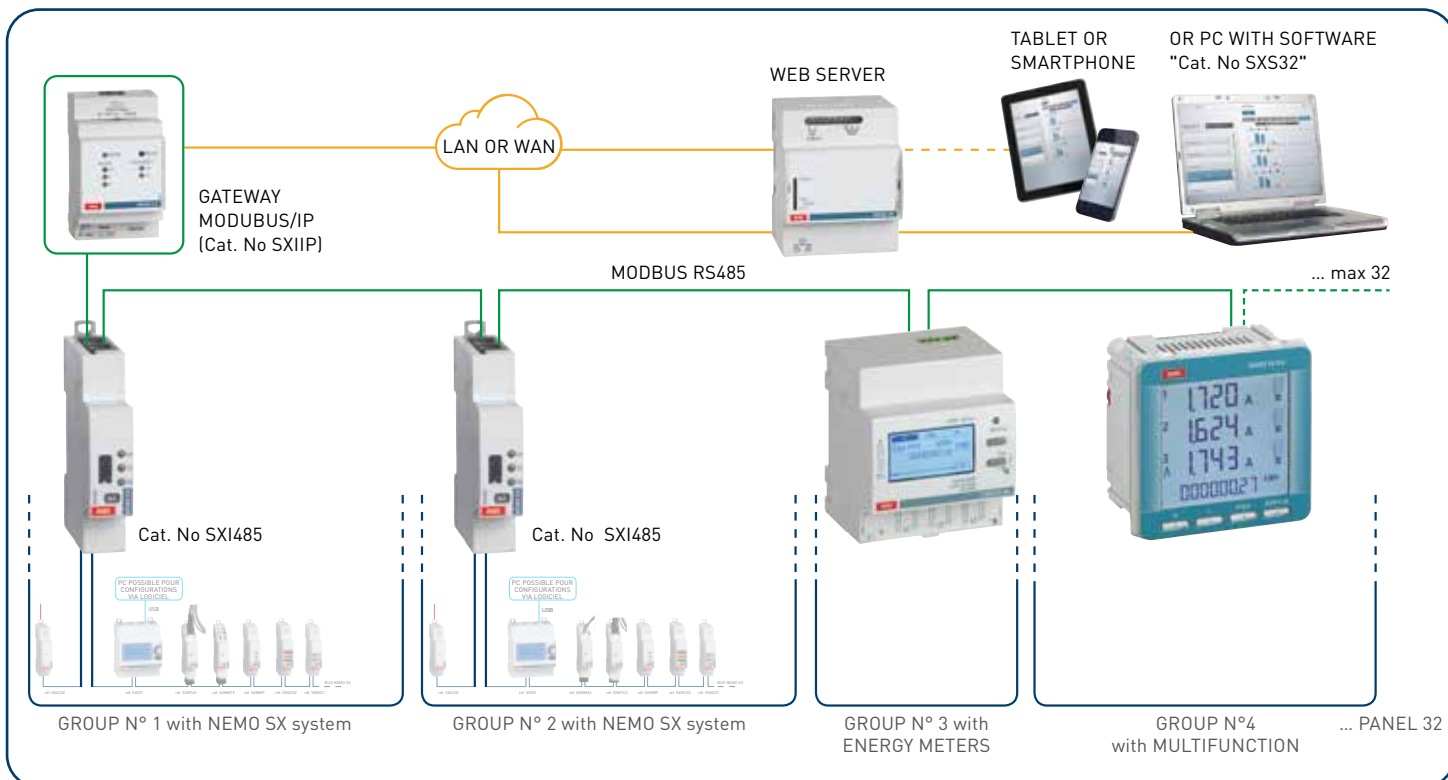
- ensure additional measurement and control functions
- manage and monitor the parameters of the electronic protection relays typical of large switches (boxed and open)
- manage and monitor the automatic switching parameters between two power sources, etc.

Scope of application:

Buildings with simple installations, also consisting of several electric cabinets, with the need to control and monitor electrical loads.

Installation:

- maximum capacity for expansion: 32 MODBUS devices
- maximum length of RS485 bus: 1000 m
- maximum logical addresses: 247





Example 4 “MULTI-SITE” CONFIGURATION

IDEAL FOR INDIVIDUAL PLANTS WHERE, IN ADDITION TO THE SERVICES DESCRIBED IN EXAMPLE 3, THE FOLLOWING IS REQUIRED:

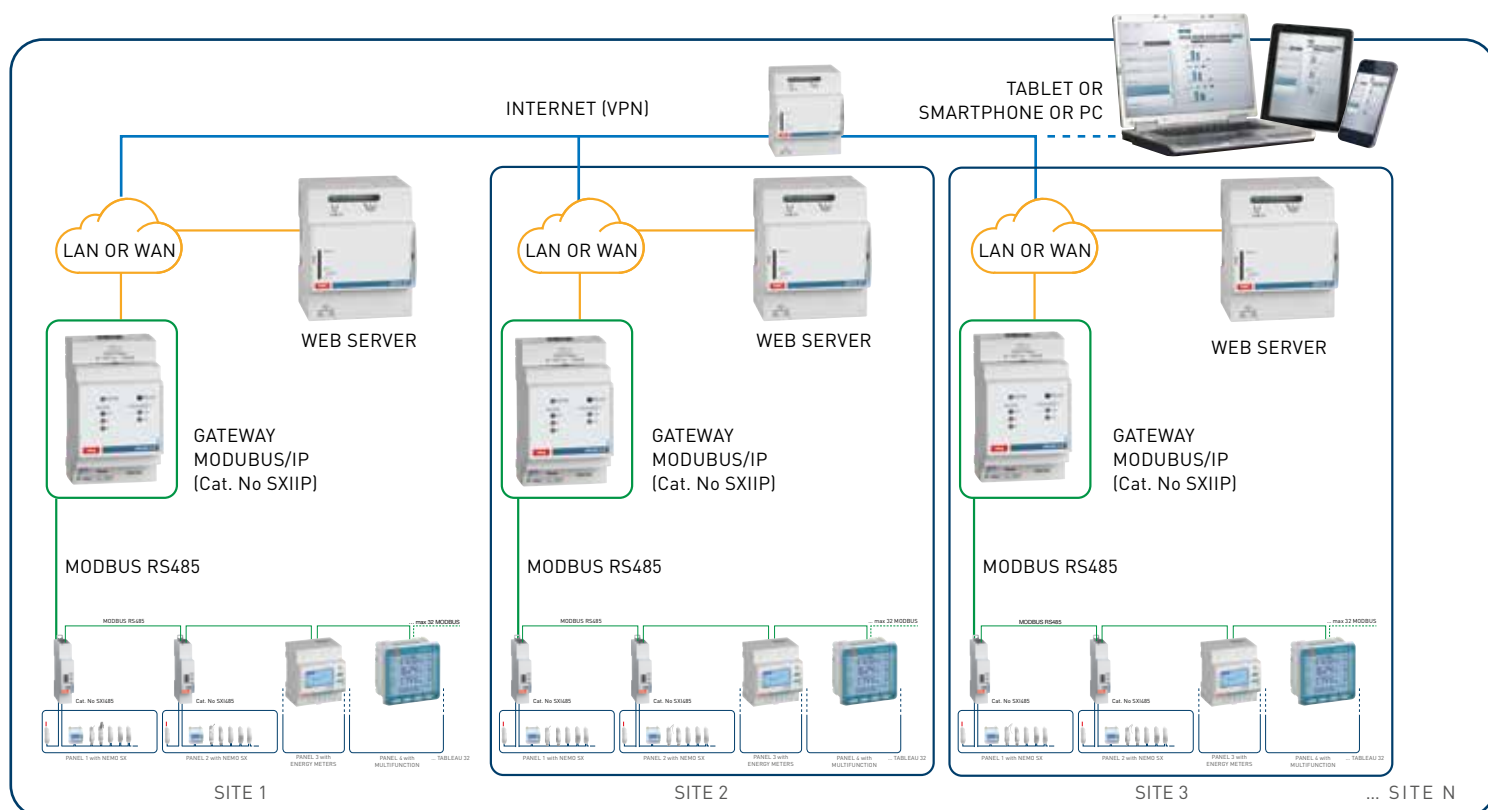
- remotely manage individual installations situated in different locations with the help of devices (smartphone, tablet, PC, etc.) connected to the Internet
- have several levels of visualization: local (1 site) or remote, with a multi-site “administrator” view.

Scope of application:

Sites (filiales de banques, points de vente de carburants, chaînes de magasin ou de restaurants, écoles, etc.) dotés d’installations simples, qui doivent être supervisées par une entité administratrice unique.

Installation:

- maximum capacity for expansion: 32 MODBUS devices - 32 devices
- maximum length of bus RS485: 1000 m
- maximum logical addresses: 247



NEMO SX: energy management system

devices



SXAR18/24/36



SXAC250-500-1000



SXAA230



SXV01



SXI485



SXIIP

Conform to IEC/EN 61131-2 (Programmable controllers) NEMO SX energy management system enables to measure, control and visualize the state of 4 rail mounting protection devices (MCBs, RCCBs, RCBOs, etc...) and head equipment, locally ("Stand alone") or remotely. All the modules of the system are equipped with two specific communication ports: one at the backside (for communication rail) and one underneath (for communication patch cords). Power supply with specific module SXAA230. Remote configuration possible with the help of the Energy Management configuration Software, available for free download via IME WEB site (giving also access to a 30-day trial version of Energy Management Software)

Item	Power supply module
SXAA230	230V/12V power supply with double cable connection or with connectors for base on the back. 500 mA 12 V = stabilized power supply module
	Communication rail DIN35
	To be fitted on rail or spacer. Allows data transmission between the different modules of NEMO SX system L (n°modules)
SXAR18	18 modules
SXAR24	24 modules
SXAR36	36 modules
SXARC	Plastic cover for communication rail
	Communication patch cords
	Allows data transmission between the different modules of NEMO SX energy supervision system Can be used instead of communication rails or to create a link between two rows (individually connected with communication rails)
	Description
SXAC250	Kit 10 cables length 250mm
SXAC500	Kit 10 cables length 500mm
SXAC1000	Kit 10 cables length 1000mm
SXACA	Adapter for joining pre-wired cables

Item	Stand alone configuration module
	The NEMO SX programming and display module allows to access the entire system via the front selector, or via USB connection to a PC.
	Description
SXV01	Programming and visualization module
	Interface module RS485/Modbus TCP-IP
	MODBUS/IP GATEWAY - Converts Modbus IP / Modbus RS485, allows to connect the devices in the electrical panel to an Ethernet network - Vn= 230 Vac - 3 modules
	Description
SXIIP	Interface module RS485/ethernet for the connection with IP network
	Interface module RS485
	Interface for converting NEMO SX into Modbus RS485 for integration into supervisory systems and other management systems.
	Description
SXI485	Interface module NEMO SX/RS485

NEMO SX: energy management system

modules



Conform to IIEC/EN 61131-2 (Programmable controllers)

NEMO SX energy management system enables to measure, control and visualize the state of 4 rail mounting protection devices (MCBs, RCCBs, RCBs, etc...) or head equipment, locally ("Stand alone") or remotely. All the modules of the system are equipped with two specific communication ports: one at the backside (for communication rail) and one underneath (for patch cords). Power supply with specific module.

Remote configuration possible with the help of the Energy Management Configuration Software, available for free download via IME web site (giving also access to a 30-day trial version of Energy Management Software)

Item	Measurement modules direct connection with closed Rogowski coils	Item	Measurement modules direct connection with open, flexible Rogowski coils
	Measurement module with Rogowsky coils supplied. Measurements made and accuracy - Current (precision 0.5): phase: I1, I2, I3 - neutral: IN - Voltage (accuracy 0.5): phase/phase: U12, U23, U31- phase/neutral: V1N, V2N, V3N - Frequency (precision 0.1) - Power: instantaneous total active, phase (precision 0.5); instantaneous total reactive, phase (precision 1); apparent total instantaneous, phase (accuracy 0.5); - Power factor (accuracy 0.5) - Energy: total/partial, positive and negative active energy (precision 0.5); total/partial, positive and negative reactive energy (precision 2). - THD (precision 2): THD voltages: V1, V2, V3 or U12, U23, U31 - THD (precision 5): THD currents: I1, I2, I3, IN. - Voltage/current harmonic analysis: odd harmonics up to the 15th Description SX3M63 3 x single-phase measuring module + 3 coils. Consumption: 0.418 W - 34.8 mA (12 Vdc) SXMM63 Single-phase measuring module + 1 coil. Consumption: 0.409 W - 34.1 mA (12 Vdc) SXMT63 3-phase measuring module + 3 coils. Consumption: 0.418 W - 34.8 mA (12 Vdc) SXMT125 3-phase measuring module + 3 coils. Consumption: 0.418 W - 34.8 mA (12 Vdc)		Measurement module with openable Rogowski Measurements made and accuracy - Current (accuracy 1): phase: I1, I2, I3 - Voltage (accuracy 0.5): phase/phase: U12, U23, U31- phase/neutral: V1N, V2N, V3N - Frequency (precision 0.1) - Power: instantaneous total active, phase (precision 1); instantaneous total reactive, phase (precision 1); apparent total instantaneous, phase (accuracy 1); - Power factor (accuracy 0.5) - Energy: total/partial, positive and negative active energy (precision 1); total/partial, positive and negative reactive energy (precision 2). - Voltage/current harmonic analysis: odd harmonics up to the 15th SXMR02 3-phase measuring module + 3 coils up to 630 A Consumption: 0.418 W - 34.8 mA (12 Vdc) SXMR04 3-phase measuring module + 3 coils up to 1600 A Consumption: 0.418 W - 34.8 mA (12 Vdc) SXMR06 3-phase measuring module + 3 coils up to 3200 A Consumption: 0.418 W - 34.8 mA (12 Vdc) SXMR08 3-phase measuring module + 3 coils up to 6300 A Consumption: 0.418 W - 34.8 mA (12 Vdc)
	Measurement module for 5 A current transformers Measurements made and accuracy - Current (precision 0.5): phase: I1, I2, I3 - neutral: IN - Voltage (accuracy 0.5): phase/phase: U12, U23, U31- phase/neutral: V1N, V2N, V3N - Frequency (precision 0.1) - Power: instantaneous total active, phase (precision 0.5); instantaneous total reactive, phase (precision 1); apparent total instantaneous, phase (accuracy 0.5); - Power factor (accuracy 0.5) - Energy: total/partial, positive and negative active energy (precision 0.5); total/partial, positive and negative reactive energy (precision 2). - Voltage/current harmonic analysis: odd harmonics up to the 15th SXMMT5		State reporting module Indicates various type of information, according to selected configuration: contacts position, plugged-in or drawn-out product, etc...Equipped with DIP switches (on the side) allowing product configuration: selection of information type and of the LED behaviour Description SXMC02 Equipped with 3 LED lights: green, red and yellow. Consumption: 0.377 W - 31.4 mA (12 Vdc)
	Extension kits for Rogowski coils Supplied with connectors Description ROGEXTM1 lunghezza: 1 m ROGEXTM3 lunghezza: 3 m		Universal control module Enables to remotely control different electrical loads or motorised controls associated to rail mounting protection devices or head equipment. Equipped with DIP switches (on the side) allowing product configuration: contact type (NO + NC, 2 NO, etc...) and function (maintained or momentary contact) Description SXMOC1 2 relays: 240 V A - 6 A. Consumption: 0.456 W - 38 mA (12 Vdc)
			Pulse concentrator This device concentrates and stores the output pulses from electricity, gas, oil, water, compressed air meters or from measurement stations up to a maximum of 3 devices Description SXMIMP Up to 3 pulse circuits. Consumption: 0.288 W - 24 mA (12 Vdc)



SOFTWARE AND INTERFACES

The range of interfaces and converters comply communication devices for different standards, repeaters capable of amplifying signals and expanding systems and converters that allow the communication interface with NEMO measurement units or CONTO energy meters.



Monitoring systems

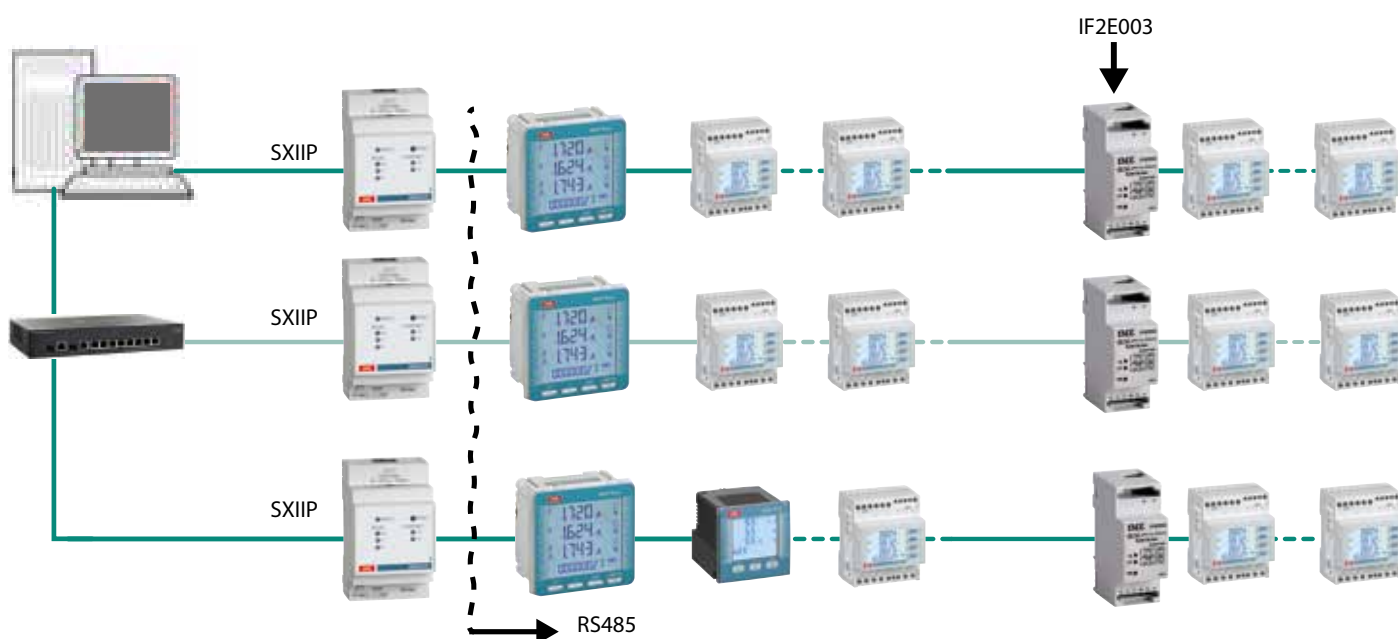
Thank to the management software and the interfaces range is possible to create more monitoring systems to allow local and/or remote management.

► LOCAL MONITORING RS 485 / Ethernet connection

PC connected with the devices using both Ethernet port (through the network switch) and a Ethernet / RS485 interface, and COM port and USB/RS485 interface.

IF4E011 or IF2E011: RS485 / Ethernet interface

IF2E003: RS485 / RS485 repeater over 31 devices or 1000 m. of line

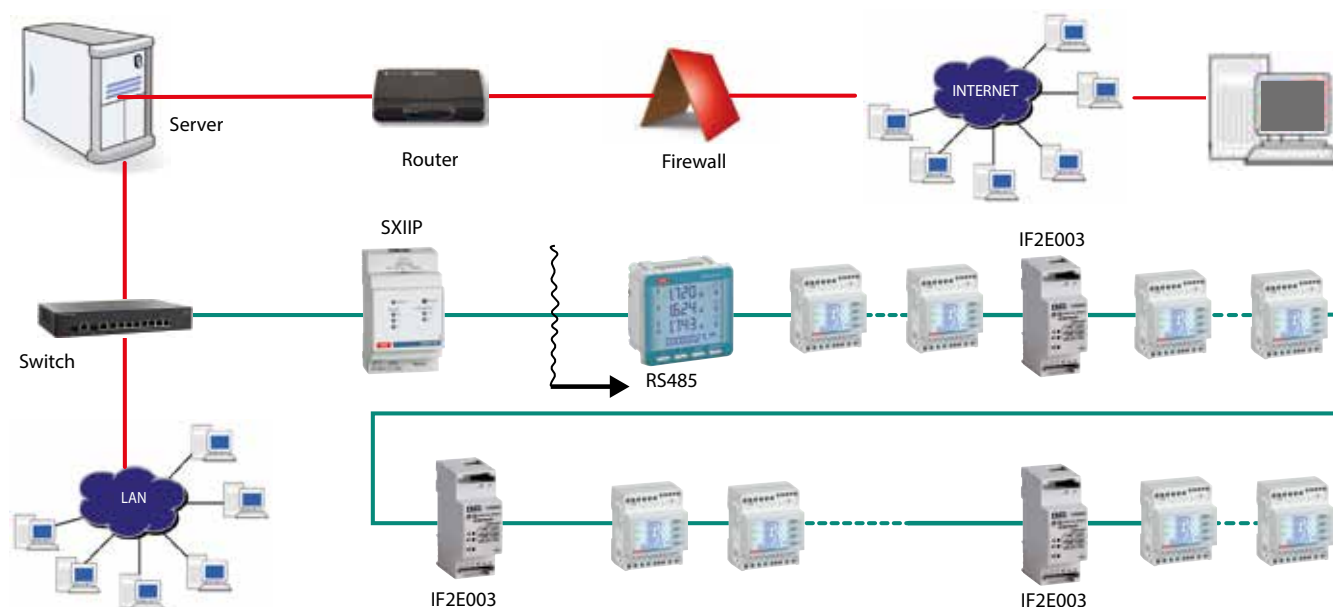


► REMOTE MONITORING Internet connection

PC mounted in a network different from the one where the devices are. Query through network router where the system under monitoring is.

IF4E011 or IF2E011: Ethernet / RS485 interface

IF2E003: RS485 / RS485 repeater over 31 devices or 1000 m. of line



Interfaces

Devices



IF4E011



IF2E002



IF2E003



IF2E011



SXWS10



SXWS255



IF4C001



IF1KNX

Conversion interface RS232-RS485

Direct connection on RS485 side up to 31 devices on a distance of 1200m at 9600 Baud or via repeaters up to 255.

Aux

IF2E002

80÷270Vac+100÷300Vdc

IF2E102

20÷60Vdc+24Vac

Repeater interface RS232-RS485

It allows to amplify the signal to 31 other devices over a distance of 1200m included in the same RS485 line

Aux

IF2E003

80÷270Vac+100÷300Vdc

IF2E103

20÷60Vdc+24Vac

Conversion interface Ethernet-RS485

It allows to interface Conto energy meters and Nemo multifunctions to an Ethernet 10/100MB network. Direct connection on RS485 line up to 31 devices or through repeaters up to 255. Two Bridge operating modes (Modbus RTU or Over TCP) or Web Server for the reading of main parameters and relevant download in csv format through a common internet browser. Direct access by IP interface

Aux

IF2E011

80÷270Vac+100÷300Vdc

IF2E111

20÷60Vdc+24Vac

Interface RS485-KNX

KNX/Modbus RS485 converter interface, for Conto energy meters and Nemo multifunctions, up to 31 struments

Aux

IF1KNX

95÷250Vac

Ethernet-RS485 Bridge or Datalogger function

Multisession conversion interface (up to 4) Ethernet-RS485/ Datalogger, it allows to interface Conto energy meters and Nemo multifunctions to an Ethernet 10/100MB network. Direct connection on RS485 line up to 31 devices or through repeaters up to 255. Two Bridge operating modes (Modbus RTU or Over TCP) or Datalogger to store the energy data for each connected device and on demand to generate consumption reports for a selected period with the possibility to deliver by email to the system administrator. In this configuration, you can manage up to 64 different energy meters / multifunctions and users with individual access and a system administrator. Direct access by IP interface.

Aux

IF4E011

80÷270Vac+100÷300Vdc

Pulse concentrator 12 inputs

It allows to interface the Conto energy meters and all devices with pulse outputs (ex. water and gas meters) to data acquisition systems through RS485 Modbus-RTU output. Three possible configurations: 12 inputs from contact SPST-NO or 6 inputs from contact SPST-NO + 6 voltage contacts 27V max or 6 inputs from contact SPST-NO + inputs S0 (Wh+/Wh-/varh+/varh-/tariff change) for connection to ES card for GME (Enel measuring group)

Aux

IF4C001

230Vac

Web server for DIN 35 rail

Web server for:

- display of states, electrical quantities and alarms
- the remote control (only with NEMO SX)
- the generation and sending of consumption reports

Perform the analysis and historicization of consumption on CSV files. It allows to consult these quantities through web pages (intranet/internet) using devices such as: smart-phones, tablets, PCs. Version for managing 10 devices (SXWS10) or 32 devices (SXWS32).

SXWS10

Input

RS485

Output

Ethernet RJ45

Aux

9÷28 Vdc

SXWS32

RS485

Ethernet RJ45

9÷28 Vdc

Web server

Web server for:

- display of states, electrical quantities and alarms
 - the remote control (only with NEMO SX)
 - the generation and sending of consumption reports
- Perform the analysis and historicization of consumption on CSV files. It allows to consult these quantities through web pages (intranet/internet) using devices such as: smart-phones, tablets, PCs, etc. Version for managing 255 devices

SXWS255

Input

Ethernet RJ45

Output

Ethernet RJ45

Aux

230V (with power supply 230/12 Vdc)

Interfaces

Devices

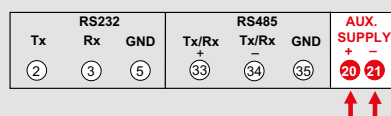
Technical features

ITEMS.	IF2E002- IF2E102	IF2E003- IF2E103	IF2E011- IF2E111	IF4E011	IF4C001	IF1KNX
COMMUNICATION						
Conversion	RS485-RS232 or RS232-RS485	RS485-RS485	RS485-Ethernet	RS485-Ethernet	RS485-RS485	RS485-KNX
AUXILIARY SUPPLY						
Rated voltage	80÷270Vac + 100÷300Vdc or 24Vac + 20÷60Vdc			80÷270Vac + 100÷300Vdc	230V	95÷250Vac
Rated burden	≤ 4VA				≤ 5 VA	0,316W - 26,3mA 0,344W - 28,7mA
ELECTROMAGNETIC COMPATIBILITY						
Emission and immunity tests according to	EN61326-1					
ENVIRONMENTAL CONDITIONS						
Nominal temperature range	-5÷55°C					
Limit range for storage and transport	-25÷70°C					
Suitable for tropical climates	yes					
Max. power dissipation *	3,5W				3W	-
MECHANICAL FEATURES						
Housing	2 modules DIN43880 (35mm)			4 modules DIN43880 (35mm)		2 modules DIN43880 (35mm)
Connections	screw terminals	Aux supply.: screw terminals RS485: screw terminals	Aux supply.: screw terminals RS485: plug-in connector Ethernet: RJ45 connector		screw terminals	
Housing material	self-extinguishing polycarbonate					
Protection degree (EN60529)	IP50 (front frame) IP20 (terminals)					

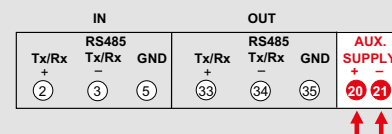
* For switchboard thermal calculation

Wiring diagrams

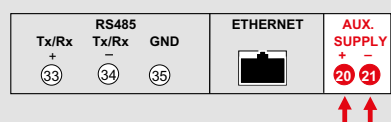
IF2E002- IF2E102



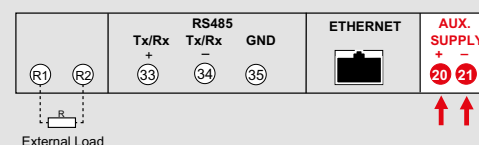
IF2E003- IF2E103



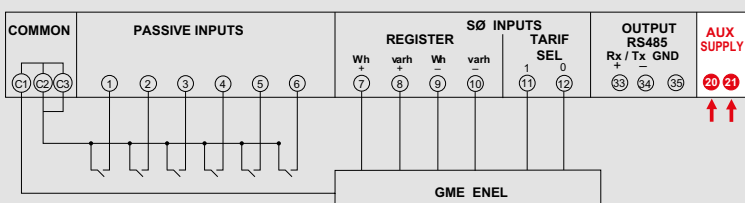
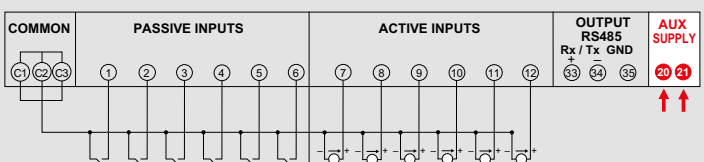
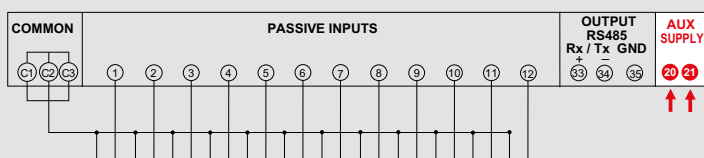
IF2E011- IF2E111



IF4E011



IF4C001



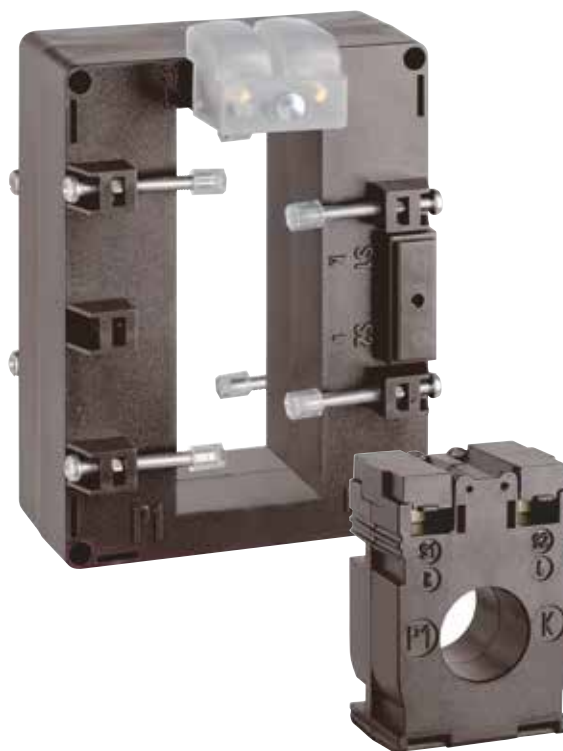


LOW VOLTAGE TRANSFORMERS

A complete range of amperometric and voltmeter transformers

To choose the CT properly you need to know:

- System rated current
This is used to determine the transformer's primary current, e.g.:
System rated current: 425A = CT 500/5A
- Power bar/cable size
This makes it possible to choose a CT with a window that is large enough to pass the phase bar/ cord through, the tendency is always to choose a slightly bigger window so as to have a little play that is useful during installation, e.g.:
Cord of 120mm² (max. outer diam. 21.5mm) = I choose model TA327 with ø27mm hole.
- Measurement class
Classes 0.5/1 recommended for measuring power, electricity and cosφ Class 3 to be used for current measures on ammeters only
- Performance (VA)





**CT with cable/
passing bar
(Primary currents:
40...8000A)**



**CT with primary
winding
(Primary currents:
5...600A)**



**Open core CT
(Primary currents:
60...5000A)**

Power absorbed (VA) by the cables connecting the CT and the instrument		
cross section mm ² copper	*VA per meter of bipolar cable at 20°C	
	secondary 5A	secondary 1A
1	1	0.04
1.5	0.685	0.0274
2.5	0.41	0.0164
4	0.254	0.0102
6	0.169	0.0068
10	0.0975	0.0039
16	0.062	0.0025

* The VA absorbed by the connection cables rises 4% for every 10% variation in the temperature.

This represents the maximum load that can be connected to the secondary terminals of the CT.

The load consists of the self consumption of the measurement instrument + adsorption of the cables connecting the CT and the instrument. This latter depends on the length and cross-section of the cable. For the functioning of a certain measurement class, the maximum load must always be lower or equal to the performance/rated class of the CT.

The following is a table for calculating the absorption of the cables connecting the CT and the instrument.

CT/5A or CT/1A?

From the table shown above, it can be seen that using the same cross section the CT/1A absorbs 25 times less than the CT/5A because of the very long sections ($\geq 20m$). You are advised to choose a CT/1A so as to reduce the section and relative cost of the cables as well as ensuring more precise reading.

Current transformers for low voltage network - MEASURE

table of choiche

PASSING CABLE/BUSBARS PRIMARY TRANSFORMERS																															
																															
Model	TAIBB			TA221			TA327			TA426			TA432			TA540			TAC80		TAC110		TAS64		TAS81						
Width (mm)	44			49.5			56			60			70			70			125		165		90		100						
Height (mm)	65			80			80			85			95			95			132		170		130		145						
Cables (mm)	Ø21			Ø21			Ø27			Ø26			Ø32			Ø40			Ø80		Ø110										
Window (mm)	16x12.5			20.5x10.5			25.5x15.5 32.5x10.5			32.5x15.5 40.5x12.5			25.5x25.5 32.5x20.5 40.5x10.5			40.5x20.5 50.5x12.5							51x31 64x11		64x31 81x11						
Primary current	VA			VA			VA			VA			VA			VA			VA		VA		VA		VA						
	cl 0.5	cl. 1	cl.3	cl 0.5	cl. 1	cl.3	cl 0.5	cl. 1	cl.3	cl 0.5	cl. 1	cl.3	cl 0.5	cl. 1	cl.3	cl 0.5	cl. 1	cl 0.5	cl. 1	cl 0.5	cl. 1	cl 0.5	cl. 1	cl 0.5	cl. 1						
40A			1																												
50A			1.5			2.5			1.5																						
60A		1	2		1.5	3			2.5																						
70A		1.5	2.5		1.5	4			1.5	3																					
75A		1.5	2.5		2	4			1.5	3																					
80A		1.5	2.5		3	4			2.5	3.5																					
100A	1.5	2.5	3.5	1.5	3		1	2.5					2	5																	
120A	2	3.5		2.5	4		2	3.5					2	5																	
125A	2	3.5	4	2.5	4		2	3.5					2	6																	
150A	3	4		4	6		3	4		1.5	3	1	3																		
160A	3	4		4	6		3	5		1.5	3	1.5	3																		
200A	4	5.5		6	8		4	7		2.5	4	3	5				1.5	3													
250A	5	6		8	10		6	8		3	4	3	5				2	4					2.5								
300A	6	7.5		8	10		8	10		4	6	5	8		2	4	2.5	5					3								
400A							10	12		6	8	8	10		4	6	3	5	3	5			4		2						
500A							12	15		6	8	10	12		4	6	3	5	3	5	2	4	2	4							
600A							15	20		6	8	12	15		6	8	4	6	4	6	4	6	3	5							
700A										8	10	10	12		8	10						6	8	4	6						
750A										8	10	10	12		8	10						6	8	4	6						
800A										10	12	10	12		8	12	4	6	4	6	6	8	4	6							
1000A												12	15		10	12	6	8	8	10	8	10	6	8							
1200A															12	15			8	10	10	12	8	10							
1250A																						10	12	8	10						
1500A																			10	12	10	12	10	12							
1600A																						10	12	10	12						
2000A																								10	12						
2500A																								10	12						
3000A																															
3200A																															
4000A																															
5000A																															
6000A																															
8000A																															

[illegible]

Current transformers for low voltage network - MEASURE

table of choice

WINDING PRIMARY TRANSFORMERS												
												
Model	TAQ2M		TAQ2L		TAQ6M		TAQ6L		TAQ10		TAQ20	
Width (mm)	56		56		56		56		85		110	
Height (mm)	80		80		80		80		102.5		140	
Primary current	VA		VA		VA		VA		VA		VA	
	cl. 0.5	cl. 1	cl 0.5	cl. 1	cl 0.5	cl. 1	cl 0.5	cl. 1	cl 0.5	cl. 1	cl 0.5	cl. 1
5A	2	4			6	7.5			10	15	20	40
10A	2	4			6	7.5			10	15	20	40
15A	2	4			6	7.5			10	15	20	40
20A	2	4			6	7.5			10	15	20	40
25A	2	4			6	7.5			10	15	20	40
30A	2	4			6	7.5			10	15	20	40
40A	2	4			6	7.5			10	15	20	40
50A			2	4			6	7.5	10	15	20	40
60A			2	4			6	7.5	10	15	20	40
70A									10	15	20	40
75A			2	4			6	7.5	10	15	20	40
80A			2	4			6	7.5	10	15	20	40
100A			2	4					10	15	20	40
120A									10	15	20	40
125A									10	15	20	40
150A									10	15	20	40
160A									10	15	20	40
200A									10	15	20	40
250A											20	40
300A											20	40
400A											20	40
500A											20	40
600A											20	40

Current transformers for low voltage network - MEASURE

table of choice

OPEN-CORE TRANSFORMERS

						
Model	TRA11	TRA15	TRA230	TRA580	TRA812	TRA816
Width (mm)	235	275	92	120	150	184
Height (mm)	219	259	110	150	190	245
Cables (mm)	Ø110	Ø150				
Window (mm)			20x30	50.5x80.5	80.5x120.5	80x160
Primary current	VA			VA		
	cl 0.5	cl. 1	cl. 3	cl 0.5	cl. 1	cl. 3
60A					1	
100A			3		1.5	
120A			3			
150A			5	1.5	2.5	
200A			5	1	2.5	
250A		5		1.5	3	
300A		5		1.5	4	
400A	5		5	2.5	6	
500A	8		8			
600A	15		15			
800A	15		15			
1000A	15		15			
1200A	20		20			
1500A	20		20			
2000A	25		25			
2500A			25			
3000A			25			
4000A			30			
5000A			30			

CURRENT SUMMATION TRANSFORMERS

			
Model	BSA02	BSA03	BTA2
Width (mm)	70	70	121
Height (mm)	93	93	124
Primary current	VA		VA
	cl 0.5	cl. 1	cl 0.5
5+5A	10	15	40
5+5+5A			40
5+5+5+5A			40
5+5+5+5+5A			15
5+5+5+5+5+5A			15
1+1A	10	15	40
1+1+1A			40
1+1+1+1A			40
1+1+1+1+1A			15
1+1+1+1+1+1A			15

Current transformers for low voltage network - PROTECTION

table of choiche

PASSING CABLE/BUSBARS PRIMARY TRANSFORMERS																
																
Model	TAS63P	TAS80	TAS80P	TAS102BP	TAS125	TAS125P										
Width (mm)	100	124	124	135 (a) 129 (b)	182	182										
Height (mm)	117.5	136	136	129 (a) 135 (b)	193	193										
Window (mm)	41x21 51x20 64x19	82x32	82x32	54x102 (a) 102x54 (b)	127x54	127x54										
Primary current	VA		VA		VA				VA		VA		VA			
	cl. 5P5	cl. 5P10	cl. 5P5	cl. 5P10	cl. 5P5	cl. 5P10	cl. 5P15	cl. 5P20	cl. 5P5	cl. 5P10	cl. 5P5	cl. 5P10	cl. 5P5	cl. 5P10	cl. 5P15	cl. 5P20
250A	2.5	1														
300A	3.5	1.2	6	2.5	8	4	2.5	1.5								
400A	4	1.5	7	2.5	10	5	3	2			6	3	12	6	3.5	2.5
500A	5	1.5	10	3	12	6	4	2.5			10	3	15	7	4	3
600A	6	2	10	4	15	7	4.5	3			10	5	20	10	5	4
700A	7	2	10	4	16	8	4.5	3			10	5	20	10	6	4
750A	7	2	10	4	20	9	5	3			10	5	25	10	7	5
800A	7	1.5	10	4	20	8	4.5	2.5	10	4	15	5	25	10	7	5
1000A	7	1.5	15	4	25	10	6	3	12	5	15	5	30	15	8	6
1200A	10	1.5	20	5	30	12	6	3	12	5	20	5	35	15	8	6
1250A	10	2	20	5	30	12	6	3	12	5	20	5	35	15	8	6
1500A	10	1.5	25	5	35	12	5		15	6	20	5	40	20	10	6
1600A	10	1.5	25	5	35	12	5		15	6	20	5	40	20	10	6
2000A			30	6	40	12	3		20	6	25	5	50	20	10	4
2500A			35	6	45	10			20	6	30	5	60	20	10	3
3000A									20	4	40	5	80	25	10	3
4000A											50	5	100	30	15	3
5000A																
6000A																
8000A																

WINDING PRIMARY TRANSFORMERS				
				
Model	TAQ10P	TAQ20P		
Width (mm)	85	110		
Height (mm)	102.5	140		
Primary current	VA		VA	
	cl 5P5	cl. 5P10	cl 5P5	cl. 5P10
5A	4	2	8	4
10A	4	2	8	4
15A	4	2	8	4
20A	4	2	8	4
25A	4	2	8	4
30A	4	2	8	4
40A	4	2	8	4
50A	4	2	8	4
60A	4	2	8	4
70A	4	2	8	4
75A	4	2	8	4
80A	4	2	8	4
100A	4	2	8	4
120A	4	2	8	4
150A	3	1.5	8	4
200A	4	2	8	4
250A	4	2	8	4
300A	4	2	8	4
400A			8	4
500A			8	4
600A			8	4

Current transformers for low voltage network - ACCURACY

table of choiche

PASSING CABLE/BUSBARS PRIMARY TRANSFORMERS																							
																	(a)		(b)				
Model	TA327			TA432			TAS65			TAS84			TAS102			TAS127			TAS127B				
Width (mm)	56			70			90 (a) 94 (b)			96 (a) 116 (b)			98 (a) 129 (b)			99 (a) 160 (b)			125 (a) 160 (b)				
Height (mm)	80			90			94 (a) 90 (b)			116 (a) 96 (b)			129 (a) 98 (b)			160 (a) 99 (b)			160 (a) 125 (b)				
Cables (mm)	Ø27			Ø32																			
Window (mm)	25.5x15.5 32.5x10.5			25.5x25.5 32.5x20.5 40.5x10.5			32x65 (a) 65x32 (b)			34x84 (a) 84x34 (b)			38x102 (a) 102x38 (b)			38x127 (a) 127x38 (b)			54x127 (a) 127x54 (b)				
Primary current	VA			VA			VA			VA			VA			VA			VA				
	cl. 0.2s	cl. 0.2	cl. 0.5s	cl. 0.2s	cl. 0.2	cl. 0.5s	cl. 0.2s	cl. 0.2	cl. 0.5s	cl. 0.2s	cl. 0.2	cl. 0.5s	cl. 0.2s	cl. 0.2	cl. 0.5s	cl. 0.2s	cl. 0.2	cl. 0.5s	cl. 0.2s	cl. 0.2	cl. 0.5s		
150A	1	1.5	2																				
160A	1	1.5	2																				
200A	2	2.5	3	1	1.5	2,5																	
250A	2	2.5	3	1	1.5	2,5																	
300A	2.5	4	5	1.5	2	3																	
400A	4	5	8	1.5	3	4																	
500A	6	7	10	2.5	5	5																	
600A	8	10	15	3	6	7	1	3	5														
700A				4	7	7	1,5	4	7,5														
750A				4	7	8	2	5	7,5														
800A				5	8	10	2,5	7,5	10	4	6	7											
1000A				6	10	12	10	12	15	6	7	8	3	5	6	4	6	8					
1200A							12	15	20	10	12	14	3	5	6	5	7.5	10					
1250A							12	15	20	10	12	14	3	5	6	5	7.5	10					
1500A							12	15	20	15	17,5	20	7.5	10	15	7.5	10	12.5	7.5	10	12.5		
1600A							12	15	20	15	17,5	20	7.5	10	15	7.5	10	12.5	7.5	10	12.5		
2000A							12	15	20	15	20	25	10	15	20	10	15	20	10	12.5	15		
2500A										20	25	30	15	20	25	15	20	25	12.5	15	20		
3000A													20	25	30	20	25	30	15	20	25		
3200A																			15	20	25		
4000A																			20	25	30		

WINDING PRIMARY TRANSFORMERS						
						
Model	TAQ6M		TAQ6L		TAQ10	
Type	Winding primary		Winding primary		Winding primary	
Width (mm)	56		56		85	
Height (mm)	50		80		102.5	
Primary current	VA		VA		VA	
	cl. 0.2	cl. 0.5s	cl. 0.2s	cl. 0.5s	cl. 0.2	cl. 0.5s
5A	3	5			5	10
10A	3	5			5	10
15A	3	5			5	10
20A	3	5			5	10
25A	3	5			5	10
30A	3	5			5	10
40A	3	5			5	10
50A			3	5	5	10
60A			3	5	5	10
70A					5	10
75A			3	5	5	10
80A			3	5	5	10
100A					5	10
120A					5	10
125A					5	10
150A					5	10

Voltage transformers for low voltage network

table of choice

VOLTAGE TRANSFORMERS - MEASUREMENT/PROTECTION																	
																	
Model	BTV3	BTV6			BTV10			BTV20			BTV50			BTV100			
Width (mm)	80	120			125			140			165			180			
Height (mm)	115	100			100			100			125			125			
Profondità (mm)	96	85			85			85			103			103			
Tensioni primarie	VA		VA			VA			VA			VA			VA		
	cl. 1	cl. 0.5	cl. 1	cl. 3P	cl. 0.5	cl. 1	cl. 3P	cl. 0.5	cl. 1	cl. 3P	cl. 0.5	cl. 1	cl. 3P	cl. 0.5	cl. 1	cl. 3P	
100V	6	6	9	20	10	15	30	20	30	50	50	75	100	100	150	200	
110V	6	6	9	20	10	15	30	20	30	50	50	75	100	100	150	200	
115V	6	6	9	20	10	15	30	20	30	50	50	75	100	100	150	200	
230V	6	6	9	20	10	15	30	20	30	50	50	75	100	100	150	200	
240V	6	6	9	20	10	15	30	20	30	50	50	75	100	100	150	200	
400V	6	6	9	20	10	15	30	20	30	50	50	75	100	100	150	200	
440V	6	6	9	20	10	15	30	20	30	50	50	75	100	100	150	200	
450V	6	6	9	20	10	15	30	20	30	50	50	75	100	100	150	200	
500V	6	6	9	20	10	15	30	20	30	50	50	75	100	100	150	200	
600V	6	6	9	20	10	15	30	20	30	50	50	75	100	100	150	200	
660V	6	6	9	20	10	15	30	20	30	50	50	75	100	100	150	200	
690V	6	6	9	20	10	15	30	20	30	50	50	75	100	100	150	200	
700V								20	30	50	50	75	100	100	150	200	
800V								20	30	50	50	75	100	100	150	200	
1000V								20	30	50	50	75	100	100	150	200	
Tensioni primarie	VA		VA			VA			VA			VA			VA		
	cl. 1	cl. 0.5	cl. 1	cl. 3P	cl. 0.5	cl. 1	cl. 3P	cl. 0.5	cl. 1	cl. 3P	cl. 0.5	cl. 1	cl. 3P	cl. 0.5	cl. 1	cl. 3P	
÷ : √3	3	3	4	10	5	7	15	8	10	25	25	30	50	50	75	100	

VOLTAGE TRANSFORMERS - PRECISION						
						
Model	BTV6	BTV10	BTV20	BTV50	BTV100	
Width (mm)	120	125	140	165	180	
Height (mm)	100	100	100	125	125	
Profondità (mm)	85	85	85	103	103	
Tensioni primarie	VA	VA	VA	VA	VA	
	cl. 0.2	cl. 0.2	cl. 0.2	cl. 0.2	cl. 0.2	cl. 0.2
230V	2.5	4	8	20	40	
240V	2.5	4	8	20	40	
400V	2.5	4	8	20	40	
440V	2.5	4	8	20	40	
450V	2.5	4	8	20	40	
500V	2.5	4	8	20	40	
600V	2.5	4	8	20	40	
660V	2.5	4	8	20	40	
690V	2.5	4	8	20	40	
700V			8	20	40	
800V			8	20	40	
1000V			8	20	40	
Tensioni primarie	VA	VA	VA	VA	VA	
	cl.0.2	cl.0.2	cl.0.2	cl.0.2	cl.0.2	cl.0.2
÷ : √3	1	2	3	8	14	

