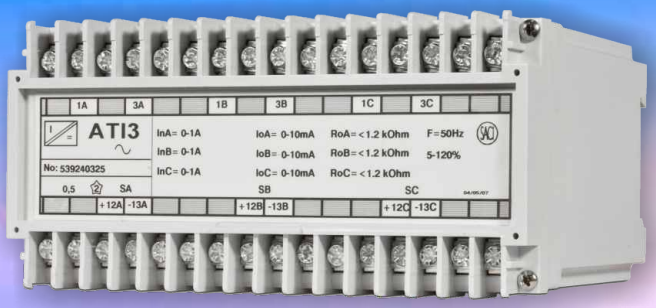
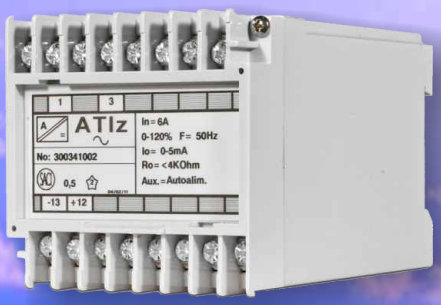
MEASURING TRANSDUCERS





MEASURING TRANSDUCERS

S.A. DE CONSTRUCCIONES INDUSTRIALES

CONTENTS

PROGRAMMABLE MEASURING TRANSDUCER

A measuring Transducer is a device which transforms the value of any physical magnitude in D.C. Signal (current or voltage, standardized)

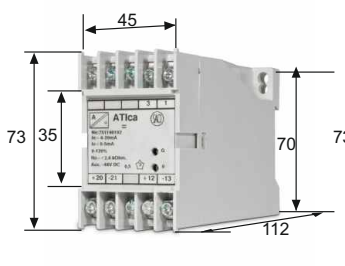
GENERAL FEATURES

All electrical parameters.
Direct current.
Alternating current.
Temperature (ºC).
Resistance.

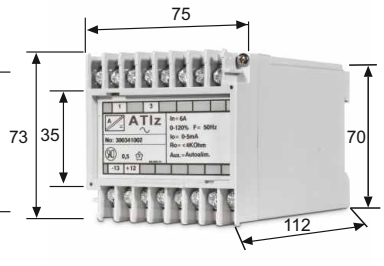
DIN casings: AT Serie
DIN RAIL casings: AM Serie

DIMENSIONS

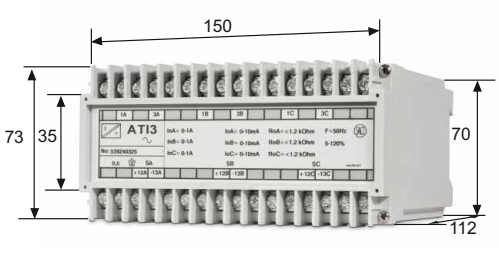
AT-0



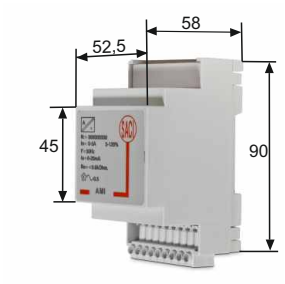
AT-1



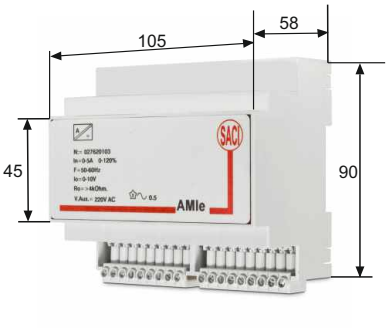
AT-2



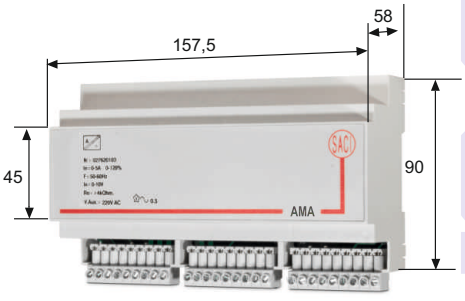
AM- 1 (3 MODULES)