Current transformers - MEASURE

Open core single-phase current transformer



TRA11



TRA15

Item	TRA11			
Passing cable window/bar Ø 110mm				
Isr 5A	Primary current (A)	Accuracy class VA		
		cl. 0.5	cl. 1	cl. 3
TAAA50C100	100A	-	-	3
TAAA50C120	120A	-	-	3
TAAA50C150	150A	-	-	5
TAAA50C200	200A	-	-	5
TAAA50C250	250A	-	5	-
TAAA50C300	300A	-	5	-
TAAA50C400	400A	5	-	-
TAAA50C500	500A	8	-	-
TAAA50C600	600A	15	-	-
TAAA50C800	800A	15	-	-
TAAA50D100	1000A	15	-	-
TAAA50D120	1200A	20	-	-
TAAA50D150	1500A	20	-	-
TAAA50D200	2000A	25	-	-

TRA15				
Passing cable window/bar Ø 150mm				
Isr 5A	Primary current (A)	Accuracy class VA		
		cl. 0.5	cl. 1	cl. 3
TAAB50C100	100A	-	-	3
TAAB50C120	120A	-	-	3
TAAB50C150	150A	-	-	5
TAAB50C200	200A	-	-	5
TAAB50C250	250A	-	5	-
TAAB50C300	300A	-	5	-
TAAB50C400	400A	5	-	-
TAAB50C500	500A	8	-	-
TAAB50C600	600A	15	-	-
TAAB50C800	800A	15	-	-
TAAB50D100	1000A	15	-	-
TAAB50D120	1200A	20	-	-
TAAB50D150	1500A	20	-	-
TAAB50D200	2000A	25	-	-
TAAB50D250	2500A	25	-	-
TAAB50D300	3000A	25	-	-
TAAB50D400	4000A	30	-	-
TAAB50D500	5000A	30	-	-

Technical characteristics

MODEL	TRA11	TRA15
Technical characteristics		
Reference specification	EN/IEC 61869-1, 61869-2	
Rated primary current I _{pr}	100÷2000A	100÷5000A
Rated frequency	50Hz	
Working frequency	47÷63Hz	
Rated continuous thermal current I _{cth}	100% I _{pr}	
Rated short-time thermal current I _{th}	< 60I _{pr} (max.90kA/1s)	
Rated dynamic current	2,5I _{th}	
Instrument security factor (FS)	≤ 15	
Rated secondary current I _{sr}	5A	
Max. power dissipation	≤ 25W	≤ 25W
Allowed max cable or busbar temperature	125°C	

INSULATION REQUIREMENTS

Type	Dry transformer, air insulation
Highest voltage for equipment U _m	0.72kV r.m.s.
Rated insulation level	3kV r.m.s. 50Hz/1min
Class of insulation (EN/IEC 61869-1, 61869-2)	B

ENVIRONMENTAL CONDITIONS

Nominal temperature range	-25÷50°C
Storage temperature	-40÷85°C
Relative humidity	≤ 85%
Suitable for tropical climates	yes

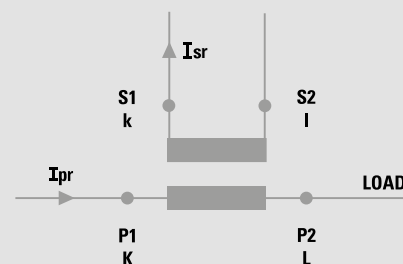
CONNECTION

Primary winding	passing bus bar
Secondary winding	tightening by nut M4

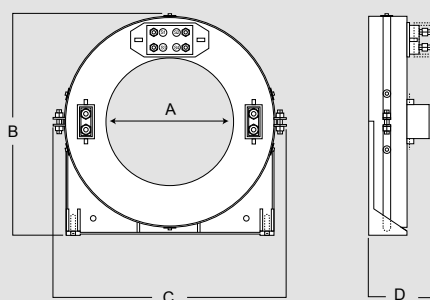
MECHANICAL FEATURES

Housing material	self extinguishing polycarbonate	
Protection degree (EN/IEC 60529)	IP20 with sealable terminal cover IP20 housing	
Weight	4200 gr	5500 gr

Wiring diagrams



Dimensions



Dim. (mm)	A	B	C	D
TRA11	110	219	235	79
TRA15	150	259	275	79

Current transformers - MEASURE

Open core single-phase current transformer



Item		TRA230			
		Busbar 20x30mm			
Isr 5A	Isr 1A	Primary current (A)	Accuracy class VA		
			cl. 0.5	cl. 1	cl. 3
TA23050B600	TA23010B600	60A	-	-	1
TA23050C100	TA23010C100	100A	-	-	1.5
TA23050C150	TA23010C150	150A	-	1.5	2.5
TA23050C200	TA23010C200	200A	1	2.5	-
TA23050C250	TA23010C250	250A	1.5	3	-
TA23050C300	TA23010C300	300A	1.5	4	-
TA23050C400	TA23010C400	400A	2.5	6	-

		TRA580			
		Busbar 50x80mm			
Isr 5A	Isr 1A	Primary current (A)	Accuracy class VA		
			cl. 0.5	cl. 1	cl. 3
TA58050C250	TA58010C250	250A	1	2	-
TA58050C300	TA58010C300	300A	1.5	3	-
TA58050C400	TA58010C400	400A	1.5	3	-
TA58050C500	TA58010C500	500A	2.5	5	-
TA58050C600	TA58010C600	600A	2.5	5	-
TA58050C800	TA58010C800	800A	3	7	-
TA58050D100	TA58010D100	1000A	5	10	-

		TRA812			
		Busbar 80x120mm			
Isr 5A	Isr 1A	Primary current (A)	Accuracy class VA		
			cl. 0.5	cl. 1	cl. 3
TA81250C500	TA81210C500	500A	-	4	12
TA81250C600	TA81210C600	600A	-	5	14
TA81250C800	TA81210C800	800A	3	7	-
TA81250D100	TA81210D100	1000A	5	10	-
TA81250D120	TA81210D120	1200A	6	11	-
TA81250D150	TA81210D150	1500A	8	15	-

		TRA816			
		Busbar 80x160mm			
Isr 5A	Isr 1A	Primary current (A)	Accuracy class VA		
			cl. 0.5	cl. 1	cl. 3
TA81650D200	TA81610D200	2000A	15	20	-
TA81650D250	TA81610D250	2500A	15	20	-
TA81650D300	TA81610D300	3000A	20	25	-
TA81650D400	TA81610D400	4000A	20	25	-
TA81650D500	TA81610D500	5000A	20	25	-

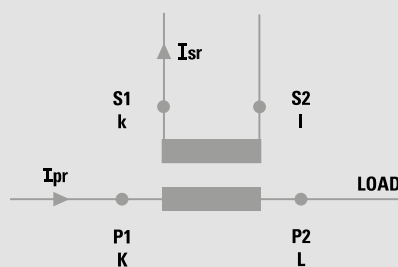
Accessories

Description
ATACOP13
Sealable terminal cover

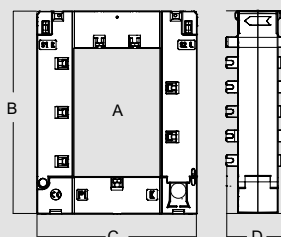
Technical characteristics

MODEL	TRA230	TRA580	TRA812	TRA816
Technical characteristics				
Reference specification	EN/IEC 61869-1, 61869-2			
Rated primary current I _{pr}	60÷400A	250÷1000A	500÷1500A	2000÷5000A
Rated frequency	50Hz			
Working frequency	47÷63Hz			
Rated continuous thermal current I _{cth}	100% I _{pr}			
Rated short-time thermal current I _{th}	< 60I _{pr} (max.90kA/1s)			
Rated dynamic current	2,5I _{th}			
Instrument security factor (FS)	≤ 15			
Rated secondary current I _{sr}	1 - 5A			
Max. power dissipation	≤ 3.4W	≤ 10W	≤ 10W	≤ 26W
Allowed max cable or busbar temperature	125°C			
INSULATION REQUIREMENTS				
Type	Dry transformer, air insulation			
Highest voltage for equipment U _m	0.72kV r.m.s.			
Rated insulation level	3kV r.m.s. 50Hz/1min			
Class of insulation (EN/IEC 61869-1, 61869-2)	B			
ENVIRONMENTAL CONDITIONS				
Nominal temperature range	-25÷50°C			
Storage temperature	-40÷85°C			
Relative humidity	≤ 85%			
Suitable for tropical climates	yes			
CONNECTION				
Primary winding	passing bus bar			
Secondary winding	4 screw terminals (max. cable section 6mm²) + 2 fast-ons (4,8x0,8mm)			
MECHANICAL FEATURES				
Housing material	self extinguishing polycarbonate			
Protection degree (EN/IEC 60529)	IP20			
Weight	680 gr	1100 gr	1550 gr	3550 gr

Wiring diagrams



Dimensions



Dim. (mm)	A	B	C	D
TRA230	20x30	110	92	60
TRA580	50x80	150	120	55
TRA812	80x120	190	150	55
TRA816	80x160	230	185	70

Current transformers - MEASURE

Winding primary single-phase current transformer



TAQ2L - TAQ6L



TAQ2M - TAQ6M



TAQ10



TAQ20

Item		TAQ2M		
Isr 5A	Isr 1A	Primary current (A)	Accuracy class VA	
			cl. 0.5	cl. 1
TAQ2M50A500	TAQ2M10A500	5A	2	4
TAQ2M50B100	TAQ2M10B100	10A	2	4
TAQ2M50B150	TAQ2M10B150	15A	2	4
TAQ2M50B200	TAQ2M10B200	20A	2	4
TAQ2M50B250	TAQ2M10B250	25A	2	4
TAQ2M50B300	TAQ2M10B300	30A	2	4
TAQ2M50B400	TAQ2M10B400	40A	2	4

Item		TAQ2L		
Isr 5A	Isr 1A	Primary current (A)	Accuracy class VA	
			cl. 0.5	cl. 1
TAQ2L50B500	TAQ2L10B500	50A	2	4
TAQ2L50B600	TAQ2L10B600	60A	2	4
TAQ2L50B750	TAQ2L10B750	75A	2	4
TAQ2L50B800	TAQ2L10B800	80A	2	4
TAQ2L50C100	TAQ2L10C100	100A	2	4

Item		TAQ6M		
Isr 5A	Isr 1A	Primary current (A)	Accuracy class VA	
			cl. 0.5	cl. 1
TAQ6M50A500	TAQ6M10A500	5A	6	7.5
TAQ6M50B100	TAQ6M10B100	10A	6	7.5
TAQ6M50B150	TAQ6M10B150	15A	6	7.5
TAQ6M50B200	TAQ6M10B200	20A	6	7.5
TAQ6M50B250	TAQ6M10B250	25A	6	7.5
TAQ6M50B300	TAQ6M10B300	30A	6	7.5
TAQ6M50B400	TAQ6M10B400	40A	6	7.5

Item		TAQ6L		
Isr 5A	Isr 1A	Primary current (A)	Accuracy class VA	
			cl. 0.5	cl. 1
TAQ6L50B500	TAQ6L10B500	50A	6	7.5
TAQ6L50B600	TAQ6L10B600	60A	6	7.5
TAQ6L50B750	TAQ6L10B750	75A	6	7.5
TAQ6L50B800	TAQ6L10B800	80A	6	7.5

Accessories

Description

ATACOP13

Sealable terminal cover for TAQ2M - TAQ2L - TAQ6M TAQ6L

ATACOP03

Sealable terminal cover for TAQ10

ATACOP07

Sealable terminal cover for TAQ20

Item		TAQ10		
Isr 5A	Isr 1A	Primary current (A)	Accuracy class VA	
			cl. 0.5	cl. 1
TAQC50A500	TAQC10A500	5A	10	15
TAQC50B100	TAQC10B100	10A	10	15
TAQC50B150	TAQC10B150	15A	10	15
TAQC50B200	TAQC10B200	20A	10	15
TAQC50B250	TAQC10B250	25A	10	15
TAQC50B300	TAQC10B300	30A	10	15
TAQC50B400	TAQC10B400	40A	10	15
TAQC50B500	TAQC10B500	50A	10	15
TAQC50B600	TAQC10B600	60A	10	15
TAQC50B700	TAQC10B700	70A	10	15
TAQC50B750	TAQC10B750	75A	10	15
TAQC50B800	TAQC10B800	80A	10	15
TAQC50C100	TAQC10C100	100A	10	15
TAQC50C120	TAQC10C120	120A	10	15
TAQC50C150	TAQC10C150	150A	10	15
TAQC50C200	TAQC10C200	200A	10	15
TAQC50C250	TAQC10C250	250A	10	15
TAQC50C300	TAQC10C300	300A	10	15

Item		TAQ20		
Isr 5A	Isr 1A	Primary current (A)	Accuracy class VA	
			cl. 0.5	cl. 1
TAQD50A500	TAQD10A500	5A	20	40
TAQD50B100	TAQD10B100	10A	20	40
TAQD50B150	TAQD10B150	15A	20	40
TAQD50B200	TAQD10B200	20A	20	40
TAQD50B250	TAQD10B250	25A	20	40
TAQD50B300	TAQD10B300	30A	20	40
TAQD50B400	TAQD10B400	40A	20	40
TAQD50B500	TAQD10B500	50A	20	40
TAQD50B600	TAQD10B600	60A	20	40
TAQD50B700	TAQD10B700	70A	20	40
TAQD50B750	TAQD10B750	75A	20	40
TAQD50B800	TAQD10B800	80A	20	40
TAQD50C100	TAQD10C100	100A	20	40
TAQD50C120	TAQD10C120	120A	20	40
TAQD50C150	TAQD10C150	150A	20	40
TAQD50C200	TAQD10C200	200A	20	40
TAQD50C250	TAQD10C250	250A	20	40
TAQD50C300	TAQD10C300	300A	20	40
TAQD50C400	TAQD10C400	400A	20	40
TAQD50C500	TAQD10C500	500A	20	40
TAQD50C600	TAQD10C600	600A	20	40

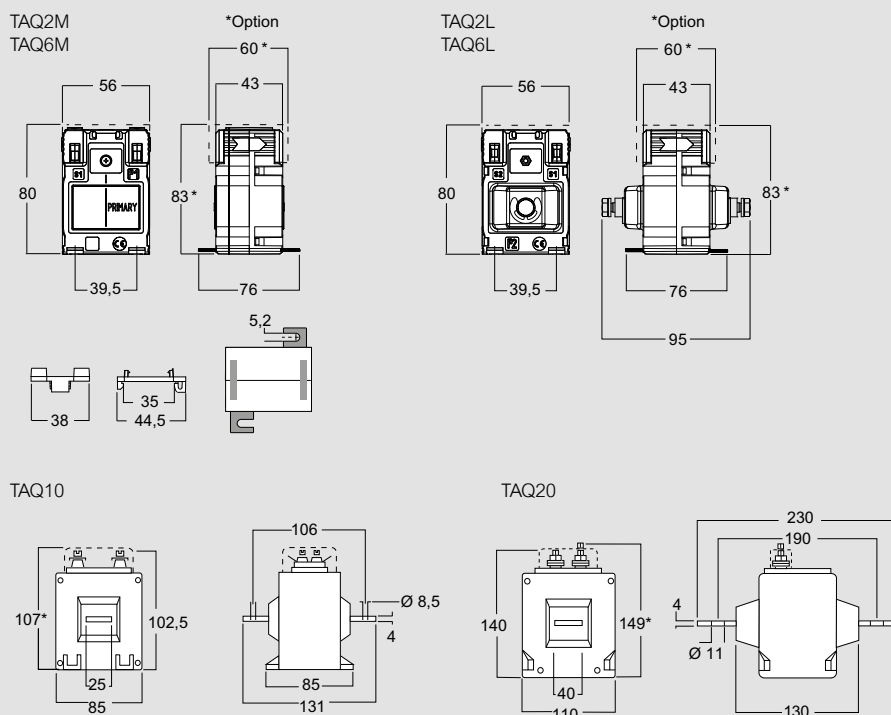
Current transformers - MEASURE

Winding primary single-phase current transformer

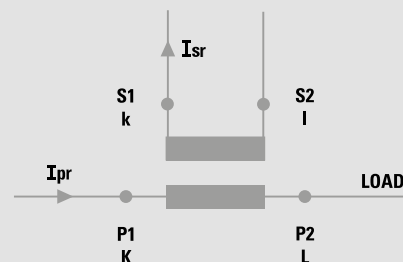
Technical characteristics

MODEL	TAQ2M	TAQ6M	TAQ2L	TAQ6L	TAQ10	TAQ20
Technical characteristics						
Reference specification	EN/IEC 61869-1, 61869-2					
Rated primary current Ipr	5÷40A	5÷40A	50÷100A	50÷80A	5÷300A	5÷600A
Rated frequency	50Hz					
Working frequency	47÷63Hz					
Rated continuous thermal current Icth	100% Ipr					
Rated short-time thermal current Ith	< 60Ipr					
Rated dynamic current	2,5Ith					
Instrument security factor (FS)	≤ 5					
Rated secondary current Isr	5 - 1A					
Max. power dissipation	≤ 4.3W	≤ 4.3W	≤ 4.3W	≤ 4.3W	≤ 2.5W	≤ 2.5W
Allowed max cable or busbar temperature	125°C					
INSULATION REQUIREMENTS						
Type	Dry transformer, air insulation					
Highest voltage for equipment Um	0.72kV r.m.s.					
Rated insulation level	3kV r.m.s. 50Hz/1min					
Class of insulation (EN/IEC 61869-1, 61869-2)	B					
ENVIRONMENTAL CONDITIONS						
Nominal temperature range	-25÷50°C					
Storage temperature	-40÷85°C					
Relative humidity	≤ 85%					
Suitable for tropical climates	yes					
CONNECTION						
Primary winding	2 screw terminals (max. cable section 6mm², 10mm² cables with lag)		Tightening by nut M6		built-in central bar (25x4mm)	built-in central bar (40x4mm)
Secondary winding	2 screw terminals (max. cable section 6mm², 10mm² cables with lag)		4 screw terminals (max. cable section 6mm²) + 2 fast-ons (4,8x0,8mm)		double screw M4	
MECHANICAL FEATURES						
Housing material	self extinguishing polycarbonate					
Protection degree (EN/IEC 60529)	IP40 housing - IP20 secondary terminals				IP20 housing, IP00 terminals (IP20 secondary terminals with sealable terminal cover)	
Mounting	snap-on 35mm rail, screw type for wall mounting					
Weight	250 gr	250 gr	300 gr	300 gr	700 gr	2000 gr

Dimensions



Wiring diagrams



Current transformers - MEASURE

Cable/passing bar single-phase current transformer



TAIBB



TA221

Item		TAIBB			
		Passing cable window/bar Ø 21mm - 16,5x12,5mm			
Isr 5A	Isr 1A	Primary current (A)	Accuracy class VA		
			cl. 0.5	cl. 1	cl.3
TABB50B400	TABB10B400	40	-	-	1
TABB50B500	TABB10B500	50	-	-	1.5
TABB50B600	TABB10B600	60	-	1	2
TABB50B700	TABB10B700	70	-	1.5	2.5
TABB50B750	TABB10B750	75	-	1.5	2.5
TABB50B800	TABB10B800	80	-	1.5	2.5
TABB50C100	TABB10C100	100	1.5	2.5	3.5
TABB50C120	TABB10C120	120	2	3.5	
TABB50C125	TABB10C125	125	2	3.5	4
TABB50C150	TABB10C150	150	3	4	
TABB50C160	TABB10C160	160	3	4	
TABB50C200	TABB10C200	200	4	5.5	
TABB50C250		250	5	6	
TABB50C300		300	6	7.5	

		TA221			
		Passing cable window/bar Ø 21mm - 20,5x10,5mm			
Isr 5A	Isr 1A	Primary current (A)	Accuracy class VA		
			cl. 0.5	cl. 1	cl.3
TA22150B500	TA22110B500	50	-	-	2.5
TA22150B600	TA22110B600	60	-	1.5	3
TA22150B700	TA22110B700	70	-	1.5	4
TA22150B750	TA22110B750	75	-	2	4
TA22150B800	TA22110B800	80	-	3	4
TA22150C100	TA22110C100	100	1.5	3	-
TA22150C120	TA22110C120	120	2.5	4	-
TA22150C125	TA22110C125	125	2.5	4	-
TA22150C150	TA22110C150	150	4	6	-
TA22150C160	TA22110C160	160	4	6	-
TA22150C200	TA22110C200	200	6	8	-
TA22150C250	TA22110C250	250	8	10	-
TA22150C300		300	8	10	-

Accessori

Description

ATACOP12

ATACOP13

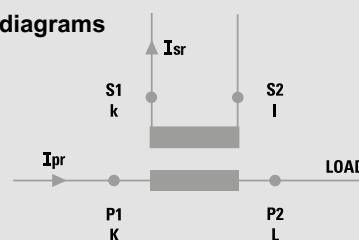
Sealable terminal cover per TAIBB

Sealable terminal cover per TA221

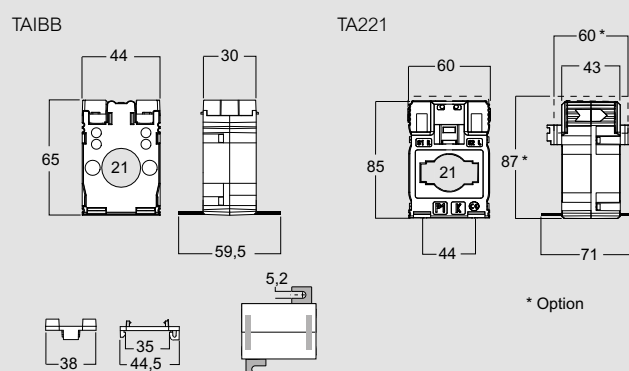
Technical characteristics

MODEL	TAIBB		TA221
Technical characteristics			
Reference specification	EN/IEC 61869-1, 61869-2		
Rated primary current Ipr	40÷300A (with secondary winding 5A)	50÷300A (with secondary winding 5A)	
	40÷200A (with secondary winding 1A)	50÷250A (with secondary winding 1A)	
Rated frequency	50Hz		
Working frequency	47÷63Hz		
Rated continuous thermal current Icth	100% Ipr		
Rated short-time thermal current Ith	< 60Ipr		
Rated dynamic current	2,5Ith		
Instrument security factor (FS)	≤ 5		
Rated secondary current Isr	5 - 1A (Isr 1A not available with Ipr 250 and 300A)		
Max. power dissipation	≤ 3W	≤ 4W	
Allowed max cable or busbar temperature	125°C		
INSULATION REQUIREMENTS			
Type	Dry transformer, air insulation		
Highest voltage for equipment Um	0.72kV r.m.s.		
Rated insulation level	3kV r.m.s. 50Hz/1min		
Class of insulation (EN/IEC 61869-1, 61869-2)	B		
ENVIRONMENTAL CONDITIONS			
Nominal temperature range	-25÷50°C		
Storage temperature	-40÷85°C		
Relative humidity	≤ 85%		
Suitable for tropical climates	yes		
CONNECTION			
Primary winding	Passing cable		
Secondary winding	screw terminals , max 2 separated wires 2,5mm²	4 screw terminals (max. cable section 6mm²)+ 2 fast-ons (4,8x0,8mm)	
MECHANICAL FEATURES			
Housing material	self extinguishing polycarbonate		
Protection degree (EN/IEC 60529)	IP40 housing - IP20 secondary terminals		
Mounting	snap-on 35mm rail, screw type for wall mounting		
Weight	180 gr	320 gr	

Wiring diagrams



Dimensions



Current transformers - MEASURE

Cable/passing bar single-phase current transformer



TA327



TA426

Item

TA327

Passing cable window/bar Ø 27mm -
25.5x15.5mm - 32.5x10.5mm

Isr 5A	Isr 1A	Primary current (A)	Accuracy class VA		
			cl. 0.5	cl. 1	cl.3
TA32750B500	TA32710B500	50	-	-	1.5
TA32750B600	TA32710B600	60	-	-	2.5
TA32750B700	TA32710B700	70	-	1.5	3
TA32750B750	TA32710B750	75	-	1.5	3
TA32750B800	TA32710B800	80	-	2.5	3.5
TA32750C100	TA32710C100	100	1	2.5	-
TA32750C120	TA32710C120	120	2	3.5	-
TA32750C125	TA32710C125	125	2	3.5	-
TA32750C150	TA32710C150	150	3	4	-
TA32750C160	TA32710C160	160	3	5	-
TA32750C200	TA32710C200	200	4	7	-
TA32750C250	TA32710C250	250	6	8	-
TA32750C300	TA32710C300	300	8	10	-
TA32750C400	TA32710C400	400	10	12	-
TA32750C500	TA32710C500	500	12	15	-
TA32750C600	TA32710C600	600	15	20	-

TA426

Passing cable window/bar Ø 26mm -
32.5x15.5mm - 40.5x12.5mm

Isr 5A	Isr 1A	Primary current (A)	Accuracy class VA	
			cl. 0.5	cl. 1
TA42650C150	TA42610C150	150A	1.5	3
TA42650C160	TA42610C160	160A	1.5	3
TA42650C200	TA42610C200	200A	2.5	4
TA42650C250	TA42610C250	250A	3	4
TA42650C300	TA42610C300	300A	4	6
TA42650C400	TA42610C400	400A	6	8
TA42650C500	TA42610C500	500A	6	8
TA42650C600	TA42610C600	600A	6	8
TA42650C700	TA42610C700	700A	8	10
TA42650C750	TA42610C750	750A	8	10
TA42650C800	TA42610C800	800A	10	12

ATACOP13

Accessories

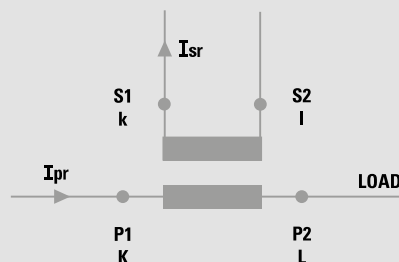
Description

Sealable terminal cover

Technical characteristics

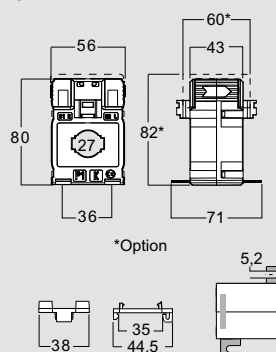
MODEL	TA327		TA426
TECHNICAL CHARACTERISTICS			
Reference specification	EN/IEC 61869-1, 61869-2		
Rated primary current Ipr	50÷600A	150÷800A	
Rated frequency	50Hz		
Working frequency	47÷63Hz		
Rated continuous thermal current Icth	100% Ipr		
Rated short-time thermal current Ith	< 60Ipr		
Rated dynamic current	2,5Ith		
Instrument security factor (FS)	≤ 5		
Rated secondary current Isr	1-5A		
Max. power dissipation	≤ 7W	≤ 11.5W	
Allowed max cable or busbar temperature	125°C		
INSULATION REQUIREMENTS			
Type	Dry transformer, air insulation		
Highest voltage for equipment Um	0.72kV r.m.s.		
Rated insulation level	3kV r.m.s. 50Hz/1min		
Class of insulation (EN/IEC 61869-1, 61869-2)	B		
ENVIRONMENTAL CONDITIONS			
Nominal temperature range	-25÷50°C		
Storage temperature	-40÷85°C		
Relative humidity	≤ 85%		
Suitable for tropical climates	yes		
CONNECTION			
Primary winding	Passing cable/sbarra		
Secondary winding	4 screw terminals (max. cable section 6mm²)+ 2 fast-ons (4,8x0,8mm)		
MECHANICAL FEATURES			
Housing material	self extinguishing polycarbonate		
Protection degree (EN/IEC 60529)	IP40 housing - IP20 secondary terminals		
Mounting	snap-on 35mm rail, screw type for wall mounting		
Weight	260 gr	300 gr	

Wiring diagrams

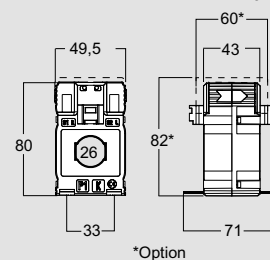


Dimensions

TA327



TA426



Current transformers - MEASURE

Cable/passing bar single-phase current transformer



TA432



TA540

Item

TA432

Passing cable window/bar Ø 32mm -
25,5x25,5mm - 32,5x20,5mm - 40,5x10,5mm

Isr 5A	Isr 1A	Primary current (A)	Accuracy class VA		
			cl. 0.5	cl. 1	cl. 3
TA43250C100	TA43210C100	100A	-	2	5
TA43250C120	TA43210C120	120A	-	2	5
TA43250C125	TA43210C125	125A	-	2	6
TA43250C150	TA43210C150	150A	1	3	-
TA43250C160	TA43210C160	160A	1.5	3	-
TA43250C200	TA43210C200	200A	3	5	-
TA43250C250	TA43210C250	250A	3	5	-
TA43250C300	TA43210C300	300A	5	8	-
TA43250C400	TA43210C400	400A	8	10	-
TA43250C500	TA43210C500	500A	10	12	-
TA43250C600	TA43210C600	600A	12	15	-
TA43250C700	TA43210C700	700A	10	12	-
TA43250C750	TA43210C750	750A	10	12	-
TA43250C800	TA43210C800	800A	10	12	-
TA43250D100	TA43210D100	1000A	12	15	-

TA540

Passing cable window/bar Ø 40mm -
40,5x20,5mm - 50,5x12,5mm - 40,5x10,5mm

Isr 5A	Isr 1A	Primary current (A)	Accuracy class VA	
			cl. 0.5	cl. 1
TA54050C300	TA54010C300	300A	2	4
TA54050C400	TA54010C400	400A	4	6
TA54050C500	TA54010C500	500A	4	6
TA54050C600	TA54010C600	600A	6	8
TA54050C700	TA54010C700	700A	8	10
TA54050C750	TA54010C750	750A	8	10
TA54050C800	TA54010C800	800A	8	12
TA54050D100	TA54010D100	1000A	10	12
TA54050D120	TA54010D120	1200A	12	15

Accessories

Description
Sealable terminal cover

ATACOP13

Technical characteristics

MODEL	TA432	TA540
TECHNICAL CHARACTERISTICS		
Reference specification	EN/IEC 61869-1, 61869-2	
Rated primary current I _{pr}	100÷1000A	300÷1200A
Rated frequency	50Hz	
Working frequency	47÷63Hz	
Rated continuous thermal current I _{cth}	100% I _{pr}	
Rated short-time thermal current I _{th}	< 60I _{pr}	
Rated dynamic current	2,5I _{th}	
Instrument security factor (FS)	≤ 5	
Rated secondary current I _{sr}	5 - 1A	
Max. power dissipation	≤ 9W	≤ 10.5W
Allowed max cable or busbar temperature	125°C	

INSULATION REQUIREMENTS

Type	Dry transformer, air insulation
Highest voltage for equipment U _m	0.72kV r.m.s.
Rated insulation level	3kV r.m.s. 50Hz/1min
Class of insulation (EN/IEC 61869-1, 61869-2)	B

ENVIRONMENTAL CONDITIONS

Nominal temperature range	-25÷50°C
Storage temperature	-40÷85°C
Relative humidity	≤ 85%
Suitable for tropical climates	yes

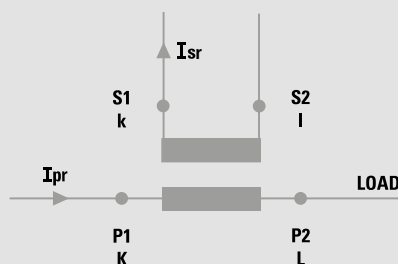
CONNECTION

Primary winding	Passing cable/bus bar primary
Secondary winding	4 screw terminals (max. cable section 6mm ²) + 2 fast-ons (4,8x0,8mm)

MECHANICAL FEATURES

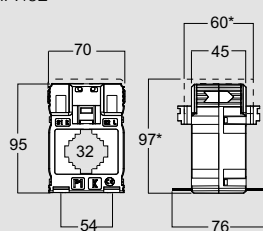
Housing material	self extinguishing polycarbonate
Protection degree (EN/IEC 60529)	IP40 housing - IP20 secondary terminals
Mounting	snap-on 35mm rail, screw type for wall mounting
Weight	420 gr 320 gr

Wiring diagrams



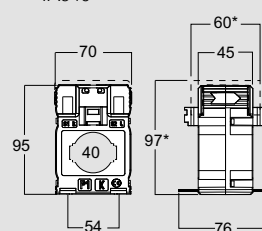
Dimensions

TA432

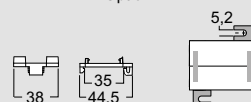


*Option

TA540



*Option



Current transformers - MEASURE

Cable/passing bar single-phase current transformer



TAC80



TAC110

Item	TAC80			
	Passing cable window/bar Ø 80mm			
Isr 5A	Primary current (A)	Accuracy class VA		
		cl. 0.5	cl. 1	
TA0850C200	200A	1.5	3	
TA0850C250	250A	2	4	
TA0850C300	300A	2.5	5	
TA0850C400	400A	3	5	
TA0850C500	500A	3	5	
TA0850C600	600A	4	6	
TA0850C800	800A	4	6	
TA0850D100	1000A	6	8	

Item	TAC110			
	Passing cable window/bar Ø 110mm			
Isr 5A	Primary current (A)	Accuracy class VA		
		cl. 0.5	cl. 1	
TA1150C400	400A	3	5	
TA1150C500	500A	3	5	
TA1150C600	600A	4	6	
TA1150C800	800A	4	6	
TA1150D100	1000A	8	10	
TA1150D120	1200A	8	10	
TA1150D150	1500A	10	12	

Technical characteristics

MODEL	TAC80	TAC110
TECHNICAL CHARACTERISTICS		
Reference specification	EN/IEC 61869-1, 61869-2	
Rated primary current I _{pr}	200÷1000A	400÷1500A
Rated frequency	50Hz	
Working frequency	47÷63Hz	
Rated continuous thermal current I _{cth}	100% I _{pr}	
Rated short-time thermal current I _{th}	< 60I _{pr}	
Rated dynamic current	2,5I _{th}	
Instrument security factor (FS)	≤ 5	
Rated secondary current I _{sr}	5A	
Max. power dissipation	≤ 7.5W	≤ 10.5W
Allowed max cable or busbar temperature	125°C	

INSULATION REQUIREMENTS

Type	Dry transformer, air insulation
Highest voltage for equipment U _m	0.72kV r.m.s.
Rated insulation level	3kV r.m.s. 50Hz/1min
Class of insulation (EN/IEC 61869-1, 61869-2)	B

ENVIRONMENTAL CONDITIONS

Nominal temperature range	-25÷50°C
Storage temperature	-40÷85°C
Relative humidity	≤ 85%
Suitable for tropical climates	yes

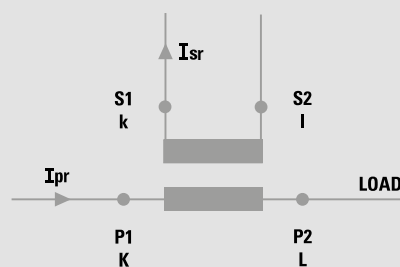
CONNECTION

Primary winding	Passing cable
Secondary winding	2 screw terminals (2x2.5mm ²)

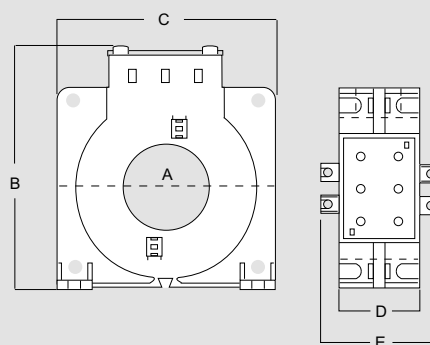
MECHANICAL FEATURES

Housing material	self extinguishing polycarbonate
Protection degree (EN/IEC 60529)	IP40 housing - IP20 secondary terminals
Mounting	2 screw type for wall mounting
Weight	500 gr 650 gr

Wiring diagrams



Dimensions



Dim. (mm)	A	B	C	D	E
TAC80	80	132	125	36	56
TAC110	110	170	165	36	56

Current transformers - MEASURE

Cable/passing bar single-phase current transformer



TAS64



TAS81

Item		TAS64			
		Passing cable window/bar 51x31mm - 64x11mm			
Isr 5A	Isr 1A	Primary current (A)	Accuracy class VA		
			cl. 0.5	cl. 1	
TASI50C250	TASI10C250	250A	-	2.5	
TASI50C300	TASI10C300	300A	-	3	
TASI50C400	TASI10C400	400A	-	4	
TASI50C500	TASI10C500	500A	2	4	
TASI50C600	TASI10C600	600A	4	6	
TASI50C700	TASI10C700	700A	6	8	
TASI50C750	TASI10C750	750A	6	8	
TASI50C800	TASI10C800	800A	6	8	
TASI50D100	TASI10D100	1000A	5	10	
TASI50D120	TASI10D120	1200A	10	12	
TASI50D125	TASI10D125	1250A	10	12	
TASI50D150	TASI10D150	1500A	10	12	
TASI50D160	TASI10D160	1600A	10	12	

		TAS81			
		Passing cable window/bar 64x31mm - 81x11mm			
Isr 5A	Isr 1A	Primary current (A)	Accuracy class VA		
			cl. 0.5	cl. 1	
TASN50C400	TASN10C400	400A	-	2	
TASN50C500	TASN10C500	500A	2	4	
TASN50C600	TASN10C600	600A	3	5	
TASN50C700	TASN10C700	700A	4	6	
TASN50C750	TASN10C750	750A	4	6	
TASN50C800	TASN10C800	800A	4	6	
TASN50D100	TASN10D100	1000A	6	8	
TASN50D120	TASN10D120	1200A	8	10	
TASN50D125	TASN10D125	1250A	8	10	
TASN50D150	TASN10D150	1500A	10	12	
TASN50D160	TASN10D160	1600A	10	12	
TASN50D200	TASN10D200	2000A	10	12	
TASN50D250	TASN10D250	2500A	10	12	

Accessories

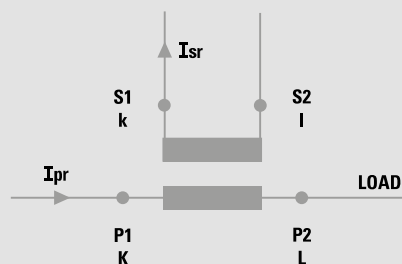
Description
Sealable terminal cover

ATACOP03

Technical characteristics

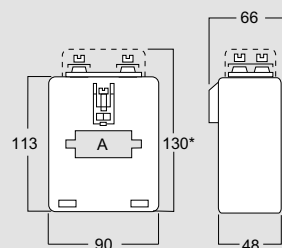
MODEL	TAS64		TAS81
TECHNICAL CHARACTERISTICS			
Reference specification	EN/IEC 61869-1, 61869-2		
Rated primary current Ipr	250÷1600A	400÷2500A	
Rated frequency	50Hz		
Working frequency	47÷63Hz		
Rated continuous thermal current Icth	100% Ipr		
Rated short-time thermal current Ith	< 60Ipr		
Rated dynamic current	2,5Ith		
Instrument security factor (FS)	≤ 5		
Rated secondary current Isr	5 - 1A		
Max. power dissipation	≤ 16W	≤ 14.5W	
Allowed max cable or busbar temperature	125°C		
INSULATION REQUIREMENTS			
Type	Dry transformer, air insulation		
Highest voltage for equipment Um	0.72kV r.m.s.		
Rated insulation level	3kV r.m.s. 50Hz/1min		
Class of insulation (EN/IEC 61869-1, 61869-2)	B		
ENVIRONMENTAL CONDITIONS			
Nominal temperature range	-25÷50°C		
Storage temperature	-40÷85°C		
Relative humidity	≤ 85%		
Suitable for tropical climates	yes		
CONNECTION			
Primary winding	Passing bus bar		
Secondary winding	tightening by nut M4		
MECHANICAL FEATURES			
Housing material	self extinguishing polycarbonate		
Protection degree (EN/IEC 60529)	IP40 housing - IP00 terminals (IP20 with sealable terminal cover)		
Weight	500 gr	470 gr	

Wiring diagrams

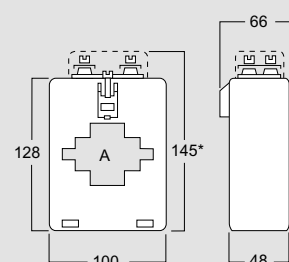


Dimensions

TAS64



TAS81



Current transformers - MEASURE

Cable/passing bar single-phase current transformer



TAS65

TAS84

Item				TAS65		
Vertical bar		Horizontal bar		Passing cable window/bar 32x65mm and 65x32mm - Long side terminals		
Isr 5A	Isr 1A	Isr 5A	Isr 1A	Primary current (A)	Accuracy class VA	
					cl. 0.5	cl. 1
TASL50C250	TASL10C250	TASL50C2503	TASL10C2503	250A	1	4
TASL50C300	TASL10C300	TASL50C3003	TASL10C3003	300A	1.5	6
TASL50C400	TASL10C400	TASL50C4003	TASL10C4003	400A	4	8
TASL50C500	TASL10C500	TASL50C5003	TASL10C5003	500A	8	10
TASL50C600	TASL10C600	TASL50C6003	TASL10C6003	600A	8	12
TASL50C700	TASL10C700	TASL50C7003	TASL10C7003	700A	10	12
TASL50C750	TASL10C750	TASL50C7503	TASL10C7503	750A	10	15
TASL50C800	TASL10C800	TASL50C8003	TASL10C8003	800A	12	15
TASL50D100	TASL10D100	TASL50D1003	TASL10D1003	1000A	15	20
TASL50D120	TASL10D120	TASL50D1203	TASL10D1203	1200A	15	20
TASL50D125	TASL10D125	TASL50D1253	TASL10D1253	1250A	15	20
TASL50D150	TASL10D150	TASL50D1503	TASL10D1503	1500A	20	25
TASL50D160	TASL10D160	TASL50D1603	TASL10D1603	1600A	20	25
TASL50D200	TASL10D200	TASL50D2003	TASL10D2003	2000A	20	25

Item				TAS84		
Vertical bar		Horizontal bar		Passing cable window/bar 34x84mm and 84x34mm - Long side terminals		
Isr 5A	Isr 1A	Isr 5A	Isr 1A	Primary current (A)	Accuracy class VA	
					cl. 0.5	cl. 1
TASO50C300	TASO10C300	TASO50C3003	TASO10C3003	300A	-	2
TASO50C400	TASO10C400	TASO50C4003	TASO10C4003	400A	3	5
TASO50C500	TASO10C500	TASO50C5003	TASO10C5003	500A	5	7
TASO50C600	TASO10C600	TASO50C6003	TASO10C6003	600A	6	10
TASO50C700	TASO10C700	TASO50C7003	TASO10C7003	700A	6	10
TASO50C750	TASO10C750	TASO50C7503	TASO10C7503	750A	8	12
TASO50C800	TASO10C800	TASO50C8003	TASO10C8003	800A	8	12
TASO50D100	TASO10D100	TASO50D1003	TASO10D1003	1000A	10	15
TASO50D120	TASO10D120	TASO50D1203	TASO10D1203	1200A	12	15
TASO50D125	TASO10D125	TASO50D1253	TASO10D1253	1250A	12	15
TASO50D150	TASO10D150	TASO50D1503	TASO10D1503	1500A	15	20
TASO50D160	TASO10D160	TASO50D1603	TASO10D1603	1600A	15	20
TASO50D200	TASO10D200	TASO50D2003	TASO10D2003	2000A	20	25
TASO50D250	TASO10D250	TASO50D2503	TASO10D2503	2500A	25	30

Accessories

Description

ATACOP04	Sealable terminal cover
ATADIS03	Spacing device for bars of 50 mm (for TAS65)
ATADIS01	Spacing device for bars of 60 mm (for TAS84)
ATAFIS01	2 screw type for wall mounting

Technical characteristics

MODEL	TAS65	TAS84
TECHNICAL CHARACTERISTICS		
Reference specification	EN/IEC 61869-1, 61869-2	
Rated primary current I _{pr}	250÷2000A	300÷2500A
Rated frequency	50Hz	
Working frequency	47÷63Hz	
Rated continuous thermal current I _{cth}	100% I _{pr}	
Rated short-time thermal current I _{th}	< 60I _{pr}	
Rated dynamic current	2,5I _{th}	
Instrument security factor (FS)	≤ 5	
Rated secondary current I _s	5 - 1A	
Max. power dissipation	≤ 20W	≤ 19W
Allowed max cable or busbar temperature	125°C	

INSULATION REQUIREMENTS

Type	Dry transformer, air insulation
Highest voltage for equipment U _m	0.72kV r.m.s.
Rated insulation level	3kV r.m.s. 50Hz/1min
Class of insulation (EN/IEC 61869-1, 61869-2)	B

ENVIRONMENTAL CONDITIONS

Nominal temperature range	-25÷50°C
Storage temperature	-40÷85°C
Relative humidity	≤ 85%
Suitable for tropical climates	yes

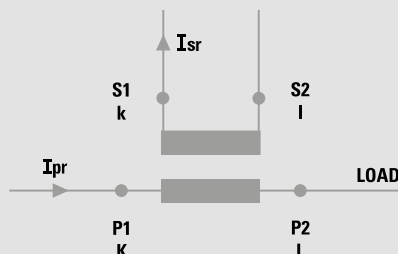
CONNECTION

Primary winding	Passing bus bar
Secondary winding:	tightening by nut M4

MECHANICAL FEATURES

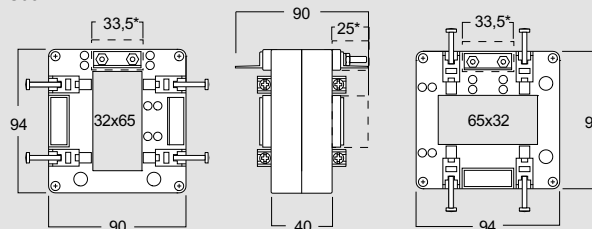
Housing material	self extinguishing polycarbonate	
Protection degree (EN/IEC 60529)	IP40 housing - IP00 terminals (IP20 with sealable terminal cover)	
Mounting	screw type on bar	
Weight	750 gr	750 gr

Wiring diagrams

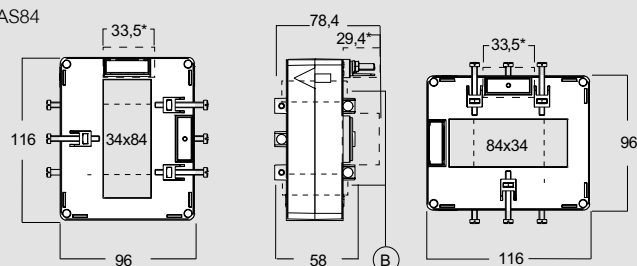


Dimensions

TAS65



TAS84



*Option B = Spacing device

Current transformers - MEASURE

Cable/passing bar single-phase current transformer



TAS102



TAS102B



Item				TAS102		
Vertical bar		Horizontal bar		Passing cable window/bar 38x102mm e 102x38mm - Long side terminals		
Isr 5A	Isr 1A	Isr 5A	Isr 1A	Primary current (A)	Accuracy class VA	
					cl. 0.5	cl. 1
TAMP50C800	TAMP10C800	TAMP50C8003	TAMP10C8003	800A	8	10
TAMP50D100	TAMP10D100	TAMP50D1003	TAMP10D1003	1000A	10	12
TAMP50D120	TAMP10D120	TAMP50D1203	TAMP10D1203	1200A	12	15
TAMP50D125	TAMP10D125	TAMP50D1253	TAMP10D1253	1250A	12	15
TAMP50D150	TAMP10D150	TAMP50D1503	TAMP10D1503	1500A	12	15
TAMP50D160	TAMP10D160	TAMP50D1603	TAMP10D1603	1600A	12	15
TAMP50D200	TAMP10D200	TAMP50D2003	TAMP10D2003	2000A	20	25
TAMP50D250	TAMP10D250	TAMP50D2503	TAMP10D2503	2500A	20	25
TAMP50D300	TAMP10D300	TAMP50D3003	TAMP10D3003	3000A	20	25

Item				TAS102B		
Vertical bar		Horizontal bar		Passing cable window/bar 54x102mm e 102x54mm - Long side terminals		
Isr 5A	Isr 1A	Isr 5A	Isr 1A	Primary current (A)	Accuracy class VA	
					cl. 0.5	cl. 1
TAMQ50C800	TAMQ10C800	TAMQ50C8003	TAMQ10C8003	800A	10	12
TAMQ50D100	TAMQ10D100	TAMQ50D1003	TAMQ10D1003	1000A	12	15
TAMQ50D120	TAMQ10D120	TAMQ50D1203	TAMQ10D1203	1200A	15	20
TAMQ50D125	TAMQ10D125	TAMQ50D1253	TAMQ10D1253	1250A	15	20
TAMQ50D150	TAMQ10D150	TAMQ50D1503	TAMQ10D1503	1500A	20	25
TAMQ50D160	TAMQ10D160	TAMQ50D1603	TAMQ10D1603	1600A	20	25
TAMQ50D200	TAMQ10D200	TAMQ50D2003	TAMQ10D2003	2000A	20	25
TAMQ50D250	TAMQ10D250	TAMQ50D2503	TAMQ10D2503	2500A	25	30
TAMQ50D300	TAMQ10D300	TAMQ50D3003	TAMQ10D3003	3000A	25	30
TAMQ50D320	TAMQ10D320	TAMQ50D3203	TAMQ10D3203	3200A	25	30
TAMQ50D400	TAMQ10D400	TAMQ50D4003	TAMQ10D4003	4000A	30	40

Accessories

Description

ATACOP04

Sealable terminal cover

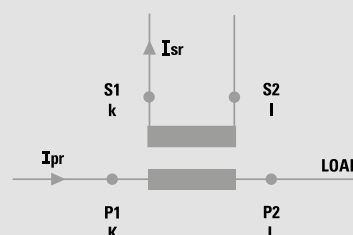
ATAFIS01

2 screw type for wall mounting

Technical characteristics

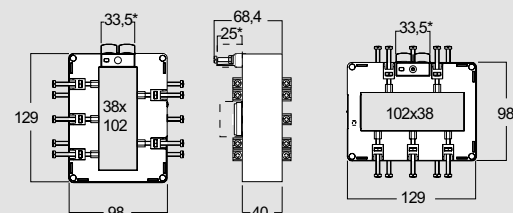
MODEL	TAS102		TAS102B
TECHNICAL CHARACTERISTICS			
Reference specification	EN/IEC 61869-1, 61869-2		
Rated primary current Ipr	800÷3000A	800÷4000A	
Rated frequency	50Hz		
Working frequency	47÷63Hz		
Rated continuous thermal current Icth	100% Ipr		
Corrente termica nominale di cortocircuito Ith	< 60Ipr		
Rated dynamic current	2,5Ith		
Instrument security factor (FS)	≤ 5		
Rated secondary current Isr	5 - 1A		
Max. power dissipation	≤ 25W	≤ 25W	
Temperatura max ammissibile su cavo a barra Primary winding	125°C		
INSULATION REQUIREMENTS			
Type	Dry transformer, air insulation		
Highest voltage for equipment Um	0.72kV r.m.s.		
Rated insulation level	3kV r.m.s. 50Hz/1min		
Class of insulation (EN/IEC 61869-1, 61869-2)	B		
ENVIRONMENTAL CONDITIONS			
Nominal temperature range	-25÷50°C		
Storage temperature	-40÷85°C		
Relative humidity	≤ 85%		
Suitable for tropical climates	yes		
CONNECTION			
Primary winding	Passing bus bar		
Secondary winding	tightening by nut M4		
MECHANICAL FEATURES			
Housing material	self extinguishing polycarbonate		
Protection degree (EN/IEC 60529)	IP40 housing - IP00 terminals (IP20 with sealable terminal cover)		
Mounting	screw type on bar		
Weight	1000 gr	1200 gr	

Wiring diagrams

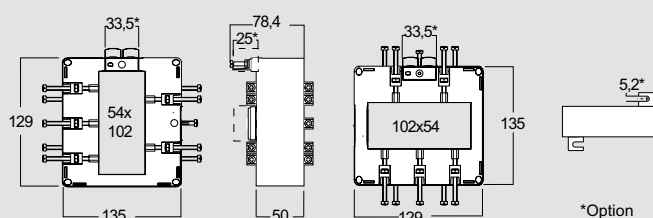


Dimensions

TAS102



TAS102B



Current transformers - MEASURE

Cable/passing bar single-phase current transformer



TAS127



TAS127B



Item				TAS127		
Vertical bar		Horizontal bar		Passing cable window/bar 38x127mm e 127x38mm - Long side terminals		
Isr 5A	Isr 1A	Isr 5A	Isr 1A	Primary current (A)	Accuracy class VA	
					cl. 0.5	cl. 1
TASR50C400	TASR10C400	TASR50C4003	TASR10C4003	400A	-	3
TASR50C500	TASR10C500	TASR50C5003	TASR10C5003	500A	2	4
TASR50C600	TASR10C600	TASR50C6003	TASR10C6003	600A	4	6
TASR50C700	TASR10C700	TASR50C7003	TASR10C7003	700A	4	8
TASR50C750	TASR10C750	TASR50C7503	TASR10C7503	750A	4	8
TASR50C800	TASR10C800	TASR50C8003	TASR10C8003	800A	4	8
TASR50D100	TASR10D100	TASR50D1003	TASR10D1003	1000A	6	10
TASR50D120	TASR10D120	TASR50D1203	TASR10D1203	1200A	8	12
TASR50D125	TASR10D125	TASR50D1253	TASR10D1253	1250A	8	12
TASR50D150	TASR10D150	TASR50D1503	TASR10D1503	1500A	10	15
TASR50D160	TASR10D160	TASR50D1603	TASR10D1603	1600A	10	15
TASR50D200	TASR10D200	TASR50D2003	TASR10D2003	2000A	15	20
TASR50D250	TASR10D250	TASR50D2503	TASR10D2503	2500A	20	25
TASR50D300	TASR10D300	TASR50D3003	TASR10D3003	3000A	25	30
TASR50D320	TASR10D320	TASR50D3203	TASR10D3203	3200A	25	30
TASR50D400	TASR10D400	TASR50D4003	TASR10D4003	4000A	25	30

Item				TAS127B		
Vertical bar		Horizontal bar		Passing cable window/bar 54x127mm e 127x54mm - Long side terminals		
Isr 5A	Isr 1A	Isr 5A	Isr 1A	Primary current (A)	Accuracy class VA	
					cl. 0.5	cl. 1
TASS50C400	TASS10C400	TASS50C4003	TASS10C4003	400A	1	7
TASS50C500	TASS10C500	TASS50C5003	TASS10C5003	500A	3	10
TASS50C600	TASS10C600	TASS50C6003	TASS10C6003	600A	5	12
TASS50C700	TASS10C700	TASS50C7003	TASS10C7003	700A	8	15
TASS50C750	TASS10C750	TASS50C7503	TASS10C7503	750A	10	15
TASS50C800	TASS10C800	TASS50C8003	TASS10C8003	800A	10	15
TASS50D100	TASS10D100	TASS50D1003	TASS10D1003	1000A	12	20
TASS50D120	TASS10D120	TASS50D1203	TASS10D1203	1200A	15	25
TASS50D125	TASS10D125	TASS50D1253	TASS10D1253	1250A	15	25
TASS50D150	TASS10D150	TASS50D1503	TASS10D1503	1500A	20	30
TASS50D160	TASS10D160	TASS50D1603	TASS10D1603	1600A	20	30
TASS50D200	TASS10D200	TASS50D2003	TASS10D2003	2000A	25	30
TASS50D250	TASS10D250	TASS50D2503	TASS10D2503	2500A	30	50
TASS50D300	TASS10D300	TASS50D3003	TASS10D3003	3000A	30	50
TASS50D320	TASS10D320	TASS50D3203	TASS10D3203	3200A	30	50
TASS50D400	TASS10D400	TASS50D4003	TASS10D4003	4000A	30	50

Accessories

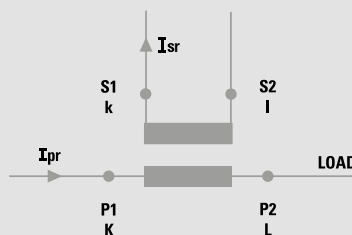
Description

ATACOP04	Sealable terminal cover
ATADIS02	Spacing device for bars of 100 mm (for TAS127)
ATAFIS01	2 screw type for wall mounting

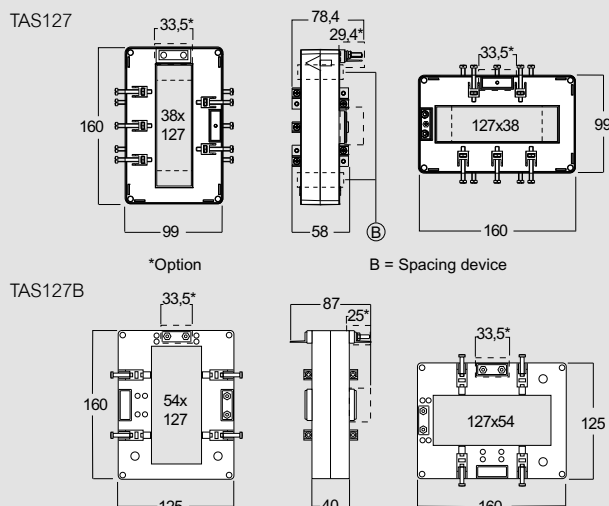
Technical characteristics

MODEL	TAS127		TAS127B
TECHNICAL CHARACTERISTICS			
Reference specification	EN/IEC 61869-1, 61869-2		
Rated primary current Ipr	400÷4000A	800÷4000A	
Rated frequency	50Hz		
Working frequency	47÷63Hz		
Rated continuous thermal current Icth	100% Ipr		
Corrente termica nominale di cortocircuito Ith	< 60Ipr		
Rated dynamic current	2,5Ith		
Instrument security factor (FS)	≤ 5		
Rated secondary current Isr	5 - 1A		
Max. power dissipation	≤ 23W	≤ 23W	
Allowed max cable or busbar temperature	125°C		
INSULATION REQUIREMENTS			
Type	Dry transformer, air insulation		
Highest voltage for equipment Um	0.72kV r.m.s.		
Rated insulation level	3kV r.m.s. 50Hz/1min		
Class of insulation (EN/IEC 61869-1, 61869-2)	B		
ENVIRONMENTAL CONDITIONS			
Nominal temperature range	-25÷50°C		
Storage temperature	-40÷85°C		
Relative humidity	≤ 85%		
Suitable for tropical climates	yes		
CONNECTION			
Primary winding	Passing bus bar		
Secondary winding	tightening by nut M4		
MECHANICAL FEATURES			
Housing material	self extinguishing polycarbonate		
Protection degree (EN/IEC 60529)	IP40 housing - IP00 terminals (IP20 with sealable terminal cover)		
Mounting	screw type on bar		
Weight	1500 gr	1300 gr	

Wiring diagrams



Dimensions



Current transformers - MEASURE

Cable/passing bar single-phase current transformer



TAU9



TAU10



TAU11



TAU12



TAU13

Item	
Isr 5A	Isr 1A
TAUB50D250	TAUB10D250
TAUB50D300	TAUB10D300
TAUB50D400	TAUB10D400
TAUB50D500	TAUB10D500

TAU9

Passing cable window/bar 55x165mm

Primary current (A)	Accuracy class VA cl. 0.5
2500A	40
3000A	40
4000A	50
5000A	60

Isr 5A	Isr 1A
TAUC50D250	TAUC10D250
TAUC50D300	TAUC10D300
TAUC50D400	TAUC10D400
TAUC50D500	TAUC10D500
TAUC50D600	TAUC10D600

TAU10

Passing cable window/bar 120x125mm

Primary current (A)	Accuracy class VA cl. 0.5
2500A	40
3000A	40
4000A	50
5000A	60
6000A	70

Isr 5A	Isr 1A
TAUD50D300	TAUD10D300
TAUD50D400	TAUD10D400
TAUD50D500	TAUD10D500
TAUD50D600	TAUD10D600
TAUD50D800	TAUD10D800

TAU11

Passing cable window/bar 120x165mm

Primary current (A)	Accuracy class VA cl. 0.5
3000A	40
4000A	50
5000A	60
6000A	70
8000A	70

Item	
Isr 5A	Isr 1A
TAUE50D400	TAUE10D400
TAUE50D500	TAUE10D500
TAUE50D600	TAUE10D600
TAUE50D800	TAUE10D800

TAU12

Passing cable window/bar 55x225mm

Primary current (A)	Accuracy class VA cl. 0.5
4000A	50
5000A	60
6000A	70
8000A	70

Isr 5A	Isr 1A
TAUF50D400	TAUF10D400
TAUF50D500	TAUF10D500
TAUF50D600	TAUF10D600
TAUF50D800	TAUF10D800

TAU13

Passing cable window/bar 120x225mm

Primary current (A)	Accuracy class VA cl. 0.5
4000A	50
5000A	60
6000A	70
8000A	70

Accessories

Description

ATACOP05

Sealable terminal cover

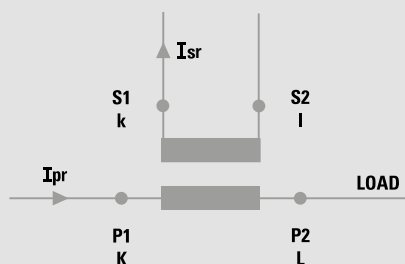
Current transformers - MEASURE

Cable/passing bar single-phase current transformer

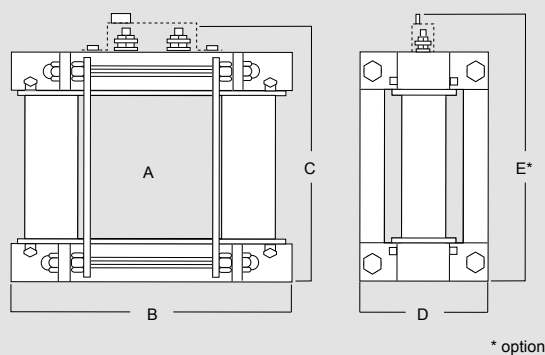
Technical characteristics

MODEL	TAU9	TAU10	TAU11	TAU12	TAU13
Technical characteristics					
Reference specification	EN/IEC 61869-1, 61869-2				
Rated primary current Ipr	2500÷5000A	2500÷6000A	3000÷8000A	4000÷8000A	4000÷8000A
Rated frequency	50Hz				
Working frequency	47÷63Hz				
Rated continuous thermal current Icth	100% Ipr				
Rated short-time thermal current Ith	< 60Ipr				
Rated dynamic current	2,5Ith				
Instrument security factor (FS)	≤ 5				
Rated secondary current Isr	5 - 1A				
Max. power dissipation	≤ 43W	≤ 43W	≤ 81W	≤ 75W	≤ 70W
Allowed max cable or busbar temperature	125°C				
INSULATION REQUIREMENTS					
Type	Dry transformer, air insulation				
Highest voltage for equipment Um	0.72kV r.m.s.				
Rated insulation level	3kV r.m.s. 50Hz/1min				
Class of insulation (EN/IEC 61869-1, 61869-2)	B				
ENVIRONMENTAL CONDITIONS					
Nominal temperature range	-25÷50°C				
Storage temperature	-40÷85°C				
Relative humidity	≤ 85%				
Suitable for tropical climates	yes				
CONNECTION					
Primary winding	Passing bus bar				
Secondary winding	tightening by nut M5				
MECHANICAL FEATURES					
Housing material	self extinguishing polycarbonate				
Protection degree (EN/IEC 60529)	IP20 housing, IP00 terminals (IP20 with sealable terminal cover)				
Mounting	screw type on bar				
Weight	5000 gr	5700 gr	6700 gr	5000 gr	5000 gr

Wiring diagrams



Dimensions



Dim. (mm)	A	B	C	D	E
TAU9	55x165	177	261	110	273.5
TAU10	120x125	257	221	110	233.5
TAU11	120x165	257	261	110	273.5
TAU12	55x225	177	321	110	333.5
TAU13	120x225	257	321	110	333.5

Current transformers - MEASURE

current summation transformer



BAS02



BAS03

Item		BSA02		
		2 single-phase input current summation transformer It effects the vectorial sum of the currents of many lines in just one voltage system. It is essential when the main C.T. ratios are not the same Winding primary		
Isr 5A	Isr 1A	Primary current (A)	Accuracy class VA	
TAEA5025	TAEA1021	5+5A	cl. 0.5	cl. 1
		1+1A	10	15

Item		BSA03		
		Three-phase input current summation transformer		
Isr 5A	Isr 1A	Primary current (A)	Accuracy class VA	
TAEA5035	TAEA1031	5+5+5A	cl. 0.5	cl. 1
		1+1+1A	10	15

Accessories	
ATACOP11	Sealable terminal cover



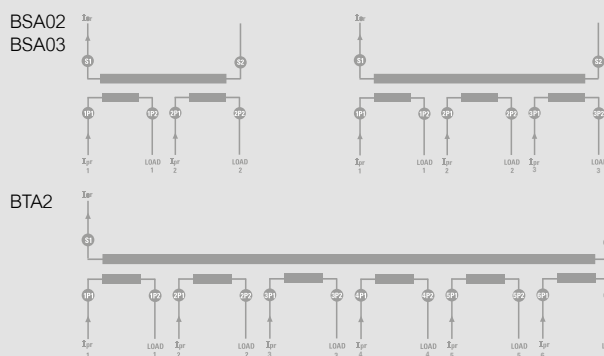
BTA2

Item		BTA2	
		From 2 to 6 single-phase input current summation transformer. It effects the vectorial sum of the currents of many lines in just one voltage system. It is essential when the main CT ratios are not the same Primary currents 1÷5A Accuracy: class 0,5 Rated burden: 40VA (2÷4 input) - 15VA (5÷6 input)	
Isr 5A	Isr 1A	Primary current (A)	Accuracy class VA cl. 0.5
TAEB5025		5+5A	40
TAEB5035		5+5+5A	40
TAEB5045		5+5+5+5A	40
TAEB5055		5+5+5+5+5A	15
TAEB5065		5+5+5+5+5+5A	15
	TAEB1021	1+1A	40
	TAEB1031	1+1+1A	40
	TAEB1041	1+1+1+1A	40
	TAEB1051	1+1+1+1+1A	15
	TAEB1061	1+1+1+1+1+1A	15

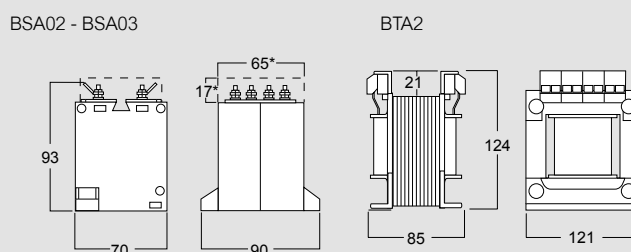
Technical characteristics

MODEL	BSA02 - BSA03		BTA2
TECHNICAL CHARACTERISTICS			
Reference specification	EN/IEC 61869-1, 61869-2		
Rated primary current Ipr	1÷5A	1÷5A	
Rated frequency	50Hz		
Working frequency	47÷63Hz		
Ingressi	2 (BSA02) or 3 (BS03)		2-3
Rated continuous thermal current Icth	100% Ipr		
Rated short-time thermal current Ith	< 60Ipr (max.90kA/1s)		
Rated dynamic current	2,5Ith		
Instrument security factor (FS)	≤ 15		
Rated secondary current Isr	1-5A		
Allowed max cable or busbar temperature	125°C		
INSULATION REQUIREMENTS			
Type	Dry transformer, air insulation		
Highest voltage for equipment Um	0.72kV r.m.s.		
Rated insulation level	3kV r.m.s. 50Hz/1min between primary and secondary terminals, 500V r.m.s. 50Hz/1min between primary sections		
Class of insulation (EN/IEC 61869-1, 61869-2)	B		
ENVIRONMENTAL CONDITIONS			
Nominal temperature range	-25÷+50°C		
Storage temperature	-40÷+85°C		
Relative humidity	≤ 85%		
Suitable for tropical climates	yes		
CONNECTION			
Primary winding	tightening by nut M4		
Secondary winding	tightening by nut M4		
MECHANICAL FEATURES			
Housing material	self extinguishing polycarbonate	metal	
Protection degree (EN/IEC 60529)	IP40 housing - IP00 terminals (IP20 with sealable terminal cover)	IP00 terminals	
Mounting	screw type for wall mounting	screw type for wall mounting	
Weight	320 gr	4000 gr	

Wiring diagrams



Dimensions



Current transformers - ACCURACY

Winding primary single-phase current transformer



TAQ6L



TAQ6M



TAQ10

Item		TAQ6M		
Isr 5A	Isr 1A	Primary current (A)	Accuracy class VA	
			cl 0.2	cl. 0.5s
TAQ6M50A500S	TAQ6M10A500S	5A	3	5
TAQ6M50B100S	TAQ6M10B100S	10A	3	5
TAQ6M50B150S	TAQ6M10B150S	15A	3	5
TAQ6M50B200S	TAQ6M10B200S	20A	3	5
TAQ6M50B250S	TAQ6M10B250S	25A	3	5
TAQ6M50B300S	TAQ6M10B300S	30A	3	5
TAQ6M50B400S	TAQ6M10B400S	40A	3	5

		TAQ6L		
Isr 5A	Isr 1A	Primary current (A)	Accuracy class VA	
			cl 0.2	cl. 0.5s
TAQ6L50B500S	TAQ6L10B500S	50A	3	5
TAQ6L50B600S	TAQ6L10B600S	60A	3	5
TAQ6L50B750S	TAQ6L10B750S	75A	3	5
TAQ6L50B800S	TAQ6L10B800S	80A	3	5

		TAQ10		
Isr 5A	Isr 1A	Primary current (A)	Accuracy class VA	
			cl 0.2	cl. 0.5s
TAQC50A500S	TAQC10A500S	5A	5	10
TAQC50B100S	TAQC10B100S	10A	5	10
TAQC50B150S	TAQC10B150S	15A	5	10
TAQC50B200S	TAQC10B200S	20A	5	10
TAQC50B250S	TAQC10B250S	25A	5	10
TAQC50B300S	TAQC10B300S	30A	5	10
TAQC50B400S	TAQC10B400S	40A	5	10
TAQC50B500S	TAQC10B500S	50A	5	10
TAQC50B600S	TAQC10B600S	60A	5	10
TAQC50B700S	TAQC10B700S	70A	5	10
TAQC50B750S	TAQC10B750S	75A	5	10
TAQC50B800S	TAQC10B800S	80A	5	10
TAQC50C100S	TAQC10C100S	100A	5	10
TAQC50C120S	TAQC10C120S	120A	5	10
TAQC50C150S	TAQC10C150S	150A	5	10

Accessories

Description

Sealable terminal cover per TAQ10

ATACOP03

Technical characteristics

MODEL	TAQ6M	TAQ6L	TAQ10
TECHNICAL CHARACTERISTICS			
Reference specification		EN/IEC 61869-1, 61869-2	
Rated primary current I _{pr}	5÷40A	50÷80A	5÷300A
Rated frequency		50Hz	
Working frequency		47÷63Hz	
Rated continuous thermal current I _{cth}		100% I _{pr}	
Rated short-time thermal current I _{th}		< 60I _{pr}	
Rated dynamic current		2,5I _{th}	
Instrument security factor (FS)		≤ 5	
Rated secondary current I _{sr}		5 - 1A	
Max. power dissipation	≤ 4.3W	≤ 4.3W	≤ 2.5W
Allowed max cable or busbar temperature		125°C	

INSULATION REQUIREMENTS

Type	Dry transformer, air insulation
Highest voltage for equipment U _m	0.72kV r.m.s.
Rated insulation level	3kV r.m.s. 50Hz/1min
Class of insulation (EN/IEC 61869-1, 61869-2)	B

ENVIRONMENTAL CONDITIONS

Nominal temperature range	-25÷50°C
Storage temperature	-40÷85°C
Relative humidity	≤ 85%
Suitable for tropical climates	yes

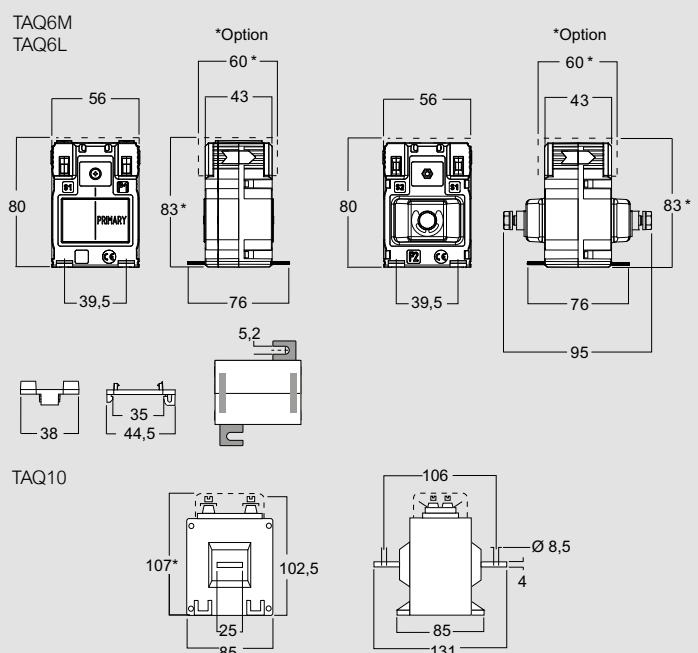
CONNECTION

Primary winding	2 screw terminals (max. cable section 6mm ² , 10mm ² Cables with lag)	Tightening by nut M6	built-in central bar (25x4mm)
Secondary winding	2 screw terminals (max. cable section 6mm ² , 10mm ² cables with lag)	4 screw terminals (max. cable section 6mm ²) + 2 fast-ons (4,8x0,8mm)	double screw M4

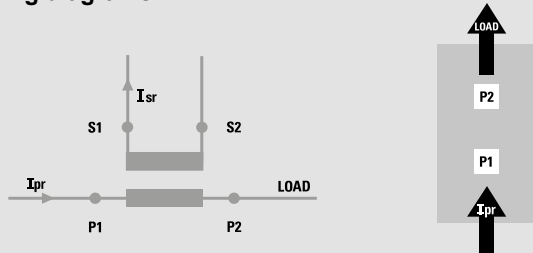
MECHANICAL FEATURES

Housing material	self extinguishing polycarbonate		
Protection degree (EN/IEC 60529)	IP40 housing - IP20 secondary terminals		IP20 housing, IP00 terminals IP20 with sealable terminal cover
Mounting	snap-on 35mm rail, screw type for wall mounting		
Weight	250 gr	300 gr	700 gr

Dimensions



Wiring diagrams



Current transformers - ACCURACY

Cable/passing bar single-phase current transformer



TA327



TA432

Item		TA327			
		Passing cable window/bar Ø 27mm - 25,5x15,5mm - 32,5x10,5mm			
Isr 5A	Isr 1A	Primary current (A)	Accuracy class VA		
			cl. 0.2s	cl. 0.2	cl. 0.5s
TA32750C150S	TA32710C150S	150	1	1.5	2
TA32750C160S	TA32710C160S	160	1	1.5	2
TA32750C200S	TA32710C200S	200	2	2.5	3
TA32750C250S	TA32710C250S	250	2	2.5	3
TA32750C300S	TA32710C300S	300	2.5	4	5
TA32750C400S	TA32710C400S	400	4	5	8
TA32750C500S	TA32710C500S	500	6	7	10
TA32750C600S	TA32710C600S	600	8	10	15

		TA432			
		Passing cable window/bar Ø 32mm - 25,5x25,5mm - 32,5x20,5mm - 40,5x10,5mm			
Isr 5A	Isr 1A	Primary current (A)	Accuracy class VA		
			cl. 0.2s	cl. 0.2	cl. 0.5s
TA43250C200S	TA43210C200S	200A	1	1.5	2.5
TA43250C250S	TA43210C250S	250A	1	1.5	2.5
TA43250C300S	TA43210C300S	300A	1.5	2	3
TA43250C400S	TA43210C400S	400A	1.5	3	4
TA43250C500S	TA43210C500S	500A	2.5	5	5
TA43250C600S	TA43210C600S	600A	3	6	7
TA43250C700S	TA43210C700S	700A	4	7	7
TA43250C750S	TA43210C750S	750A	4	7	8
TA43250C800S	TA43210C800S	800A	5	8	10
TA43250D100S	TA43210D100S	1000A	6	10	12

Accessories

Description
Sealable terminal cover

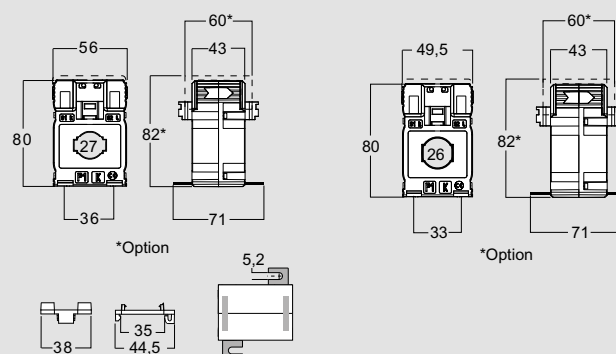
ATACOP13

Technical characteristics

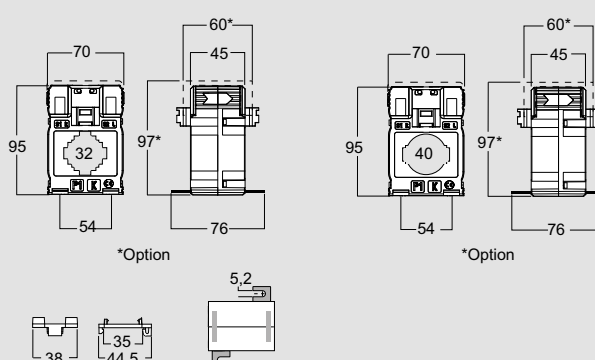
MODEL	TA327		TA432	
TECHNICAL CHARACTERISTICS				
Reference specification	EN/IEC 61869-1, 61869-2			
Rated primary current I _{pr}	150÷600A		200÷1000A	
Rated frequency	50Hz			
Working frequency	47÷63Hz			
Rated continuous thermal current I _{cth}	100% I _{pr}			
Rated short-time thermal current I _{th}	< 60I _{pr}			
Rated dynamic current	2,5I _{th}			
Instrument security factor (FS)	≤ 5			
Rated secondary current I _{sr}	5 - 1A			
Max. power dissipation	≤ 7W a I _{cth}		≤ 9W a I _{cth}	
Allowed max cable or busbar temperature	125°C			
INSULATION REQUIREMENTS				
Type	Dry transformer, air insulation			
Highest voltage for equipment U _m	0.72kV r.m.s.			
Rated insulation level	3kV r.m.s. 50Hz/1min			
Class of insulation (EN/IEC 61869-1, 61869-2)	B			
ENVIRONMENTAL CONDITIONS				
Nominal temperature range	-25÷50°C			
Storage temperature	-40÷85°C			
Relative humidity	≤ 85%			
Suitable for tropical climates	yes			
CONNECTION				
Primary winding	Passing cable/sbarra			
Secondary winding	4 screw terminals (max. cable section 6mm²) + 2 fast-ons (4,8x0,8mm)			
MECHANICAL FEATURES				
Housing material	self extinguishing polycarbonate			
Protection degree (EN/IEC 60529)	IP40 housing - IP20 secondary terminals			
Mounting	snap-on 35mm rail, screw type for wall mounting			
Weight	260 gr		420 gr	

Dimensions

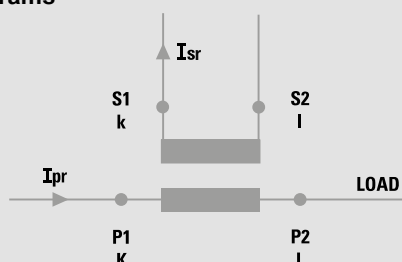
TA327



TA432



Wiring diagrams



Current transformers - ACCURACY

Cable/passing bar single-phase current transformer



TAS65

TAS84

Item				TAS65			
Vertical bar		Horizontal bar		Passing cable window/bar 32x65mm and 65x32mm Long side terminals			
Isr 5A	Isr 1A	Isr 5A	Isr 1A	Primary current (A)	Accuracy class VA		
					cl. 0.2s	cl. 0.2	cl. 0.5s
TASL50C600S	TASL10C600S	TASL50C6003S	TASL10C6003S	600A	1	3	5
TASL50C700S	TASL10C700S	TASL50C7003S	TASL10C7003S	700A	1.5	4	7.5
TASL50C750S	TASL10C750S	TASL50C7503S	TASL10C7503S	750A	2	5	7.5
TASL50C800S	TASL10C800S	TASL50C8003S	TASL10C8003S	800A	2.5	7.5	10
TASL50D100S	TASL10D100S	TASL50D1003S	TASL10D1003S	1000A	10	12	15
TASL50D120S	TASL10D120S	TASL50D1203S	TASL10D1203S	1200A	12	15	20
TASL50D125S	TASL10D125S	TASL50D1253S	TASL10D1253S	1250A	12	15	20
TASL50D150S	TASL10D150S	TASL50D1503S	TASL10D1503S	1500A	12	15	20
TASL50D160S	TASL10D160S	TASL50D1603S	TASL10D1603S	1600A	12	15	20
TASL50D200S	TASL10D200S	TASL50D2003S	TASL10D2003S	2000A	12	15	20

Vertical bar		Horizontal bar		TAS84			
				Passing cable window/bar 34x84mm and 84x34mm Long side terminals			
Isr 5A	Isr 1A	Isr 5A	Isr 1A	Primary current (A)	Accuracy class VA		
					cl. 0.2s	cl. 0.2	cl. 0.5s
TASO50C800S	TASO10C800S	TASO50C8003S	TASO10C8003S	800A	4	6	7
TASO50D100S	TASO10D100S	TASO50D1003S	TASO10D1003S	1000A	6	7	8
TASO50D120S	TASO10D120S	TASO50D1203S	TASO10D1203S	1200A	10	12	14
TASO50D125S	TASO10D125S	TASO50D1253S	TASO10D1253S	1250A	10	12	14
TASO50D150S	TASO10D150S	TASO50D1503S	TASO10D1503S	1500A	15	17.5	20
TASO50D160S	TASO10D160S	TASO50D1603S	TASO10D1603S	1600A	15	17.5	20
TASO50D200S	TASO10D200S	TASO50D2003S	TASO10D2003S	2000A	15	20	25
TASO50D250S	TASO10D250S	TASO50D2503S	TASO10D2503S	2500A	20	25	30

Accessories

Description

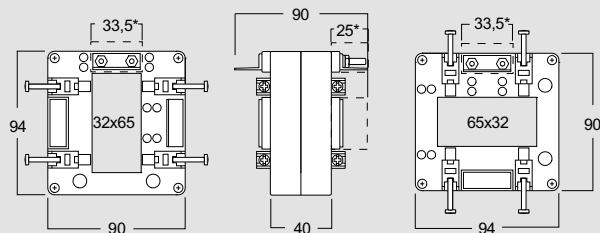
ATACOP04	Sealable terminal cover
ATADIS01	Spacing device for bars of 60 mm (for TAS84)
ATADIS03	Spacing device for bars of 50 mm (for TAS65)
ATAFIS01	2 screw type for wall mounting

Technical characteristics

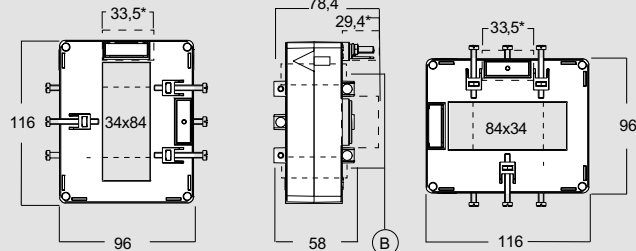
MODEL	TAS65		TAS84
TECHNICAL CHARACTERISTICS			
Reference specification	EN/IEC 61869-1, 61869-2		
Rated primary current Ipr	600÷2000A	800÷2500A	
Rated frequency	50Hz		
Working frequency	47÷63Hz		
Rated continuous thermal current Icth	100% Ipr		
Rated short-time thermal current Ith	< 60Ipr		
Rated dynamic current	2,5Ith		
Instrument security factor (FS)	≤ 5		
Rated secondary current Isr	5 - 1A		
Max. power dissipation	≤ 20W	≤ 19W	
Allowed max cable or busbar temperature	125°C		
INSULATION REQUIREMENTS			
Type	Dry transformer, air insulation		
Highest voltage for equipment Um	0.72kV r.m.s.		
Rated insulation level	3kV r.m.s. 50Hz/1min		
Class of insulation (EN/IEC 61869-1, 61869-2)	B		
ENVIRONMENTAL CONDITIONS			
Nominal temperature range	-25÷50°C		
Storage temperature	-40÷85°C		
Relative humidity	≤ 85%		
Suitable for tropical climates	yes		
CONNECTION			
Primary winding	Passing bus bar		
Secondary winding	tightening by nut M4		
MECHANICAL FEATURES			
Housing material	self extinguishing polycarbonate		
Protection degree (EN/IEC 60529)	IP40 housing - IP00 terminals (IP20 with sealable terminal cover)		
Mounting	screw type on bar		
Weight	750 gr	750 gr	

Dimensions

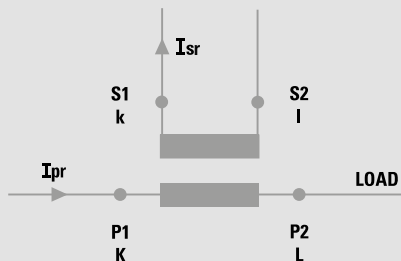
TAS65



TAS84



Wiring diagrams



Current transformers - ACCURACY

Cable/passing bar single-phase current transformer



TAS102

Item				TAS102			
Vertical bar		Horizontal bar		Passing cable window/bar 38x102mm and 102x38mm - Long side terminals			
Isr 5A	Isr 1A	Isr 5A	Isr 1A	Primary current (A)	cl. 0.2s	cl. 0.2	cl. 0.5s
TAMP50D100S	TAMP10D100S	TAMP50D1003S	TAMP10D1003S	1000A	3	5	6
TAMP50D120S	TAMP10D120S	TAMP50D1203S	TAMP10D1203S	1200A	3	5	6
TAMP50D125S	TAMP10D125S	TAMP50D1253S	TAMP10D1253S	1250A	3	5	6
TAMP50D150S	TAMP10D150S	TAMP50D1503S	TAMP10D1503S	1500A	7.5	10	15
TAMP50D160S	TAMP10D160S	TAMP50D1603S	TAMP10D1603S	1600A	7.5	10	15
TAMP50D200S	TAMP10D200S	TAMP50D2003S	TAMP10D2003S	2000A	10	15	20
TAMP50D250S	TAMP10D250S	TAMP50D2503S	TAMP10D2503S	2500A	15	20	25
TAMP50D300S	TAMP10D300S	TAMP50D3003S	TAMP10D3003S	3000A	20	25	30

Accessories

Description

ATACOP04
ATAFIS01

Sealable terminal cover
2 screw type for wall mounting

Technical characteristics

MODEL	TAS102
TECHNICAL CHARACTERISTICS	
Reference specification	EN/IEC 61869-1, 61869-2
Rated primary current I _{pr}	1000÷3000A
Rated frequency	50Hz
Working frequency	47÷63Hz
Rated continuous thermal current I _{cth}	100% I _{pr}
Rated short-time thermal current I _{th}	< 60I _{pr}
Rated dynamic current	2,5I _{th}
Instrument security factor (FS)	≤ 5
Rated secondary current I _{sr}	1 - 5A
Max. power dissipation	≤ 25W
Allowed max cable or busbar temperature	125°C

INSULATION REQUIREMENTS

Type	Dry transformer, air insulation
Highest voltage for equipment U _m	0.72kV r.m.s.
Rated insulation level	3kV r.m.s. 50Hz/1min
Class of insulation (EN/IEC 61869-1, 61869-2)	B

ENVIRONMENTAL CONDITIONS

Nominal temperature range	-25÷50°C
Storage temperature	-40÷85°C
Relative humidity	≤ 85%
Suitable for tropical climates	yes

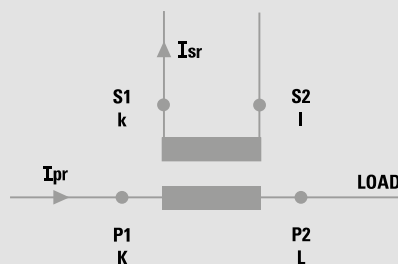
CONNECTION

Primary winding	Passing bus bar
Secondary winding	tightening by nut M4

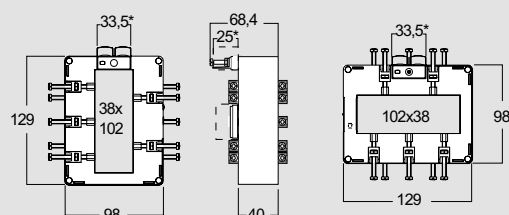
MECHANICAL FEATURES

Housing material	self extinguishing polycarbonate
Protection degree (EN/IEC 60529)	IP40 housing - IP00 terminals (IP20 with sealable terminal cover)
Mounting	screw type on bar
Weight	1000 gr

Wiring diagrams



Dimensions



Current transformers - ACCURACY

Cable/passing bar single-phase current transformer



TAS127



TAS127B



Item			
Vertical bar		Horizontal bar	
Isr 5A	Isr 1A	Isr 5A	Isr 1A
TASR50D100S	TASR10D100S	TASR50D1003S	TASR10D1003S
TASR50D120S	TASR10D120S	TASR50D1203S	TASR10D1203S
TASR50D125S	TASR10D125S	TASR50D1253S	TASR10D1253S
TASR50D150S	TASR10D150S	TASR50D1503S	TASR10D1503S
TASR50D160S	TASR10D160S	TASR50D1603S	TASR10D1603S
TASR50D200S	TASR10D200S	TASR50D2003S	TASR10D2003S
TASR50D250S	TASR10D250S	TASR50D2503S	TASR10D2503S
TASR50D300S	TASR10D300S	TASR50D3003S	TASR10D3003S

TAS127

Passing cable window/bar
38x127mm and 127x38mm -
Long side terminals

Primary current (A)	Accuracy class VA		
	cl. 0.2s	cl. 0.2	cl. 0.5s
1000A	4	6	8
1200A	5	7.5	10
1250A	5	7.5	10
1500A	7.5	10	12.5
1600A	7.5	10	12.5
2000A	10	15	20
2500A	15	20	25
3000A	20	25	30

Vertical bar		Horizontal bar	
Isr 5A	Isr 1A	Isr 5A	Isr 1A
TASS50D150S	TASS10D150S	TASS50D1503S	TASS10D1503S
TASS50D160S	TASS10D160S	TASS50D1603S	TASS10D1603S
TASS50D200S	TASS10D200S	TASS50D2003S	TASS10D2003S
TASS50D250S	TASS10D250S	TASS50D2503S	TASS10D2503S
TASS50D300S	TASS10D300S	TASS50D3003S	TASS10D3003S
TASS50D320S	TASS10D320S	TASS50D3203S	TASS10D3203S
TASS50D400S	TASS10D400S	TASS50D4003S	TASS10D4003S

TAS127B

Passing cable window/bar
54x127mm and 127x54mm -
Long side terminals

Primary current (A)	Accuracy class VA		
	cl. 0.2s	cl. 0.2	cl. 0.5s
1500A	7.5	10	12.5
1600A	7.5	10	12.5
2000A	10	12.5	15
2500A	12.5	15	20
3000A	15	20	25
3200A	15	20	25
4000A	20	25	30

Accessories

Description

ATACOP04

Sealable terminal cover

ATADIS02

Spacing device for bars of 50 mm (for TAS127)

Technical characteristics

MODEL	TAS127	TAS127B
TECHNICAL CHARACTERISTICS		
Reference specification	EN/IEC 61869-1, 61869-2	
Rated primary current I _{pr}	1000÷3000A	1500÷4000A
Rated frequency	50Hz	
Working frequency	47÷63Hz	
Rated continuous thermal current I _{cth}	100% I _{pr}	
Rated short-time thermal current I _{th}	< 60I _{pr}	
Rated dynamic current	2,5I _{th}	
Instrument security factor (FS)	≤ 5	
Rated secondary current I _{sr}	5 - 1A	
Max. power dissipation	≤ 23W	≤ 23W
Allowed max cable or busbar temperature	125°C	

INSULATION REQUIREMENTS

Type	Dry transformer, air insulation
Highest voltage for equipment U _m	0.72kV r.m.s.
Rated insulation level	3kV r.m.s. 50Hz/1min
Class of insulation (EN/IEC 61869-1, 61869-2)	B

ENVIRONMENTAL CONDITIONS

Nominal temperature range	-25÷50°C
Storage temperature	-40÷85°C
Relative humidity	≤ 85%
Suitable for tropical climates	yes

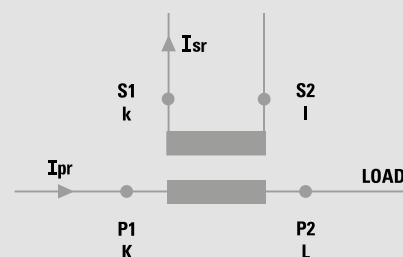
CONNECTION

Primary winding	Passing bus bar
Secondary winding	tightening by nut M4

MECHANICAL FEATURES

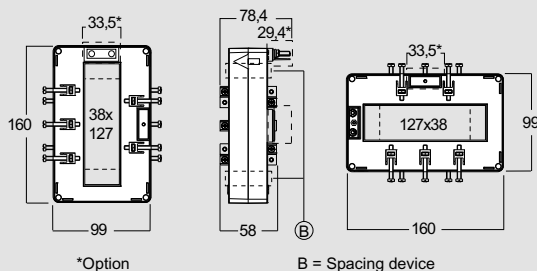
Housing material	self extinguishing polycarbonate
Protection degree (EN/IEC 60529)	IP40 housing - IP00 terminals (IP20 with sealable terminal cover)
Mounting	screw type on bar
Weight	1500 gr 1300 gr