AM- 2 (6 MODULES)



AM- 3 (9 MODULES)

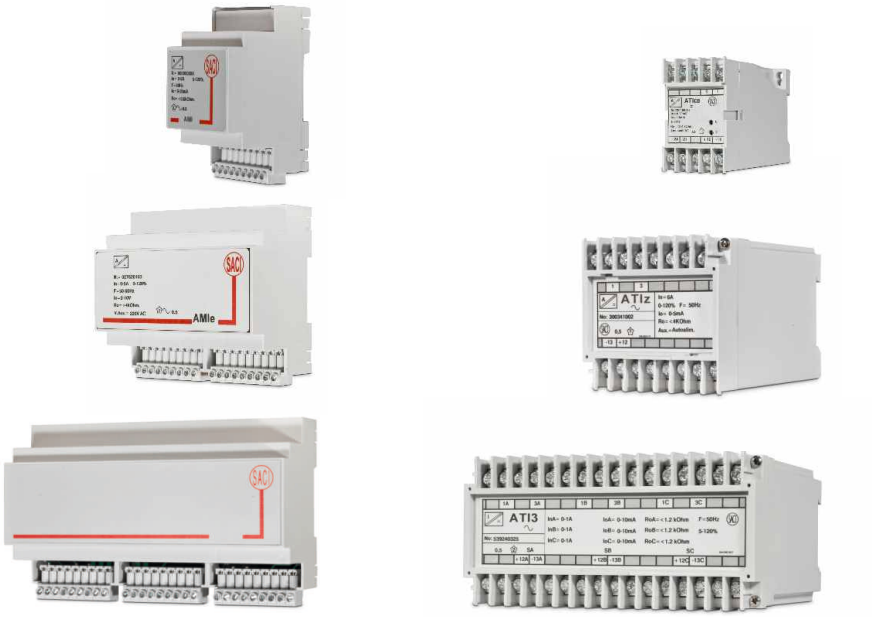


STANDARDS

EN 60688	Electrical measuring transducers.
IEC 255	Insulation test.
EN 60068	Environment and vibration test.
EN 60801	Electromagnetic compatibility.
IEC 1000	Electromagnetic compatibility.
EN 61010	Safety requirements.
EN 61036	Static meters for active energy, classes 1 and 2.
EN 61268	Static meters for reactive energy, classes 2 and 3.
EN 60529	Casing protection class (IP Code).
EN 50081	Electromagnetic compatibility - Emission.
EN 50082	Electromagnetic compatibility - Immunity.
DIN 43864	Pulse interface.
UL 94	Flammability test.
IEC 38	Standard voltage and current values.
IEC 664	Insulation coordination.

GENERAL TECHNICAL SPECIFICATIONS

Insulation	3,7 kV, 50 Hz, 1 min. Double insulation Installation category III Pollution degree 2		
Impulse voltage strength	5 kV, 1,2/50 µs.		
High frequency disturbances (HF)	2,5 kV, 1 MHz.		
Overloads			
	Current input	**Serie AT**	**Serie AM**
		2 In continuously	2 In continuously
		20 In, 3 s.	20 In, 1 s.
		40 In, 1 s.	-
		30 In 3 s. (on request)	-
		60 In 1 s. (on request)	-
	Voltage input	1.2 Vn continuously 2 Vn, 10 s.	1.2 Vn continuously 2 Vn, 10 s.
Accuracy	0,5 – 0,2		
Reference temperature	23 ºC ±1 ºC		
Temperature coefficient	≤0.003 % / C		
Operating temperature	-10 ºC a +55 C		
Storage temperature	-30 ºC a +70 C		
Linearity error	≤0,1 %		
Ripple (peak to peak)	≤0,3 %		
Response time	≤200 ms (0-90 %Io).		
Operating frequency	50, 60 and 400 Hz		
Variation with frequency			
50-60 Hz	A,W not affected		
50-60 Hz	V not affected		
50-60 Hz	V 0,1 %/Hz		
50-60 Hz	Var, cos ϕ 1 %/Hz		