Wiring diagrams

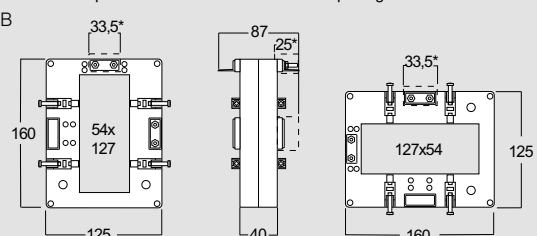


Dimensions

TAS127



TAS127B



Current transformers - PROTECTION

Winding primary single-phase current transformer



TAQ10P



TAQ20P

Item		TAQ10P		
		Winding primary con built-in central bar 25x4mm		
Isr 5A	Isr 1A	Primary current (A)	Accuracy class VA	
			cl. 5P5	cl. 5P10
TAVB50A500	TAVB10A500	5A	4	2
TAVB50B100	TAVB10B100	10A	4	2
TAVB50B150	TAVB10B150	15A	4	2
TAVB50B200	TAVB10B200	20A	4	2
TAVB50B250	TAVB10B250	25A	4	2
TAVB50B300	TAVB10B300	30A	4	2
TAVB50B400	TAVB10B400	40A	4	2
TAVB50B500	TAVB10B500	50A	4	2
TAVB50B600	TAVB10B600	60A	4	2
TAVB50B700	TAVB10B700	70A	4	2
TAVB50B750	TAVB10B750	75A	4	2
TAVB50B800	TAVB10B800	80A	4	2
TAVB50C100	TAVB10C100	100A	4	2
TAVB50C120	TAVB10C120	120A	4	2
TAVB50C150	TAVB10C150	150A	3	1,5
TAVB50C200	TAVB10C200	200A	4	2
TAVB50C250	TAVB10C250	250A	4	2
TAVB50C300	TAVB10C300	300A	4	2

Item		TAQ20P		
		Winding primary con built-in central bar 40x4mm		
Isr 5A	Isr 1A	Primary current (A)	Accuracy class VA	
			cl. 5P5	cl. 5P10
TAVA50A500	TAVA10A500	5A	8	4
TAVA50B100	TAVA10B100	10A	8	4
TAVA50B150	TAVA10B150	15A	8	4
TAVA50B200	TAVA10B200	20A	8	4
TAVA50B250	TAVA10B250	25A	8	4
TAVA50B300	TAVA10B300	30A	8	4
TAVA50B400	TAVA10B400	40A	8	4
TAVA50B500	TAVA10B500	50A	8	4
TAVA50B600	TAVA10B600	60A	8	4
TAVA50B700	TAVA10B700	70A	8	4
TAVA50B750	TAVA10B750	75A	8	4
TAVA50B800	TAVA10B800	80A	8	4
TAVA50C100	TAVA10C100	100A	8	4
TAVA50C120	TAVA10C120	120A	8	4
TAVA50C150	TAVA10C150	150A	8	4
TAVA50C200	TAVA10C200	200A	8	4
TAVA50C250	TAVA10C250	250A	8	4
TAVA50C300	TAVA10C300	300A	8	4
TAVA50C400	TAVA10C400	400A	8	4
TAVA50C500	TAVA10C500	500A	8	4
TAVA50C600	TAVA10C600	600A	8	4

Accessories

Description

ATACOP03

Sealable terminal cover (for TAQ10P)

ATACOP07

Sealable terminal cover (for TAQ20P)

Technical characteristics

MODEL	TAQ10P	TAQ20P
TECHNICAL CHARACTERISTICS		
Reference specification	EN/IEC 61869-1, 61869-2	
Rated primary current I _{pr}	5÷300A	5÷600A
Rated frequency	50Hz	
Working frequency	47÷63Hz	
Rated continuous thermal current I _{cth}	100% I _{pr}	
Rated short-time thermal current I _{th}	< 60I _{pr}	
Rated dynamic current	2,5I _{th}	
Rated secondary current I _{sr}	1 - 5A	
Max. power dissipation	≤ 2.5W	≤ 1.5W
Allowed max cable or busbar temperature	125°C	

INSULATION REQUIREMENTS

Type	Dry transformer, air insulation
Highest voltage for equipment U _m	0.72kV r.m.s.
Rated insulation level	3kV r.m.s. 50Hz/1min
Class of insulation(EN 60044-1)	B

ENVIRONMENTAL CONDITIONS

Nominal temperature range	-25÷+50°C
Storage temperature	-40÷+85°C
Relative humidity	≤ 85%
Suitable for tropical climates	yes

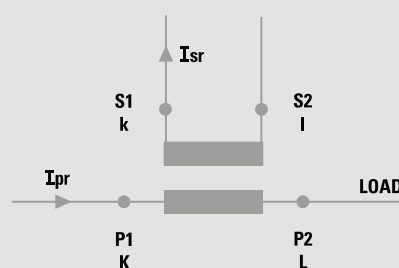
CONNECTION

Primary winding	built-in central bar (25x4mm)	built-in central bar (40x4mm)
Secondary winding	double screw M4	

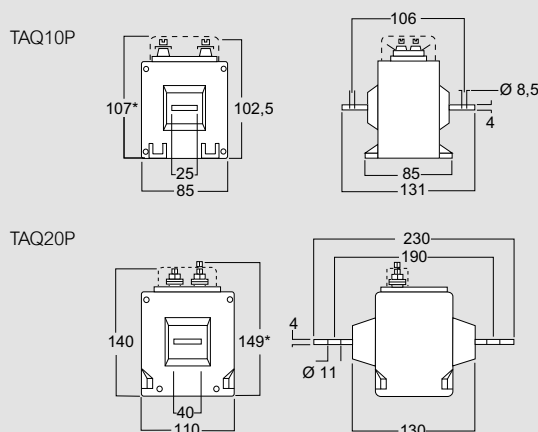
MECHANICAL FEATURES

Housing material	self extinguishing polycarbonate	
Protection degree (EN/IEC 60529)	P40 housing - IP00 terminals (IP20 with sealable terminal cover)	
Mounting	screw type on bar	
Weight	700 gr	2000 gr

Wiring diagrams



Dimensions



Current transformers - PROTECTION

Cable/passing bar single-phase current transformer



TAS63P



TAS80

Item

TAS63P

Passing cable window/bar 41x21mm -
51x20mm - 64x19mm

Isr 5A	Isr 1A	Primary current (A)	Accuracy class VA	
			cl. 5P5	cl. 5P10
TAWA50C250	TAWA10C250	250A	2.5	1
TAWA50C300	TAWA10C300	300A	3.5	1.2
TAWA50C320	TAWA10C320	320A	4	1.5
TAWA50C400	TAWA10C400	400A	5	1.5
TAWA50C600	TAWA10C600	600A	6	2
TAWA50C700	TAWA10C700	700A	7	2
TAWA50C750	TAWA10C750	750A	7	2
TAWA50C800	TAWA10C800	800A	7	1.5
TAWA50D100	TAWA10D100	1000A	7	1.5
TAWA50D120	TAWA10D120	1200A	10	1.5
TAWA50D125	TAWA10D125	1250A	10	2
TAWA50D150	TAWA10D150	1500A	10	1.5
TAWA50D160	TAWA10D160	1600A	10	1.5

TAS80

Passing cable window/bar 41x21mm -
51x20mm - 64x19mm

Isr 5A	Isr 1A	Primary current (A)	Accuracy class VA	
			cl. 5P5	cl. 5P10
TASM50C300	TASM10C300	300A	6	2.5
TASM50C320	TASM10C320	320A	7	2.5
TASM50C400	TASM10C400	400A	10	3
TASM50C600	TASM10C600	600A	10	4
TASM50C700	TASM10C700	700A	10	4
TASM50C750	TASM10C750	750A	10	4
TASM50C800	TASM10C800	800A	10	4
TASM50D100	TASM10D100	1000A	15	4
TASM50D120	TASM10D120	1200A	20	5
TASM50D125	TASM10D125	1250A	20	5
TASM50D150	TASM10D150	1500A	25	5
TASM50D160	TASM10D160	1600A	25	5
TASM50D200	TASM10D250	2000A	30	6
TASM50D250	TASM10D250	2500A	35	6

Accessories

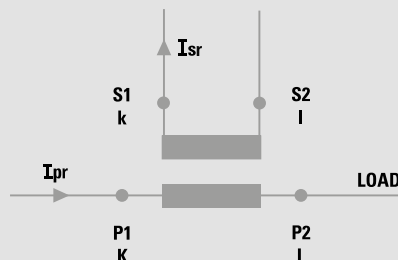
Description
Sealable terminal cover

ATACOP03

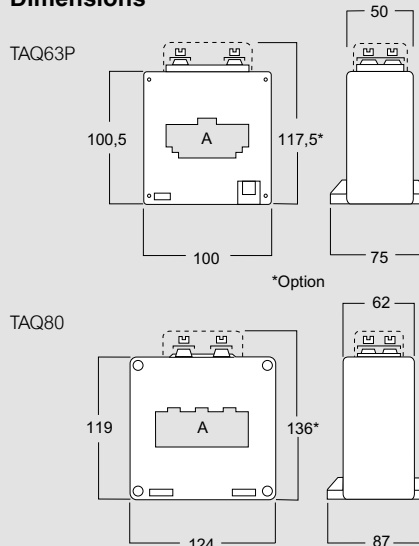
Technical characteristics

MODEL	TAS63P		TAS80
TECHNICAL CHARACTERISTICS			
Reference specification	EN/IEC 61869-1, 61869-2		
Rated primary current I _{pr}	250÷1600A	300÷2500A	
Rated frequency	50Hz		
Working frequency	47÷63Hz		
Rated continuous thermal current I _{cth}	100% I _{pr}		
Rated short-time thermal current I _{th}	< 60I _{pr}		
Rated dynamic current	2,5I _{th}		
Rated secondary current I _{sr}	5 - 1A		
Max. power dissipation	≤ 8W	≤ 36W	
Allowed max cable or busbar temperature	125°C		
INSULATION REQUIREMENTS			
Type	Dry transformer, air insulation		
Highest voltage for equipment U _m	0.72kV r.m.s.		
Rated insulation level	3kV r.m.s. 50Hz/1min		
Class of insulation (EN/IEC 61869-1, 61869-2)	B		
ENVIRONMENTAL CONDITIONS			
Nominal temperature range	-25÷50°C		
Storage temperature	-40÷85°C		
Relative humidity	≤ 85%		
Suitable for tropical climates	si		
CONNECTION			
Primary winding	passing bus bar		
Secondary winding	tightening by nut M4		
MECHANICAL FEATURES			
Housing material	self extinguishing polycarbonate		
Protection degree (EN/IEC 60529)	IP40 housing - IP00 terminals (IP20 with sealable terminal cover)		
Weight	900 gr	1200 gr	

Wiring diagrams



Dimensions



Current transformers - PROTECTION

Cable/passing bar single-phase current transformer



TAS80P



TAS120BP

Item		TAS80P					
		Passing cable window/bar 82x32mm					
Isr 5A	Isr 1A	Primary current (A)	cl. 5P5	cl. 5P10	cl. 5P15	cl. 5P20	
TAWB50C300	TAWB10C300	300A	8	4	2.5	1.5	
TAWB50C320	TAWB10C320	320A	1	5	3	2	
TAWB50C400	TAWB10C400	400A	12	6	4	2.5	
TAWB50C600	TAWB10C600	600A	15	7	4.5	3	
TAWB50C700	TAWB10C700	700A	16	8	4.5	3	
TAWB50C750	TAWB10C750	750A	20	9	5	3	
TAWB50C800	TAWB10C800	800A	20	8	4.5	2.5	
TAWB50D100	TAWB10D100	1000A	25	10	6	3	
TAWB50D120	TAWB10D120	1200A	30	12	6	3	
TAWB50D125	TAWB10D125	1250A	30	12	6	3	
TAWB50D150	TAWB10D150	1500A	35	12	5	-	
TAWB50D160	TAWB10D160	1600A	35	12	5	-	
TAWB50D200	TAWB10D200	2000A	40	12	3	-	
TAWB50D250	TAWB10D250	2500A	45	10	-	-	

Vertical bar		Horizontal bar		Primary current (A)	Accuracy class VA	
Isr 5A	Isr 1A	Isr 5A	Isr 1A		cl. 5P5	cl. 5P10
TAPQ50C800	TAPQ10C800	TAPQ50C8003	TAPQ10C8003	800A	10	4
TAPQ50D100	TAPQ10D100	TAPQ50D1003	TAPQ10D1003	1000A	12	5
TAPQ50D120	TAPQ10D120	TAPQ50D1203	TAPQ10D1203	1200A	12	5
TAPQ50D125	TAPQ10D125	TAPQ50D1253	TAPQ10D1253	1250A	12	5
TAPQ50D150	TAPQ10D150	TAPQ50D1503	TAPQ10D1503	1500A	15	6
TAPQ50D160	TAPQ10D160	TAPQ50D1603	TAPQ10D1603	1600A	15	6
TAPQ50D200	TAPQ10D200	TAPQ50D2003	TAPQ10D2003	2000A	20	6
TAPQ50D250	TAPQ10D250	TAPQ50D2503	TAPQ10D2503	2500A	20	6
TAPQ50D300	TAPQ10D300	TAPQ50D3003	TAPQ10D3003	3000A	20	4

TAS102BP

Passing cable window/bar 54x102mm or 102x54mm long side terminals

Accessories

Description

ATACOP03 Sealable terminal cover (for TAS80P)

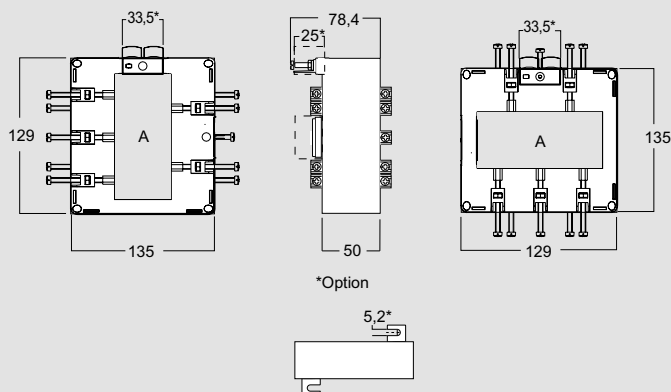
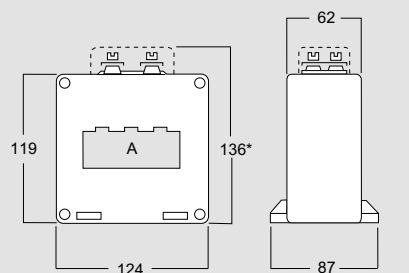
ATACOP04 Sealable terminal cover (for TAS102BP)

ATAFIS01 2 screw type for wall mounting (for TAS102BP)

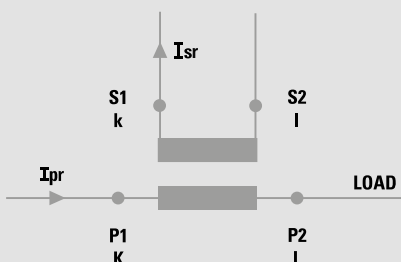
Technical characteristics

MODEL	TAS80P		TAS120BP
TECHNICAL CHARACTERISTICS			
Reference specification	EN/IEC 61869-1, 61869-2		
Rated primary current Ipr	300÷2500A	800÷3000A	
Rated frequency	50Hz		
Working frequency	47÷63Hz		
Rated continuous thermal current Icth	100% Ipr		
Rated short-time thermal current Ith	< 60Ipr		
Rated dynamic current	2,5Ith		
Rated secondary current Isr	5 - 1A		
Max. power dissipation	≤ 25.5W	≤ 30W	
Allowed max cable or busbar temperature	125°C		
INSULATION REQUIREMENTS			
Type	Dry transformer, air insulation		
Highest voltage for equipment Um	0.72kV r.m.s.		
Rated insulation level	3kV r.m.s. 50Hz/1min		
Class of insulation (EN/IEC 61869-1, 61869-2)	B		
ENVIRONMENTAL CONDITIONS			
Nominal temperature range	-25÷50°C		
Storage temperature	-40÷85°C		
Relative humidity	≤ 85%		
Suitable for tropical climates	yes		
CONNECTION			
Primary winding	passing bus bar		
Secondary winding	tightening by nut M4		
MECHANICAL FEATURES			
Housing material	self extinguishing polycarbonate		
Protection degree (EN/IEC 60529)	P40 housing - IP00 terminals (IP20 with sealable terminal cover)		
Weight	2000 gr	2000 gr	

Dimensions



Wiring diagrams



Current transformers - PROTECTION

Cable/passing bar single-phase current transformer



TAS125



TAS125P

Item

TAS125

Passing cable window/bar 127x54mm

Isr 5A	Isr 1A	Primary current (A)	Accuracy class VA	
			cl. 5P5	cl. 5P10
TASQ50C400	TASQ10C400	400A	6	3
TASQ50C500	TASQ10C500	500A	10	3
TASQ50C600	TASQ10C600	600A	10	5
TASQ50C700	TASQ10C700	700A	10	5
TASQ50C750	TASQ10C750	750A	10	5
TASQ50C800	TASQ10C800	800A	15	5
TASQ50D100	TASQ10D100	1000A	15	5
TASQ50D120	TASQ10D120	1200A	20	5
TASQ50D125	TASQ10D125	1250A	20	5
TASQ50D150	TASQ10D150	1500A	20	5
TASQ50D160	TASQ10D160	1600A	20	5
TASQ50D200	TASQ10D200	2000A	25	5
TASQ50D250	TASQ10D250	2500A	30	5
TASQ50D300	TASQ10D300	3000A	40	5
TASQ50D400	TASQ10D400	4000A	50	5

TAS125P

Passing cable window/bar 127x54mm

Isr 5A	Isr 1A	Primary current (A)	Accuracy class VA			
			cl. 5P5	cl. 5P10	cl. 5P15	cl. 5P20
TAWC50C400	TAWC10C400	400A	12	6	3.5	2.5
TAWC50C500	TAWC10C500	500A	15	7	4	3
TAWC50C600	TAWC10C600	600A	20	10	5	4
TAWC50C700	TAWC10C700	700A	20	10	6	4
TAWC50C750	TAWC10C750	750A	25	10	7	5
TAWC50C800	TAWC10C800	800A	25	10	7	5
TAWC50D100	TAWC10D100	1000A	30	15	8	6
TAWC50D120	TAWC10D120	1200A	35	15	8	6
TAWC50D125	TAWC10D125	1250A	35	15	8	6
TAWC50D150	TAWC10D150	1500A	40	20	10	6
TAWC50D160	TAWC10D160	1600A	40	20	10	6
TAWC50D200	TAWC10D200	2000A	50	20	10	4
TAWC50D250	TAWC10D250	2500A	60	20	10	3
TAWC50D300	TAWC10D300	3000A	80	25	10	3
TAWC50D400	TAWC10D400	4000A	100	30	15	3

Accessories

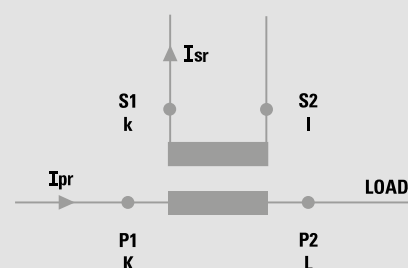
Description
Sealable terminal cover

ATACOP03

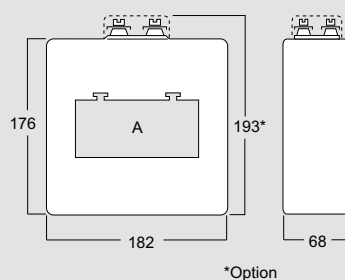
Technical characteristics

MODEL	TAS125		TAS125P
TECHNICAL CHARACTERISTICS			
Reference specification	EN/IEC 61869-1, 61869-2		
Rated primary current Ipr	400÷4000A	400÷4000A	
Rated frequency	50Hz		
Working frequency	47÷63Hz		
Rated continuous thermal current Icth	100% Ipr		
Corrente termica nominale di cortocircuito Ith	< 60Ipr		
Rated dynamic current	2,5Ith		
Rated secondary current Isr	5 - 1A		
Max. power dissipation	≤ 44W	≤ 30W	
Allowed max cable or busbar temperature	125°C		
INSULATION REQUIREMENTS			
Type	Dry transformer, air insulation		
Highest voltage for equipment Um	0.72kV r.m.s.		
Rated insulation level	3kV r.m.s. 50Hz/1min		
Class of insulation (EN/IEC 61869-1, 61869-2)	B		
ENVIRONMENTAL CONDITIONS			
Nominal temperature range	-25÷50°C		
Storage temperature	-40÷85°C		
Relative humidity	≤ 85%		
Suitable for tropical climates	si		
CONNECTION			
Primary winding	passing bus bar		
Secondary winding	tightening by nut M4		
MECHANICAL FEATURES			
Housing material	self extinguishing polycarbonate		
Protection degree (EN/IEC 60529)	P40 housing - IP00 terminals (IP20 with sealable terminal cover)		
Weight	1500 gr	3600 gr	

Wiring diagrams

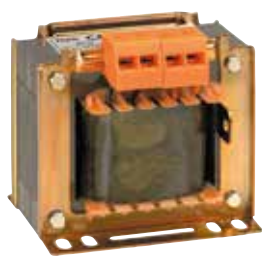


Dimensions



Voltage transformers - PROTECTION & MEASURE

single-phase voltage transformers



BTV3



BTV6 - BTV10

Item	BTV3	
Secondary voltage (V)		
100V	Primary voltage (V)	Accuracy class VA cl. 1
TVVAC115C100	115V	6
TVVAC230C100	230V	6
TVVAC400C100	400V	6
TVVAC440C100	440V	6
TVVAC450C100	450V	6
TVVAC500C100	500V	6
TVVAC600C100	600V	6
TVVAC660C100	660V	6
TVVAC690C100	690V	6
100V : √3		
TVVAG100G100	100V : √3	3
TVVAG115G100	115V : √3	3
TVVAG400G100	400V : √3	3
TVVAG440G100	440V : √3	3
TVVAG450G100	450V : √3	3
TVVAG500G100	500V : √3	3

Accessories

Description

ATVCOP01Primary / secondary
sealable terminal cover

Item	BTV6			
Secondary voltage (V)		Accuracy class VA		
100V	Primary voltage (V)	cl. 0.5	cl. 1	cl. 3
TVVBC100C100	100V	6	9	20
TVVBC110C100	110V	6	9	20
TVVBC115C100	115V	6	9	20
TVVBC230C100	230V	6	9	20
TVVBC240C100	240V	6	9	20
TVVBC400C100	400V	6	9	20
TVVBC440C100	440V	6	9	20
TVVBC450C100	450V	6	9	20
TVVBC500C100	500V	6	9	20
TVVBC600C100	600V	6	9	20
TVVBC660C100	660V	6	9	20
TVVBC690C100	690V	6	9	20
100V : √3				
TVVBG100G100	100V : √3	3	4	10
TVVBG240G100	240V : √3	3	4	10
TVVBG400G100	400V : √3	3	4	10
TVVBG450G100	450V : √3	3	4	10
TVVBG500G100	500V : √3	3	4	10
TVVBG600G100	600V : √3	3	4	10
TVVBG690G100	690V : √3	3	4	10

Item	BTV10			
Secondary voltage (V)		Accuracy class VA		
100V	Primary voltage (V)	cl. 0.5	cl. 1	cl. 3
TVVCC100C100	100V	10	15	30
TVVCC110C100	110V	10	15	30
TVVCC230C100	230V	10	15	30
TVVCC240C100	240V	10	15	30
TVVCC400C100	400V	10	15	30
TVVCC440C100	440V	10	15	30
TVVCC450C100	450V	10	15	30
TVVCC500C100	500V	10	15	30
TVVCC600C100	600V	10	15	30
TVVCC660C100	660V	10	15	30
TVVCC690C100	690V	10	15	30
100V : √3				
TVVCG100G100	100V : √3	5	7	15
TVVCG230G100	230V : √3	5	7	15
TVVCG400G100	400V : √3	5	7	15
TVVCG450G100	450V : √3	5	7	15
TVVCG500G100	500V : √3	5	7	15
TVVCG600G100	600V : √3	5	7	15
TVVCG660G100	660V : √3	5	7	15

Voltage transformers - PROTECTION & MEASURE

single-phase voltage transformers



BTV20 - BTV50 - BTV100

Item		BTV20			
Secondary voltage (V)		Accuracy class VA			
100V	Primary voltage (V)	cl. 0.5	cl. 1	cl. 3	
TVVDC100C100	100V	20	30	50	
TVVDC110C100	110V	20	30	50	
TVVDC230C100	230V	20	30	50	
TVVDC240C100	240V	20	30	50	
TVVDC400C100	400V	20	30	50	
TVVDC440C100	440V	20	30	50	
TVVDC450C100	450V	20	30	50	
TVVDC500C100	500V	20	30	50	
TVVDC600C100	600V	20	30	50	
TVVDC660C100	660V	20	30	50	
TVVDC690C100	690V	20	30	50	
TVVDC700C100	700V	20	30	50	
TVVDC800C100	800V	20	30	50	
TVVDD100C100	1000V	20	30	50	
100V : $\sqrt{3}$					
TVVDG100G100	100V : $\sqrt{3}$	8	10	25	
TVVDG400G100	400V : $\sqrt{3}$	8	10	25	
TVVDG440G100	440V : $\sqrt{3}$	8	10	25	
TVVDG600G100	600V : $\sqrt{3}$	8	10	25	
TVVDG660G100	660V : $\sqrt{3}$	8	10	25	
TVVDG690G100	690V : $\sqrt{3}$	8	10	25	
TVVDG800G100	800V : $\sqrt{3}$	8	10	25	
TVVDH100G100	1000V : $\sqrt{3}$	8	10	25	

Accessories

Description

ATVCOP01

Primary / secondary sealable terminal cover

Item		BTV50			
Secondary voltage (V)		Accuracy class VA			
100V	Primary voltage (V)	cl. 0.5	cl. 1	cl. 3	
TVVEC100C100	100V	50	75	100	
TVVEC230C100	230V	50	75	100	
TVVEC240C100	240V	50	75	100	
TVVEC400C100	400V	50	75	100	
TVVEC440C100	440V	50	75	100	
TVVEC500C100	500V	50	75	100	
TVVEC600C100	600V	50	75	100	
TVVEC690C100	690V	50	75	100	
TVVEC800C100	800V	50	75	100	
TVVED100C100	1000V	50	75	100	
100V : $\sqrt{3}$					
TVVEG100G100	100V : $\sqrt{3}$	25	30	50	
TVVEG400G100	400V : $\sqrt{3}$	25	30	50	
TVVEG440G100	440V : $\sqrt{3}$	25	30	50	
TVVEG500G100	500V : $\sqrt{3}$	25	30	50	
TVVEG600G100	600V : $\sqrt{3}$	25	30	50	
TVVEG690G100	690V : $\sqrt{3}$	25	30	50	
TVVEG800G100	800V : $\sqrt{3}$	25	30	50	
TVVEH100G100	1000V : $\sqrt{3}$	25	30	50	

Item		BTV100			
Secondary voltage (V)		Accuracy class VA			
100V	Primary voltage (V)	cl. 0.5	cl. 1	cl. 3	
TVVFC400C100	400V	100	150	200	
TVVFC800C100	800V	100	150	200	
TVVFD100C100	1000V	100	150	200	
100V : $\sqrt{3}$					
TVVFG400G100	400V : $\sqrt{3}$	50	75	100	

Voltage transformers - ACCURACY

single-phase voltage transformers



BTV6 -BTV10
BTV20 -BTV50
BTV100

Item	BTV6	
Secondary voltage (V)	Primary voltage (V)	Accuracy class VA cl. 0.2
100V		
TVVBC400C100S	400V	2.5
TVVBC500C100S	500V	2.5
TVVBC600C100S	600V	2.5
TVVBC690C100S	690V	2.5
100V : $\sqrt{3}$		
TVVBG400G100S	400V : $\sqrt{3}$	1
TVVBG500G100S	500V : $\sqrt{3}$	1

Item	BTV20	
Secondary voltage (V)	Primary voltage (V)	Accuracy class VA cl. 0.2
100V		
TVVDC400C100S	400V	8
TVVDC440C100S	440V	8
TVVDC690C100S	690V	8
TVVDC700C100S	700V	8
TVVDC800C100S	800V	8
TVVDD100C100S	1000V	8
100V : $\sqrt{3}$		
TVVDG400G100S	400V : $\sqrt{3}$	3
TVVDG660G100S	660V : $\sqrt{3}$	3
TVVHG100G100S	1000V : $\sqrt{3}$	3

Item	BTV10	
Secondary voltage (V)	Primary voltage (V)	Accuracy class VA cl. 0.2
100V		
TVVCC400C100S	400V	4
TVVCC600C100S	600V	4
TVVCC690C100S	690V	4
100V : $\sqrt{3}$		
TVVCG600G100S	600V : $\sqrt{3}$	2

Item	BTV50	
Secondary voltage (V)	Primary voltage (V)	Accuracy class VA cl. 0.2
100V		
TVVEC690C100S	690V	20
TVVED100C100S	1000V	20
100V : $\sqrt{3}$		
TVVEG400G100S	400V : $\sqrt{3}$	8
TVVEG600G100S	600V : $\sqrt{3}$	8
TVVEG690G100S	690V : $\sqrt{3}$	8

Item	Accessories	
Item	Description	
ATVCOP01	Primary / secondary sealable terminal cover	
Item	BTV100	
Secondary voltage (V)	Primary voltage (V)	Accuracy class VA cl. 0.2
100V		
TVVFC450C100S	450V	40
100V : $\sqrt{3}$		
TVVFG230G100S	230V : $\sqrt{3}$	14

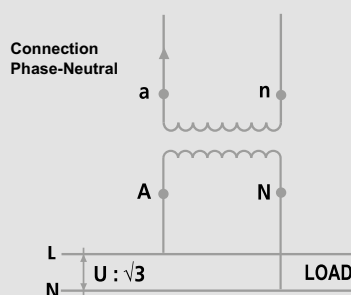
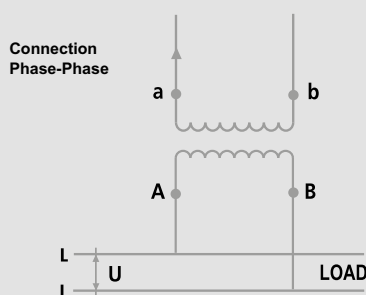
Voltage transformers - ACCURACY

single-phase voltage transformers

Technical characteristics

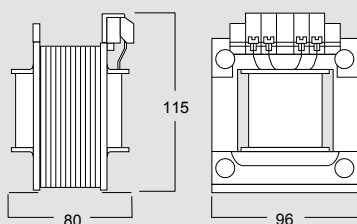
MODEL	BTV3		BTV6		BTV10		BTV20		BTV50		BTV100		
TECHNICAL CHARACTERISTICS													
Reference specification		EN/IEC61869-1, EN/IEC61869-3											
Rated primary voltage Upr (MEASURE & ACCURACY)		100÷690V (phase-phase) - 100÷690V : √3 (phase-neutral)					100÷1000V (phase-phase) - 1000÷1000V : √3 (phase-neutral)						
Tensioni nominali primarie Upr (PROTECTION)		-		230÷690V (phase-phase) - 230÷690V : √3 (phase-neutral)			230÷1000V (phase-phase) - 230÷1000V : √3 (phase-neutral)						
Rated secondary voltage Usr		100V (phase-phase) - 100V : √3 (phase-neutral)											
Rated frequency		50Hz											
Working frequency		47÷63Hz											
Continuous rated time		1.2 Upr											
8 hours rated time		1,9Upr (phase-neutral and Primary winding Upr:√3)											
Max. power dissipation (MEASURE & PROTECTION)		≤ 9W		≤ 8.5W		≤ 7W		≤ 8.5W		≤ 11W		≤ 32W	
Max. power dissipation (ACCURACY)		-		≤ 7W		≤ 8.5W		≤ 8.5W		≤ 11W		≤ 32W	
Allowed max cable or busbar temperature		125°C											
INSULATION REQUIREMENTS													
Type		Dry transformer, air insulation											
Highest voltage for equipment Um		0.72kV r.m.s. (≤ 600V) - 1.2kV (>600V)											
Rated insulation level		3kV (≤ 600V) - 6kV (>600V) r.m.s. 50Hz/1min											
Class of insulation (EN/IEC61869-1)		B											
ENVIRONMENTAL CONDITIONS													
Nominal temperature range		-25÷50°C											
Storage temperature		-40÷85°C											
Relative humidity		≤ 85%											
Suitable for tropical climates		si											
CONNECTION													
Primary winding and secondary winding		M4 and faston 6,3x0,8mm											
MECHANICAL FEATURES													
Housing material		metal											
Protection degree (EN/IEC 60529)		IP00 terminals		IP00 terminals (IP20 with sealable terminal cover)									
Mounting		Fixing screw facility for wall mounting											
Weight		2350 gr		2700 gr		3100 gr		2700 gr		6100 gr		7500 gr	

Wiring diagrams

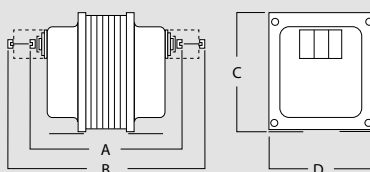


Dimensions

BTV3



BTV6 - BTV10 - BTV20 - BTV50 - BTV100



Dim. (mm)	A	B*	C	D
BTV6	120	155	100	85
BTV10	125	160	100	85
BTV20	140	175	100	85
BTV50	165	200	125	103
BTV100	180	215	125	103

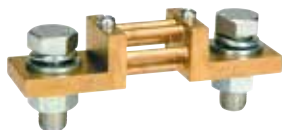
* with sealable terminal cover

Transformers

accessories



DER



ATAP015

Item			DER - Shunts for direct current measure
60mV	100mV	150mV	
DER060A100	DER100A100	DER150A100	It gives a mV signal directly proportional to the measured current Primary current 30÷6000A Voltage drop 60 – 100 – 150mV Accuracy cl. 0,5 Dimensions according to DIN 43703
DER060A150	-	DER150A150	
DER060A200	DER100A200	DER150A200	1A
DER060A250	DER100A250	DER150A250	1.5A
DER060A300	DER100A300	DER150A300	2A
DER060A400	DER100A400	DER150A400	2.5A
DER060A500	DER100A500	DER150A500	3A
DER060A600	DER100A600	DER150A600	4A
DER060A800	DER100A800	DER150A800	5A
DER060B100	DER100B100	DER150B100	6A
DER060B150	DER100B150	DER150B150	8A
DER060B200	DER100B200	DER150B200	10A
DER060B250	DER100B250	DER150B250	15A
DER060B300	DER100B300	DER150B300	20A
DER060B400	DER100B400	DER150B400	25A
DER060B500	DER100B500	DER150B500	30A
DER060B600	DER100B600	DER150B600	40A
DER060B800	DER100B800	DER150B800	50A
DER060C100	DER100C100	DER150C100	60A
DER060C120	DER100C120	DER150C120	80A
DER060C150	DER100C150	DER150C150	100A
DER060C200	DER100C200	DER150C200	120A
DER060C250	DER100C250	DER150C250	150A
DER060C300	DER100C300	DER150C300	200A
DER060C400	DER100C400	DER150C400	250A
DER060C500	DER100C500	DER150C500	300A
DER060C600	DER100C600	DER150C600	400A
DER060C800	DER100C800	DER150C800	500A
DER060D100	DER100D100	DER150D100	600A
DER060D120	DER100D120	DER150D120	800A
DER060D150	DER100D150	DER150D150	1000A
DER060D200	DER100D200	DER150D200	1200A
DER060D250	DER100D250	DER150D250	1500A
DER060D300	DER100D300	DER150D300	2000A
DER060D400	DER100D400	DER150D400	2500A
DER060D500	DER100D500	DER150D500	3000A
DER060D600	DER100D600	DER150D600	4000A
			5000A
			6000A

Item	CT accessory
ATAP015	Description Fully static accessory which can instantly reclose the CT secondary circuit opened due to connection breakdown or to the removal of connected devices, to avoid dangerous overvoltages generated by the opening, and automatic instantaneous reset when normal conditions are restored. CT /1A or /5A secondary opening protection .



DELTA RESIDUAL CURRENT RELAIS

The range of Delta relays are the ideal for use in the industrial and service sectors, in public lighting and in building automatic machines, they comply with standards of protection CEI EN standard 60947-2 appendices B and M class A, anyway compatible with pulsing currents.

The range of modular, flush mounting and residual current relay in combination with current transformers Del and Del A (open core type), has the aim of protecting people and property while assuring system continuity of service.

Permanent connection control

An important feature of the Delta series is the permanent connection control of circuit between residual current relay and C.T.: by detecting of any anomaly in the connection between C.T. and E.L.R., the protection automatically intervenes, without waiting for the periodic check to carry out by test push button.

Δt intervention time adjustment

The Δt tripping time adjustment makes this series ideal for the creation of selective protection systems; adjustment in $I\Delta n$ current makes it possible to protect people and property against undesired or dangerous dispersions.



Version with harmonic filter

With the evolution of system requirements and the introduction into the systems of devices fitted with power electronics, the F models have been created with harmonic filter for systems that are subject to considerable disruption.

Residual current relay

table of choiche

								
Model		DELTA D2-b	DELTA D2-L	DELTA D2-s	DELTA D4-s	DELTA D4-F	DELTA D4-h	DELTA D4-I
Item		RDBMR	RD1AF	RD3AF	RD4B2	RD3B2	RDD4	RD2B213B
Range	19 0,03÷30A		*	*	*	*		*
	18 0,5÷30A						*	
Istantaneous	t=0s a I _{Δn} 30mA	*	*	*	*	*	*	*
Waveform	Sinusoidal (Type AC)		*	*	*	*	*	*
	Chopped pulsating with superimposed dc (Type A)		*	*	*	*	*	*
Filter for harmonics	Selectable					*	*	*
	Fixed							
Reference standard	EN60947-2 IEC60947-2		*	*	*	*	*	*
Alarm	1 Output relay		*	*		(2)		
	2 Outputs relay				(2)		*	*
	1 Output + Pre-alarm	*			(2)	(2)		(2)
I_{Δn} display	LED Bargraph			*	*	*		*
	Display	*					*	
Outputs relay	SPDT		*	*				
	SPDT + SPST							
	2 SPDT	*			*	*	*	*
Positive/negative safety	Selectable		*	*	*	*	*	*
Test	Local	*	*	*	*	*	*	*
	Remote		(1)	(1)	*	(1)	*	
	Automatic	*	*	*	*	*	*	*
Reset	Local	*	*	*	*	*	*	*
	Remote	*	*	*	*	*	*	*
	Automatic	*	*	*	*		*	
Auxiliary power supply	230Vac		*	*	*	*	*	*
	24-48-115-240-400Vac		*	*	*	*	*	
	20÷150Vdc		*	*	*	*	*	
	10÷36Vdc					*		
Dimensions	2 Modules	*	*	*				
	4 Modules				*	*	*	*
	48 x 48 mm							
	72 x 72 mm							
	96 x 96 mm							
Communication	RS485						*	

(1) Not available with aux. supply 20÷150Vdc-48Vac

(2) On choiche

Residual current relay

table of choice

									
Model		DELTA 48-s	DELTA 48-s	DELTA 72-s	DELTA 72-s	DELTA 72-h	DELTA 72-F	DELTA 96-s	DELTA 96-F
Item		RD1DF	RD1D2	RD1EP	RD1E2	RD3E2	RD2E2	RD1G2	RD2G2
Range	19 0,03÷30A	*	*	*	*	*		*	
	18 0,5÷30A						*		*
Istantaneous	t=0s a I _{Δn} 30mA	*	*	*	*	*		*	
Waveform	Sinusoidal (Type AC)	*	*	*	*	*	*	*	*
	Chopped pulsating with superimposed dc (Type A)	*	*	*	*	*	*	*	*
Filter for harmonics	Selectable								
	Fixed								*
Norma di riferimento	EN60947-2 IEC60947-2	*	*	*	*	*	*	*	*
Alarm	1 Output relay	*	*						
	2 Outputs Relay				(2)	(2)	(2)	(2)	(2)
	1 Output + Pre-alarm			*	(2)	(2)	(2)	(2)	(2)
I_{Δn} display	LED Bargraph			*	*	*	*	*	*
	Display					*			
Outputs relay	SPDT	*							
	SPDT + SPST		*			*			
	2 SPDT			*	*		*	*	*
Positive/negative safety	Selectable	*	*	*	*	*	*	*	*
Test	Local	*	*	*	*	*	*	*	*
	Remote	(1)	(1)	(1)	(1)	*	(1)	(1)	(1)
	Automatico	*	*	*	*	*	*	*	*
Reset	Local	*	*	*	*	*	*	*	*
	Remote	*	*	*	*	*	*	*	*
	Automatic	*	*	*					
Auxiliary power supply	230Vac	*	*	*	*	*	*	*	*
	24-48-115-240-400Vac	*	*	*	*	*	*	*	*
	20÷150Vdc	*	*	*	*	*	*	*	*
	10÷36Vdc								
Dimensions	2 Modules								
	4 Modules								
	48 x 48 mm	*	*						
	72 x 72 mm			*	*	*	*		
	96 x 96 mm							*	*
Communication	RS485								

(1) Not available with aux. supply 20÷150Vdc-48Vac

(2) On choice

Residual current relay

residual current relay type B with external toroids



DELTA D2-b

Item	DELTA D2-b
	Versions 230Vac/dc and 24 Vac/dc Pre-alarm and alarm output LCD display Signalization LED Settable tripping threshold Aux. power supply
RDBMRCD230	100÷250Vac/dc
RDBMRCD24	24÷60Vac - 24÷78Vdc

	Toroids for DELTA D2-b
	Toroids in 4 sizes Closed toroids
	Diameter (mm)
TDB35	35
TDB60	60
TDB120	120
TDB210	210

Technical characteristics

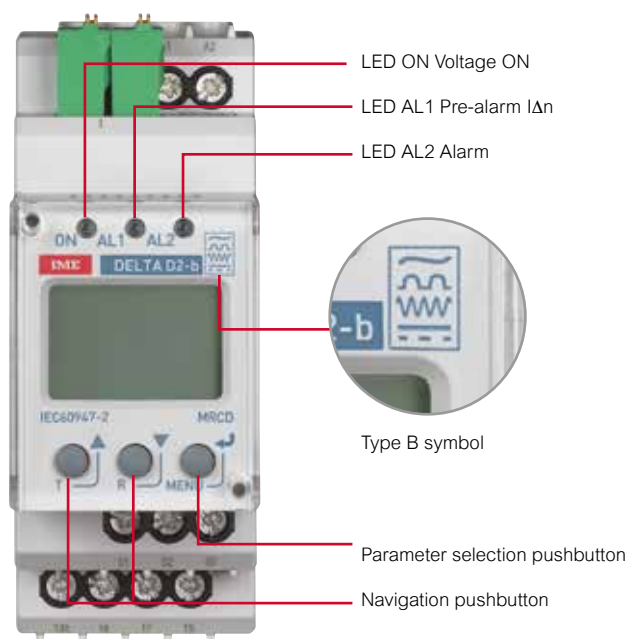
Item	RDBMRCD24	RDBMRCD230
Reference standard	IEC 60947-2 Annex M	
Insulating voltage, U_i	100V	250V
Installation category	III	
Pollution degree	2	
Supply / Output	2,2kV	
Pulse withstand voltage U_{imp}	2,5kV	4kV
Residual current $I_{\Delta n}$	0,03÷3A	
Frequency	0÷2kHz	
Network voltage to be controlled	≤800V	
Aux. power supply U_s	24÷60Vac - 24÷78Vdc	100÷250Vac/dc
Power consumption	< 6.5VA	
Thermic power consumption	6,5W	
Outputs relay	AL2 (Alarm) - AL1 (pre-Alarm)	
Safety contact type	SPDT/positive (normally excited)	
Output relay features (EN/IEC 60947-5-1)	230 Vac 5A (AC-13) - 24 Vdc 1A (DC-12)	
DISPLAY		
Display LCD	3 digit (1000 points)	
Instantaneous $I_{\Delta n}$	yes	
Tripping threshold	yes	
Tripping time delay	yes	
LEDs signalling	ON: Voltage ON Us - AL1: Pre-alarm $I_{\Delta n}$ - AL2: Alarm	
PARAMETERS		
Tripping threshold $I_{\Delta n}$ (AL2)	0,03÷3A	
Tripping time delay Δt	0÷10s	
Pre-alarm threshold $I_{\Delta n}$ (AL1)	settable 50÷100% AL2	
Tripping time delay Δt (Pre-alarm)	0÷10s	
PROTECTION CLASS		
Protection degree (IEC/EN 60529)	IP20 (terminals) - IP30 (internal components)	
MECHANICAL CHARACTERISTICS		
Dimensions	2 modules DIN35	
Nominal temperature range (functional/storage)	Min. = -25 °C Max. = +55 °C. Min. = -25 °C Max. = +70 °C.	

APPLICATION FIELDS

Type B earth leakage relays can be used in circuits with frequency converters, medical devices (such as X-RAY or TAC machines), inverters for photovoltaic systems, lift electric lines, laboratory test equipment, industrial cranes, crafts and trade, mechanical workshop (arc welders, numerical control machines), three-phase charging station for electric cars, three-phase UPS.

DESCRIPTION

The type B earth leakage relay is a device, compliant with the IEC 60947-2 annex M standard, capable of detecting unidirectional sinusoidal or direct component differential current pulses or continuous differential currents, which could be harmful or dangerous. The earth leakage relay is in turn connected to a toroid that detects the leakage currents in the plants. The associated circuit breaker is tripped by an undervoltage release (UVR) or a current release (ST). The Delta D2-b relays with special TDB closed core toroid, available in 4 sizes, in combination with the BTicino Megatiker circuit-breakers and relative release coils have been certified for additional protection against direct contacts



Residual current relay

modular residual current relay type A



DELTA D2-L



DELTA D2-S



DELTA D4-S



DELTA D4-F



DELTA D4-H



DELTA D4-I

Item	DELTA D2-L
	Instantaneous ($t = 0$) at $I_{\Delta n}$ 30mA Selectable set point 30mA÷30A (19 ranges) Field-selectable negative or positive security (fail safe) Automatic permanent test Manual or automatic reset (3 restart attempts)
	Aux. power supply
RD1AF11B	24Vac
RD1AF12B	115Vac
RD1AF13B	230Vac
RD1AF15B	400Vac
RD1AF1HB	20÷150Vdc + 48Vac

Item	DELTA D2-s with LED Bargraph
	Instantaneous ($t = 0$) at $I_{\Delta n}$ 30mA Selectable set point 30mA÷30A (19 ranges) Instantaneous display as percentage of $I_{\Delta n}$ Field-selectable negative or positive security (fail safe) Automatic permanent test Manual or automatic reset (3 restart attempts)
	Aux. power supply
RD3AF11B	24Vac
RD3AF12B	115Vac
RD3AF13B	230Vac
RD3AF15B	400Vac
RD3AF1HB	20÷150Vdc + 48Vac

Item	DELTA D4-s
	Instantaneous ($t = 0$) at $I_{\Delta n}$ 30mA Selectable set point 30mA÷30A (19 ranges) Instantaneous display as percentage of $I_{\Delta n}$ Alarm + pre-alarm or alarm function with 2 SPDT contact Field-selectable negative or positive security (fail safe) Automatic permanent test Automatic restart (up to 10 attempts) in case of transient earth fault "No trip" TEST (local, without output relay tripping) Sealable front frame
	Aux. power supply
RD4B211B	24Vac
RD4B212B	115Vac
RD4B213B	230Vac
RD4B215B	400Vac
RD4B21HB	20÷150Vdc + 48Vac

Item	DELTA D4-F (with enhanced filter)
	Instantaneous ($t = 0$) at $I_{\Delta n}$ 30mA Selectable set point 30mA÷30A (19 ranges) Instantaneous display as percentage of $I_{\Delta n}$ Filter for harmonics, field-selectable Alarm function + pre-alarm or alarm + power fail signaling Field selectable negative or positive security Automatic permanent test
	Aux. power supply
RD3B211B	24Vac
RD3B212B	115Vac
RD3B213B	230Vac
RD3B215B	400Vac
RD3B21HB	20÷150Vdc + 48Vac

	DELTA D4-h		
	TType A (EN/IEC 60947-2 annex B and M) Selectable set point and delay Alarm + pre-alarm or alarm function with 2 SPDT contacts Selectable filter for harmonic components Instantaneous display IΔn Automatic permanent test “No trip” TEST (without output relay tripping) Manual or automatic RESET RS485 communication		
	IΔn (A)	Vn	Pre Alarm
RDD42130	0.03÷30A	230Vac	20/30/40/50% IΔn
RDD421H0		20÷150Vdc+48Vac	
RDD42131		230Vac	
RDD421H1		20÷150Vdc+48Vac	

RD2B213B	DELTA D4-I		
	Use in unattended environments (public lighting, traffic lights plants)		
	Automatic reset (max.3 attempts) in the event of transient ground fault		
	Instantaneous (t = 0) at IΔn 30mA		
	Selectable set point: 30mA÷30A (19 ranges)		
	Instantaneous display as percentage of IΔn		
	Filter for harmonics, field-selectable		
	Field-selectable negative or positive security (fail safe)		
	Automatic permanent test		
	</		

Residual current relay

flush mounting residual current relay type A



DELTA 48-S

DELTA 72-S

DELTA 72-H

DELTA 72-F

DELTA 96-S

DELTA 96-F

Instantaneous ($t = 0$) at $I_{\Delta n}$ 30mA, selectable set point: 30mA÷30A (19 ranges), field-selectable negative or positive security (fail safe), automatic permanent test, manual or automatic reset (3 restart attempts)

Item		DELTA 48-S		
1 alarm contact	2 alarm contacts	$I_{\Delta n}$ (A)	V_n	t (s)
RD1DF11B	RD1D211B	0.03÷30A	24Vac	0-0.15- 0.25-0.5- 1-2.5-5
RD1DF12B	RD1D212B		115Vac	
RD1DF13B	RD1D213B		230Vac	
RD1DF15B	RD1D215B		400Vac	
RD1DF1HB	RD1D21HB		20÷150Vdc+ 48Vac	

		DELTA 72-S		
		Instantaneous $I_{\Delta n}$ percentage Pre-alarm threshold		
2 alarm contacts + pre-alarm)	2 contact (alarm or alarm + pre-alarm)	$I_{\Delta n}$ (A)	V_n	t (s)
RD1EP11B	RD1E211B	0.03÷30A	24Vac	0-0.15- 0.25-0.5- 1-2.5-5
RD1EP12B	RD1E212B		115Vac	
RD1EP13B	RD1E213B		230Vac	
RD1EP15B	RD1E215B		400Vac	
RD1EP1HB	RD1E21HB		20÷150Vdc+ 48Vac	

		DELTA 72-H		
		Instantaneous $I_{\Delta n}$ percentage Pre-alarm threshold		
		$I_{\Delta n}$ (A)	V_n	t (s)
RD3E211B	0.03÷30A		24Vac	0-0.15-0.25- 0.5-1-2.5-5
RD3E212B			115Vac	
RD3E217B			230Vac	
RD3E218B			400Vac	
RD3E21HB			20÷150Vdc+ 48Vac	

		DELTA 72-F (with enhanced filter)		
		Heavy industrial applications with distorted current waveforms: inverters, variable speed drives, rectifiers, frequency regulators Filter for harmonics It cannot be used to protect people Selectable set point 50mA÷30A (18 ranges) Instantaneous display as percentage of $I_{\Delta n}$ Field-selectable negative or positive security (fail safe) Automatic permanent test Alarm relay + pre-alarm or alarm relay with double exchange		
		$I_{\Delta n}$ (A)	V_n	t (s)
RD2E211B	0.05÷30A		24Vac	0-0.15-0.25- 0.5-1-2.5-5
RD2E212B			115Vac	
RD2E213B			230Vac	
RD2E215B			400Vac	
RD2E21HB			20÷150Vdc+ 48Vac	

		DELTA 96-S		
		Instantaneous $I_{\Delta n}$ percentage Pre-alarm threshold		
		$I_{\Delta n}$ (A)	V_n	t (s)
RD1G211B	0.03÷30A		24Vac	0-0.15-0.25- 0.5-1-2.5-5
RD1G212B			115Vac	
RD1G213B			230Vac	
RD1G215B			400Vac	
RD1G21HB			20÷150Vdc+ 48Vac	

		DELTA 96-F (with enhanced filter)		
		Heavy industrial applications with distorted current waveforms: inverters, variable speed drives, rectifiers, frequency regulators Filter for harmonics It cannot be used to protect people Selectable set point 50mA÷30A (18 ranges) Instantaneous display as percentage of $I_{\Delta n}$ Field-selectable negative or positive security (fail safe) Automatic permanent test Alarm relay + pre-alarm or alarm relay with double exchange		
		$I_{\Delta n}$ (A)	V_n	t (s)
RD2G211B	0.05÷30A		24Vac	0-0.15-0.25- 0.5-1-2.5-5
RD2G212B			115Vac	
RD2G213B			230Vac	
RD2G215B			400Vac	
RD2G21HB			20÷150Vdc+ 48Vac	

Residual current relay

toroidal transformers for residual current relay



TDG+
TDS+



TDA+



APPLICATION

If problems with the insulation or size of the cables or busbars of the line to be protected do not allow the use of toroidal transformers (hole diameter max. 300mm), it is possible to use measurement current transformers with 5A secondary winding and identical primary currents, class of accuracy 0.5 or 1.

CHOICE OF THE TRANSFORMER

Transformer ratio: depending on the ratio of the combined measurement CTs. In connection with measuring CTs with a ratio higher than 400/5A, the values of the tripping current $I_{\Delta n}$ that can be selected on the differential relay are multiplied by 10.

CONNECTION TDS5 - RESIDUAL CURRENT RELAY

Preferably to be made with shielded cable; this precaution assumes particular importance in the installation of highly sensitive residual current relays ($I_{\Delta n} \leq 0.1A$). Particular attention must also be paid to the distance between the toroid and the relay (which must be as short as possible) and to the proximity of power conductors or other equipment which can disturb the system. If the shielding cannot be used, it is advisable to twist the TDS5-relay connection cables.

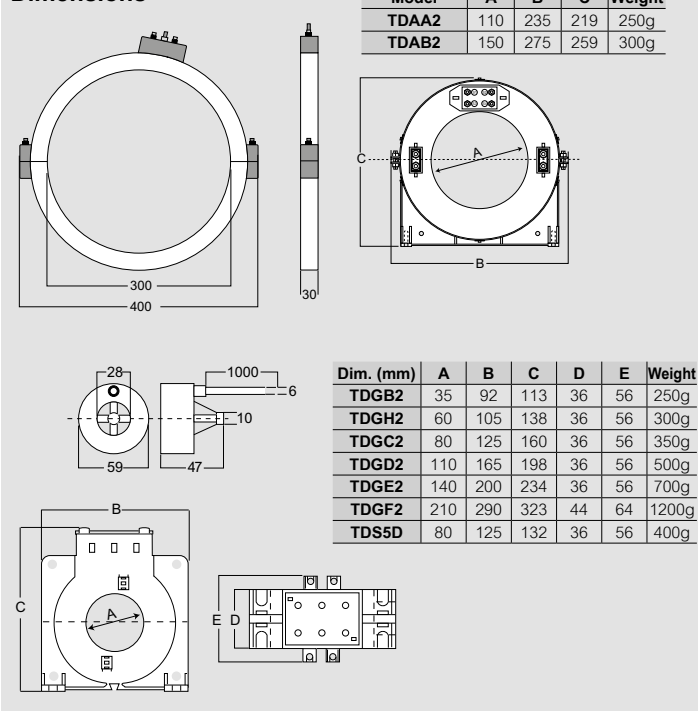
Item	DEL - Toroids with closed core		
	$I_{\Delta n}$ (A)	Internal diameter (mm)	Type
TDGA2	0.03	28	Closed
TDGB2	0.03	35	Closed
TDGH2	0.03	60	Closed
TDGC2	0.03	80	Closed
TDGD2	0.1	110	Closed
TDGE2	0.3	140	Closed
TDGF2	0.3	210	Closed
ATADIN01	Accessory for transformers mounting on DIN35 rail		

DEL - Summing toroids with closed core with measure CT			
	$I_{\Delta n}$ (A)	Internal diameter (mm)	Type
TDS5C100	100/5	80	Closed
TDS5C150	150/5	80	Closed
TDS5C250	250/5	80	Closed
TDS5C400	400/5	80	Closed
TDS5C500	500/5	80	Closed
TDS5C600	600/5	80	Closed
TDS5C800	800/5	80	Closed
TDS5D100	1000/5	80	Closed
TDS5D120	1200/5	80	Closed
TDS5D125	1250/5	80	Closed
TDS5D150	1500/5	80	Closed
TDS5D160	1600/5	80	Closed
TDS5D200	2000/5	80	Closed
TDS5D250	2500/5	80	Closed
TDS5D300	3000/5	80	Closed
TDS5D320	3200/5	80	Closed
TDS5D400	4000/5	80	Closed
TDS5D500	5000/5	80	Closed

DEL-A - Toroids with openable core			
	$I_{\Delta n}$ (A)	Internal diameter (mm)	Type
TDAA2	0.5	110	Open
TDAB2	0.5	150	Open
TDAC2	1	300	Open

TECHNICAL CHARACTERISTICS	
Primary/secondary measuring ratio	1/700
Primary circuit	conductors of line to be protected that cross toroid hole
Test current corresponding to 6 I_n	I_{max} (shown values are valid only for conductors passing exactly in the middle of toroid)
I_{th} short circuit thermal current I_{th}	90kA for EN/IEC 61869-1, 61869-2
INSULATION	
Rated voltage of the monitored circuit U_n	720V (phase-neutral)
Rated power frequency withstand voltage	3kV (50Hz / 1min)
Rated impulse withstand voltage U_{imp}	8kV 1,2/50 μ s
Circuits considered	measurement winding to ground
ENVIRONMENTAL CONDITIONS	
Nominal range temperature (EN/IEC 60947-2)	-5÷40°C
Limit temperature range for storage	-40÷70°C
Suitable for tropical climates	yes
MECHANICAL CHARACTERISTICS	
Connections	screw terminals with protection terminal cover (sealable)
Housing material	PC V0 self-extinguishing according to UL94

Dimensions



Residual current relay

switch opening circuit monitoring unit with current launching coil



It guarantees the differential protection reliability by monitoring the release circuit working order of one or two switches with current launching coil.

It reports the opening circuit breakdown by displaying the alarm (front LED) and intervention of output relay.

It can be used for all the applications which provide for the use of circuits with current launching coil to monitor its proper working order (for instance security circuits, sound or visual signalling of states of alarm, fire pumps, etc...)

Controlled circuits 1 or 2 (selectable)

Controlled circuit voltage 20÷440V ac/dc

Alarm display

Alarm detection with output relay intervention

Item	Delta TCS		
	Auxiliary voltage	Circuit voltage	Contacts
ARD003	230Vac	20÷440Vac/dc	2
ARD00H	20÷150Vdc+48Vac	20÷440	2

Technical characteristics

INPUT

Controlled circuits	1 or 2 selectable
Controlled circuit voltage	20÷440V ac/dc
Controlled circuit rated burden	≤ 1mA

SETTING

Measure	direct current (DC) or alternating current (AC) circuit
Controlled circuits	1 coil (F1) or 2 coils (F2)

SIGNALIZATION

Monitoring (coil not broken down)	LED green "Ok"
Alarm (broken down coil)	LED red "Fault" + relay communication

CONTROL

Manual test	it verifies the proper working order for monitoring unit and coil circuit
-------------	---

In the F2 function 2 Test keys which allow verifying each single circuit are available

ALARM

Delay	≥ 1s
Reset	Automatic
Delay reset	≥ 1s

OUTPUT

Function F1	2 contacts SPDT (R1+R2)
Function F2	1 contact SPDT (R1) + 1 contact SPDT (R2)

Contact range	5A 250Vac cosφ 1 – 3A 250Vac cosφ 0,4 – 5A 30Vdc
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Positive security fail safe (normally energised relay)

AUX. POWER SUPPLY

Rated value Uaux ac	48 - 230V
Tolerance	0,8÷1,1Uaux ac – 40÷60V(Uaux ac 48V)
Rated frequency	50Hz
Frequency range	47÷63Hz
Power consumption	2,5VA
Rated value Uaux dc	20÷150Vdc
Protected against incorrect polarity	yes
Power consumption	2,5W

TESTS FOR ELECTROMAGNETIC COMPATIBILITY

Emission/Immunity tests according to	EN/IEC 60947-2
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ENVIRONMENTAL CONDITIONS

Nominal temperature range	-10÷50°C
Storage temperature	-40÷70°C
Suitable for tropical climates	yes
Max. power dissipation*	≤ 2,5W

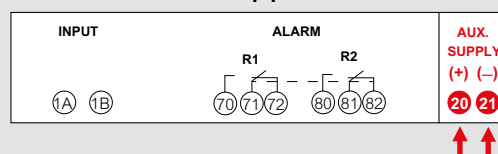
MECHANICAL CHARACTERISTICS

Housing	4 modules DIN 43880 (35mm)
Connections	screw terminals for cable up to 4mm ²
Materiale	self-extinguishing polycarbonate
Protection degree (EN / IEC 60529)	IP40 front frame, IP20 terminals

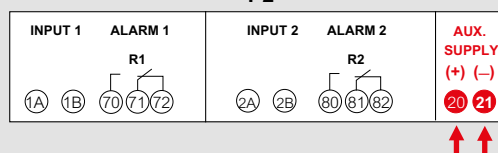
* For switchboard thermal calculation

WIRING DIAGRAMS

F1



F2



Residual current relay

Technical characteristics for modular RCD

MODEL	DELTA D2-L	DELTA D2-S	DELTA D4-S	DELTA D4-F	DELTA D4-H	DELTA D4-I
Standard reference	EN60947-2 IEC60947-2					
Connection	low voltage lines, with series TD transformer					
Waveform IΔn	Sinusoidal (type AC) or chopped pulsating with superimposed dc (type A) according to EN60947-2 (annex B and M) IEC60947-2					
Rated frequency fn	50Hz					
Frequency	47÷63Hz					
SET UP						
Current set point IΔn (selectable with potentiometer)	7 positions, 3 range x1 - x10 - x100					
Range IΔn	0.03 - 0.05 - 0.075 - 0.1 - 0.15 - 0.2 - 0.3 (x1 - x10 - x100)					
Non-operating residual current	0.5 IΔn					
Adjustable Intervention time t	0 - 0.15 - 0.25 - 0.5 - 1 - 2.5 - 5 sec					
SIGNALIZATION AND ALARM						
Display	-		-		LED rossi, 1000 points (3 digit)	-
Value displayed	-		-		Instantaneous value IΔn / threshold value IΔn /delay Δt	-
Power ON	LED green "ON"					
Instantaneous value IΔn	-	3 LED yellow, 20 - 40 - 60% of the value of IΔn	4 LED, 20 - 30 -40 - 50% of the value of IΔn	-	20 – 30 – 40 – 50% IΔn selected	4 LED yellow, 20 - 30 -40 - 50% of the value of IΔn
Alarm intervention	Red LED "TRIP" + relay switching		Red LED "TRIP" + relay switching		message"ALL" + relay switching 1	Red LED "TRIP" + relay switching
Ring current transformer-relay connection failure	1 red LED "TRIP" + relay self-retaining 1 excluded with automatic reset		1 red LED "TRIP" + relay self-retaining 1 excluded with automatic reset		message "Ct" + relay 1 switching	1 red LED "TRIP" + relay self-retaining 1 excluded with automatic reset
TRIP state memorization	1 red LED "TRIP" + relay self-retaining 1 excluded with automatic reset		1 red LED "TRIP" + relay self-retaining 1 excluded with automatic reset		message"ALL" + relay switching 1	-
Reset	manual or automatic, selectable by dip switch				-	-
Local manual	front key		front key		front key	front key
Remote manual	external contact		external contact		external contact	external contact
Automatic	3 (1 each 60 seconds)		10 (30s÷256 min)	-	Yes	Yes
Inhibited reset with persistent residual current	> 50% IΔn		> 50% IΔn		> 50% IΔn	> 50% IΔn
OUTPUT						
Relay	1 contact SPDT		2 contacts SPDT	-	2 contacts SPDT	2 contacts SPDT
Contact range	5A 250Vac cosφ 1 - 3A 250Vac cosφ 0.4 - 5A 30Vdc					
Negative security (normally de-energised relay) or positive security fail safe (normally energised relay): selectable by dip switch	Yes		Yes		Yes	Yes
AUX. POWER SUPPLY						
Rated value Uaux	24V - 48V - 115V - 230V - 400V		24V - 48V - 115V - 230V - 400V		230V-48V	230V
Tolerance	0,85÷1,1Uaux - 40÷60V (Uaux 48V)					
Rated frequency	50Hz (47÷63Hz)		50Hz (47÷63Hz)		50Hz (47÷63Hz)	50Hz (47÷63Hz)
Power consumption	≤ 2.5VA		≤ 2.5VA		≤ 2.5VA	≤ 2.5VA
Rated value Uaux	20÷150Vdc		20÷150Vdc		-	-
Protected against incorrect polarity	Yes		Yes		-	-
Power consumption	≤ 2.5W		≤ 2.5W		-	-
Immunity to short interruption of supply voltage (rated Uaux)	up to 300ms		up to 150ms		up to 150ms	up to 150ms
TESTS FOR ELECTROMAGNETIC COMPATIBILITY						
Emission/Immunity tests	EN / IEC 60947-2					
ENVIRONMENTAL CONDITIONS						
Nominal temperature range	-5÷50°C		-5÷50°C		-5÷50°C	-5÷50°C
Storage temperature	-40÷70°C		-40÷70°C		-40÷70°C	-40÷70°C
Suitable for tropical climates	Yes		Yes		Yes	Yes
Max. power dissipation	≤ 2W *		≤ 2W *		≤ 3W *	≤ 2W *
MECHANICAL CHARACTERISTICS						
Housing (Modules DIN 43880)	2		4		4	4
Front frame sigillabile	Yes		Yes		Yes	Yes
Connections	screw terminals		screw terminals		screw terminals	screw terminals
Cables section	4mm²		4mm²		4mm²	4mm²
Self-extinguishing material	polycarbonate		polycarbonate		polycarbonate	polycarbonate
Protection degree (front frame/ terminals) (EN / IEC 60529)	IP50/IP20		IP40/IP20		IP40/IP20	IP40/IP20
COMMUNICATION RS 485						
Standard	-		-		RS485 – 3 wires	-
Protocol	-		-		ModBus RTU / TCP	-
Baud rate	-		-		4800÷38400 bit/s	-

* For switchboard thermal calculation

Residual current relay

Technical characteristics for flush-mounting RCD

MODEL	DELTA 48-S	DELTA D72-S	DELTA 72-H	DELTA D72-F	DELTA D96-S	DELTA 96-F
Standard reference	EN60947-2 IEC60947-2					
Connection	low voltage lines, with series TD transformer					
Waveform IΔn	sinusoidal (type AC) or chopped pulsating with superimposed d.c. (type A) according to EN60947-2 (annex B and M) IEC60947-2					
Rated frequency fn	50Hz					
Frequency	47÷63Hz					
SET UP						
Current set point IΔn (Selectable with potentiometer)	7 positions, 3 range x1 - x10 - x100			6 positions, 3 range x1 - x10 - x100	7 positions, 3 range x1 - x10 - x100	6 positions, 3 range x1 - x10 - x100
Range IΔn (x1 - x10 - x100)	0.03 - 0.05 - 0.075 - 0.1 - 0.15 - 0.2 - 0.3			0.05 - 0.075 - 0.1 - 0.15 - 0.2 - 0.3	0.03-0.05-0.075- 0.1-0.15-0.2-0.3	0.05 - 0.075 - 0.1 0.15 - 0.2 - 0.3
Non-operating residual current	0.5 IΔn					
Adjustable Intervention time t	0 - 0.15 - 0.25 - 0.5 - 1 - 2.5 - 5 sec					
SIGNALIZATION E ALARM						
Power ON	LED green "ON"					
Instantaneous value IΔn (4 LED yellow)	-	20-30-40-50% of the values of IΔn	20-30-40-50% of the values of IΔn	20-30-40-50% of the values of IΔn	20-30-40-50% of the values of IΔn	20-30-40-50% of the values of IΔn
Alarm intervention (LED red)	"TRIP" + relay communication		"AL" flashing + relay communication "FAULT"	"TRIP" + relay communication	"TRIP" + relay communication	"TRIP" + relay communication
Ring current transformer-relay connection failure	1 red LED "TRIP" + relay self-retaining 1 excluded with automatic reset		"CT" flashing + relay communication "FAULT"	LED red flashing "TRIP" + relay communication "TRIP"	1 red LED "TRIP" + relay self-retaining 1 excluded with automatic reset	1 red LED "TRIP" + relay self-retaining 1 excluded with automatic reset
Test Local manual	front key		front key		front key	front key
Test Remote manual	external contact		external contact		external contact	external contact
Automatic	3 (1 each 60 seconds)		10 (30s÷256 min)	-	Yes	Yes
Inhibited reset with persistent residual current	> 50% IΔn					
Pre-Alarm			relay communication "ALARM"	relay switch 50% IΔn	relay switch 50% IΔn	relay switch 50% IΔn
Instantaneous value IΔn			display 1000 points (3 digit)			
Type of display			LED red, 7 segments		LED red, 1000 points (3 digit)	
Digit height			± 5% + 1 digit (referred to the full scale)			
Accuracy			10÷100% IΔn selected			
OUTPUT						
Relay	1 contact SPDT o 1 contact SPDT + 1 contact SPST	1 contact SPDT (negative safety)	1 contact SPDT + 1 SPST	2 contacts SPDT + 1 contact SPDT (pre alarm)	2 contacts SPDT + 1 contact SPDT (pre alarm)	2 contacts SPDT + 1 contact SPDT (pre alarm)
Contact range	5A 250Vac cosφ 1 - 3A 250Vac cosφ 0.4 - 5A 30Vdc					
AUX. POWER SUPPLY						
Rated value Uaux	24V - 48V - 115V - 230V - 400V				230V-48V	230V
Tolerance	0,85÷1,1Uaux - 40÷60V (Uaux 48V)					0,85÷1,1Uaux
Rated frequency	50Hz (47÷63Hz)					
Power consumption	≤ 2.5VA		≤ 4A	≤ 2,5VA	≤ 2.5VA	≤ 2.5VA
Rated value Uaux	20÷150Vdc				-	-
Power consumption	≤ 2.5W		≤ 4W	≤ 2,5W	≤ 2,5W	≤ 2,5W
TESTS FOR ELECTROMAGNETIC COMPATIBILITY						
Emission/Immunity tests	EN / IEC 60947-2					
ENVIRONMENTAL CONDITIONS						
Nominal temperature range	-5÷50°C		-25÷55°C	5÷50°C	-5÷50°C	-5÷50°C
Storage temperature	-40÷70°C		-40÷85°C	-40÷70°C	-40÷70°C	-40÷70°C
Suitable for tropical climates	Yes		Yes	Yes	Yes	Yes
Max. power dissipation	≤ 2W *		≤ 2,5W *	≤ 2W *	≤ 3W *	≤ 2W *
MECHANICAL CHARACTERISTICS						
Housing (flush-mounting)	48x48x102mm	72x72x81.8mm			96x96x80mm	
Front frame	45x45mm or 52x52mm	68x68mm or 75x75 mm			92x92mm	
Front frame sigillabile	Yes		Yes		Yes	Yes
Connections	faston		screw terminals		screw terminals	screw terminals
Cables section	6,3 x 0,8 mm		4mm²		4mm²	4mm²
Self-extinguishing material	polycarbonate		polycarbonate		polycarbonate	polycarbonate
Protection degree (front frame/ terminals) (EN / IEC 60529)	IP40/IP20 (IP54 with kit front frame optional)		IP40/IP20		IP40/IP20	IP40/IP20

* For switchboard thermal calculation

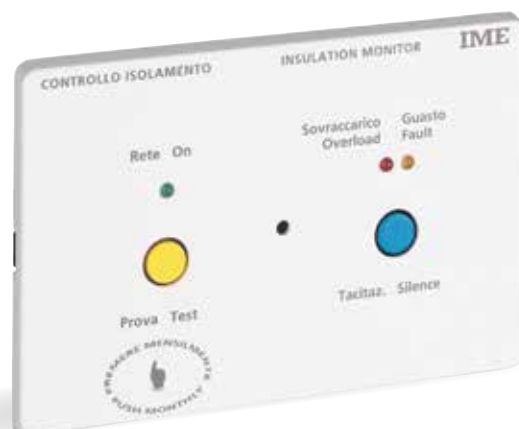


ISO INSULATION AND MEASUREMENT RELAYS

Relay for isolation, measurement and control capable of guaranteeing maximum system safety.

Insulation monitors, with relative insulating transformers, are devices that are widely used in switchboards and cabinets for medical use. In addition to these devices, a remote signaling device is available that can be used to keep the situation always under control.

Measurement relays are instead programmable devices for alternating and direct voltages and currents. These luminaires can also be requested in a customized version to satisfy any type of installation requirement



Insulation relays

insulation relay for medical use in IT systems



RIH4001



ARIH001

Item	IISO D4Z - Insulation relay for 230Vac circuit			
	Insulation relays for medical use for 230V ac circuit, 1 input from Pt100 + 1 input from CT/5A, 2 contacts, selectable insulation alarm selectable in resistance (R) or impedance (Z) + alarm temperature/power, LED pre-alarm signal, lcd display, output for connection up to 5 remote repeater (Iso Qz), 4 modules			
RIH4001	Input	Alarm threshold	N° output	Aux
	230Vac	50÷500kΩ	2 (alarm + temperature/power)	230Vac

Item	ISO D4Zs - Insulation relay for 24Vac circuit			
	Insulation relay for medical use for 24Vac circuit, 1 contact, insulation alarm selectable in resistance (R) or impedance (Z), LED pre-alarm signal, lcd display, output for connection up to 5 remote repeater (Iso Qz), 4 modules			
RIH4003	Input	Alarm threshold	N° output	Aux
	24Vac	50÷500kΩ	1 (alarm + temperature/power)	230Vac

Item	ISO QZ - Signal and remote control panel			
	Description Signal and remote control panel for insulation relay Iso D4Z - Iso D4Zs. Green POWER ON LED Red FAULT LED Acoustic warning TEST and SILENCE button			
ARIH001				

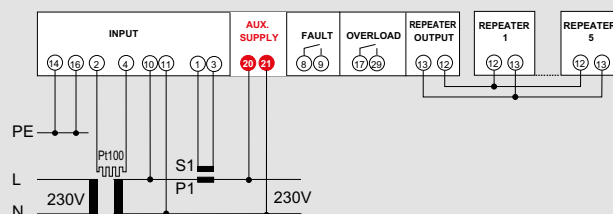
Technical characteristics

ITEM	RIH4001	RIH4003	ARIH001
Standard	EN/IEC 61557-8 (annex A and B) IEC 60364-7-710		CEI 64/8-7 Par. 710.51.2 - 710.4 NFC15-211
DISPLAY			
Type of display	LCD		-
Digit height	5mm (2 lines x 8 digit)		-
INPUT			
Voltage connection	insulation transformer Iso TV		-
Rated voltage Un	230V	24V	-
Rated frequency fn	50Hz		-
Operating frequency	47÷63Hz		-
Insulation measuring circuit current	≤ 100μA		-
External VT temperature	Pt100 2-wire resistance bulb	-	-
Current connection	by CT/5A	-	-
Rated burden input current	≤ 0,5VA	-	-
Input impedance	> 100kΩ	-	-
Measuring voltage	< 15V	-	-
AUXILIARY SUPPLY			
Rated voltage Uaux	230V		Fed via Iso D4. Panel supply insulated from RI2H auxiliary supply and network. Each insulation monitor RI2H can supply up to 5 repeater. Protection against possible short circuit in the connection between RI2H and ARI1
Tolerance	0,9÷1,1Uaux		
Rated frequency	± 50%Hz		
Operating frequency	47÷63Hz		
Rated burden	≤ 6VA - ≤ 4W		
ELECTROMAGNETIC COMPATIBILITY			
Emission tests according to	EN/IEC 61326-2-4	EN/IEC 61557-8	EN/IEC 61557-8
Immunity tests according to	EN/IEC 61326-2-4		
ENVIRONMENTAL CONDITIONS			
Nominal temperature	-5÷55°C		
Storage temperature	-25÷70°C		
Suitable for tropical climates	si		
Max. power dissipation	≤ 4W *		
MECHANICAL CHARACTERISTICS			
Housing	4 modules DIN 43880 (35mm)		flush-mounting (106x71mm)
Connection	screw terminals for cables up to 4mm²		screw terminals
Material	self-extinguishing polycarbonate		resin
Protection degree (EN60529)	IP20 terminals/ IP54 front frame		IP30 front frame

* For switchboard thermal calculation

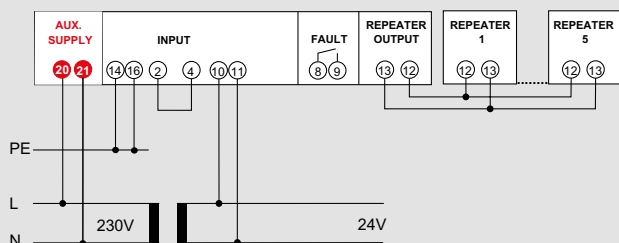
Wiring diagrams

RIH4001

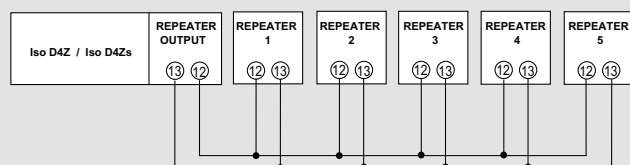


Wiring diagrams

RIH4003



ARIH001



Insulation relays

insulation transformers for medical use



TI230D500S



TI024D100

Item	Iso TV - Single-phase isolating transformers		
	Insulation single-phase transformer for medical use complete with Pt100 probe, according to Standards EN/IEC 61558-2-15. Used in connection with Iso D4-Z insulation monitor for a continuous control of the insulation towards ground. Primary voltage 230V. Secondary voltage 230V. Rated output 1,5 – 3 – 5 – 7,5 – 10kVA		
TI230D150S	primary V	secondary V	Power
TI230D300S			1,5kVA
TI230D500S	230Vac	230V	3kVA
TI230D750S			5kVA
TI230E100S			7.5kVA
			10kVA

	Iso TV - Single-phase isolating transformers for scialytic lamps		
	Safety single-phase transformer according to Standards EN/IEC 61558-2-6. Used in connection with Iso D4-Zs insulation monitor for a continuous control of the insulation towards ground. Primary voltage 230V. Secondary voltage 24V Rated output 1kVA		
TI024D100	primary V	secondary V	Power
	230Vac	24V	1kVA

Technical characteristics

ITEM	TI230D	TI024D100
Standard reference	61558-2-15	EN/IEC 61558-2-6
Classification	non-short-circuit proof transformer	
Rated voltage primaria Upn	230V	230V
Rated voltage secundaria Usn	230V	24V
Rated frequency	50-60Hz	
Efficiency	> 96%	-
Short-circuit voltage	≤ 3% Upn	-
No-load input current	≤ 3% Ipn	-
Inrush current	≤ 12 Ipn	-
Leakage current of the output winding to earth	≤ 0,5mA	-
Transformer temperature measurement	Pt100 resistance bulb, 2-wire	-

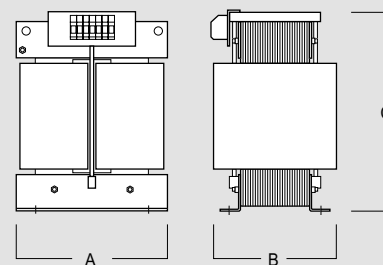
ENVIRONMENTAL CONDITIONS

Nominal temperature	40°C
Storage temperature	-40+85°C

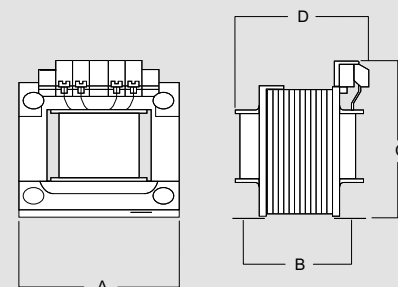
MECHANICAL CHARACTERISTICS

Installation	Fixed, non exposed
Protection degree (EN60529)	IP00 enclosure, IP20 terminals
Connection	Screw terminals

Dimensions



Item	A	B	C	Weight
TI230D150S	200	170	300	~21kg
TI230D300S	250	200	400	~35kg
TI230D500S	250	210	400	~42kg
TI230D750S	280	200	430	~65kg
TI230E100S	280	200	430	~77kg



Item	A	B	C	D	Weight
TI024D100	153	140	133	160	~13,5kg

Insulation relays

Insulation relay for industrial use in IT systems



ISO D4

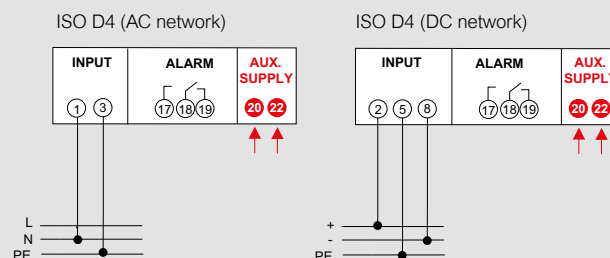
Item	ISO D4 - alternating current			
	Insulation relay for IT network in ac, 1 contact, automatic reset, 4 module. Continuous control of insulation towards earth, in IT distribution system at 24÷400Vac single-phase network Selectable threshold 20÷200kΩ or 5÷200kΩ Alarm relay output			
	Input	Alarm threshold	N° output	Aux
RI2A123	24÷400Vac	5÷200kΩ	1 (allarm)	230Vac
RI2A113	24÷400Vac	20÷200kΩ	1 (allarm)	230Vac

	ISO D4 - direct current			
	Insulation relay for IT network in dc, 1 contact, automatic reset, 4 module. Continuous control of insulation towards earth, in direct current network at 20÷60 - 100÷160 - 210÷230Vdc Selectable threshold 20÷200kΩ Alarm relay output			
	Input	Alarm threshold	N° output	Aux
RI2CC13	20÷60Vdc	20÷200kΩ	1 (allarm)	230Vac
RI2CA13	100÷160Vdc	20÷200kΩ	1 (allarm)	230Vac
RI2CE13	210÷230Vdc	20÷200kΩ	1 (allarm)	230Vac

Technical characteristics

ITEM	ISO D4 (AC)	ISO D4 (DC)
INPUT		
Line voltage	24÷400Vac	20÷60 - 100÷160 - 210÷230Vdc
Rated frequency fn	50Hz	-
Operating frequency	47÷63Hz	-
Measuring voltage	12Vdc	-
Measuring current	< 50µA	≤ 0,5mA
SETTING UP		
Intervention point	selectable by 6-position rotary switch	
Range	20/40/70/100/150/200kΩ or 5/10/20/50/100/200kΩ	20/40/70/100/150/200kΩ
ALLARM		
Alarm intervention	red LED "ALARM" + relay switching	
Accuracy	± 10% setting value	
Intervention time	≤ 600ms	
Reset	automatic	
Hysteresis	≤ 20%	
OUTPUT		
Relay "ALARM"	1 SPDT contact	
Contact range	5A 250Vac cosφ 1 – 3A 250Vac cosφ 0,4 – 5A 30Vdc	
AUXILIARY SUPPLY		
Rated voltage Uaux	230V	
Tolerance	0,85÷1,1Vaux	
Rated frequency	50Hz	
Operating frequency	47÷63Hz	
Rated burden	≤ 4VA	
MECHANICAL CHARACTERISTICS		
Housing	4 modules DIN 43880 (35mm)	
Connection	screw terminals for cables up to 4mm²	
Material	self-extinguishing polycarbonate	
Protection degree (EN60529)	IP54 front frame IP20 terminals	

Wiring diagrams



Measurement relays

alternating current and voltage relay



RM2I



RM2U



RM2S

Item

RM2I - Minimum and maximum current relay, single-phase network

Single-phase alternating current relay, 1 contact, selectable min. or max. threshold, automatic or manual reset

Min or max alarm, selectable on field

Adjustable set point, hysteresis and delay

Field selectable negative or positive security (fail safe)

Intervention inhibition when turning on

Ability to store intervention

	Input	Alarm threshold	N° output	Aux
RM2IM112	1A	10÷120%In	1 (ALIARM min. or max.)	115Vac
RM2IM113	1A			230Vac
RM2IM11H	1A			20÷150Vdc+48Vac
RM2IM152	5A			115Vac
RM2IM153	5A			230Vac
RM2IM15H	5A	20÷150Vdc+48Vac		20÷150Vdc+48Vac
RM2IM15L	5A			150÷250Vdc

RM2U - Minimum and maximum voltage relay, single-phase network

Single-phase alternating voltage relay, 1 contact, selectable min. or max. threshold, automatic or manual reset.

Direct input up to 400V

Adjustable set point, hysteresis and delay

Field selectable negative or positive security (fail safe)

Intervention inhibition when turning on

Ability to store intervention

	Input	Alarm threshold	N° output	Aux
RM2UM1A2	100V	10÷120%Un	1 (ALIARM min. or max.)	115Vac
RM2UM1A3	100V			230Vac
RM2UM1AH	100V			20÷150Vdc+48Vac
RM2UM1AL	100V			150÷50Vdc
RM2UM1F2	250V			115Vac
RM2UM1F3	250V	20÷150Vdc+48Vac		230Vac
RM2UM1FH	250V			20÷150Vdc+48Vac
RM2UM1FL	250V			150÷250Vdc
RM2UM1K2	400V	20÷150Vdc+48Vac		115Vac
RM2UM1K3	400V			230Vac
RM2UM1KH	400V			20÷150Vdc+48Vac
RM2UM1KL	400V			150÷250Vdc

RM2S - Voltage asymmetry, sequence and lack of phase relay, three-phase network

3-phase alternating voltage relay, 1 contact, sequence/failure/asymmetry phases, automatic reset,

Three phase line 380÷415V 50 and 60Hz

Voltage asymmetry threshold adjustable 5÷25%

Adjustable intervention time 0,2÷10s

	Input	Soglia ALIARM	N° output	Aux
RM2S41	380÷415V	5÷25%	1 (ALIARM)	self supplied

Technical characteristics

ITEM	RM2I	RM2U	RM2S
INPUT			
Rated current In	5A or 1A	-	-
Rated voltage Un	-	100-250-400V	380÷415V
Waveform	sinusoidal, form factor 1,11		
Rated frequency fn	50Hz	50 – 60Hz	
Operating frequency	47÷63Hz	-	
Rated burden	≤ 0,5VA	≤ 0,2VA	≤ 2,7VA
Continuous overload	1,2In	1,2Un	-
Instantaneous overload	2In/5s	-	-

SETTING UP

Intervention point	min or max alarm, selectable by dip switch		asymmetry, sequence and lack of phase alarm
Intervention threshold	continuously adjustable by trimmer		
Adjustable ranges	10+120%In	10+120%Un	5+25%
Intervention time (t)	0,1+10 seconds		0,2+10 seconds
Ripetibilità	±1%		-
Intervention inhibit when switching on (ts)	0 - 3 - 6 - 9 seconds		-
Hysteresis adjustable range	5+50% of set point		-
Reset	automatic or manual		automatic

OUTPUT

Relay	1 SPDT contact		
Contact range	5A 250Vac cosφ 1 – 3A 250Vac cosφ 0,4 – 5A 30Vdc		

AUXILIARY SUPPLY

Rated voltage Uaux ac	48-115-230V	48-115-230-240V	self supplied
Tolerance	0,9÷1,1Uaux 40÷60(48V)	0,9÷1,1Uaux - 40÷60V (48V)	-
Rated frequency	50Hz	-	
Operating frequency	47÷63Hz	-	
Rated burden	≤ 2,5VA	-	
Rated voltage Uaux dc	20÷150Vdc – 150÷250Vdc	-	
Rated burden	≤ 1W	-	

ELECTROMAGNETIC COMPATIBILITY

Emission tests according to	EN 50081-1, EN 55011		
Immunity tests according to	EN 50082-2		

ENVIRONMENTAL CONDITIONS

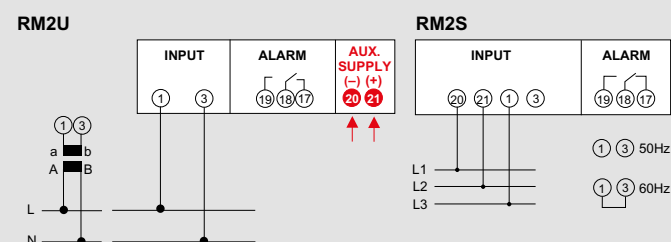
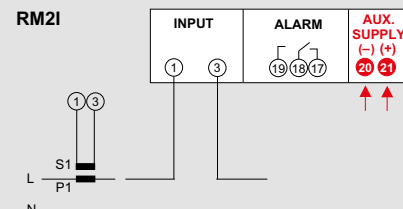
Nominal temperature	-5÷40°C		
Storage temperature	-40÷70°C		
Max. power dissipation	≤ 2.5W *	≤ 2W *	

MECHANICAL CHARACTERISTICS

Housing	2 modules DIN 43880 (35mm)		
Connection	screw terminals for cables up to 4mm²		
Material	self-extinguishing polycarbonate		
Protection degree (EN60529)	IP40 front frame, IP20 terminals		

* For switchboard thermal calculation

Wiring diagrams



Measurement relays

Alternating current relay



RM3I

Item

RM3I - Minimum and maximum current relay, three-phase network

3-phase alternating current relay, 2 contacts, 1 min. or max. threshold or 2 max. selectable, automatic or manual reset, DIN rail 100x75x110mm
Min or max alarm, selectable on field
Adjustable set point, hysteresis and delay
Field selectable negative or positive security (fail safe)
Intervention inhibition when turning on
Ability to store intervention

RM3IT253
RM3IT25F

Input	Alarm threshold	N° output	Aux
5A	15÷100%In	2 (allarm min. or max. or 2 max)	230Vac
5A			24Vdc



RM3U

Item

RM3U - Minimum and maximum voltage relay, three-phase network

3-phase alternating voltage relay, 1 contact, 1 min. or max. threshold, automatic reset, DIN rail 70x75x110mm
Min or max alarm, selectable on field
Direct input up to 400V
Adjustable set point, hysteresis and delay
Field selectable negative or positive security (fail safe)
Intervention inhibition when turning on
Ability to store intervention

RM3UT3AA
RM3UT3KA

Input	Alarm threshold	N° output	Aux
100V	±20%Un	1 (ALARM min. or max.)	self supplied
400V			

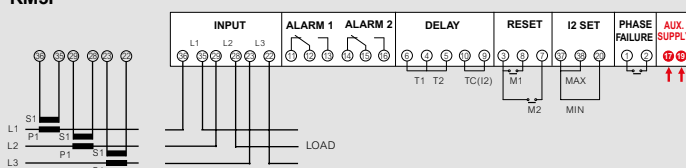
Technical characteristics

INPUT	RM3I	RM3U
Rated current In	5A	-
Rated voltage Un	-	100 - 400V
Waveform	sinusoidal, form factor 1,11	
Rated frequency fn	50Hz	50Hz
Operating frequency	47÷63Hz	47÷63Hz
Rated burden	≤ 0,5VA	≤ 0,5VA
Continuous overload	1,2In	1,2In
Instantaneous overload	2In/5s	2In/5s
SETTING UP		
Intervention threshold	continuously adjustable by trimmer	
Adjustable ranges	15÷100% In	± 20% Un
Intervention time (t)	continuously adjustable by trimmer - 0,1÷30 s	continuously adjustable by trimmer - 0,5÷31,5 s
Reset	automatic or manual	automatic
OUTPUT		
Relay	2 SPDT contact	
Contact range	5A 250Vac cosφ 1 – 3A 250Vac cosφ 0,4 5A 30Vdc	
AUXILIARY SUPPLY		
Rated voltage	24Vdc-230Vac	AUXILIARY SUPPLY taken from measurement (self supplied)
ELECTROMAGNETIC COMPATIBILITY		
Emission tests according to	EN 50081-1, EN 55011	EN 50081-1, EN 55011
Immunity tests according to	EN 50082-2	EN 50082-2
ENVIRONMENTAL CONDITIONS		
Nominal temperature	-5÷40°C	-5÷40°C
Storage temperature	-40÷70°C	-40÷70°C
Suitable for tropical climates	si	si
Max. power dissipation	≤ 2W *	≤ 2W *
MECHANICAL CHARACTERISTICS		
Housing per guida DIN 43880	70x75x110mm	45x75x110mm
Connection	screw terminals for cables up to 4mm²	
Material	self-extinguishing polycarbonate	
Protection degree (EN60529)	IP40 front frame, IP20 terminals	

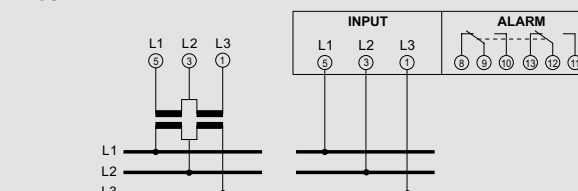
* For switchboard thermal calculation

Wiring diagrams

RM3I

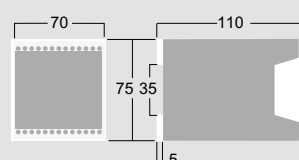


RM3U

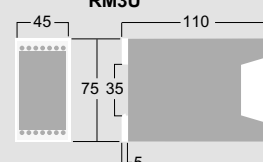


Dimensions

RM3I



RM3U



Measurement relays

MDirect current and voltage measuring relay



RM3C

Item	RM3C - Minimum and maximum current relay, DC network			
	Direct current and voltage measuring relay, 2 contacts, min. and/or max. threshold, automatic reset, 2000-points led display for any quantity directly proportional to programmable input, DIN rail 100x75x110mm. Bidirectional direct or pulsating voltage or current relay 2 Min. and / or Max. programmable alarms Input voltage 50÷200mV Input current 1÷20mA Programmable measuring range Programmable display value Storage of highest measured value (resettable)			
	Input	Alarm threshold	N° output	Aux
RM3C211				24Vac
RM3C213				115Vac
RM3C216				230Vac
RM3C21H	program-mable	program-mable	2 (ALIARM min. o max.)	20÷150Vdc+48Vac
RM3C21L				150÷250Vdc

Technical characteristics

DISPLAY

Type of display	LED red, 7 segments
Digit height	14mm
N° of display points	2.000 (3 1/2 digit)
Maximum display	-1999÷1999
Offset	-1999÷1999 digit
Full scale	1999÷1999 digit
Decimal point	00.00 - 000.0 - 0000

PROGRAMMABLE PARAMETERS

Range (Un / In)	200mV-20V-200V-20mA-2mA
Measuring range	min. 0÷0,25Un/In max. -Un/-In÷Un/In

ALARM

Programmables alarms	2 min. e/o max.
Set-point programmable	-1999÷1999 digit
Hysteresis programmable	-1999÷1999 digit
Intervention time	≤ 500ms
Delay (programmable)	0÷60s (1s step)
Delay accuracy	±10%
Tempo di Reset	≤ 500ms
Output	2 relays with SPDT contacts, potential free
Contact range	5A 250Vac - 0,5A 100Vdc
Accuracy	2 (0,25%+K)+ 1 digit

INPUT

Measurement	direct or pulsating current or voltage, average value
Rated voltage Un	200mV - 20V - 200V
Rated current In	20mA - 2mA
Continuous overload	1,2Un - 1,2In
Instantaneous overload	2Un/5s - 2In/5s

AUXILIARY SUPPLY

Rated voltage Uaux	24-48-115-230V
Tolerance	± 10% Uaux - 40÷60V(Uaux 48V)
Rated frequency	50Hz
Operating frequency	47÷63Hz
Rated burden	5VA
Rated voltage Uaux dc	20÷150Vdc - 150÷250Vdc
Rated burden	3W

ELECTROMAGNETIC COMPATIBILITY

Emission tests according to	EN/IEC 61326-1
Immunity tests according to	EN/IEC 61326-1

ENVIRONMENTAL CONDITIONS

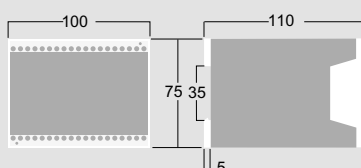
Nominal temperature	-5÷40°C
Storage temperature	-40÷70°C
Max. power dissipation	≤ 3,6W *

MECHANICAL CHARACTERISTICS

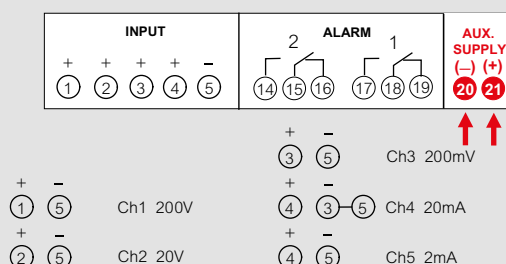
Housing	per guida DIN 43880 (35mm) 100x75x110mm
Connection	screw terminals
Material	self-extinguishing polycarbonate
Protection degree (EN60529)	IP52 front frame, IP20 terminals

* For switchboard thermal calculation

Dimensions



Wiring diagrams



Measurement relays

power management relay



Beep

Item **Beep**

Beep is a consumption management relay for single phase networks with users up to 6 kW, designed to solve this problem. It continuously monitors the power used and, if the power threshold that can be set is exceeded, it emits a warning by means of a buzzer so that the loads can be manually removed in order to reduce the power before the electricity cuts out or, if the relay-type output is enabled, it automatically cuts off the non-priority loads. These are then reactivated after a lapse of time that can be programmed.