AM AT

ORDERING INFORMATION

1.- Type of measuring transducer: AT…, or AM
For example: a) ATI
b) AMW

2.- Input range of the measuring parameter (A,V, Hz, W, Var, ϕ , Wh, Varh, Ω , ºC).
For example: a) 0-5 A
b) 45-55 Hz
c) 10 kW

3.- Current output or Voltage output (mA or V).
For example: a) 0-5 mA
b) 4-20 mA
c) 10 V

The two last data define the Transfer curves (see page MT21).

4.- Auxiliary voltage: AC or DC.(if it is required)

5.- Data

Measuring transducers for frequency:	Rated voltage.
Measuring transducers for active power:	Rated current and rated voltage between phases.
Measuring transducers for phase angle:	Rated current and rated voltage between phases.
Measuring transducers for energy:	Rated current and rated voltage between phases and number of output pulses per kWh.

INPUTS (*)

TYPE 1 -	Alternating current (A.C.)	
	In	**5 A or 1 A**
	Burden (per circuit)	0,2 VA
		1,5 VA (Self supplied)
TYPE 2 -	Alternating voltage (A.C.)	
	Vn	**100, 110, 115, 230, 400 or 440 V**
	Burden (per circuit)	(Vn 1mA) VA
		1,5 VA (Self supplied voltage and frequency transducers)
TYPE 3 -	Direct current (D.C.)	
	In	**100 µA ÷ 5 A**
	Burden (per circuit)	In 60 mV
TYPE 4 -	Direct voltage (D.C.)	
	Vn	**60 mV ÷ 440 V**
	Burden (per circuit)	Vn 1 mA
TYPE 5 -	Frequency (Hz)	
	Fn	**50, 60 or 400 Hz**

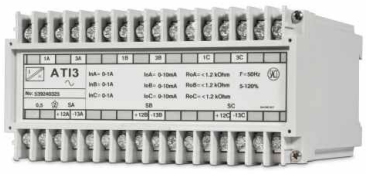
OUTPUTS (*)

TYPE 1 -	Current output (D.C.)	
	Io	**1, 5, 10 or 20 mA**
	Load resistance	Ro (kΩ) = 12 V / Io (mA)
	Saturation limit	2 Io
TYPE 2 -	Current output (D.C.)	
	Io (auxiliary voltage required)	**4-20 mA**
	Load resistance	Ro (kΩ) = 12 V / Io (mA)
	Saturation limit	2 Io
TYPE 3 -	Voltage output	
	Vo (auxiliary voltage required)	**1, 5 or 10 V**
		1-5 or 2-10 V
	Load resistance	Ro (kΩ) = Vo / 10 mA
	Saturation limit	2 Vo
	Max. open circuit voltage	30 V
TYPE 4 -	Pulse output	
	Type	Relay
		Normally open (NO)
		Voltage free
	Frequency	200 ÷ 6000 Imp./h
	Pulse lenght	200 ÷ 300 ms
	Voltage	250 V
	Maximum current	8 A

AUXILIARY VOLTAGES (*)

TYPE 1 -	A.C. auxiliary voltage	
	Aux. V	**115, 230, 400 or 440 V ±20 %**
	Burden	See model.
TYPE 2 -	DC. auxiliary voltage	
	Aux. V	**12, 24, 48, 110 or 220 V ±20 %**
	Burden	See model.