Thanks to the programming of the overload threshold (up to 6.5 kW), it can be used on users with different powers 3-4,5-6 kW (default setting per user 3 kW) and it is able to manage non-priority loads up to 16A. During normal functioning, if the front key is pushed, it is possible to display with red LEDs, the real time values of the active power (kW), the voltage (V) and the current (A).

RM2P133

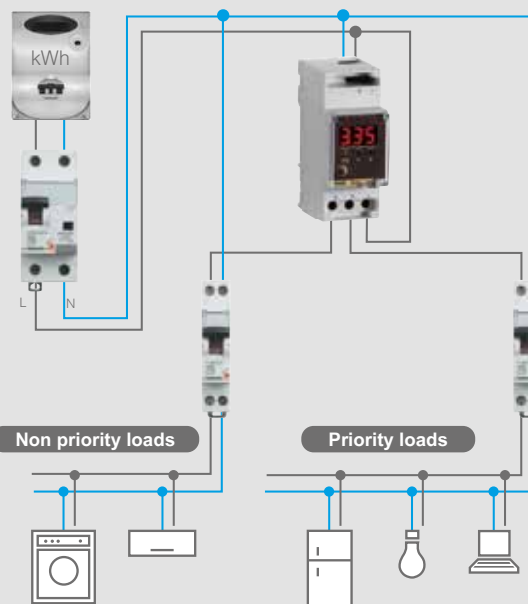
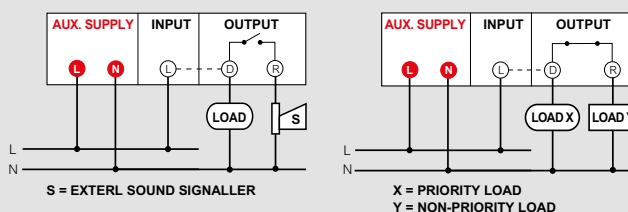
Input	Alarm threshold	N° output	Aux
230V - 28A	0÷6,5kW	1 (SPST 250Vac-16A)	230Vac

Technical characteristics

DISPLAY	
Type of display	LED rosso
Digit height	9mm
ALLARM	
Output	1 SPST contact in voltage
Contact range	250Vac / 16A
Accuracy	± 1%
INPUT	
Measure	true root-mean-square value
Rated voltage Un	195÷264V
Rated current In	28A
Rated frequency	50Hz
Operating frequency	47÷63Hz
Rated burden	≤ 0,5W
AUXILIARY SUPPLY	
Rated voltage Uaux	230V
Tolerance	0,85÷1,15Uaux
Rated frequency	50Hz
Operating frequency	47÷63Hz
Rated burden	≤ 3,2VA - 1,8W
ELECTROMAGNETIC COMPATIBILITY	
Emission tests according to	EN 55022 (classe B)
ENVIRONMENTAL CONDITIONS	
Nominal temperature	-5÷40°C
Storage temperature	-40÷70°C
Max. power dissipation	2,3W *
MECHANICAL CHARACTERISTICS	
Housing	2 modules DIN 43880 (35mm)
Connection	screw terminals
Material	self-extinguishing polycarbonate
Protection degree (EN60529)	IP52 front frame, IP20 terminals

* For switchboard thermal calculation

Wiring diagrams

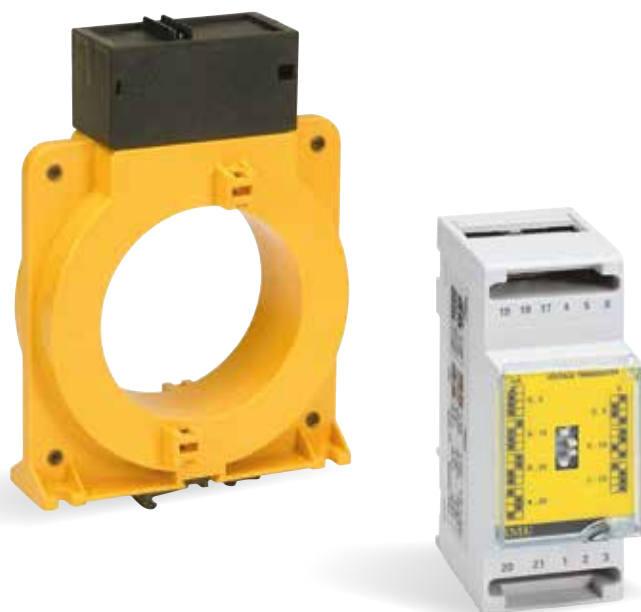




TRANSDUCERS TEMA

TEMA transducers are signal conversion devices used to measure voltage and current of the main electrical quantities.

Solutions for installation on DIN35 rail or toroidal with integrated transducer are available.



Transducers

table of choice

								
Transducers	TEMA I	TEMA I4	TEMA I4e	TEMA U	TEMA U4	TEMA U4e	TEMA Fp	TEMA Pr4
Type	unidirectional to real zero, for variable output load						uni and bidirectional	unidirectional
Line	single-phase	single-phase	single-phase	single-phase	single-phase	single-phase	single-phase -three-phase	single-phase -three-phase
Measurement	AC current	AC current	AC current	AC voltage	AC voltage	AC voltage	programmable	programmable
Type of measurement	according R.M.S.							
Sinusoidal waveform	form factor 1,11		distorted	form factor 1,11		distorted	distorted	distorted
AC auxiliary supply	self-supplied	48 - 115 - 230Vac	48 - 115 - 230Vac	self-supplied	48 - 115 - 230Vac	48 - 115 - 230Vac	115 - 230 - 240Vac	80÷265Vac
DC auxiliary supply	-	20÷150 - 150÷250Vdc	20÷150 - 150÷250Vdc	-	20÷150 - 150÷250Vdc	20÷150 - 150÷250Vdc	20÷150 - 150÷250Vdc	110÷300Vdc - 11÷60Vdc
Output current rated value	0÷5 - 0÷10 - 0÷20mA	0÷5/10/20mA - 4÷20mA	0÷5/10/20mA - 4÷20mA	0÷5 - 0÷10 - 0÷20mA	0÷5/10/20mA - 4÷20mA	0÷5/10/20mA - 4÷20mA		0÷20mA - 4÷20mA
Output voltage rated value	0÷5 - 0÷10V	0÷5/10V - 2÷10V	0÷5/10V - 2÷10V	0÷5 - 0÷10V	0÷5/10V - 2÷10V	0÷5/10V - 2÷10V		-
Output load	≤ 500Ω (20mA) ≤ 1kΩ (10mA) ≤ 2kΩ (5mA) ≥ 100kΩ (5V) ≥ 200kΩ (10V)	≤ 750Ω (20mA) ≤ 1,5kΩ (10mA) ≤ 3kΩ (5mA) ≥ 5kΩ (5-10V)	≤ 750Ω (20mA) ≤ 1,5kΩ (10mA) ≤ 3kΩ (5mA) ≥ 5kΩ (5-10V)	≤ 750Ω (20mA) ≤ 1,5kΩ (10mA) ≤ 3kΩ (5mA) ≥ 5kΩ (5-10V)	≤ 750Ω (20mA) ≤ 1,5kΩ (10mA) ≤ 3kΩ (5mA) ≥ 5kΩ (5-10V)	≤ 750Ω (20mA) ≤ 1,5kΩ (10mA) ≤ 3kΩ (5mA) ≥ 5kΩ (5-10V)	≤ 750Ω (20mA) ≤ 1,5kΩ (10mA) ≤ 3kΩ (5mA) ≥ 5kΩ (5-10V)	≤ 750W
Response time	≤300ms	≤300ms	≤100ms 50ms (optional)	≤300ms	≤300ms	≤100ms 50ms (optional)	≤300ms - ≤100ms (optional)	≤300ms
Accuracy	cl. 0,5	cl. 0,5	cl. 0,5	cl. 0,5	cl. 0,5	cl. 0,5	cl. 0,5 o cl. 1	cl. 0,5
Input current rated value	1 - 1,2A - 5 - 6A	1 - 1,2A - 5 - 6A	1 - 1,2A - 5 - 6A	1 - 1,2A - 5 - 6A	1 - 1,2A - 5 - 6A	1 - 1,2A - 5 - 6A	5A o 1A	5A o 1A
Input voltage rated value	-	-	-	100 - 110 - 120 - 250 - 400 - 440V	100 - 110 - 120 - 250 - 400 - 440V	100 - 110 - 120 - 250 - 400 - 440V	400V (fase-fase) (80÷500V)	400V (fase-fase) (80÷690V)
Frequency	50Hz (47÷63Hz)	50Hz (47÷63Hz)	50Hz (47÷63Hz)	50Hz (47÷63Hz)	50Hz (47÷63Hz)	50Hz (47÷63Hz)	50Hz (45÷65Hz)	50Hz (45÷65Hz)
Instantaneous overload	20In/1s	20In/1s	20In/1s	2Un/1s (max 450V)	2Un/1s (max 450V)	2Un/1s (max 600V)	2Un/1s - 20In/1s	20 In/0,5s
Continuous overload	3In	3In	3In	-	-	-		1,2In
Output power consumption	≤2,5VA	≤3VA (Vac) ≤1,5W (Vdc)	≤3VA (Vac) ≤1,5W (Vdc)	≤2,5VA	≤3VA (Vac) ≤1,5W (Vdc)	-	≤3VA (Vac) ≤3W (Vdc)	≤7VA (Vac) ≤5W (Vdc)
Input power consumption	≤0,2VA	≤0,2VA	≤0,2VA	-	-	≤0,5VA	≤0,5VA (for phase)	≤0,5VA
Self-extinguishing material	polycarbonate	polycarbonate	polycarbonate	polycarbonate	polycarbonate	polycarbonate	polycarbonate	polycarbonate
Protection degree	IP20/IP50	IP20/IP40	IP20/IP40	IP20/IP50	IP20/IP40	IP20/IP40	IP20/IP52	IP20/IP40
Nominal temperature	0÷45°C	0÷45°C	0÷45°C	0÷45°C	0÷45°C	0÷45°C	0÷50°C	-5÷55°C
Storage temperature	-25÷70°C	-25÷70°C	-25÷70°C	-25÷70°C	-25÷70°C	-25÷70°C	-25÷70°C	-25÷70°C
Suitable for tropical climates	YES	YES	YES	YES	YES	YES	YES	YES
Relative humidity	up to 75%	up to 75%	up to 75%	up to 75%	up to 75%	up to 75%	up to 75%	up to 75%
Max.power dissipation	≤2W	≤2,6W	≤2,6W	≤2W	≤2,6W	≤2,6W	≤4,8W	≤6W
Section terminals	4mm²	4mm²	4mm²	4mm²	4mm²	4mm²	6mm²	4,5-6mm² - 2,5-4mm²
Dimensions	2 modules DIN	2 modules DIN	2 modules DIN	2 modules DIN	2 modules DIN	2 modules DIN	8 modules DIN	96x96x101,3mm

						
CT with transducer	TT35	TT35A	HT35A	HT80A	HT35Bm	HT35Bs
Diameter	35 mm	35 mm	35 mm	80 mm	35 mm	35 mm
Rated current (unidirectional) dc	-	-	100-150-200-250-300-400A	400-500-600-800-1000A	10-20-30-40-50-60-70-80-90-100A	10-20-30-40-50-60-70-80-90-100A
Rated current ac	5-10-15-20-25-30-35-40-45A 15-30-45-60-75-90-105-120-135A 25-50-75-100-125-150-175-200-225A 50-100-150-200-250-300-350-400-450A		-	-	-	-
Output	4÷20mA (2 wires technology)	0÷20mA - 4÷20mA - 0÷10V (4 wires technology)	0÷20mA - 4÷20mA - 0÷10V	0÷20mA - 4÷20mA - 0÷10V	0÷20mA - 4÷20mA	0÷20mA - 4÷20mA
Power supply AUX ac	-	115 - 230Vac	48 - 115 - 230Vac	48 - 115 - 230Vac	24Vac - 80÷270Vac	-
Power supply AUX dc	10÷34Vdc	-	20÷150Vdc	20÷150Vdc	20÷60Vdc - 110÷300Vdc	15Vdc

Transducers

Transducers single-phase



Tema I



Tema I4



Tema I4e

To measure average value, calibration according RMS value

Input by CT/1A - CT/5A

Output selectable on field (7 ranges)

Selectable values: 0÷5/10/20mA - 4÷20mA

0÷5/10V - 2÷10V

To measure TRUE RMS value

Input by CT/1A - CT/5A

Output selectable on field (7 ranges)

Selectable values: 0÷5/10/20mA - 4÷20mA

0÷5/10V - 2÷10V

Tema I - AC single-phase current transducer

Item	Input (A)	Output (mA)	Output (V)	Auxiliary power supply
TM2IA12	0÷1	0÷5	-	self-supplied
TM2IA13	0÷1	0÷10	-	self-supplied
TM2IA14	0÷1	0÷20	-	self-supplied
TM2IA16	0÷1	-	0÷5	self-supplied
TM2IA18	0÷1	-	0÷10	self-supplied
TM2IA22	0÷1,2	0÷5	-	self-supplied
TM2IA23	0÷1,2	0÷10	-	self-supplied
TM2IA24	0÷1,2	0÷20	-	self-supplied
TM2IA26	0÷1,2	-	0÷5	self-supplied
TM2IA28	0÷1,2	-	0÷10	self-supplied
TM2IA32	0÷5	0÷5	-	self-supplied
TM2IA33	0÷5	0÷10	-	self-supplied
TM2IA34	0÷5	0÷20	-	self-supplied
TM2IA36	0÷5	-	0÷5	self-supplied
TM2IA38	0÷5	-	0÷10	self-supplied
TM2IA42	0÷6	0÷5	-	self-supplied
TM2IA43	0÷6	0÷10	-	self-supplied
TM2IA44	0÷6	0÷20	-	self-supplied
TM2IA46	0÷6	-	0÷5	self-supplied
TM2IA48	0÷6	-	0÷10	self-supplied

Tema I4e - AC single-phase current transducer with selectable output (TRMS)

Item	Input (A)	Output	Auxiliary power supply
TM4I210	0÷1	selectable	115Vac
TM4I220	0÷1,2	selectable	115Vac
TM4I230	0÷5	selectable	115Vac
TM4I240	0÷6	selectable	115Vac
TM4I310	0÷1	selectable	230Vac
TM4I320	0÷1,2	selectable	230Vac
TM4I330	0÷5	selectable	230Vac
TM4I340	0÷6	selectable	230Vac
TM4IH10	0÷1	selectable	20÷150Vdc+48Vac
TM4IH20	0÷1,2	selectable	20÷150Vdc+48Vac
TM4IH30	0÷5	selectable	20÷150Vdc+48Vac
TM4IH40	0÷6	selectable	20÷150Vdc+48Vac
TM4IL10	0÷1	selectable	150÷250Vdc
TM4IL20	0÷1,2	selectable	150÷250Vdc
TM4IL30	0÷5	selectable	150÷250Vdc
TM4IL40	0÷6	selectable	150÷250Vdc

NOTE: Executions available on all models, response time 50msec, add 2 at the end of product code.

Tema I4- AC single-phase current transducer with selectable output

Item	Input (A)	Output	Auxiliary power supply
TM3I210	0÷1	selectable	115Vac
TM3I220	0÷1,2	selectable	115Vac
TM3I230	0÷5	selectable	115Vac
TM3I240	0÷6	selectable	115Vac
TM3I310	0÷1	selectable	230Vac
TM3I320	0÷1,2	selectable	230Vac
TM3I330	0÷5	selectable	230Vac
TM3I340	0÷6	selectable	230Vac
TM3IH10	0÷1	selectable	20÷150Vdc+48Vac
TM3IH20	0÷1,2	selectable	20÷150Vdc+48Vac
TM3IH30	0÷5	selectable	20÷150Vdc+48Vac
TM3IH40	0÷6	selectable	20÷150Vdc+48Vac
TM3IL10	0÷1	selectable	150÷250Vdc
TM3IL20	0÷1,2	selectable	150÷250Vdc
TM3IL30	0÷5	selectable	150÷250Vdc
TM3IL40	0÷6	selectable	150÷250Vdc

Transducers

Transducers single-phase



To measure average value, calibration according RMS value
Direct input up to 440V or by VT



To measure average value, calibration according RMS value
Direct input up to 500V or by VT
Output selectable on field (7 ranges)
Selectable values: 0÷5/10/20mA - 4÷20mA
0÷5/10V - 2÷10V

Tema U - AC single-phase voltage transducer

Item	Input (V)	Output (mA)	Output (V)	Auxiliary power supply
TM2UA12	0÷100	0÷5	-	self-supplied
TM2UA13	0÷100	0÷10	-	self-supplied
TM2UA14	0÷100	0÷20	-	self-supplied
TM2UA16	0÷100	-	0÷5	self-supplied
TM2UA18	0÷100	-	0÷10	self-supplied
TM2UA22	0÷110	0÷5	-	self-supplied
TM2UA23	0÷110	0÷10	-	self-supplied
TM2UA24	0÷110	0÷20	-	self-supplied
TM2UA26	0÷110	-	0÷5	self-supplied
TM2UA28	0÷110	-	0÷10	self-supplied
TM2UA32	0÷120	0÷5	-	self-supplied
TM2UA33	0÷120	0÷10	-	self-supplied
TM2UA34	0÷120	0÷20	-	self-supplied
TM2UA36	0÷120	-	0÷5	self-supplied
TM2UA38	0÷120	-	0÷10	self-supplied
TM2UA72	0÷250	0÷5	-	self-supplied
TM2UA73	0÷250	0÷10	-	self-supplied
TM2UA74	0÷250	0÷20	-	self-supplied
TM2UA76	0÷250	-	0÷5	self-supplied
TM2UA78	0÷250	-	0÷10	self-supplied
TM2UA92	0÷400	0÷5	-	self-supplied
TM2UA93	0÷400	0÷10	-	self-supplied
TM2UA94	0÷400	0÷20	-	self-supplied
TM2UA96	0÷400	-	0÷5	self-supplied
TM2UA98	0÷400	-	0÷10	self-supplied
TM2UAA2	0÷440	0÷5	-	self-supplied
TM2UAA3	0÷440	0÷10	-	self-supplied
TM2UAA4	0÷440	0÷20	-	self-supplied
TM2UAA6	0÷440	-	0÷5	self-supplied
TM2UAA8	0÷440	-	0÷10	self-supplied

Tema U4 - tAC single-phase voltage transducer, with selectable output

Item	Input (V)	Output	Auxiliary power supply
TM3U210	0÷100	selectable	115Vac
TM3U220	0÷110	selectable	115Vac
TM3U230	0÷120	selectable	115Vac
TM3U270	0÷250	selectable	115Vac
TM3U290	0÷400	selectable	115Vac
TM3U2A0	0÷440	selectable	115Vac
TM3U2C0	0÷500	selectable	115Vac
TM3U2P0	0÷50<>500V *	selectable	115Vac
TM3U310	0÷100	selectable	230Vac
TM3U320	0÷110	selectable	230Vac
TM3U330	0÷120	selectable	230Vac
TM3U370	0÷250	selectable	230Vac
TM3U390	0÷400	selectable	230Vac
TM3U3A0	0÷440	selectable	230Vac
TM3U3C0	0÷500	selectable	230Vac
TM3U3P0	0÷50<>500V *	selectable	230Vac
TM3UH10	0÷100	selectable	20÷150Vdc+48Vac
TM3UH20	0÷110	selectable	20÷150Vdc+48Vac
TM3UH30	0÷120	selectable	20÷150Vdc+48Vac
TM3UH70	0÷250	selectable	20÷150Vdc+48Vac
TM3UH90	0÷400	selectable	20÷150Vdc+48Vac
TM3UHA0	0÷440	selectable	20÷150Vdc+48Vac
TM3UHC0	0÷500	selectable	20÷150Vdc+48Vac
TM3UHP0	0÷50<>500V *	selectable	20÷150Vdc+48Vac
TM3UL10	0÷100	selectable	150÷250Vdc
TM3UL20	0÷110	selectable	150÷250Vdc
TM3UL30	0÷120	selectable	150÷250Vdc
TM3UL70	0÷250	selectable	150÷250Vdc
TM3UL90	0÷400	selectable	150÷250Vdc
TM3ULA0	0÷440	selectable	150÷250Vdc
TM3ULC0	0÷500	selectable	150÷250Vdc
TM3ULP0	0÷50<>500V *	selectable	150÷250Vdc

NOTE: Executions available on all models, response time 50msec, add 2 at the end of product code.

Transducers

Single-phase transducers



TM4U+



TM8P+



TM96+

Item	Tema U4e - TRMS Single phase alternating voltage transducer with selectable output		
	To measure TRUE RMS value Direct input up to 500V or by VT Output selectable on field (7 ranges) Selectable values: 0÷5/10/20mA - 4÷20mA 0÷5/10V - 2÷10V		
	Input (V)	Output	Auxiliary power supply
TM4U210	0÷100	selectable	115Vac
TM4U220	0÷110	selectable	115Vac
TM4U230	0÷120	selectable	115Vac
TM4U270	0÷250	selectable	115Vac
TM4U290	0÷400	selectable	115Vac
TM4U2A0	0÷440	selectable	115Vac
TM4U2C0	0÷500	selectable	115Vac
TM4U2P0	0÷50<>500V *	selectable	115Vac
TM4U310	0÷100	selectable	230Vac
TM4U320	0÷110	selectable	230Vac
TM4U330	0÷120	selectable	230Vac
TM4U370	0÷250	selectable	230Vac
TM4U390	0÷400	selectable	230Vac
TM4U3A0	0÷440	selectable	230Vac
TM4U3C0	0÷500	selectable	230Vac
TM4U3P0	0÷50<>500V *	selectable	230Vac
TM4UH10	0÷100	selectable	20÷150Vdc+48Vac
TM4UH20	0÷110	selectable	20÷150Vdc+48Vac
TM4UH30	0÷120	selectable	20÷150Vdc+48Vac
TM4UH70	0÷250	selectable	20÷150Vdc+48Vac
TM4UH90	0÷400	selectable	20÷150Vdc+48Vac
TM4UHA0	0÷440	selectable	20÷150Vdc+48Vac
TM4UHC0	0÷500	selectable	20÷150Vdc+48Vac
TM4UHP0	0÷50<>500V *	selectable	20÷150Vdc+48Vac
TM4UL10	0÷100	selectable	150÷250Vdc
TM4UL20	0÷110	selectable	150÷250Vdc
TM4UL30	0÷120	selectable	150÷250Vdc
TM4UL70	0÷250	selectable	150÷250Vdc
TM4UL90	0÷400	selectable	150÷250Vdc
TM4ULA0	0÷440	selectable	150÷250Vdc
TM4ULC0	0÷500	selectable	150÷250Vdc
TM4ULP0	0÷50<>500V *	selectable	150÷250Vdc

* In addition to the product code pls. indicate the input value corresponding to output
 NOTE: Executions available on all models, response time 50msec, add 2 at the end of product code.

Item	Tema fP - Programmable transducer			
	Keyboard programmable transducer single-phase and three-phase Wholly field programmable Direct three-phase voltage input up to 500V or by VT, current input by CT 1/5A True R.M.S. measurements Output programmable 10 ranges, 0÷5/10/20 - 4÷20mA ± 5/10/20mA, 0÷10V - 1÷5V ±10V Measured quantity: Active/reactive/apparent power Power factor Phase angle Power demand			
	Input (A)	Input (V)	Output	Auxiliary power supply
TM8P02110	1	80÷500	selectable	115Vac
TM8P02120	5	80÷500	selectable	115Vac
TM8P03110	1	80÷500	selectable	230Vac
TM8P03120	5	80÷500	selectable	230Vac
TM8P0H110	1	80÷500	selectable	20÷150Vdc
TM8P0H120	5	80÷500	selectable	20÷150Vdc
TM8P0L110	1	80÷500	selectable	150÷250Vdc
TM8P0L120	5	80÷500	selectable	150÷250Vdc

Tema Pr4 - Programmable transducer through RS232 communication			
Single and three-phase 3-4 wire network Direct three phase voltage input up to 690V or by VT, current input by CT 1/5A 4 analog outputs 0÷20mA or 4÷20mA Quantities which can be associated to the output: Phase or linked voltage Phase current Phase or three-phase active/reactive power Power factor Frequency Average active/reactive power and current			
	Input (A)	Input (V)	Auxiliary power supply
TM960411	1	80÷690	selectable 80÷265Vac 110÷300Vdc
TM960412	1	80÷690	selectable 11÷60Vdc
TM960451	5	80÷690	selectable 80÷265Vac 110÷300Vdc
TM960452	5	80÷690	selectable 11÷60Vdc

Accessories

Description
ATM96002 Programming kit (software + RS232 module + USB adapter)
IF96005 Alarm module 2 relay outputs associable to 2 quantities measured by Tema Pr4

NOTE: Executions available on all models, response time 100msec, add 2 at the end of product code.

Transducers

CT with built-in transducer, for AC and DC network



TT35A



HT35Bs

HT35Bm

TT35 - with current transducer for AC networks

Item			
2-wire technology Passing cable window Ø 35mm Primary current field-selectable 9 programmable ranges			
	Input	Output (mA)	Auxiliary power supply
TT1AA502A	5/10/15/20/25/30/35/40/45	4÷20	10÷34Vdc
TT1AB152A	15/30/45/60/75/90/105/120/135A	4÷20	10÷34Vdc
TT1AB252A	25/50/75/100/125/150/175/200/225	4÷20	10÷34Vdc
TT1AB502A	50/100/150/200/250/300/350/400/450	4÷20	10÷34Vdc

TT35A TT35 - with current transducer for AC networks

Item			
4-wire technology Passing cable window Ø 35mm Primary current field-selectable 9 programmable ranges			
	Input (A)	Output	Auxiliary power supply
TT1BA5012	5/10/15/20/25/30/35/40/45	0÷20mA	115Vac
TT1BA5013	5/10/15/20/25/30/35/40/45	0÷20mA	230Vac
TT1BA5022	5/10/15/20/25/30/35/40/45	4÷20mA	115Vac
TT1BA5023	5/10/15/20/25/30/35/40/45	4÷20mA	230Vac
TT1BA5032	5/10/15/20/25/30/35/40/45	0÷10V	115Vac
TT1BA5033	5/10/15/20/25/30/35/40/45	0÷10V	230Vac
TT1BB1512	15/30/45/60/75/90/105/120/135	0÷20mA	115Vac
TT1BB1513	15/30/45/60/75/90/105/120/135	0÷20mA	230Vac
TT1BB1522	15/30/45/60/75/90/105/120/135	4÷20mA	115Vac
TT1BB1523	15/30/45/60/75/90/105/120/135	4÷20mA	230Vac
TT1BB1532	15/30/45/60/75/90/105/120/135	0÷10V	115Vac
TT1BB1533	15/30/45/60/75/90/105/120/135	0÷10V	230Vac
TT1BB2512	25/50/75/100/125/150/175/200/225	0÷20mA	115Vac
TT1BB2513	25/50/75/100/125/150/175/200/225	0÷20mA	230Vac
TT1BB2522	25/50/75/100/125/150/175/200/225	4÷20mA	115Vac
TT1BB2523	25/50/75/100/125/150/175/200/225	4÷20mA	230Vac
TT1BB2532	25/50/75/100/125/150/175/200/225	0÷10V	115Vac
TT1BB2533	25/50/75/100/125/150/175/200/225	0÷10V	230Vac
TT1BB5012	50/100/150/200/250/300/350/400/450	0÷20mA	115Vac
TT1BB5013	50/100/150/200/250/300/350/400/450	0÷20mA	230Vac
TT1BB5022	50/100/150/200/250/300/350/400/450	4÷20mA	115Vac
TT1BB5023	50/100/150/200/250/300/350/400/450	4÷20mA	230Vac
TT1BB5032	50/100/150/200/250/300/350/400/450	0÷10V	115Vac
TT1BB5033	50/100/150/200/250/300/350/400/450	0÷10V	230Vac

HT35Bs - with cHall effect current transducer with Hall effect for DC networks

Item			
Passing cable window Ø 35mm			
	Input	Output (mA)	Auxiliary power supply
HT1BS101A	10/20/30/40/50/60/70/80/90/100	0÷20	15Vdc by HT35Bm *
HT1BS102A	10/20/30/40/50/60/70/80/90/100	4÷20	15Vdc by HT35Bm *

* HT35Bm può alimentare up to 3 HT35Bs

HT35Bm - with cHall effect current transducer with Hall effect for DC networks

Item			
4-wire technology Passing cable window Ø 35mm			
	Input	Output (mA)	Auxiliary power supply
HT1BM1017	10/20/30/40/50/60/70/80/90/100	0÷20	80÷270Vac 110÷300Vdc
HT1BM101C	10/20/30/40/50/60/70/80/90/100	0÷20	20÷60Vdc 24Vac
HT1BM1027	10/20/30/40/50/60/70/80/90/100	4÷20	80÷270Vac 110÷300Vdc
HT1BM102C	10/20/30/40/50/60/70/80/90/100	4÷20	20÷60Vdc 24Vac

Transducers

CT with Hall effect built-in transducer, for DC network



HT35A - with cHall effect current transducer with Hall effect for DC networks			
Item	Passing cable window Ø 35mm Field-selectable output		
	Input (A)	Output (mA)	Auxiliary power supply
HT1BC1032	0÷100	0÷10V	115Vac
HT1BC1033	0÷100	0÷10V	230Vac
HT1BC103T	0÷100	0÷10V	20÷150Vdc+48Vac
HT1BC1042	0÷100	0÷20/4÷20mA	115Vac
HT1BC1043	0÷100	0÷20/4÷20mA	230Vac
HT1BC104T	0÷100	0÷20/4÷20mA	20÷150Vdc+48Vac
HT1BC1532	0÷150	0÷10V	115Vac
HT1BC1533	0÷150	0÷10V	230Vac
HT1BC153T	0÷150	0÷10V	20÷150Vdc+48Vac
HT1BC1542	0÷150	0÷20/4÷20mA	115Vac
HT1BC1543	0÷150	0÷20/4÷20mA	230Vac
HT1BC154T	0÷150	0÷20/4÷20mA	20÷150Vdc+48Vac
HT1BC2032	0÷200	0÷10V	115Vac
HT1BC2033	0÷200	0÷10V	230Vac
HT1BC203T	0÷200	0÷10V	20÷150Vdc+48Vac
HT1BC2042	0÷200	0÷20/4÷20mA	115Vac
HT1BC2043	0÷200	0÷20/4÷20mA	230Vac
HT1BC204T	0÷200	0÷20/4÷20mA	20÷150Vdc+48Vac
HT1BC2532	0÷250	0÷10V	115Vac
HT1BC2533	0÷250	0÷10V	230Vac
HT1BC253T	0÷250	0÷10V	20÷150Vdc+48Vac
HT1BC2542	0÷250	0÷20/4÷20mA	115Vac
HT1BC2543	0÷250	0÷20/4÷20mA	230Vac
HT1BC254T	0÷250	0÷20/4÷20mA	20÷150Vdc+48Vac
HT1BC3032	0÷300	0÷10V	115Vac
HT1BC3033	0÷300	0÷10V	230Vac
HT1BC303T	0÷300	0÷10V	20÷150Vdc+48Vac
HT1BC3042	0÷300	0÷20/4÷20mA	115Vac
HT1BC3043	0÷300	0÷20/4÷20mA	230Vac
HT1BC304T	0÷300	0÷20/4÷20mA	20÷150Vdc+48Vac
HT1BC4032	0÷400	0÷10V	115Vac
HT1BC4033	0÷400	0÷10V	230Vac
HT1BC403T	0÷400	0÷10V	20÷150Vdc+48Vac
HT1BC4042	0÷400	0÷20/4÷20mA	115Vac
HT1BC4043	0÷400	0÷20/4÷20mA	230Vac
HT1BC404T	0÷400	0÷20/4÷20mA	20÷150Vdc+48Vac

HT80A - with cHall effect current transducer with Hall effect for DC networks			
Item	Passing cable window Ø 80mm Field-selectable output		
	Input (A)	Output (mA)	Auxiliary power supply
HT2BC4032	0÷400	0÷10V	115Vac
HT2BC4033	0÷400	0÷10V	230Vac
HT2BC403T	0÷400	0÷10V	20÷150Vdc+48Vac
HT2BC4042	0÷400	0÷20/4÷20mA	115Vac
HT2BC4043	0÷400	0÷20/4÷20mA	230Vac
HT2BC404T	0÷400	0÷20/4÷20mA	20÷150Vdc+48Vac
HT2BC5032	0÷500	0÷10V	115Vac
HT2BC5033	0÷500	0÷10V	230Vac
HT2BC503T	0÷500	0÷10V	20÷150Vdc+48Vac
HT2BC5042	0÷500	0÷20/4÷20mA	115Vac
HT2BC5043	0÷500	0÷20/4÷20mA	230Vac
HT2BC504T	0÷500	0÷20/4÷20mA	20÷150Vdc+48Vac
HT2BC6032	0÷600	0÷10V	115Vac
HT2BC6033	0÷600	0÷10V	230Vac
HT2BC603T	0÷600	0÷10V	20÷150Vdc+48Vac
HT2BC6042	0÷600	0÷20/4÷20mA	115Vac
HT2BC6043	0÷600	0÷20/4÷20mA	230Vac
HT2BC604T	0÷600	0÷20/4÷20mA	20÷150Vdc+48Vac
HT2BC8032	0÷800	0÷10V	115Vac
HT2BC8033	0÷800	0÷10V	230Vac
HT2BC803T	0÷800	0÷10V	20÷150Vdc+48Vac
HT2BC8042	0÷800	0÷20/4÷20mA	115Vac
HT2BC8043	0÷800	0÷20/4÷20mA	230Vac
HT2BC804T	0÷800	0÷20/4÷20mA	20÷150Vdc+48Vac
HT2BD1032	0÷1000	0÷10V	115Vac
HT2BD1033	0÷1000	0÷10V	230Vac
HT2BD103T	0÷1000	0÷10V	20÷150Vdc+48Vac
HT2BD1042	0÷1000	0÷20/4÷20mA	115Vac
HT2BD1043	0÷1000	0÷20/4÷20mA	230Vac
HT2BD104T	0÷1000	0÷20/4÷20mA	20÷150Vdc+48Vac

Accessories

Description	
ATADIN01	Accessory for DIN rail 35mm mounting

Transducers

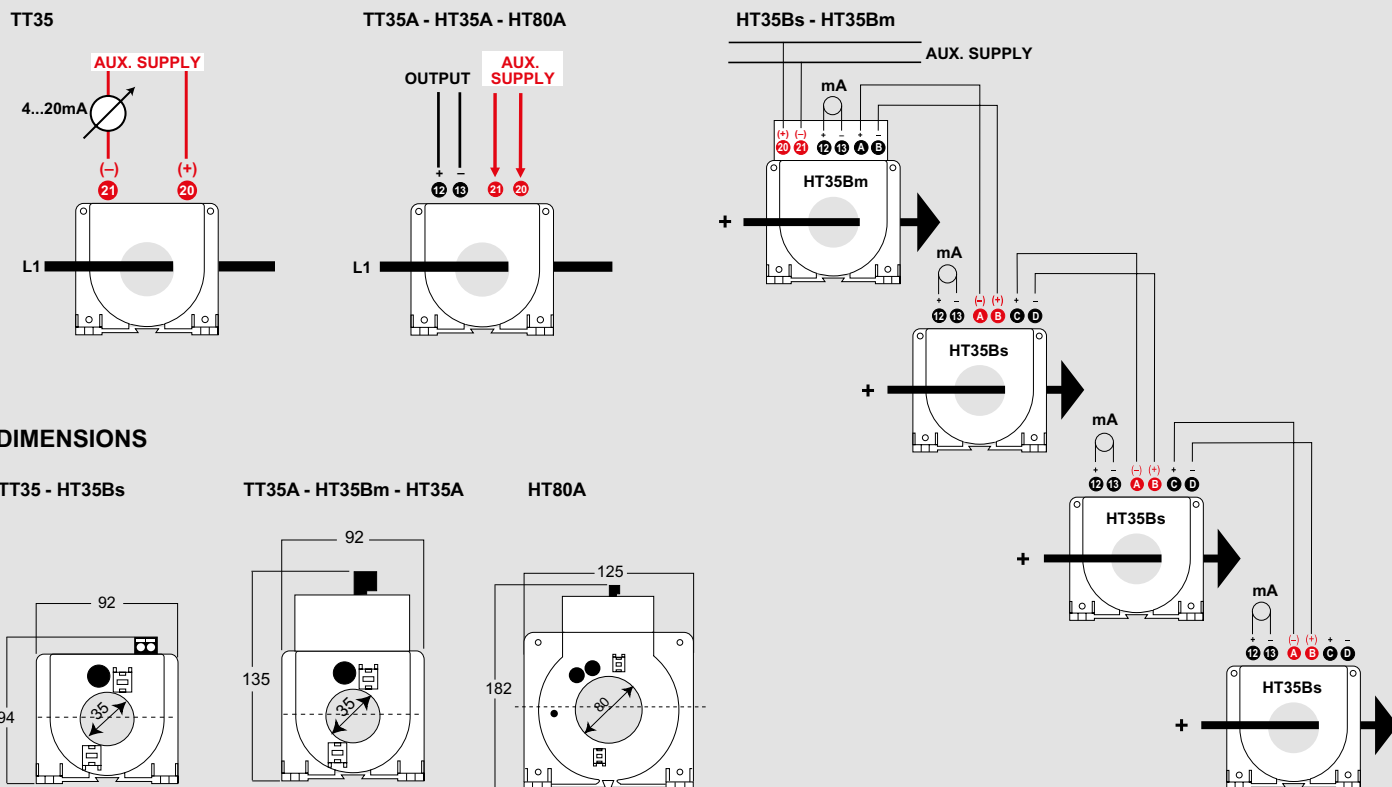
CT with Hall effect built-in transducer, for DC network

TECHNICAL CHARACTERISTICS

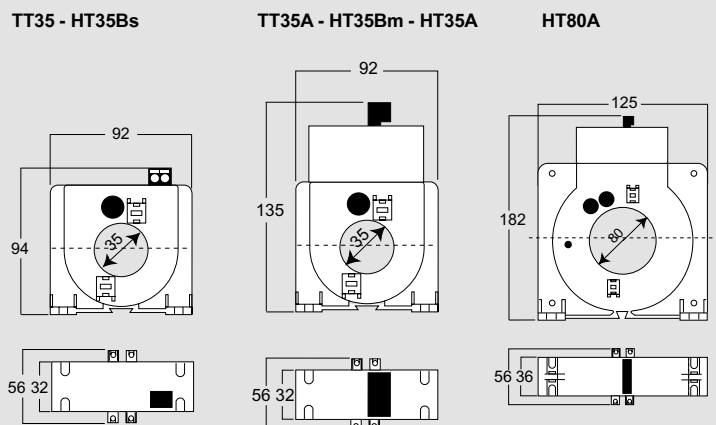
INPUT	TT35	TT35A	HT35BS	HT35BM	HT35A	HT80A
Rated current In	5÷450A	5÷450A	10÷100A	10÷100A	100÷400A	400÷1000A
Rated frequency	50Hz	50Hz	-	-	-	-
Frequency range	47÷63Hz	47÷63Hz	-	-	-	-
Instantaneous overload	20 In/1 sec	20 In/1 sec	-	-	-	-
Continuous overload	-	-	1,2In	1,2In	1,2In	1,2In
OUTPUT						
Type	unidirectional, real or live zero for variable output load					
Accuracy	class 1					
Rated values	0÷20mA	0÷20mA - 4÷20mA - 0÷10V	0÷20mA - 4÷20mA	0÷20mA - 4÷20mA	0÷20mA - 4÷20mA - 0÷10V	
Voltage rated value		≤ 750Ω (20mA) ≥ 200Ω (10V)	≤ 500Ω	≤ 500Ω	≤ 750Ω (20mA) - >1KΩ (10V)	
AUXILIARY POWER SUPPLY						
Rated value Uaux ac Other value on request	10÷34Vdc	115 o 230Vac	15V	24Vac - 80÷270Vac 20÷60Vdc - 110÷300Vdc	48 - 115 - 230Vac 20÷150Vdc	
Rated burden	≤ 3VA	≤ 3VA	≤ 1VA - 1W	≤ 1VA - 1W	≤3,5W	≤5VA
MECHANICAL CHARACTERISTICS						
Housing material	self-extinguishing polycarbonate					
Protection degree (EN/IEC 60529)	IP20 terminals					
Mounting	screw type					
Connections type	removable screw terminals					
CONDIZIONI AMBIENTALI						
Nominal temperature	0÷45°C					
Storage temperature	-25÷70°C					
Suitable for tropical climates	yes					
Max.power dissipation*	≤4W	≤4W	≤4W	≤4W	≤4W	≤4W

*For switchboard thermal calculation

WIRING DIAGRAMS



DIMENSIONS





DIGITAL INDICATORS

Digital measuring instruments and luminous bars, for displaying precise, safe and reliable electrical quantities.

Digital indicators are multi-range instruments for insertion on translators, shunts, field sensors, current transformers, voltage transformers or direct.

Recessed solutions are available, for installation on DIN35 rail or light bars with LED indicators.

An extremely complete range of digital indicators capable of satisfying any system requirement



Digital indicators

Modular digital indicators 1000 points DGM D4 series



DGM A



DGM D



DGM G



DGM S



DGM M



DGM N

Item	Alternating current direct connection True RMS			
	Vn (aux)	Input	Display	Output
DGMA03A3	115Vac			
DGMA06A3	230Vac	10A	9.99A	-
DGMA03A4	115Vac			
DGMA06A4	230Vac	20A	20.0A	-
DGMA23A3	115Vac			
DGMA26A3	230Vac	10A	9.99A	

¹ Selectable VT primary voltages: 100/120/150/160/200/250/300/400/500/600/700/750/800V - 1/1,2/1,5/1,6/2/2,5/3/4/5/6/7/7,5/8/10/15/20/25/30/40/50/60/70/75/80/100/120/150/160/200/250kV

	Network frequency			
	Vn (aux)	Input	Display	Output
DGMS06F1	230Vac	100÷500V 10÷100Hz	10÷99,9Hz	-
DGMS26F1	230Vac	100÷500V 10÷100Hz	10÷99,9Hz	2 alarm relays

Item	Alternating current by CT Alternating voltage directly connection True RMS			
	Vn (aux)	Input	Display	Output
DGMG01C1	24Vac			
DGMG03C1	115Vac			
DGMG06C1	230Vac	5A-500V	Primary CT selectable ² o 500V	-
DGMG0HC1	20÷150Vdc+48Vac			
DGMG01C2	24Vac			
DGMG03C2	115Vac			
DGMG06C2	230Vac	1A-500V	Primary CT selectable ² o 500V	-
DGMG0HC2	20÷150Vdc+48Vac			
DGMG21C1	24Vac			
DGMG23C1	115Vac			
DGMG26C1	230Vac	5A-500V	Primary CT selectable ² o 500V	2 alarm relays
DGMG2HC1	20÷150Vdc+48Vac			

² primary currents of selectable CT: 5/10/15/20/25/30/40/50/60/70/75/80/100/120/150/160/200/250/300/400/500/600/700/750/800A - 1/1,2/1,5/1,6/2/2,5/3/4/5/6/7/7,5/8kA

	Unidirectional direct current by external shunt			
	Vn (aux)	Input	Display	Output
DGMM06L4	230Vac			
DGMM0HL4	20÷150Vdc +48Vac	0÷60/100/150mV	Current shunt selectable ³	-
DGMM26L4	230Vac			
DGMM2HL4	20÷150Vdc +48Vac	0÷60/100/150mV		2 alarm relays

³ correnti derivatore selezionabili: 5/10/15/20/25/30/40/50/60/70/75/80/100/120/150/160/200/250/300/400/500/600/700/750/800A - 1/1,2/1,5/1,6/2/2,5/3/4/5/6/7/7,5/8kA

	Unidirectional direct voltage direct connection			
	Vn (aux)	Input	Display	Output
DGMN06N6	230Vac			
DGMN0HN6	20÷150Vdc+48Vac	0÷100V o 0÷500V	0÷99,9V or 0÷500V	-
DGMN26N6	230Vac			
DGMN2HN6	20÷150Vdc+48Vac	0÷100V o 0÷500V		0÷100V o 0÷500V

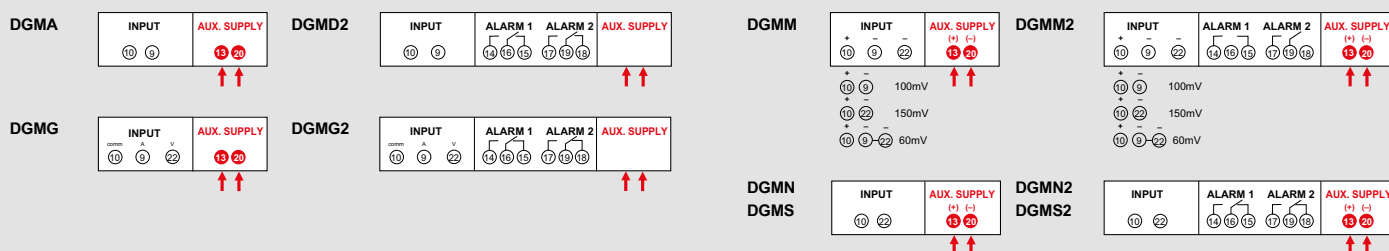
Technical characteristics

MODEL	DGMA	DGMD	DGMG	DGMS	DGMM	DGMN
DISPLAY						
Type of display	7 segments, green LED's					
Digit height	14mm					
N° of display points	1.000 (3 digit)					
Maximum display	999	999	999	999	999	999
Decimal point	automatic	automatic	automatic	-	automatic	automatic
Accuracy (referred to full scale)	± 1%+1 digit	± 1%+1 digit	± 1%+1 digit	± 0,1Hz	± 1%+1 digit	± 1%+1 digit
Display update	2,9s	2,9s	2,9s	1 lettura/0,8s	2,9s	2,9s
INPUT						
Connection	direct	direct (voltage) by external CT (current)	direct or by external VT	direct	by shunt	direct
Rated voltage Un	-	500V	100V	100÷500V	60 - 100 - 150mV	100 - 500V
Rated current In	10A - 20A	5A – 1A	-	-	-	-
Measuring range	0,2÷12A	10÷600V 0,1÷6A(In 5A) – 0,02÷1,2A (In1A)	5÷120V	-	0,02÷1,2In	0,02÷1,2Un
Rated burden	≤ 1VA	≤ 0.1VA - ≤ 0,6VA	≤ 0.1VA	≤ 0.1VA	-	-
Measure	True RMS value				-	-
Input signal waveform	symmetrical wave			-	-	-
Rated frequency	50Hz	50Hz	50Hz	-	-	-
Working frequency	47÷420Hz	47÷420Hz	47÷420Hz	10÷100Hz	-	-
Input impedance	-	-	-	-	≥ 70kΩ(150mV) - ≥ 47kΩ(100mV) - ≥ 28kΩ(60mV)	≥ 200kΩ(Un 100V) - ≥ 1MΩ(Un 500V)
Continuous overload	12A **	1,2In – 1,2Un	120V	1.2 Un	-	1,2Un
Instantaneous overload	-	2In/5s	-	-	2In/5s	-
Form factor	-	-	-	1.11	-	-
ALARMS						
Programmables alarms	2 (min or max)					
Programmables set-point	0÷12A	0÷120% selected range		10÷100Hz	0÷120% selected range	
Programmables hysteresis	0÷set-point					
Delay	programmable 1÷60s					
Delay accuracy	±10%					
Reset time	≤ 500ms					
Output	2 relays with SPDT contacts, potential free					
Contacts range	5A 250Vac – 0,5A 100Vdc					
Accuracy (referred to full scale)	±1,5%					
AUXILIARY POWER SUPPLY						
Rated value Uaux ac:	24-48–115–230V					
Tolerance	±10% Uaux AC – 40÷60V (Uaux 48V)					
Rated frequency	± 50%Hz					
Working frequency	47÷63Hz					
Rated burden	≤ 3.5VA					
Rated value Uaux cc:	20÷150Vdc–150÷250Vdc					
Rated burden	≤ 2.5W					
ELECTROMAGNETIC COMPATIBILITY						
Emission/immunity tests according to	EN/IEC 61326-1	EN/IEC 61326-1	EN/IEC 61326-1	EN/IEC 61326-1	EN/IEC 61326-1	EN/IEC 61326-1
ENVIRONMENTAL CONDITIONS						
Nominal temperature	-5÷55°C					
Storage temperature	-40÷70°C					
Suitable for tropical climates	yes					
Max. power dissipation	≤ 3.5W *					
MECHANICAL CHARACTERISTICS						
Housing	4 modules DIN 43880 (35mm)					
Connection	screw terminals					
Material	self-extinguishing polycarbonate					
Protection degree (EN/IEC 60529):	IP50 front frame, IP20 terminals					

* For switchboard thermal calculation

** only 10A input

Wiring diagrams



Digital indicators

Flush mounting digital indicators 2000 points DGP 36 P2k - DGQ 72 P2k - DGQ 96 P2k series



DGP 36 P2k
72x36mm

DGQ 72 P2k
72x72mm

DGQ 96 P2k
96x96mm

Completely programmable:

- Programmable input for alternating or direct voltage 500V, display in autoscaling with resolution 0,1V up to 200V and 1V over 200V.
- Programmable input for alternating or direct current 10A, display with resolution 0,01A.
- Programmable input for network frequency 10÷100Hz or 380÷420Hz display with resolution 0,1Hz or 1Hz respectively.
- Programmable input for alternating voltage from VT with secondary 100- 110-115-120V, 23 selectable VT primary display (230/300/400/500/600/660 /690/800/1000V - 3/3,3/5/5,5/6/6,6/10/11/13, 8/15/20/22/30kV).
- Programmable input for alternating current from CT with secondary 1-5A, 33 selectable CT primary display (5/10/15/20/25/30/40/50/60/75/ 80/100/120/125/150/160/200/250/300/400/500/600/750/800/1000/1200 /1250/1500/1600/2000A - 2,5/3/4kA).
- Programmable input for indirect alternating or direct voltage any value between 50 and 500V, programmable corresponding display (max indication 1999).
- Programmable input for indirect alternating or direct current any value between 1 and 10A, programmable corresponding display (max indication 1999)

Item	Alternating current direct connection or by CT. Alternating voltage direct connection or by VT. Network frequency. Direct or indirect bidirectional direct current. Direct or indirect bidirectional direct voltage. True RMS				
	DGP 36 P2k	DGQ 72 P2k	DGQ 96 P2k	Vn (aux)	Input
DG3P03P5	DG8P03P5	DG9P03P5	115Vac	program- mable	program- mable (max ±1999)
DG3P06P5	DG8P06P5	DG9P06P5	230Vac		
DG3P0MP5	DG8P0MP5	DG9P0MP5	20÷150Vdc 20÷60Vdc		

Accessories

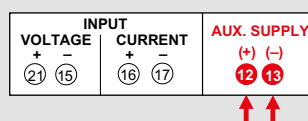
	Description
ADGIP543	Protection front cover IP54 for 72x36mm
ADGIP547	Protection front cover IP54 for 72x72mm
ADGIP549	Protection front cover IP54 for 96x96mm
AV652	Protection front cover IP65 for 72x72mm
AV653	Protection front cover IP65 for 96x96mm

Technical characteristics

MODEL	DGP 36 P2K			DGQ 72 P2K	DGQ 96 P2K
DISPLAY					
Type of display	7 segments, red LED's				
Digit height	14mm				
N° of display points:	2.000 (3½ digit)				
Maximum display	-1999÷1999				
Engineering unit	user-customizable (adhesive label)				
Polarity indication	automatic				
Display update	1 lettura/s				
Accuracy (referred to full scale)	±0,1% + 1 digit	±1% + 1 digit		±1% + 1 digit	
INPUT					
Connection	direct or by external CT/TV				
Waveform	continuous or symmetrical, distorted sinusoidal, partialized SCR, square				
Rated voltage Un	500V				
Rated current In	10A - 5A - 1A				
Measuring range	10÷600V - 50mA÷12A - 0,1÷6A - 0,02÷1,2A 10÷100Hz - 380÷420Hz				
Continuous overload	1,2Un - 1,2In				
Instantaneous overload	2Un/5s - 2In/5s				
Voltage drop	≤ 0,25V (10A)	≤ 0,2V (10A)		≤ 0,2V (10A)	
Working voltage	50÷500V				
Measure	True RMS value				
AUXILIARY POWER SUPPLY					
Rated value Uaux ac	115V - 230V - 20÷60V				
Tolerance	103÷126V (Uaux.115V) - 207÷253V (Uaux.230V) - (Uaux.20÷60V)				
Rated frequency	50Hz				
Working frequency	47÷63Hz				
Rated burden	≤ 4VA (253V)				
Rated value Uaux cc:	20÷150V				
Rated burden	≤ 3W				
ELECTROMAGNETIC COMPATIBILITY					
Emission tests according to	EN/IEC 61326-1				
Immunity tests according to	EN/IEC 61326-1				
ENVIRONMENTAL CONDITIONS					
Nominal temperature	-5÷55°C				
Storage temperature	-40÷70°C				
Suitable for tropical climates	si				
Max. power dissipation	≤ 3,6W *				
MECHANICAL CHARACTERISTICS					
Flush mounting panel cutout	68x33mm	68x68mm		92x92mm	
Front frame	72x36mm (75x39mm for IP54)	72x72mm (75x75mm for IP54)		96x96mm (99x99mm for IP54)	
Depth	108mm				
Connection	faston 6,3x0,8mm				
Material	self-extinguishing polycarbonate				
Protection degree (EN/IEC 60529)	IP50 (front frame) IP20 (terminals) Optional: IP54/IP65 (with kit)				

* for switchboard thermal calculation

WIRING DIAGRAMS



Digital indicators

Flush mounting digital indicators 2000 points - DGP 36 P2k - DGQ 72 P2k - DGQ 96 P2k series



DGP 36 P2k
72x36mm



DGQ 72 P2k
72x72mm



DGQ 96 P2k
96x96mm

Item	Bidirectional direct current and voltage by transducers/sensors/shunt				
DGP 36 P2k	DGQ 72 P2k	DGQ 96 P2k	Vn (aux)	Input	Display
DG3P0NP1	DG8P0NP1	DG9P0NP1	80÷270Vac 100÷300Vdc	program- mable NOTE	program- mable (max ±1999)
DG3P0MP1	DG8P0MP1	DG9P0MP1	20÷150Vdc 20÷60Vac		

NOTE: programmable inputs $\pm 1/5/10/20\text{mA}$ - $4\div 20\text{mA}$ - $\pm 50/60/75/100/150\text{mV}$ - $\pm 1/5/10\text{V}$

Accessories

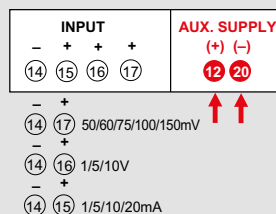
	Description
ADGIP543	Protection front cover IP54 for 72x36mm
ADGIP547	Protection front cover IP54 for 72x72mm
ADGIP549	Protection front cover IP54 for 96x96mm
AV652	Protection front cover IP65 for 72x72mm
AV653	Protection front cover IP65 for 96x96mm

Technical characteristics

MODEL	DGP 36 P2K	DGQ 72 P2K	DGQ 96 P2K
DISPLAY			
Type of display	7 segments, red LED's		
Digit height	14mm		
N° of display points:	2.000 (3½ digit)		
Maximum display	-1999÷1999		
Engineering unit	user-customizable (adhesive label)		
Polarity indication	automatic		
Accuracy (referred to full scale)	± 0,1% + 1 digit		
INPUT			
Connection	direct		
Waveform	direct		
Rated voltage Un	50–60–75–100- 150mV - 1-5-10V		
Rated current Un	1-5-10-20mA – 4÷20mA		
Input impedance	≥ 40kΩ (150mV) - ≥ 300kΩ (10V)		
Continuous overload:	1,2Un – 1,2In		
Instantaneous overload	2Un/5s – 2In/5s		
Voltage drop:	≤ 1V (5mA) - ≤ 200mV (20mA)		
Measure:	direct current or voltage		
AUXILIARY POWER SUPPLY			
Rated value Uaux ac:	20÷60V or 80÷270V		
Rated frequency	± 50%Hz		
Working frequency	47÷63Hz		
Rated burden	≤ 3VA	≤ 3VA	≤ 3VA
Rated value Uaux cc:	20÷150V or 100÷300V		
Rated burden	≤ 3W		
ELECTROMAGNETIC COMPATIBILITY			
Emission tests according to	EN/IEC 61326-1		
Immunity tests according to	EN/IEC 61326-1		
ENVIRONMENTAL CONDITIONS			
Nominal temperature	-5÷55°C		
Storage temperature	-40÷70°C		
Suitable for tropical climates	yes		
Max. power dissipation	≤ 3.6W *	≤ 3.6W *	≤ 3.6W *
MECHANICAL CHARACTERISTICS			
Flush mounting panel cutout:	68x33mm	68x68mm	92x92mm
Front frame:	72x36mm (75x39mm for IP54)	72x72mm (75x75mm for IP54)	96x96mm (99x99mm for IP54)
Depth:	108mm		
Connection	faston 6,3x0,8mm		
Material	self-extinguishing polycarbonate		
Protection degree (EN/IEC 60529):	IP50 (front frame) IP20 (terminals) Optional: IP54/IP65 ((with kit))		

* for switchboard thermal calculation

WIRING DIAGRAMS



Digital indicators

Flush mounting digital indicators - DGP 96 series



DG4A+
96x48mm



DG4D..
96x48mm



DG4P+ 96x48mm



DG4Q+
96x48mm

Item	Alternating current direct connection - true RMS			
	Vn (aux)	Input	Display	Output
DG4A01A3	24Vac	10A	9.99A	-
DG4A03A3	115Vac			
DG4A06A3	230Vac			
DG4A23A3	115Vac	10A	9.99A	2 alarm relays
DG4A26A3	230Vac			

Item	Alternating voltage direct connection up to 100V or by VT with secondary 100V - true RMS			
	Vn (aux)	Input	Display	Output
DG4D03D1	115Vac	100V	Primario selezionabile VT NOTE	-
DG4D06D1	230Vac			
DG4D0HD1	20÷150Vdc+48Vac			

NOTE: Selectable VT primary voltages: 100/120/150/160/200/250/300/400/500/600/700/750/800V - 1/1,2/1,5/1,6/2/2,5/3/4/5/6/7/7,5/8/10/15/20/25/30/40/50/60/70/75/80/100/120/150/160/200/250kV

Item	Network frequency		
	Vn (aux)	Input	Display
DG4S03F1	115Vac	100÷500V 10÷100Hz	10.0÷99.9 Hz
DG4S06F1	230Vac		
DG4S0HF1	20÷150Vdc+48Vac		

Item	Bidirectional direct current and voltage by transducers/sensors/shunt - 2000 points			
	Vn (aux)	Input	Display	Output
DG4P01P2	24Vac	Program- mable NOTE	Programmable (max ±1999) NOTE	-
DG4P03P2	115Vac			
DG4P06P2	230Vac			
DG4P0HP2	20÷150Vdc +48Vac			
DG4P21P2	24Vac	Program- mable NOTE	Programmable (max ±1999)	2 alarm relays
DG4P23P2	115Vac			
DG4P26P2	230Vac			
DG4P2HP2	20÷150Vdc+48Vac			
DG4P26P22	230Vac	Program- mable NOTE	Programmable (max ±1999)	2 alarm relays 24Vdc (30mA)

NOTE: programmable inputs $\pm 0,5 \div \pm 2\text{mA}$ / $\pm 5 \div \pm 20\text{mA}$ / $4 \div 20\text{mA}$ / $\pm 50 \div \pm 200\text{mV}$ / $\pm 5 \div \pm 20\text{V}$ / $\pm 50 \div \pm 200\text{V}$

Item	Directional direct current and voltage by transducers/sensors/shunt			
	Vn (aux)	Input	Display	Output
DG4Q01P2	24Vac	Program- mable	Programmable (max 9999) NOTE	-
DG4Q03P2	115Vac			
DG4Q06P2	230Vac			
DG4Q0HP2	20÷150Vdc +48Vac			
DG4Q21P2	24Vac	Program- mable	Programmable (max 9999) NOTE	2 alarm relays
DG4Q23P2	115Vac			
DG4Q26P2	230Vac			
DG4Q2HP2	20÷150Vdc+48Vac			

NOTE: programmable inputs $0,5 \div 2\text{mA}$ / $5 \div 20\text{mA}$ / $4 \div 20\text{mA}$ / $50 \div 200\text{mV}$ / $5 \div 20\text{V}$ / $50 \div 200\text{V}$

	Accessories
	Description
ADGIP544	Protection front cover IP54
AV654	Protection front cover IP65

Digital indicators

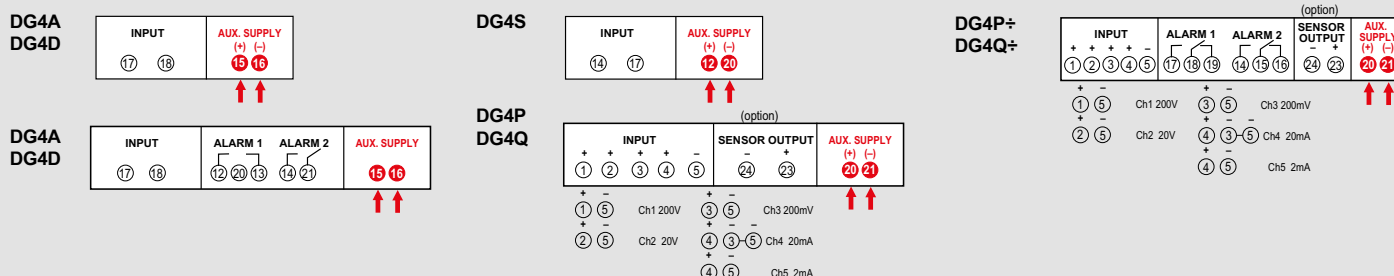
Flush mounting digital indicators - DGP 96 series

Technical characteristics

MODEL	DG4A	DG4D	DG4S	DG4P0	DG4P2	DG4Q0	DG4Q2
DISPLAY							
Type of display	7 segments, red LED's						
Digit height	14mm						
N° of display points	1.000 (3 digit)	1.000 (3 digit)	1.000 (3 digit)	2.000 (3 1/2 digit)	2.000 (3 1/2 digit)	10.000 (4 digit)	10.000 (4 digit)
Maximum display	999	999	999	-1999÷1999	-1999÷1999	9999	9999
Engineering unit	A	V or kV	Hz	user-customizable (adhesive label)			
Decimal point	automatic	automatic	fixed (00,0)	-	-	-	-
Overrange	Input 12A	Input > 1,2Un	-	-	-	-	-
Accuracy (referred to full scale)	± 1% + 1 digit	± 1% + 1 digit	±0,1Hz	±(0,25% + K) +1 digit			
Display update	2,9s	2,9s	0.8s	3 reading/s	3 reading/s	3 reading/s	3 reading/s
INPUT							
Connection	direct	direct or by external VT	-	direct			
Rated voltage Un	-	100V	100÷500V	200mV – 20V - 200V			
Rated current In	10A	-	-	20mA - 2mA			
Measuring range	0,2÷12A	5÷120V	10÷100Hz	Un÷0÷Un or - In÷0÷In (min) 0÷0,25Un or 0÷0,25In (max)			
Rated burden	≤ 1VA	≤ 0.1VA	≤ 0.1VA	-	-	-	-
Measure	true RMS			direct or pulsating, average value			
Waveform	symmetrical wave		symmetric sinusoidal, Form factor 1,11	direct or pulsating with frequency ≥ 50Hz			
Rated frequency	50Hz			-	-	-	-
Working frequency	47÷420Hz		10÷100Hz	-	-	-	-
Continuous overload	12A	120V	-	1,2In – 1,2Un			
Instantaneous overload	-	-	-	2Un/5s – 2In/5s			
ALARMS							
Programmables alarms	2	2	-	-	2	-	2
Set-point (programmable)	0÷12A	-	-	-	-1999÷1999 digit	-	0÷9999 digit
Hysteresis (programmable)	0÷set-point		-	-	-1999÷1999 digit	-	0÷9999 digit
Delay (programmable)	1÷60s		-	-	1÷60s	-	1÷60s
Delay accuracy	±10%		-	-	±10%	-	±10%
Reset time	≤ 500ms		-	-	≤ 500ms	-	≤ 500ms
Output	2 relays with SPDT contacts, potential free		-	-	2 relays with SPDT contacts, potential free	-	2 relays with SPDT contacts, potential free
Contacts range	5A 250Vac – 0,5A 100Vdc		-	-	5A 250Vac – 0,5A 100Vdc	-	5A 250Vac – 0,5A 100Vdc
Accuracy (referred to full scale)	±1,5%	±1,5%	-	-	2 (0,25%+K)+ 1 digit	-	2 (0,25%+K)+ 1 digit
AUXILIARY POWER SUPPLY							
Rated value Uaux AC	24 – 48 – 115 – 230V						
Tolerance	±10% Uaux AC – 40÷60V (Uaux 48V)						
Rated frequency	± 50%Hz						
Working frequency	47÷63Hz						
Rated burden	≤ 3.5VA			≤ 4.5VA			
Rated value Uaux DC	20÷150Vdc – 150÷250Vdc						
Rated burden	≤ 2.5W			≤ 3W			
ELECTROMAGNETIC COMPATIBILITY							
Emission/immunity tests	according to EN/IEC 61326-1						
ENVIRONMENTAL CONDITIONS							
Nominal temperature	-5÷55°C						
Storage temperature	-40÷70°C						
Suitable for tropical climates	yes						
Max. power dissipation	≤ 3.5W *			≤ 3.6W *			
MECHANICAL CHARACTERISTICS							
Housing	flush mounting (panel cutout 92x45mm)						
Front frame	96x48mm (99x52mm with protection IP54)						
Depth	103mm						
Connection	faston 6,3x0,8mm						
Material	self-extinguishing polycarbonate						
Protection degree (EN/IEC 60529)	IP50 (front frame) IP20 (terminals) - Optional: IP54/IP65 (with kit)						

* for switchboard thermal calculation

WIRING DIAGRAMS



Digital indicators

Digital indicators da incasso 1000 punti serie DGP 96 - DGQ72



DGP96
96x48mm



DGQ72
72x72mm

Item		Alternating current measurement by CT Alternating voltage direct connection - True RMS			
DGP96	DGQ72	Vn (aux)	Input	Display	Output
DG4G01C1		24Vac	5A - 600V	Primario selezio- nabile TA (NOTE)	-
DG4G03C1		115Vac			
DG4G06C1		230Vac			
DG4G0HC1		20÷150Vdc +48Vac			
DG4G01C2		24Vac	1A - 600V	Primario selezio- nabile TA NOTE	-
DG4G03C2		115Vac			
DG4G06C2		230Vac			
DG4G0HC2		20÷150Vdc +48Vac			
DG4G21C1	DG7G21C1	24Vac	5A - 600V	Primario selezio- nabile TA NOTE	2 alarm relays
DG4G23C1	DG7G23C1	115Vac			
DG4G26C1	DG7G26C1	230Vac			
DG4G2HC1	DG7G2HC1	20÷150Vdc +48Vac			
DG4G23C2		115Vac	1A - 600V	Primario selezio- nabile TA NOTE	2 alarm relays
DG4G26C2		230Vac			
DG4G2HC2		20÷150Vdc +48Vac			

NOTE: Selectable shunt currents:: 5/10/15/20/25/30/40/50/60/70/75/80/100/120/150/160/200/250/300/400/500/600/700/750/800A 1/1,2/1,5/1,6/2/2,5/3/4/5/6/7/7,5/8kA

Accessories

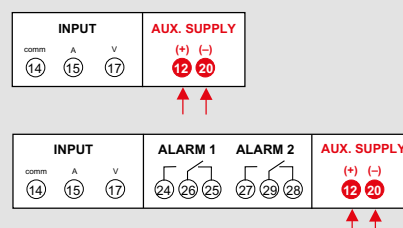
	Description
ADGIP544	Protection front cover IP54 for 96x48mm meters
AV654	Protection front cover IP65 for 96x48mm meters
ADGIP547	Protection front cover IP54 for 72x72mm meters
AV652	Protection front cover IP65 for 72x72mm meters

Technical characteristics

MODEL	DGP96	DGQ72
DISPLAY		
Type of display	7 segments, red LED's	
Digit height	14mm	
N° of display points	1.000 (3 digit)	
Maximum display	999	
Engineering unit	A or kA or V	
Decimal point	automatic	
Overrange	Input > 1,2In or 1,2Un	
Accuracy (referred to full scale)	± 1% + 1 digit	
Display update	2,9s	
INPUT		
Connection	direct or by external CT /5A - /1A	
Rated voltage Un	600V	
Rated current Un	5A – 1A	
Measuring range	10÷600V - 0,1÷6A (In 5A) 0,02÷1,2A (In1A)	
Rated burden	≤ 0.1VA (Un) - ≤ 0.6VA (In)	
Measure	True RMS value	
Waveform	symmetrical wave	
Rated frequency	50Hz	
Working frequency	47÷420Hz	
Continuous overload	1,2In – 1,2Un	
Instantaneous overload	2In/5s	
ALARMS		
Programmables alarms	2	
Set-point (programmable)	0÷120% set-point	
Hysteresis (programmable)	0÷set-point	
Delay (programmable)	1÷60s	
Delay accuracy	±10%	
Reset time	≤ 500ms	
Output	2 relays with SPDT contacts, potential free	
Contacts range	5A 250Vac – 0,5A 100Vdc	
Accuracy (referred to full scale)	±1,5%	
AUXILIARY POWER SUPPLY		
Rated value Uaux AC	24–48–115–230V	
Tolerance	±10% Uaux AC – 40÷60V (Uaux 48V)	
Rated frequency	± 50%Hz	
Working frequency	47÷63Hz	
Rated burden	≤ 3.5VA	
Rated value Uaux DC	20÷150Vdc – 150÷250Vdc	
Rated burden	≤ 2.5W	
ELECTROMAGNETIC COMPATIBILITY		
Emission tests according to	EN/IEC 61326-1	
Immunity tests according to	EN/IEC 61326-1	
ENVIRONMENTAL CONDITIONS		
Nominal temperature	-5÷55°C	
Storage temperature	-40÷70°C	
Suitable for tropical climates	yes	
Max. power dissipation	≤ 3.5W *	≤ 3.5W *
MECHANICAL CHARACTERISTICS		
Flush mounting panel cutout	92x45mm	68x68mm)
Front frame	96x48mm (99x52mm for IP54)	72x72mm (75x75mm for IP54)
Depth	103mm	75mm
Connection	faston 6,3x0,8mm	
Material	self-extinguishing polycarbonate	
Protection degree (EN/IEC 60529)	IP50 (front frame) IP20 (terminals) - Optional: IP54/IP65 ((with kit))	

* for switchboard thermal calculation

WIRING DIAGRAMS



Digital indicators

Flush mounting digital indicators 1000 points - DGP 96 series



DGP96
96x48mm

Unidirectional direct current by external shunt

Item				
DGP96	Vn (aux)	Input	Display	Output
DG4M01L4	24Vac			
DG4M03L4	115Vac			
DG4M06L4	230Vac	0÷60/100 /150mV	Shunt current NOTE	-
DG4M0HL4	20÷150Vdc +48Vac			
DG4M0LL4	150÷250Vdc			

NOTE: Selectable shunt currents: 5/10/15/20/25/30/40/50/60/70/75/80/100/120/150/160/200/250/300/400/500/600/700/750/800A - 1/1,2/1,5/1,6/2/2,5/3/4/5/6/7/7,5/8kA

Accessories

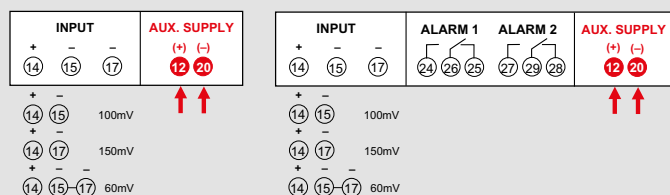
	Description
ADGIP544	Protection front cover IP54 for 96x48mm meters
AV654	Protection front cover IP65 for 96x48mm meters

Technical characteristics

MODEL	DGP96
DISPLAY	
Type of display	7 segments, red LED's
Digit height	14mm
N° of display points	1.000 (3 digit)
Maximum display	999
Engineering unit	A or kA
Decimal point	automatic
Ovrange	Input > 1,2In
Accuracy (referred to full scale)	± 1% + 1 digit
Display update	2,9s
INPUT	
Connection	by shunt/60 - /100 - /150mV
Measuring range	0,02÷12In
Input impedance	≥ 70kΩ(150mV) - ≥ 47kΩ(100mV) ≥ 28kΩ(60mV)
Instantaneous overload	2In/5s
ALARMS	
Programmables alarms	2
Set-point (programmable)	0÷120% set-point
Hysteresis (programmable)	0÷set-point
Delay (programmable)	1÷60s
Delay accuracy	±10%
Reset time	≤ 500ms
Output	2 relays with SPDT contacts, potential free
Contacts range	5A 250Vac - 0,5A 100Vdc
Accuracy (referred to full scale)	±1,5%
AUXILIARY POWER SUPPLY	
Rated value Uaux AC	24 - 48 - 115 - 230V
Tolerance	±10% Uaux AC - 40÷60V (Uaux 48V)
Rated frequency	± 50%Hz
Working frequency	47÷63Hz
Rated burden	≤ 3.5VA
Rated value Uaux DC	20÷150Vdc - 150÷250Vdc
Rated burden	≤ 2.5W
ELECTROMAGNETIC COMPATIBILITY	
Emission tests according to	EN/IEC 61326-1
Immunity tests according to	EN/IEC 61326-1
ENVIRONMENTAL CONDITIONS	
Nominal temperature	-5÷55°C
Storage temperature	-40÷70°C
Suitable for tropical climates	yes
Max. power dissipation	≤ 3.5W *
MECHANICAL CHARACTERISTICS	
Flush mounting panel cutout	92x45mm
Front frame	96x48mm (99x52mm for IP54)
Depth	103mm
Connection	faston 6,3x0,8mm
Material	self-extinguishing polycarbonate
Protection degree (EN/IEC 60529)	IP50 (front frame) IP20 (terminals) - Optional: IP54/IP65 ((with kit))

* for switchboard thermal calculation

WIRING DIAGRAMS



Digital indicators

Flush mounting digital indicators 1000 points - DGP 96 series



DGP96
96x48mm

Unidirectional direct voltage direct connection

Item				
DGP 96	Vn (aux)	Input	Display	Output
DG4N01N6	24Vac	0÷100V 0÷500V	0÷99.9V 0÷500V	-
DG4N03N6	115Vac			
DG4N06N6	230Vac			
DG4N0HN6	20÷150Vdc+48Vac			
DG4N0LN6	150÷250Vdc	0÷100V 0÷500V	0÷99.9V 0÷500V	2 alarm relays
DG4N21N6	24Vac			
DG4N23N6	115Vac			
DG4N26N6	230Vac			
DG4N2HN6	20÷150Vdc+48Vac			
DG4N2LN6	150÷250Vdc			

Accessories

Description

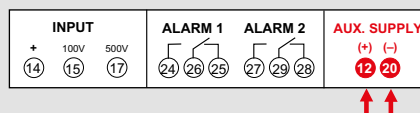
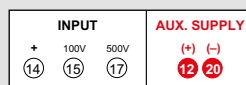
ADGIP544	Protection front cover IP54 for 96x48mm
AV654	Protection front cover IP65 for 96x48mm

Technical characteristics

MODEL	DGP96
DISPLAY	
Type of display	7 segments, red LED's
Digit height	14mm
N° of display points	1.000 (3 digit)
Maximum display	999
Engineering unit	V
Decimal point	automatic
Overrange	Input > 1,2Un
Accuracy (referred to full scale)	± 1% + 1 digit
Display update	2,9s
INPUT	
Connection	direct
Rated voltage Un	100 – 500V
Measuring range	0,02÷1,2Un
Input impedance	≥ 200kΩ(Un 100V) - ≥ 1MΩ(Un 500V)
Continuous overload	1,2Un
ALARMS	
Programmables alarms	2
Set-point (programmable)	0÷120% set-point
Hysteresis (programmable)	0÷set-point
Delay (programmable)	1÷60s
Delay accuracy	±10%
Reset time	≤ 500ms
Output	2 relays with SPDT contacts, potential free
Contacts range	5A 250Vac – 0,5A 100Vdc
Accuracy (referred to full scale)	±1,5%
AUXILIARY POWER SUPPLY	
Rated value Uaux AC	24 – 48 – 115 – 230 – 240V
Tolerance	±10% Uaux AC – 40÷60V (Uaux 48V)
Rated frequency	± 50%Hz
Working frequency	47÷63Hz
Rated burden	≤ 3.5VA
Rated value Uaux DC	20÷150Vdc – 150÷250Vdc
Rated burden	≤ 2.5W
ELECTROMAGNETIC COMPATIBILITY	
Emission tests according to	EN/IEC 61326-1
Immunity tests according to	EN/IEC 61326-1
ENVIRONMENTAL CONDITIONS	
Nominal temperature	-5÷55°C
Storage temperature	-40÷70°C
Suitable for tropical climates	yes
Max. power dissipation	≤ 3.5W
MECHANICAL CHARACTERISTICS	
Flush mounting panel cutout	92x45mm
Front frame	96x48mm (99x52mm for IP54)
Depth	103mm
Connection	faston 6,3x0,8mm
Material	self-extinguishing polycarbonate
Protection degree (EN/IEC 60529)	IP50 (front frame) IP20 (terminals) - Optional IP54/IP65 ((with kit))

* for switchboard thermal calculation

WIRING DIAGRAMS



Digital indicators

Flush mounting digital bargraph - LD 24 series



LD24
96x24mm

Item		Ammeter digital bargraph for measurement by external shunt		
		Bidirectional continuous current measurement display of any directly proportional size		
Vertical	Horizontal	Vn (aux)	Input	Display
LD201BGG11	LD201BGG13	18÷36Vdc	0÷20mA	0÷100%
LD201BGL11	LD201BGL13		4÷20mA	0÷100%

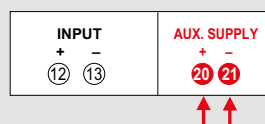
		Voltmeter digital bargraph for measurement by external shunt		
		Bidirectional continuous voltage measurement display of any directly proportional size		
Vertical	Horizontal	Vn (aux)	Input	Display
LD202BNC11	LD202BNC13	18÷36Vdc	0÷5V	0÷100%
LD202BNE11	LD202BNE13		0÷10V	0÷100%

Technical characteristics

MODEL	LD201÷		LD202÷
DISPLAY			
Type of display	red LED's bargraph, 30 segments		
Segment size	2x5mm		
Scale lenght	75mm		
Bar position	horizontal or vertical		
Scale marking	0÷100%		
Overrange indication	blinking of last 10 segments		
Response time	≤ 100ms		
Accuracy	± 1 segment		
INPUT			
Connection	direct		
Rated voltage Un	-	0÷5V 0÷10V	
Rated current In	0÷20mA 4÷20mA	-	
Measuring range	0÷In or -In÷0÷In	0÷Un or -Un÷0÷Un	
Input impedance	-	≥ 10MΩ (Un ≤ 2V) - ≥ 300kΩ (Un > 2V)	
Continuous overload	2In	1.2Un	
Instantaneous overload	10In/5s	2Un/5s	
Voltage drop	400mV (In ≤ 20mA) ≤ 200mV (In > 20mA and 4÷20mA)	-	
AUXILIARY POWER SUPPLY			
Rated value Uaux AC	18÷36Vdc		
Rated burden	≤ 2W		
ELECTROMAGNETIC COMPATIBILITY			
Emission tests according to	EN/IEC 61326-1		
Immunity tests according to	EN/IEC 61326-1		
ENVIRONMENTAL CONDITIONS			
Nominal temperature	-5÷55°C		
Storage temperature	-40÷70°C		
Suitable for tropical climates	si		
Max. power dissipation	≤ 2W *		
MECHANICAL CHARACTERISTICS			
Housing	flush mounting (panel cutout 92x22,2mm)		
Front frame	96x24mm		
Depth	94mm		
Connection	fast-on 3x0,8mm		
Material	self-extinguishing polycarbonate		
Protection degree (EN/IEC 60529)	IP50 (front frame) IP20 (terminals)		

* for switchboard thermal calculation

WIRING DIAGRAMS





ANALOGUE INDICATORS

**Analog measuring instruments
with alarms, robust, reliable,
precise**

The range consists of flush mounting analogue indicators with alarms for AC or DC current and voltage. Instruments are available for insertion via CT, or for insertion via transducers/sensors.

The appliances in this family are:

- Voltmeter
- Ammeter



Analog indicators

Flush mounting analog meters RQ series

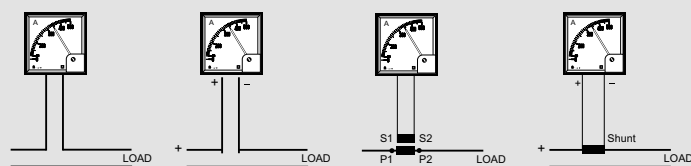
MODEL		RQ48E-RQ72E-RQ96E		RQ48M-RQ72M-RQ96M		RQ48FI RQ72FI RQ96FI	
	RQ48 - 48x48mm RQ72 - 72x72mm RQ96 - 96x96mm						
Type		ammeter (ac)	Voltmeter (ac)	ammeter (dc)	Voltmeter (dc)	Frequencymeter	
DISPLAY							
Scale	interchangeable						
Scale length	90°						
Standard scale marking	0÷In	0÷Un	0÷In or In÷0÷In	0÷Un or Un÷0÷Un	45÷55Hz - 55÷65Hz - 45÷65Hz		
Motor startup marking scale	0÷In÷2In÷0÷In÷5In	-	-	-	-		
INPUT							
Connection	direct or external CT	direct or external VT	direct or external shunt or transducers	direct or transducer or sensor	direct		
Rated current In (direct)*	1÷100A	-	50µA÷60A	-	-		
Rated current In (by CT)	5A or 1A	-	-	-	-		
Rated current In (by shunt)	-	-	1A/60÷600÷60mV	-	-		
Rated current In (by transducer)	-	-	1÷10/20mA - 4 - 20mA	-	-		
Rated voltage Un (direct)*	-	10÷600V	-	10÷600V	100÷440V		
Rated voltage Un (by VT)	-	100÷110V	-	-	-		
Rated voltage Un (by field sensor)	-	-	-	50÷300mV	-		
Rated voltage Un (by transducer)	-	-	-	5 – 10V	-		
Continuous orerload	1,2In	1,2Un	1,2In	1,2Un	-		
Instantaneous orerload	10÷5s	10÷5s	10÷5s	10÷5s	-		
Rating frequency fn	50Hz		-	-	50Hz - 60Hz		
Working frequency	45÷5Hz		-	-	-		
Accuracy (EN/IEC 60051)	class 1,5					class 0,5 class 1 (45÷65Hz)	
Rated burden	≤ 1,1VA	≤ 3,5VA (500V) - ≤ 3VA (300V)	-	10mA with Un - 60÷300mV 1mA with Un 0÷600V	≤ 4VA		
INSULATION (EN/IEC 610÷1)							
Installation category	III						
Pollution degree	2						
Insulation voltage	600V (phase - neutral)						
A.C. voltage test (current input towards voltage input and oroutput)	-						
A.C. voltage test (all circuits and andarth)	4kV r.m.s. 50Hz/5s						
ENVIRONMENTAL CONDITIONS							
Nominal temperature	-25÷50°C						
Storage temperature	-40÷80°C						
Vibration test according to	EN/IEC 600-1						
Shock test according to	EN/IEC 600-1						
MECHANICAL CHARACTERISTICS							
Mounting	flush mounting						
Material	self-extinguishing polycarbonate						
Connection	screw terminal / fast-on 6,3 x 0,8mm						
Protection degree (EN/IEC 60529)	IP52 front frame, IP20 terminals (with protection)						
Weight	120gr (RQ48) - 190gr (RQ72) - 260gr (RQ96)						

* values according to item code

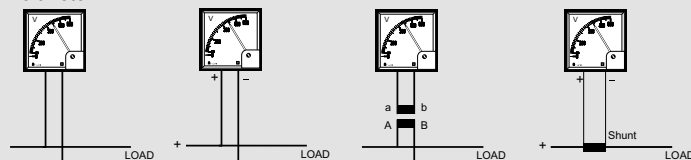
	RQ48T RQ72T RQ96T	RQ48TE RQ72TE RQ96TE	RQ48M-RQ72M-RQ96M + TESI P-TESI Q-TESI PF	
				
	Thermic ammeter	Thermic-electro-magnetic ammeter	Wattmeter Varmeter	Power factor meter
	interchangeable		-	
	90°			
	0÷2In	0÷2In (thermic) 0÷In(electromagnetic)	ind 0,5÷1÷0,5 cap	-
	-	0÷In÷2In	-	
	by transducer		direct or external CT or VT	
	-		-	
	5A		5A or 1A	
	-			
	230÷240÷400÷415 - 440V 100÷110V			
	-			
	1,2In		In - Un	
	10÷5s		2In/5s - 2Un/5s	
	50Hz		50Hz	
	45÷5Hz		47÷63Hz	
	class 1,5	class 1,5 (instantaneous current) - class 3 (thermal current)	class 1,5	
	≤ 2,5VA		voltage ≤ 1VA - current ≤ 0,5VA	
	III			
	2			
	600V (phase - neutral)		300V (phase - neutral)	
	-		2,5kV r.m.s. 50Hz/1min	
	4kV r.m.s. 50Hz/1min			
	-25÷50°C		-10÷55°C	
	-40÷80°C		-25÷70°C	
	EN/IEC 600-1		EN620-11	
	EN/IEC 600-1		EN620-11	
	flush mounting			
	self-extinguishing polycarbonate			
	screw terminal / fast-on 6,3 x 0,8mm			
	IP52 front frame, IP20 terminals (with protection)			
	120ar (RQ48) - 190ar (RQ72) - 260ar (RQ96)			

Wiring diagrams

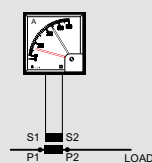
ammeter



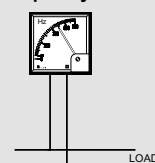
Voltmeter



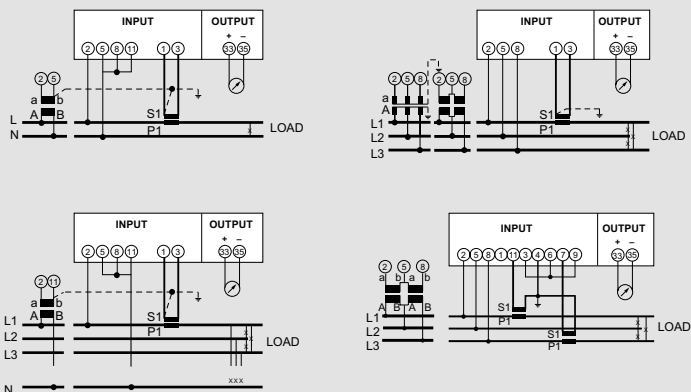
Thermic ammeter



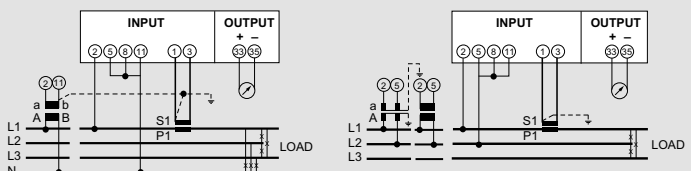
Frequencymeter



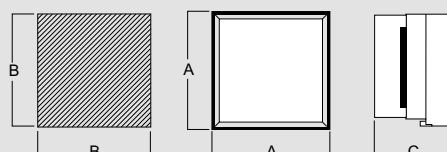
Wattmeter and Varmeter



Power factor meter



Dimensions



Dim. (mm)	A	B	C
RQ48...	48x48	45x45	75
RQ72...	72x72	68x68	69
RQ96...	96x96	92x92	69

Analog indicators

Flush mounting analog meters for alternating current and voltage RQ series



RQ48E - 48x48mm



RQ72E - 72x72mm



RQ96E - 96x96mm



RQ48E - 48x48mm



RQ72E - 72x72mm



RQ96E - 96x96mm

Item			Alternating current ammeters by CT	
			Scale length 90° Accuracy cl.1,5	
RQ48E	RQ72E	RQ96E	Input	Scale
AN12510000	AN22510000	AN32510000	-/5A	*
AN12D1A500	AN22D1A500	AN32D1A500	5/5A	0÷5A
AN1251B100	AN2251B100	AN3251B100	10/5A	0÷10A
AN1251B150	AN2251B150	AN3251B150	15/5A	0÷15A
AN1251B200	AN2251B200	AN3251B200	20/5A	0÷20A
AN1251B250	AN2251B250	AN3251B250	25/5A	0÷25A
AN1251B300	AN2251B300	AN3251B300	30/5A	0÷30A
AN1251B400	AN2251B400	AN3251B400	40/5A	0÷40A
AN1251B500	AN2251B500	AN3251B500	50/5A	0÷50A
AN1251B600	AN2251B600	AN3251B600	60/5A	0÷60A
AN1251B700	AN2251B700	AN3251B700	70/5A	0÷70A
AN1251B750	AN2251B750	AN3251B750	75/5A	0÷75A
AN1251B800	AN2251B800	AN3251B800	80/5A	0÷80A
AN1251C100	AN2251C100	AN3251C100	100/5A	0÷100A
AN1251C120	AN2251C120	AN3251C120	120/5A	0÷120A
AN1251C125	AN2251C125	AN3251C125	125/5A	0÷5A
AN1251C150	AN2251C150	AN3251C150	150/5A	0÷150A
AN1251C160	AN2251C160	AN3251C160	160/5A	0÷160A
AN1251C200	AN2251C200	AN3251C200	200/5A	0÷200A
AN1251C250	AN2251C250	AN3251C250	250/5A	0÷250A
AN1251C300	AN2251C300	AN3251C300	300/5A	0÷300A
AN1251C400	AN2251C400	AN3251C400	400/5A	0÷400A
AN1251C500	AN2251C500	AN3251C500	500/5A	0÷500A
AN1251C600	AN2251C600	AN3251C600	600/5A	0÷600A
AN1251C700	AN2251C700	AN3251C700	700/5A	0÷700A
AN1251C750	AN2251C750	AN3251C750	750/5A	0÷750A
AN1251C800	AN2251C800	AN3251C800	800/5A	0÷800A
AN1251D100	AN2251D100	AN3251D100	1000/5A	0÷1000A
AN1251D120	AN2251D120	AN3251D120	1200/5A	0÷2kA
AN1251D125	AN2251D125	AN3251D125	1250/5A	0÷25kA
AN1251D150	AN2251D150	AN3251D150	1500/5A	0÷5kA
AN1251D160	AN2251D160	AN3251D160	1600/5A	0÷6kA
AN1251D200	AN2251D200	AN3251D200	2000/5A	0÷2kA
AN1251D250	AN2251D250	AN3251D250	2500/5A	0÷2,5kA
AN1251D300	AN2251D300	AN3251D300	3000/5A	0÷3kA
AN1251D400	AN2251D400	AN3251D400	4000/5A	0÷4kA
AN1251D500	AN2251D500	AN3251D500	5000/5A	0÷5kA
AN1251D600	AN2251D600	AN3251D600	6000/5A	0÷6kA
AN1251D800	AN2251D800	AN3251D800	8000/5A	0÷8kA
AN1251E100	AN2251E100	AN3251E100	10000/5A	0÷10kA

Other executions available

2 In overscale: Replace the 6th number (1) of item code with 2

5 In overscale: Replace the 6th number (1) of item code with 5

CT /1A connection: Replace the 5th number (5 or D) of item code with 1

For any special request (for example IP54 degree of protection, tropicalization...) contact the Bticino sales officials directly

Item			Alternating current ammeters direct connection	
RQ48E	RQ72E	RQ96E	Input	Scale
AN12D1A100	AN22D1A100	AN32D1A100	direct	0÷1A
AN12D1A150	AN22D1A150	AN32D1A150		0÷5A
AN12D1A200	AN22D1A200	AN32D1A200		0÷2A
AN12D1A250	AN22D1A250	AN32D1A250		0÷2.5A
AN12D1A300	AN22D1A300	AN32D1A300		0÷3A
AN12D1A400	AN22D1A400	AN32D1A400		0÷4A
AN12D1A500	AN22D1A500	AN32D1A500		0÷5A
AN12D1A600	AN22D1A600	AN32D1A600		0÷6A
AN12D1B100	AN22D1B100	AN32D1B100		0÷10A
AN12D1B150	AN22D1B150	AN32D1B150		0÷15A
AN12D1B200	AN22D1B200	AN32D1B200		0÷20A
AN12D1B250	AN22D1B250	AN32D1B250		0÷25A
AN12D1B300	AN22D1B300	AN32D1B300		0÷30A
AN12D1B400	AN22D1B400	AN32D1B400		0÷40A
AN12D1B500	AN22D1B500	AN32D1B500		0÷50A
AN12D1B600	AN22D1B600	AN32D1B600		0÷60A
AN22D1B800	AN32D1B800			0÷80A
AN22D1C100	AN32D1C100			0÷100A