(*) Other technical specifications, on request



ALTERNATING CURRENT

MODEL	Types (*)			Dimens.	Aux.Voltage	% In	Transfer. (I/O)	Diagram	THD In
	I	O	Aux						
ATI	1	1	-	AT-1	Self supplied	5-120%	A	Nr. 01	< 0,5%
AMI	1	1	-	AM-1	Self supplied	5-120%	A	Nr. 01	< 0,5%
ATIz	1	1	-	AT-1	Self supplied	0-120%	A	Nr. 01	< 0,5%
ATI3 (Triple)	1	1	-	AT-2	Self supplied	5-120%	A	Nr. 06	< 0,5%
ATIz3 (Triple)	1	1	-	AT-2	Self supplied	0-120%	A	Nr. 06	< 0,5%
ATIa	1	1-2-3	1-2	AT-1	1,5VA/1,5W	0-120%	A,B,G	Nr. 02	< 0,5%
AMIa	1	1-2-3	1-2	AM-2	1,5VA/1,5W	0-120%	A,B,G	Nr. 02	< 0,5%
ATIa3 (Triple)	1	1-2-3	1-2	AT-2	4,5VA/4,5W	0-120%	A,B,G	Nr. 03	< 0,5%
ATIe (RMS)	1	1-2-3	1-2	AT-2	2VA/2W	0-120%	A,B,G	Nr. 02	(**)
AMIe (RMS)	1	1-2-3	1-2	AM-2	2VA/2W	0-120%	A,B,G	Nr. 02	(**)

(*) I: Input; O: Output; Aux: Auxiliary voltage; Type: See page MT-08

(**) Not affected by THD

ALTERNATING VOLTAGE

MODEL	Types (*)			Dimens.	Aux.Voltage	% Un	Transfer. (I/O)	Diagram	THD In
	I	O	Aux						
ATU	2	1	-	AT-1	Self supplied	40-120%	A	Nr. 05	< 0,5%
AMU	2	1	-	AM-1	Self supplied	40-120%	A	Nr. 05	< 0,5%
ATU3 (Triple)	2	1	-	AT-2	Self supplied	40-120%	A	Nr. 09	< 0,5%
ATUa	2	1-2-3	1-2	AT-1	1,5VA/1,5W	0-120%	A	Nr. 04	< 0,5%
AMUa	2	1-2-3	1-2	AM-2	1,5VA/1,5W.	0-120%	A	Nr. 04	< 0,5%
ATUa3 (Triple)	2	1-2-3	1-2	AT-2	4,5VA/4,5W	0-120%	A,B,G	Nr. 12	< 0,5%
ATUe (RMS)	2	1-2-3	1-2	AT-2	2VA/2W	0-120%	A,B,G	Nr. 04	(**)
AMUe (RMS)	2	1-2-3	1-2	AM-2	2VA/2W	0-120%	A,B,G	Nr. 04	(**)
ATUVn	2	1	-	AT-1	Self supplied	0±120%	A,B,G	Nr. 05	<0,5%

(*) I: Input; O: Output; Aux: Auxiliary voltage; Type: See page MT-08

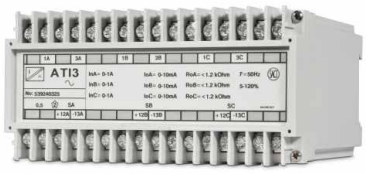
(**) Not affected by THD

FREQUENCY

MODEL	Types (*)			Dimens.	Aux.Voltage	% Vn	% Fn	Transfer. (I/O)	Diagram	THD In
	I	O	Aux							
ATF	2-5	1-2-3	-	AT-1	Self supplied	80-120%	90-110%	G,H	Nr. 05	< 20%
AMF	2-5	1-2-3	-	AM-1	Self supplied	80-120%	90-110%	G,H	Nr. 05	< 20%
ATFa	2-5	1-2-3	1-2	AT-1	3VA/3W	10-120%	10-120%	A,G,H	Nr. 04	(**)
AMFa	2-5	1-2-3	1	AM-1	3VA/3W	10-120%	10-120%	A,G,H	Nr. 04	(**)