Other executions available

2 In overscale: Replace the 6th number (1) of item code with 2 (ammeter)

5 In overscale: Replace the 6th number (1) of item code with 5 (ammeter)

			Alternating voltage voltmeters by VT	
RQ48E	RQ72E	RQ96E	Input	Scale
AN15P11111	AN25P11111	AN35P11111	other values	nota 2

Note 2 - in addition to the item code indicate the scale and the VT ratio

			Alternating voltage voltmeters direct Connection	
RQ48E	RQ72E	RQ96E	Input	Scale
AN15DDB100	AN25DDB100	AN35DDB100	direct	0÷10V
AN15DDB150	AN25DDB150	AN35DDB150		0÷15V
AN15DDB250	AN25DDB250	AN35DDB250		0÷25V
AN15DDB300	AN25DDB300	AN35DDB300		0÷30V
AN15DDB400	AN25DDB400	AN35DDB400		0÷40V
AN15DDB600	AN25DDB600	AN35DDB600		0÷60V
AN15DDC100	AN25DDC100	AN35DDC100		0÷100V
AN15DDC150	AN25DDC150	AN35DDC150		0÷150V
AN15DDC200	AN25DDC200	AN35DDC200		0÷200V
AN15DDC250	AN25DDC250	AN35DDC250		0÷250V
AN15DDC300	AN25DDC300	AN35DDC300		0÷300V
AN15DDC400	AN25DDC400	AN35DDC400		0÷400V
AN15DDC500	AN25DDC500	AN35DDC500		0÷500V
AN15DDC600	AN25DDC600	AN35DDC600		0÷600V
AN25DDC750	AN35DDC750			0÷750V
AN25DDC800	AN35DDC800			0÷800V

Analog indicators

Flush mounting analog meters for direct current RQ series



RQ48M - 48x48mm



RQ72M - 72x72mm



RQ96M - 96x96mm

Item			Direct current ammeters by shunt 60mV	
RQ48M	RQ72M	RQ96M	Input	Scale
AN162B6001	AN262B6001	AN362B6001	$\pm 0 \div 60\text{mV}$	Note 1
AN163B6001	AN263B6001	AN363B6001	$60 \div 0 \div 60\text{mV}$	Note 1

Item			Direct current ammeters direct connection	
RQ48M	RQ72M	RQ96M	Input	Scale
AN130B5002	AN230B5002	AN330B5002	direct	$0 \div 50\mu\text{A}$
AN130C1002				$0 \div 100\mu\text{A}$
AN130C6002	AN230C6002	AN330C6002		$0 \div 600\mu\text{A}$
AN138A1002	AN238A1002	AN338A1002		$0 \div 1\text{A}$
AN138A1502	AN238A1502	AN338A1502		$0 \div 5\text{A}$
AN138A2502	AN238A2502	AN338A2502		$0 \div 2.5\text{A}$
AN138A3002	AN238A3002	AN338A3002		$0 \div 3\text{A}$
AN138A4002	AN238A4002	AN338A4002		$0 \div 4\text{A}$
AN138A5002	AN238A5002	AN338A5002		$0 \div 5\text{A}$
AN138A6002	AN238A6002	AN338A6002		$0 \div 6\text{A}$
AN138B1002	AN238B1002	AN338B1002		$0 \div 10\text{A}$
AN138B1502	AN238B1502	AN338B1502		$0 \div 15\text{A}$
AN138B2002	AN238B2002	AN338B2002		$0 \div 20\text{A}$
AN138B2502	AN238B2502	AN338B2502		$0 \div 25\text{A}$
AN138B3002	AN238B3002	AN338B3002		$0 \div 30\text{A}$
AN138B4002	AN238B4002	AN338B4002		$0 \div 40\text{A}$
	AN238B5002	AN338B5002		$0 \div 50\text{A}$
	AN238B6002	AN338B6002		$0 \div 60\text{A}$

Item			Direct current indicators by transducers/sensors	
RQ48M	RQ72M	RQ96M	Input	Scale
AN132A1001	AN232A1001	AN332A1001	$0 \div 1\text{mA}$	Note 2
AN132A5001	AN232A5001	AN332A5001	$0 \div 5\text{mA}$	Note 2
AN132B1001	AN232B1001	AN332B1001	$0 \div 10\text{mA}$	Note 2
AN132B2001	AN232B2001	AN332B2001	$0 \div 20\text{mA}$	Note 2
AN133A1001	AN233A1001	AN333A1001	$1 \div 0 \div 1\text{mA}$	Note 2
AN133A5001	AN233A5001	AN333A5001	$0 \div 5\text{mA}$	Note 2
AN133A1001	AN233B1001	AN333B1001	$10 \div 0 \div 10\text{mA}$	Note 2
AN133B2001	AN233B2001	AN333B2001	$0 \div 20\text{mA}$	Note 2
AN134M0001	AN234M0001	AN334M0001	$4 \div 20\text{mA}$	Note 2
AN135V0001	AN235V0001	AN335V0001	$0 \div 4 \div 20\text{mA}$	Note 2
AN13SA1001	AN23SA1001	AN33SA1001	$\pm 0 \div 1\text{mA}$	Note 3

Note 1 - In addition to the item code indicate the scale corresponding to the input

Note 2 - In addition to the item code indicate the scale corresponding to the input

Note 3 - In addition to the item code indicate the scale moved to zero (ie 20-0-100kW 100kW = 1mA)

For any special request (for example IP54 degree of protection, tropicalization...) contact the Bticino sales officials directly

Analog indicators

Flush mounting analog meters for direct voltage RQ series



RQ48M - 48x48mm



RQ72M - 72x72mm



RQ96M - 96x96mm



RQ48FI - 48x48mm



RQ72FI - 72x72mm



RQ96FI - 96x96mm

Item			Direct voltage voltmeters direct connection	
RQ48M	RQ72M	RQ96M	Input	Scale
AN164B6001	AN264B6001	AN364B6001	direct	Note 1
AN164B1502	AN264B1502	AN364B1502		0÷15V
AN164B2502	AN264B2502	AN364B2502		0÷25V
AN164B3002	AN264B3002	AN364B3002		0÷30V
AN164B4002	AN264B4002	AN364B4002		0÷40V
AN164B6002	AN264B6002	AN364B6002		0÷60V
AN164B8002	AN264B8002	AN364B8002		0÷80V
AN164C1002	AN264C1002	AN364C1002		0÷100V
AN164C1502	AN264C1502	AN364C1502		0÷150V
AN164C2002	AN264C2002	AN364C2002		0÷200V
AN164C2502	AN264C2502	AN364C2502		0÷250V
AN164C3002	AN264C3002	AN364C3002		0÷300V
AN164C4002	AN264C4002	AN364C4002		0÷400V
AN164C5002	AN264C5002	AN364C5002		0÷500V
AN164C6002	AN264C6002	AN364C6002		0÷600V

Item			Direct voltage indicators by transducers/sensors/shunt	
RQ48M	RQ72M	RQ96M	Input	Scale
AN162B5001	AN262B5001	AN362B5001	0÷50mV	Note 1
AN162B6001	AN262B6001	AN362B6001	0÷60mV	
AN162C1001	AN262C1001	AN362C1001	0÷100mV	
AN162C1501	AN262C1501	AN362C1501	0÷150mV	
AN163B5001	AN263B5001	AN363B5001	50÷0÷50mV	
AN163B6001	AN263B6001	AN363B6001	60÷0÷60mV	
AN163C1001	AN263C1001	AN363C1001	100÷0÷100mV	
AN163C1501	AN263C1501	AN363C1501	150÷0÷150mV	
AN164A5001	AN264A5001	AN364A5001	0÷5V	
AN164B1001	AN264B1001	AN364B1001	0÷10V	
AN165A5001	AN265A5001	AN365A5001	5÷0÷5V	
AN165B1001	AN265B1001	AN365B1001	10÷0÷10V	

Note - 1 In addition to the item code indicate the scale corresponding to the input.

Flush mounting analog meters for frequency RQ series

Item			Frequency meters direct or by VT	
RQ48FI	RQ72FI	RQ96FI	Input	Scale
AN1712	AN2711	AN3711	100V	45÷55Hz
AN1713	AN2712	AN3712	1÷115V	
AN1714	AN2713	AN3713	230-240V	
	AN2714	AN3714	40÷15V	
	AN2715	AN3715	440V	45÷65Hz
AN1722	AN2721	AN3721	100V	
AN1723	AN2722	AN3722	1÷115V	
AN1724	AN2723	AN3723	230-240V	
	AN2724	AN3724	40÷15V	
	AN2725	AN3725	440V	55÷65Hz
AN1732	AN2731	AN3731	100V	
AN1733	AN2732	AN3732	1÷115V	
AN1734	AN2733	AN3733	230-240V	
	AN2734	AN3734	40÷15V	
	AN2735	AN3735	440V	

Analog indicators

Flush mounting analog meters for power meters RQ series



Item			Wattmeters indicator	
RQ48M	RQ72M	RQ96M	Input	Scale
AN132A1001	AN232A1001	AN332A1001	0÷1mA	Note 1
AN133A1001	AN233A1001	AN333A1001	1÷0÷1mA	
AN13SA1001	AN23SA1001	AN33SA1001	-÷0÷1mA	

Note 1 - In addition to the item code indicate the start and end of scale values in W, kW, MW for wattmeters, var, kvar, Mvar for varmeters

		TESI P Active power transducer TESI Q Reactive power transducer				
TESI P	TESI Q	Line	Input A*	Input V	Output	Setting
TN2P1PA12A	-	1F	5A	100V	0÷1mA	Note 2
TN2P1PA22A	-			110V		
TN2P1PA32A	-			230V		
TN2P1PA42A	-			240V		
TN2P2PA12A	TN2Q2PA12A			100V		
TN2P2PA22A	TN2Q2PA22A	3P balanced	5A	110V	1÷1mA	Note 2
TN2P2PA52A	TN2Q2PA52A			400V		
TN2P2PA62A	TN2Q2PA62A			415V		
TN2P2PA72A	TN2Q2PA72A			440V		
TN2P3PA12A	TN2Q3PA12A			100V		
TN2P3PA22A	TN2Q3PA22A	3P+N balanced	5A	110V	1÷1mA	Note 2
TN2P3PA52A	TN2Q3PA52A			400V		
TN2P3PA62A	TN2Q3PA62A			415V		
TN2P3PA72A	TN2Q3PA72A			440V		
TN2P4PA12A	TN2Q4PA12A			100V		
TN2P4PA22A	TN2Q4PA22A	3P unbalanced	5A	110V	1÷1mA	Note 2
TN2P4PA52A	TN2Q4PA52A			400V		
TN2P4PA62A	TN2Q4PA62A			415V		
TN2P4PA72A	TN2Q4PA72A			440V		
TN2P5PA12A	TN2Q5PA12A			100V		
TN2P5PA22A	TN2Q5PA22A	3F+N unbalanced	5A	110V	1÷1mA	Note 2
TN2P5PA52A	TN2Q5PA52A			400V		
TN2P5PA62A	TN2Q5PA62A			415V		
TN2P5PA72A	TN2Q5PA72A			440V		

* Input from CT/1A Replace the 9th number (2) of the item code with 1

Note 2 - In addition to the item code indicate the CT ratio, the ratio of the TV, if established and the power value corresponding to the output 1mA in W, kW, MW for wattmeters, var, kvar, Mvar for varmeters (the value must be between 50% and 120% of rated output Pn/Qn - single-phase line $P_n = V \times I$ and three-phase line $P_n/Q_n = \sqrt{3} \times V \times I$ where V is the rated voltage or the primary of the TV and I to Nominal value of current or the CT primary.

Note - In addition to the item code indicate the start and end of scale values ind 0,5÷1÷0,5 cap

Flush mounting analog meters for power factor meters RQ series



Item			Power factor meter	
RQ48M	RQ72M	RQ96M	Input	Scale
AN133A1001	AN233A1001	AN333A1001	1÷0÷1mA	Note

Note - In addition to the item code indicate the start and end of scale values ind 0,5÷1÷0,5 cap

TESI PF Power factor transducer					
	Line	Input A*	Input V	Output	Setting
TN2C11A12A	1P or 3P+N balanced	5A	100V	1÷1mA	ind 0÷1÷0,5 cap
TN2C11A22A			110V		
TN2C11A32A			230V		
TN2C11A42A			240V		
TN2C21A12A	3P balanced	5A	100V	1÷1mA	ind 0÷1÷0,5 cap
TN2C21A22A			110V		
TN2C21A52A			400V		
TN2C21A62A			415V		
TN2C21A72A			440V		

* Input from CT/1A replace the 9th number (2) of the item code with 1

Analog indicators

Interchangeable scale for RQ series



RQ48 - 48x48mm



RQ72 - 72x72mm



RQ96 - 96x96mm

Item			Interchangeable scale for A.C. ammeters by CT	
RQ48E	RQ72E	RQ96E	Input	Scale
SC12D1A500	SC22D1A500	SC32D1A500	5/5A	0÷5A
SC1251B100	SC2251B100	SC3251B100	10/5A	0÷10A
SC1251B150	SC2251B150	SC3251B150	15/5A	0÷15A
SC1251B200	SC2251B200	SC3251B200	20/5A	0÷20A
SC1251B250	SC2251B250	SC3251B250	25/5A	0÷25A
SC1251B300	SC2251B300	SC3251B300	30/5A	0÷30A
SC1251B400	SC2251B400	SC3251B400	40/5A	0÷40A
SC1251B500	SC2251B500	SC3251B500	50/5A	0÷50A
SC1251B600	SC2251B600	SC3251B600	60/5A	0÷60A
SC1251B700	SC2251B700	SC3251B700	70/5A	0÷70A
SC1251B750	SC2251B750	SC3251B750	75/5A	0÷75A
SC1251B800	SC2251B800	SC3251B800	80/5A	0÷80A
SC1251C100	SC2251C100	SC3251C100	100/5A	0÷100A
SC1251C120	SC2251C120	SC3251C120	120/5A	0÷120A
SC1251C125	SC2251C125	SC3251C125	125/5A	0÷5A
SC1251C150	SC2251C150	SC3251C150	150/5A	0÷150A
SC1251C160	SC2251C160	SC3251C160	160/5A	0÷160A
SC1251C200	SC2251C200	SC3251C200	200/5A	0÷200A
SC1251C250	SC2251C250	SC3251C250	250/5A	0÷250A
SC1251C300	SC2251C300	SC3251C300	300/5A	0÷300A
SC1251C400	SC2251C400	SC3251C400	400/5A	0÷400A
SC1251C500	SC2251C500	SC3251C500	500/5A	0÷500A
SC1251C600	SC2251C600	SC3251C600	600/5A	0÷600A
SC1251C700	SC2251C700	SC3251C700	700/5A	0÷700A
SC1251C750	SC2251C750	SC3251C750	750/5A	0÷750A
SC1251C800	SC2251C800	SC3251C800	800/5A	0÷800A
SC1251D100	SC2251D100	SC3251D100	1000/5A	0÷1000A
SC1251D120	SC2251D120	SC3251D120	1200/5A	0÷2kA
SC1251D125	SC2251D125	SC3251D125	1250/5A	0÷25kA
SC1251D150	SC2251D150	SC3251D150	1500/5A	0÷5kA
SC1251D160	SC2251D160	SC3251D160	1600/5A	0÷6kA
SC1251D200	SC2251D200	SC3251D200	2000/5A	0÷2kA
SC1251D250	SC2251D250	SC3251D250	2500/5A	0÷2.5kA
SC1251D300	SC2251D300	SC3251D300	3000/5A	0÷3kA
SC1251D400	SC2251D400	SC3251D400	4000/5A	0÷4kA
SC1251D500	SC2251D500	SC3251D500	5000/5A	0÷5kA
SC1251D600	SC2251D600	SC3251D600	6000/5A	0÷6kA
SC1251D800	SC2251D800	SC3251D800	8000/5A	0÷8kA
SC1251E100	SC2251E100	SC3251E100	10000/5A	0÷10kA

Other executions available

2In overscale: Replace the 6th number (1) of item code with 2

5In overscale: Replace the 6th number (1) of item code with 5

Input from CT/1A: Replace the 5th number (5 or D) of the item code with 1

Item			Interchangeable scale for direct voltage and current indicators connection through transducers/sensors/shunt	
RQ48E	RQ72E	RQ96E	Input	Scale
SC130L0000	SC230L0000	SC330L0000	various in dc	Note 1
SC134M0000	SC234M0000	SC334M0000	4÷20mA	
SC135V0000	SC235V0000	SC335V0000	0÷4÷20mA	

Note 1 - In addition to the item code indicate the scale corresponding to the input

Accessories	
AV653	Description
	Protection front cover IP65 for 96x96mm

Analog indicators

Flush mounting analog meters AQ series

MODEL	AQ48Mrad -AQ72Mrad - AQ96Mrad		AQ48M - AQ72M - AQ96M		AQ72FI - AQ96FI	AQ48M -AQ72M-AQ96M + TESI P-TESI Q-TESI PF	
							
Type	ammeter (ac)	Voltmeter (ac)	ammeter (dc)	Voltmeter (dc)	Frequencyme- ter	Wattmeter Varmeter	Cosfimeter
DISPLAY							
Scale	interchangeable					-	
Scale length	240°					240°	
Standard scale marking	0÷In	0÷Un	0÷In or In÷0÷In	0÷Un or Un÷0÷Un	45÷55Hz - 55÷65Hz - 45÷65Hz	ind 0,5÷1÷0,5 cap	-
Motor startup marking scale	0÷In÷2In÷0÷In÷5In	-	-	-	-	-	
INPUT							
Connection	direct or external CT	direct or external VT	direct or external shunt or trans- ducers	direct or trans- ducer or sensor	direct	direct or by external CT/TV	
Rated current In (direct)*	1÷100A	-	50µA÷60A	-	-	-	
Rated current In (by CT)	5A or 1A	-	-	-	-	5A or 1A	
Rated current In (by shunt)	-	-	1A/60mV ÷ 6000A/60mV	-	-	-	
Rated current In (by transducer)	-	-	1÷10/20mA - 4 - 20mA	-	-	-	
Rated voltage Un (direct)*	-	10÷600V	-	10÷600V	100÷440V	230÷240÷400÷415 - 440V	
Rated voltage Un (by VT)	-	100÷110V	-	-	-	100÷110V	
Rated voltage Un (da by field sensor)	-	-	-	50÷300mV	-	-	
Rated voltage Un (by transducer)	-	-	-	5 – 10V	-	-	
Continuous overload	1,2In	1,2Un	1,2In	1,2Un	-	In - Un	
Instantaneous overload	10÷5s	10÷5s	10÷5s	10÷5s	-	2In/5s - 2Un/5s	
Rating frequency fn	50Hz		-	-	50Hz - 60Hz	50Hz	
Working frequency	45÷5Hz		-	-	-	47÷63Hz	
Accuracy (EN/IEC 60051)	class 1,5				class 0,5 class 1 (45÷65Hz)	class 1,5	
Rated burden	≤ 1,1VA	≤ 3,5VA (500V) - ≤ 3VA (300V)	-	10mA with Un - 60÷300mV 1mA with Un 0÷600V	≤ 4VA	voltage ≤ 1VA - current ≤ 0,5VA	
INSULATION (EN/IEC 610÷1)							
Installation category	III					III	
Pollution degree	2					2	
Insulation voltage	600V (phase - neutral)					300V (phase - neutral)	
A.C. voltage test (current input towards voltage input and output)	-					2,5kV r.m.s. 50÷1min	
A.C. voltage test (all circuits and earth)	4kV r.m.s. 50÷5s					4kV r.m.s. 50÷1min	
ENVIRONMENTAL CONDITIONS							
Nominal temperature	-25÷50°C					-10÷55°C	
Storage temperature	-40÷80°C					-25÷70°C	
Vibration test according to	EN/IEC 600-1					EN620-11	
Shock test according to	EN/IEC 600-1					EN620-11	
MECHANICAL CHARACTERISTICS							
Mounting	flush mounting					flush mounting	
Material	self-extinguishing polycarbonate					self-extinguishing polycarbonate	
Connection	screw terminal / fast-on 6,3 x 0,8mm					screw terminal / fast-on 6,3 x 0,8mm	
Protection degree (EN/IEC 60529)	IP52 front frame, IP20 terminals (with protection)					IP52 front frame, IP20 terminals (with protection)	
Weight	120gr (AQ48) - 190gr (AQ72) - 260gr (AQ96)					120gr (AQ48) - 190gr (AQ72) - 260gr (AQ96)	

Analog indicators

Flush mounting analog meters for alternating current AQ series with rectifier accessory



AQ48Mrad - 48x48mm



AQ72Mrad - 72x72mm



AQ96Mrad - 96x96mm



AQ48Mrad - 48x48mm



AQ72Mrad - 72x72mm



AQ96Mrad - 96x96mm

Item			Alternating current ammeters by CT	
AQ48Mrad	AQ72Mrad	AQ96Mrad	Input	Scale
AN51110000	AN61110000	AN71110000	-/1A	*
AN51510000	AN61510000	AN71510000	-/5A	*
AN51D1A500	AN61D1A500	AN71D1A500	5/5A	0÷5A
AN5151B100	AN6151B100	AN7151B100	10/5A	0÷10A
AN5151B150	AN6151B150	AN7151B150	15/5A	0÷15A
AN5151B200	AN6151B200	AN7151B200	20/5A	0÷20A
AN5151B250	AN6151B250	AN7151B250	25/5A	0÷25A
AN5151B300	AN6151B300	AN7151B300	30/5A	0÷30A
AN5151B400	AN6151B400	AN7151B400	40/5A	0÷40A
AN5151B500	AN6151B500	AN7151B500	50/5A	0÷50A
AN5151B600	AN6151B600	AN7151B600	60/5A	0÷60A
AN5151B700	AN6151B700	AN7151B700	70/5A	0÷70A
AN5151B750	AN6151B750	AN7151B750	75/5A	0÷75A
AN5151B800	AN6151B800	AN7151B800	80/5A	0÷80A
AN5151C100	AN6151C100	AN7151C100	100/5A	0÷100A
AN5151C120	AN6151C120	AN7151C120	120/5A	0÷120A
AN5151C125	AN6151C125	AN7151C125	125/5A	0÷125A
AN5151C150	AN6151C150	AN7151C150	150/5A	0÷150A
AN5151C160	AN6151C160	AN7151C160	160/5A	0÷160A
AN5151C200	AN6151C200	AN7151C200	200/5A	0÷200A
AN5151C250	AN6151C250	AN7151C250	250/5A	0÷250A
AN5151C300	AN6151C300	AN7151C300	300/5A	0÷300A
AN5151C400	AN6151C400	AN7151C400	400/5A	0÷400A
AN5151C500	AN6151C500	AN7151C500	500/5A	0÷500A
AN5151C600	AN6151C600	AN7151C600	600/5A	0÷600A
AN5151C700	AN6151C700	AN7151C700	700/5A	0÷700A
AN5151C750	AN6151C750	AN7151C750	750/5A	0÷750A
AN5151C800	AN6151C800	AN7151C800	800/5A	0÷800A
AN5151D100	AN6151D100	AN7151D100	1000/5A	0÷1kA
AN5151D120	AN6151D120	AN7151D120	1200/5A	0÷2kA
AN5151D125	AN6151D125	AN7151D125	1250/5A	0÷25kA
AN5151D150	AN6151D150	AN7151D150	1500/5A	0÷5kA
AN5151D160	AN6151D160	AN7151D160	1600/5A	0÷6kA
AN5151D200	AN6151D200	AN7151D200	2000/5A	0÷2kA
AN5151D250	AN6151D250	AN7151D250	2500/5A	0÷2.5kA
AN5151D300	AN6151D300	AN7151D300	3000/5A	0÷3kA
AN5151D400	AN6151D400	AN7151D400	4000/5A	0÷4kA
AN5151D500	AN6151D500	AN7151D500	5000/5A	0÷5kA
AN5151D600	AN6151D600	AN7151D600	6000/5A	0÷6kA
AN5151D800	AN6151D800	AN7151D800	8000/5A	0÷8kA
AN5151E100	AN6151E100	AN7151E100	10000/5A	0÷10kA

Item			Alternating current ammeters direct connection	
AQ48Mrad	AQ72Mrad	AQ96Mrad	Input	Scale
AN51D1A500	AN61D1A500	AN71D1A500	direct	0÷5A

Alternating voltage voltmeters by VT

Item			Input		Scale
AQ48Mrad	AQ72Mrad	AQ96Mrad	other values		nota 2
AN54P11111	AN64P11111	AN74P11111			

Note 2 - in addition to the Cat. Nos. indicate the scale and the VT ratio.

Alternating voltage voltmeters direct connection

AQ48Mrad	AQ72Mrad	AQ96Mrad	Input		Scale
AN54DDC300	AN64DDC300	AN74DDC300	direct		0÷300V
AN54DDC500	AN64DDC500	AN74DDC500	direct		0÷500V

Other executions available

2 In overscale: replace the 6th number (1) of item code with 2

5 In overscale: replace the 6th number (1) of item code with 5

Input from CT/1A: replace the 5th number (5 or D) of the item code with 1

Analog indicators

Flush mounting analog meters for direct current AQ series



AQ48M - 48x48mm

AQ72M - 72x72mm

AQ96M - 96x96mm

AQ48M - 48x48mm
AQ72M - 72x72mm
AQ96M - 96x96mmAQ72FI - 72x72mm
AQ96FI - 96x96mm

Item			Direct current ammeters by shunt 60mV	
AQ48M	AQ72M	AQ96M	Input	Scale
AN562B6001	AN662B6001	AN762B6001	-÷0÷60mV	Note1
AN563B6001	AN663B6001	AN763B6001	50÷0÷50mV	Note1



AQ48M - 48x48mm

AQ72M - 72x72mm

AQ96M - 96x96mm

Item			Direct current indicators by transducers/sensors	
AQ48M	AQ72M	AQ96M	Input	Scale
AN532A1001	AN632A1001	AN732A1001	0÷1mA	Note 2
AN532A5001	AN632A5001	AN732A5001	0÷5mA	Note 2
AN532B2001	AN632B2001	AN732B2001	0÷20mA	Note 2
AN533A1001	AN633A1001	AN733A1001	1÷0÷1mA	Note 2
AN533A5001	AN633A5001	AN733A5001	5÷0÷5mA	Note 2
AN533B2001	AN633B2001	AN733B2001	20÷0÷20mA	Note 2
AN534M0001	AN634M0001	AN734M0001	4÷20mA	Note 2
AN535V0001	AN635V0001	AN735V0001	0÷4÷20mA	Note 2
AN53SA1001	AN63SA1001	AN73SA1001	-÷0÷1mA	Note 3

Item			Direct voltage voltmeters direct connection	
			Direct indication of input voltage Indication of any quantity, directly proportional to signals coming from transducers, sensors or shunts Moving coil Input direct 10÷600V Input from 50÷500mV shunt Input by transducer or 5 – 10V sensors Lateral or central zero version Scale length 240° Accuracy cl.1,5	
AQ48M	AQ72M	AQ96M	Input	Scale
AN564B1502	AN664B1502	AN764B1502	direct	0÷15V
AN564B4002	AN664B4002	AN764B4002		0÷40V
AN564C1502	AN664C1502	AN764C1502		0÷150V
AN564C3002	AN664C3002	AN764C3002		0÷300V
AN564C5002	AN664C5002	AN764C5002		0÷500V

Item			Direct voltage indicators by transducers/sensors/shunt	
AQ48M	AQ72M	AQ96M	Input	Scale
AN562B5001	AN662B5001	AN762B5001	0÷50mV	Note 1
AN562B6001	AN662B6001	AN762B6001	0÷60mV	
AN562C1001	AN662C1001	AN762C1001	0÷100mV	
AN562C1501	AN662C1501	AN762C1501	0÷150mV	
AN563B5001	AN663B5001	AN763B5001	50÷0÷50mV	
AN563B6001	AN663B6001	AN763B6001	60÷0÷60mV	
AN563C1001	AN663C1001	AN763C1001	100÷0÷100mV	
AN563C1501	AN663C1501	AN763C1501	150÷0÷150mV	
AN564A5001	AN664A5001	AN764A5001	0÷5V	
AN564B1001	AN664B1001	AN764B1001	0÷10V	
AN565A5001	AN665A5001	AN765A5001	5÷0÷5V	
AN565B1001	AN665B1001	AN765B1001	10÷0÷10V	

Item			Frequency meters direct or by VT	
			Direct indication of input frequencies Voltage 100÷440V Moving coil Scale length 240° Accuracy cl.0,5 (cl.1 45÷65Hz)	
AQ72FI	AQ96FI		Input	Scale
AN6711	AN7711		100V	45÷55Hz
AN6712	AN7712		1÷115V	
AN6713	AN7713		230-240V	
AN6714	AN7714		40÷15V	
AN6731	AN7731		100V	55÷65Hz
AN6732	AN7732		1÷115V	
AN6733	AN7733		230-240V	
AN6734	AN7734		40÷15V	

Other executions available:

Input/central zero scale Replace the 5th number (4) of the item code with 1

Note 1: In addition to the item code indicate the scale to zero shifted eg 20÷0÷100A
100A = 60mV

Note 2: In addition to the item code indicate the scale corresponding to the input

Note 3: In addition to the item code indicate the scale moved to zero (ie 20-0-
100kW 100kW = 1mA)

Analog indicators

Flush mounting analog meters for power meters AQ series



Item			Wattmeters indicator	
AQ48M	AQ72M	AQ96M	Input	Scale
AN532A1001	AN632A1001	AN732A1001	0÷1mA	note 1
AN533A1001	AN633A1001	AN733A1001	1÷0÷1mA	
AN53SA1001	AN63SA1001	AN73SA1001	±0÷1mA	

Note 1: In addition to the item code indicate the start and end of scale values in W, kW, MW for wattmeters, var, kvar, Mvar for varmeters

		TESI P Active power transducer TESI Q Reactive power transducer				
TESI P	TESI Q	Line	Input A*	Input V	Output	Setting
TN2P1PA12A TN2P1PA22A TN2P1PA32A TN2P1PA42A	-	1P	5A	100V 110V 230V 240V	±0÷1mA	Note 2
TN2P2PA12A TN2P2PA22A TN2P2PA52A TN2P2PA62A TN2P2PA72A	TN2Q2PA12A TN2Q2PA22A TN2Q2PA52A TN2Q2PA62A TN2Q2PA72A	3P balanced	5A	100V 110V 400V 415V 440V	1÷1mA	Note 2
TN2P3PA12A TN2P3PA22A TN2P3PA52A TN2P3PA62A TN2P3PA72A	TN2Q3PA12A TN2Q3PA22A TN2Q3PA52A TN2Q3PA62A TN2Q3PA72A	3P+N balanced	5A	100V 110V 400V 415V 440V	1÷1mA	Note 2
TN2P4PA12A TN2P4PA22A TN2P4PA52A TN2P4PA62A TN2P4PA72A	TN2Q4PA12A TN2Q4PA22A TN2Q4PA52A TN2Q4PA62A TN2Q4PA72A	3P unbalanced	5A	100V 110V 400V 415V 440V	1÷1mA	Note 2
TN2P5PA12A TN2P5PA22A TN2P5PA52A TN2P5PA62A TN2P5PA72A	TN2Q5PA12A TN2Q5PA22A TN2Q5PA52A TN2Q5PA62A TN2Q5PA72A	3P+N unbalanced	5A	100V 110V 400V 415V 440V	1÷1mA	Note 2

* Input from CT/1A Replace the 9th number (2) of the item code with 1

Note 2: In addition to the item code indicate the CT ratio, the ratio of the TV, if established and the power value corresponding to the output 1mA in W, kW, MW for wattmeters, var, kvar, Mvar for varmeters (the value must be between 50% and 120% of rated output Pn/Qn - single-phase line $P_n = V \times I$ and three-phase line $P_n/Q_n = \sqrt{3} \times V \times I$ where V is the rated voltage or the primary of the TV and I to nominal value of current or the CT primary.

Flush mounting analog meters for power factor meters AQ series



Item			Power Factor	
AQ48M	AQ72M	AQ96M	Input	Scale
AN533A1001	AN633A1001	AN733A1001	0÷1mA	note

Note: In addition to the item code indicate the start and end of scale values in 0,5÷1÷0,5 cap

TESI PF Power Factor transducer					
	Line	Input A*	Input V	Output	Setting
TN2C11A12A TN2C11A22A TN2C11A32A TN2C11A42A	1P or 3P+N balanced	5A	100V 110V 230V 240V	1÷1mA	ind 0÷1÷0,5 cap
TN2C21A12A TN2C21A22A TN2C21A52A TN2C21A62A TN2C21A72A	3P balanced	5A	100V 110V 400V 415V 440V	1÷1mA	ind 0÷1÷0,5 cap

* Input from CT/1A Replace the 9th number (2) of the item code with 1

Analog indicators

Interchangeable scale for AQ series



Scale AQ48 - 48x48mm



Scale AQ72 - 72x72mm



Scale AQ96 - 96x96mm



Scale AQ48 - 48x48mm



Scale AQ72 - 72x72mm



Scale AQ96 - 96x96mm

Item			Interchangeable scale for A.C. ammeters by CT	
AQ48Mrad	AQ72Mrad	AQ96Mrad	Input	Scale
SC51D1A500	SC71D1A500	SC71D1A500	5/5A	0÷5A
SC5151B100	SC6151B100	SC7151B100	10/5A	0÷10A
SC5151B150	SC6151B150	SC7151B150	15/5A	0÷15A
SC5151B200	SC6151B200	SC7151B200	20/5A	0÷20A
SC5151B250	SC6151B250	SC7151B250	25/5A	0÷25A
SC5151B300	SC6151B300	SC7151B300	30/5A	0÷30A
SC5151B400	SC6151B400	SC7151B400	40/5A	0÷40A
SC5151B500	SC6151B500	SC7151B500	50/5A	0÷50A
SC5151B600	SC6151B600	SC7151B600	60/5A	0÷60A
SC5151B700	SC6151B700	SC7151B700	70/5A	0÷70A
SC5151B750	SC6151B750	SC7151B750	75/5A	0÷75A
SC5151B800	SC6151B800	SC7151B800	80/5A	0÷80A
SC5151C100	SC6151C100	SC7151C100	100/5A	0÷100A
SC5151C120	SC6151C120	SC7151C120	120/5A	0÷120A
SC5151C125	SC6151C125	SC7151C125	125/5A	0÷5A
SC5151C150	SC6151C150	SC7151C150	150/5A	0÷150A
SC5151C160	SC6151C160	SC7151C160	160/5A	0÷160A
SC5151C200	SC6151C200	SC7151C200	200/5A	0÷200A
SC5151C250	SC6151C250	SC7151C250	250/5A	0÷250A
SC5151C300	SC6151C300	SC7151C300	300/5A	0÷300A
SC5151C400	SC6151C400	SC7151C400	400/5A	0÷400A
SC5151C500	SC6151C500	SC7151C500	500/5A	0÷500A
SC5151C600	SC6151C600	SC7151C600	600/5A	0÷600A
SC5151C700	SC6151C700	SC7151C700	700/5A	0÷700A
SC5151C750	SC6151C750	SC7151C750	750/5A	0÷750A
SC5151C800	SC6151C800	SC7151C800	800/5A	0÷800A
SC5151D100	SC6151D100	SC7151D100	1000/5A	0÷1000A
SC5151D120	SC6151D120	SC7151D120	1200/5A	0÷2kA
SC5151D125	SC6151D125	SC7151D125	1250/5A	0÷25kA
SC5151D150	SC6151D150	SC7151D150	1500/5A	0÷5kA
SC5151D160	SC6151D160	SC7151D160	1600/5A	0÷6kA
SC5151D200	SC6151D200	SC7151D200	2000/5A	0÷2kA
SC5151D250	SC6151D250	SC7151D250	2500/5A	0÷2.5kA
SC5151D300	SC6151D300	SC7151D300	3000/5A	0÷3kA
SC5151D400	SC6151D400	SC7151D400	4000/5A	0÷4kA
SC5151D500	SC6151D500	SC7151D500	5000/5A	0÷5kA
SC5151D600	SC6151D600	SC7151D600	6000/5A	0÷6kA
SC5151D800	SC6151D800	SC7151D800	8000/5A	0÷8kA
SC5151E100	SC6151E100	SC7151E100	10000/5A	0÷10kA

Other executions available

2 In overscale: replace the 6th number (1) of item code with 2

5 In overscale: replace the 6th number (1) of item code with 5

Input from CT/1A: replace the 5th number (5 or D) of the item code with 1

Item			Interchangeable scale for direct voltage and current indicators connection through transducers/sensors/shunt	
AQ48M	AQ72M	AQ96M	Input	Scale
SC530L0000	SC630L0000	SC730L0000	various in dc	Note 1
SC534M0000	SC634M0000	SC734M0000	4÷20mA	
SC535V0000	SC635V0000	SC735V0000	0÷4÷20mA	

Note 1 In addition to the item code indicate the scale corresponding to the input

Accessories	
AV653	Description
	Protection front cover IP65 for 96x96mm

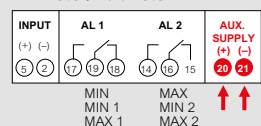
Analog indicators

Flush mounting analog meters with alarms AL96 series

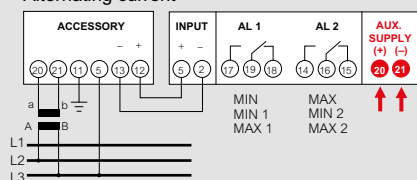
MODEL	AL96DC		AL96MI	
 AL96 - 96x96mm				
Type	ammeter (dc)	Voltmeter (dc)	Insulator meter (ac)	Insulator meter (dc)
DISPLAY				
Scale length	90°			
Standard scale marking	0÷In	0÷Un	$\infty \div 5 \div 0.5M\Omega \div 0$ $\infty \div 2 \div 0.2M\Omega \div 0$	0.2÷0MΩ $\infty \div 200 \div 20 \div 0k\Omega$
INPUT				
Connection	direct	direct or by shunt	direct	direct
Rated current In	1 – 5 - 10÷20 – 4÷20mA	-	-	-
Rated voltage Un	-	60mV÷200V	up to 690V	24 - 120÷220Vdc
Rating frequency	-	-	50 Hz	-
Working frequency	-	-	47÷63Hz	-
Continuous orverload	1,2In	1,2Un	-	-
Instantaneous orverload	5÷5s	-	-	-
Rated burden	-	-	-	-
Input impedance	-	-	-	-
Voltage drop	≤ 100mV	-	-	-
OUTPUT				
Type	2 relays with SPDT contacts, potential free			
Contacts range	230V 4A cosφ 0,4 – 24V 4Adc			
Programmables alarms	2 (MIN+MAX or MIN1+MIN2 or MAX1+MAX2)			
AUXILIARY POWER SUPPLY				
Rated value Uaux ac	115 – 230V			
Tolerance	±10% Uaux			
Rating frequency	50Hz			
Working frequency	47÷63Hz			
Rated burden	≤ 3VA			
ENVIRONMENTAL CONDITIONS				
Nominal temperature	-10÷55°C			
Storage temperature	-40÷70°C			
Suitable for tropical climates	yes			
Max. power dissipation	≤ 2.5W			
MECHANICAL CHARACTERISTICS				
Mounting	flush mounting (panel cutout 92x92mm)			
Front frame	96x96mm (99x99mm with protection IP54)			
Depth	103mm			
Connection	faston 6,3x0,8mm			
MATERIAL	self-extinguishing polycarbonate			
Protection degree (EN/IEC 60529)	IP50 (front frame) IP20 (terminals) optional IP54 (with kit ADGIP549)			
Weight	450 gr			

Wiring diagrams

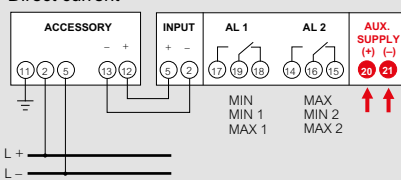
Ammeter/Voltmeter



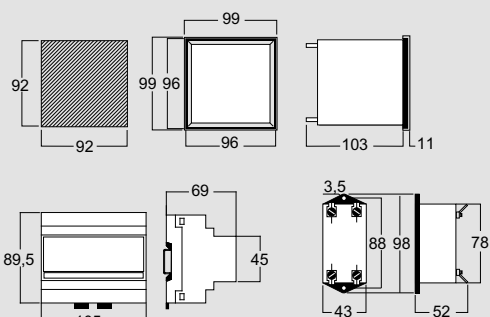
Alternating current



Direct current



Dimensions



Analog indicators

Flush mounting analog meters with alarms for direct current and voltage AL96 series



AL96DC - 96x96mm



AL96MI - 96x96mm

Item	Direct voltage voltmeter unidirectional direct or by transducers/field sensors			
ANT6P133	Input 0÷60mV <>200V	Scale Note 1	Alarm type Min and Max	Auxiliary power supply 230Vac

AL96MI - A.C. insulation meter for IT networks				
ANTN1131 ANTN1132 ANTN1133 ANTN1141 ANTN1142 ANTN1143	Input up to 690Vac	Scale $\infty \div 5M\Omega \div 0$	Alarm type min & max	Auxiliary power supply 100Vac
			min & max	115Vac
			min & max	230Vac
			2 min	100Vac
			2 min	115Vac
			2 min	230Vac
ANTN1242 ANTN1243		$\infty \div 2M\Omega \div 0$	2 min	115Vac
			2 min	230Vac

Item	AL96MI - D.C. insulation meter for IT networks			
ANTN2232 ANTN2233 ANTN2242 ANTN2243	Input 24Vdc	Scale $\infty \div 2M\Omega \div 0$	Alarm type min & max min & max 2 min 2 min	Auxiliary power supply 115Vac 230Vac 115Vac 230Vac

Accessories	
ADGIP549 AV653	Description Protection front cover IP54 for 96x96mm Protection front cover IP65 for 96x96mm

Note 1: In addition to the item code indicate the scale corresponding to the input

Analog indicators

Flush mounting double synchronizing meters and sequencymeters



RQ72SE 72x72mm



RQ96SE 96x96mm



D4SE

Item **RQ72SE Flush mounting LED sequencymeter 72X72mm**

ANQB1	Input 100÷440V	Frequency 50Hz
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Item **RQ96SE Flush mounting LED sequencymeter 96X96mm**

ANRB1	Input 100÷440V	Frequency 50-60Hz
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Item **D4SE Modular LED sequencymeter**

AN9B1	Input 100÷440V	Frequency 50-60Hz
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SYNCRO 96L 96x96mm



SYNCRO 96C 96x96mm

Item **SYNCRO 96L - LED synchronoscope direct or by VT**

ANRJ1	Input 1÷115V	Frequency 50-60Hz
ANRJ2	230-240V	50-60Hz
ANRJ3	40÷40V	50-60Hz

Additional executions:
IP54 front Add 3 to the end of the item code

Item **SYNCRO 96C - LED synchronoscope with synchronizing output relay**

	Input	Auxiliary power supply	Frequency
ANTJ11	30÷150V	18÷36Vdc	35÷80Hz
ANTJ21	30÷150V	95÷6Vac	35÷80Hz
ANTJ10	110÷620V	18÷36Vdc	35÷80Hz
ANTJ30	110÷620V	360÷440Vac	35÷80Hz

Technical characteristics

MODEL	RQ72SE	RQ96SE	D4SE
DISPLAY			
Type display	red LED's		
Phase presence	LED "L1-L2-L3" on		
Correct cyclic sequence	"CORRECT" LED on		
Wrong cyclic sequence	"INCORRECT" LED on		
Phase failure	"CORRECT and INCORRECT" LED's contemporaneously on with turning off of LED corresponding to failing phase (L1 or L2 orL3)		
Input			
Line voltage Un	100÷440V		
Rating frequency	50-60Hz		
Working frequency	47÷63Hz		
Rated burden	≤ 2VA		
ENVIRONMENTAL CONDITIONS			
Nominal temperature	-25÷50°C		
Storage temperature	-40÷80°C		
Vibration test according to	EN/IEC 600-1 par. 7.6		
Shock test according to	EN/IEC 600-1 par. 7.6		
MECHANICAL CHARACTERISTICS			
Housing	flush mounting (panel cutout 68x68mm)	flush mounting (panel cutout 92x92mm)	4 modules DIN43880 (35mm)
Connection	screw terminal / faston 6,3x0,8mm		screw terminal cable up to 4mm ²
Material	self-extinguishing polycarbonate		
Protection degree (EN/IEC 60529)	IP52 front frame IP20 terminals (with terminal covers)	IP50 front frame IP20 terminals	

MODEL	SYNCRO 96L	SYNCRO 96C
DISPLAY		
Scale length	360°	360°
INPUT		
Connection	direct or by VT	direct
Rated voltage Un (direct)	230-240÷40÷40V	110÷620V
Rated voltage Un (by VT)	100÷5V	30÷150V
Rating frequency	50Hz - 60Hz	50Hz - 60Hz
Working frequency	47÷63Hz	35÷80Hz
Rated burden	3VA (100V)	< 500µA
ENVIRONMENTAL CONDITIONS		
Nominal temperature	-5÷55°C	-10÷65°C
Storage temperature	-40÷80°C	-40÷70°C
Vibration test according to	EN/IEC 600-1 par. 7.6	
Shock test according to	EN/IEC 600-1 par. 7.6	
MECHANICAL CHARACTERISTICS		
Mounting	flush mounting (panel cutout 92x92mm)	
Front frame	96x96mm (99x99mm with protection IP54)	
Depth	105mm	81.5mm
Connection	screw terminal/ fast-on 6,3x0,8mm	
Material	self-extinguishing polycarbonate	
Protection degree (EN/IEC 60529)	IP52 (front frame) IP20 (terminals)	

Analog indicators

Hourmeters



Item			Flush mounting hourmeters		
RQ480	RQ720	RQ960	Voltage	Frequency	Scale
ANPA1	ANQA1	ANRA1	1÷115V	50Hz	00000,00h
ANPA3	ANQA3	ANRA3	230-240V	50Hz	
ANPA5	ANQA5	ANRA5	40÷15V	50Hz	
A÷6	A÷6	A÷6	24V	50Hz	
ANPA7	ANQA7	ANRA7	48V	50Hz	
ANPA2	ANQA2	ANRA2	1÷115V	60Hz	000000,0h
ANPA4	ANQA4	ANRA4	230-240V	60Hz	
ANPAV	-	-	24V	60Hz	
ANPA8	ANQA8	ANRA8	10÷80V	dc	
ANPA9	ANQA9	ANRA9	110V	dc	

Additional executions:

Tropicalization: Add 1 to the end of the item code

IP54 front: add 3 to the end of the item code

Item		Flush mounting hourmeters		
R360	C580	Voltage	Frequency	Scale
ANXA3	-	230-240V	50Hz	00000.00h
ANXA6	-	24V	50Hz	
ANXAV	-	24V	60Hz	
-	ANZA8	10-80V	dc	000000,0h

Flush mounting hourmeters			
D20	Voltage	Frequency	Scale
ANYA1	1÷115V	50Hz	00000.00h
ANYA3	230-240V	50Hz	
ANYA6	24V	50Hz	
ANYAV	24V	60Hz	

3-phase switches amperometric and voltmeter



Item		C48 - Flush mounting switches
C48	Description	
AV104	amperometric single-pole to 3 gears (12A-690V)	
AV105	voltmeter for 3 voltages (12A-690V)	
AV106	voltmeter for 3 phase voltages, 3 phase-neutral (12A-690V)	
CD3	Description	
AV114	amperometric single-pole to 3 gears (12A-690V)	
AV115	voltmeter for 3 voltages (12A-690V)	
AV116	voltmeter for 3 phase voltages, 3 phase-neutral (12A-690V)	



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