(*) I: Input; O: Output; Aux: Auxiliary voltage; Type: See page MT-08

(**) Not affected by THD



ACTIVE POWER

SINGLE-PHASE, ALTERNATING CURRENT

MODEL	Types (*)			Dimens.	Aux.Voltage	% Pn	Transfer. (I/O)	Diagram	THD Vn In
	I	O	Aux						
ATW	1-2	1-2-3	1-2	AT-2	3VA/3W	0-144%	A, B, C, D, E, F	Nr. 07	< 20%
AMW	1-2	1-2-3	1	AM-3	3VA/3W	0-144%		Nr. 07	< 20%

BALANCED THREE-PHASE, ALTERNATING CURRENT

MODEL	Types (*)			Dimens.	Aux.Voltage	% Pn	Transfer. (I/O)	Diagram	THD Vn In
	I	O	Aux						
ATWI - 3 Wire	1-2	1-2-3	1-2	AT-2	3VA/3W	0-144%	A, B, C, D, E, F	Nr. 17	< 20%
AMWI - 3 Wire	1-2	1-2-3	1	AM-3	3VA/3W	0-144%		Nr. 17	< 20%
ATWIn - 4 Wire	1-2	1-2-3	1-2	AT-2	3VA/3W	0-144%	A, B, C, D, E, F	Nr. 14	< 20%
AMWIn - 4 Wire	1-2	1-2-3	1	AM-3	3VA/3W	0-144%		Nr. 14	< 20%

UNBALANCED THREE-PHASE, ALTERNATING CURRENT

MODEL	Types (*)			Dimens.	Aux.Voltage	% Pn	Transfer. (I/O)	Diagram	THD Vn In
	I	O	Aux						
ATWII - 3 Wire	1-2	1-2-3	1-2	AT-2	3,5VA/3,5W	0-144%	A, B, C, D, E, F	Nr. 18	< 20%
AMWII - 3 Wire	1-2	1-2-3	1	AM-3	3,5VA/3,5W	0-144%		Nr. 18	< 20%
ATW3 - 4 Wire	1-2	1-2-3	1-2	AT-2	3,5VA/3,5W	0-144%	A, B, C, D, E, F	Nr. 15	< 20%
AMW3 - 4 Wire	1-2	1-2-3	1	AM-3	3,5VA/3,5W	0-144%		Nr. 15	< 20%

(*) I: Input; O: Output; Aux: Auxiliary voltage; Type: See page MT-08

REACTIVE POWER

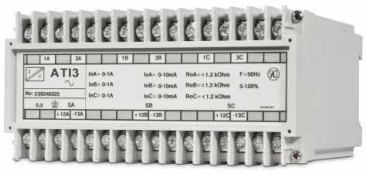
SINGLE-PHASE, ALTERNATING CURRENT

MODEL	Types (*)			Dimens.	Aux.Voltage	% Pn	Transfer. (I/O)	Diagram	THD Vn In
	I	O	Aux						
ATWr	1-2	1-2-3	1-2	AT-2	3VA/3W	0-144%	A, B, C, D, E, F	Nr. 07	< 0,5%
AMWr	1-2	1-2-3	1	AM-3	3VA/3W	0-144%		Nr. 07	< 0,5%

BALANCED THREE-PHASE, ALTERNATING CURRENT

MODEL	Types (*)			Dimens.	Aux.Voltage	% Pn	Transfer. (I/O)	Diagram	THD Vn In
	I	O	Aux						
ATWIr - 3 Wire	1-2	1-2-3	1-2	AT-2	3VA/3W	0-144%	A, B, C, D, E, F	Nr. 17	< 0,5%
AMWIr - 3 Wire	1-2	1-2-3	1	AM-3	3VA/3W	0-144%		Nr. 17	< 0,5%
ATWInr - 4 Wire	1-2	1-2-3	1-2	AT-2	VA/3W	0-144%	A, B, C, D, E, F	Nr. 14	< 0,5%
AMWInr - 4 Wire	1-2	1-2-3	1	AM-3	3VA/3W	0-144%		Nr. 17	< 0,5%

(*) I: Input; O: Output; Aux: Auxiliary voltage; Type: See page MT-08



REACTIVE POWER

UNBALANCED THREE-PHASE, ALTERNATING CURRENT

MODEL	Types (*)			Dimens.	Aux.Voltage	% Pn	Transfer. (I/O)	Diagram	THD Vn In
	I	O	Aux						
ATWIIr - 3 Wire	1-2	1-2-3	1-2	AT-2	3,5VA/3,5W	0-144%	A, B, C, D, E, F	Nr. 18	< 0,5%
AMWIIr - 3 Wire	1-2	1-2-3	1	AM-3	3,5VA/3,5W	0-144%		Nr. 18	< 0,5%
ATW3r - 4 Wire	1-2	1-2-3	1-2	AT-2	3,5VA/3,5W	0-144%	A, B, C, D, E, F	Nr. 15	< 0,5%
AMW3r - 4 Wire	1-2	1-2-3	1	AM-3	3,5VA/3,5W	0-144%		Nr. 15	< 0,5%

(*) I: Input; O: Output; Aux: Auxiliary voltage; Type: See page MT-08

COMBINED MEASURING TRANSDUCERS FOR ACTIVE AND REACTIVE POWER

Insulation between outputs, 5kV, 50 Hz, 1 min.

SINGLE-PHASE, ALTERNATING CURRENT

MODEL	Types (*)			Dimens.	Aux.Voltage	% Pn	Transfer. (I/O)	Diagram	THD Vn In
	I	O	Aux (ª)						
ATWV	1-2	1-2-3	1-2	AT-2	4VA/4W	0-144%	A, B, C, D E, F	Nr. 08	Pn 20% Qn< 0,5%

(ª) No es posible 220V C.C

BALANCED THREE-PHASE, ALTERNATING CURRENT

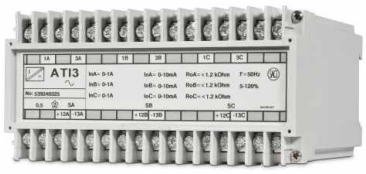
MODEL	Types (*)			Dimens.	Aux.Voltage	% Pn	Transfer. (I/O)	Diagram	THD Vn In
	I	O	Aux						
ATWVI - 3 Wire	1-2	1-2-3	1-2	AT-2	4VA/4W	0-144%	A, B, C, D E, F	Nr. 27	Pn 20% Qn< 0,5%
ATWIn - 4 Wire	1-2	1-2-3	1-2	AT-2	4VA/4W	0-144%	A, B, C, D E, F	Nr. 13	Pn 20% Qn< 0,5%

UNBALANCED THREE-PHASE, ALTERNATING CURRENT

MODEL	Types (*)			Dimens.	Aux.Voltage	% Pn	Transfer. (I/O)	Diagram	THD Vn In
	I	O	Aux						
ATWVII - 3 Wire	1-2	1-2-3	1-2	AT-2	4VA/4W	0-144%	A, B, C, D E, F	Nr. 24	Pn 20% Qn< 0,5%
ATWV3 - 4 Wire	1-2	1-2-3	1	AT-2	4VA/4W	0-144%	A, B, C, D E, F	Nr. 21	Pn 20% Qn< 0,5%

(*) I: Input; O: Output; Aux: Auxiliary voltage; Type: See page MT-08

COMBINED MEASURING TRANSDUCERS FOR POWER + ENERGY
See PROGRAMMABLE MEASURING TRANSDUCER, Cp2000 MODEL



DIRECT CURRENT

MODEL	Types (*)			Dimens.	Aux.Voltage	% In	Transfer. (I/O)	Diagram
	I	O	Aux					
ATIca	3	1-2-3	1-2	AT-1	4VA/4W	0-120%	A, B, C, D, E, F	Nr. 11
ATIca (a)	3	1-2-3	2	AT-0	4VA/4W	0-120%		Nr. 11

(*) I: Input; O: Output; Aux: Auxiliary voltage; Type: See page MT-08

DIRECT VOLTAGE

MODEL	Types (*)			Dimens.	Aux.Voltage	% Vn	Transfer. (I/O)	Diagram
	I	O	Aux					
ATUca	4	1-2-3	1-2	AT-1	4VA/4W	0-120%	A, B, C, D, E, F	Nr. 10
ATUca (a)	4	1-2-3	2	AT-0	4VA/4W	0-120%		Nr. 10

(*) I: Input; O: Output; Aux: Auxiliary voltage; Type: See page MT-08

PHASE ANGLE

SINGLE PHASE, ALTERNATING CURRENT

MODEL	Types (*)			Dimens.	Aux.Voltage	% Φ	Transfer. (I/O)	Diagram	THD In
	I	O	Aux						
ATA	1-2	1-2-3	1-2	AT-2	3VA/3W	-60-0-60	C, D, F	Nr. 07	< 20%
AMA	1-2	1-2-3	1	AM-3	3VA/3W	-90-0-90		Nr. 07	< 20%

BALANCED THREE-PHASE, ALTERNATING CURRENT

MODEL	Types (*)			Dimens.	Aux.Voltage	% Φ	Transfer. (I/O)	Diagram	THD In
	I	O	Aux						
ATAI	1-2	1-2-3	1-2	AT-2	3VA/3W	-60-0-60	C, D, F	Nr. 22	< 20%
AMAI	1-2	1-2-3	1	AM-3	3VA/3W	-90-0-90		Nr. 22	< 20%

PHASE ANGLE BETWEEN VOLTAGE

MODEL	Types (*)			Dimens.	Aux.Voltage	% Φ	Transfer. (I/O)	Diagram	THD In
	I	O	Aux						
ATAU	2	1-2-3	1	AT-2	3VA/3W	-180-0-180	C, D, F	Nr. 23	< 20%

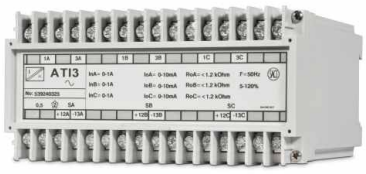
(*) I: Input; O: Output; Aux: Auxiliary voltage; Type: See page MT-08

ALTERNATING CURRENT. BIDIRECTIONAL CURRENT (R.M.S)

MODEL	Types (*)			Dimens.	Aux.Voltage	% In	Transfer. (I/O)	Diagram	THD In
	I	O	Aux						
ATIB Single-phase	1-2	1-2-3	1-2	AT-2	3VA/3W	0-120%	C, D, F	Nr. 07	(**)
ATIBI Balanced three-phase	1-2	1-2-3	1	AT-2	3VA/3W	0-120%		Nr. 17	(**)

(*) I: Input; O: Output; Aux: Auxiliary voltage; Type: See page MT-08

(**) Not affected by THD



RESISTANCE (0-100; 0-3000Ω)

MODEL	Types (*)			Dimens.	Aux.Voltage	% Rn	Transfer. (I/O)	Diagram
	I	O	Aux					
ATS2	100%	1-2-3	1-2	AT-1	2VA/2W	0-100 %	A, B, G	Nr. 25

(*) I: Input; O: Output; Aux: Auxiliary voltage; Type: See page MT-08

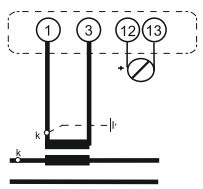
TEMPERATURE SENSOR PT100 (0-100; 0-600 ºC)

MODEL	Types (*)			Dimens.	Aux.Voltage	% Tn	Transfer. (I/O)	Diagram
	I	O	Aux					
ATS1	100%	1-2-3	1-2	AT-1	2VA/2W	0-100 %	A, B, D, F, G	Nr. 25

(*) I: Input; O: Output; Aux: Auxiliary voltage; Type: See page MT-08

CONNECTION DIAGRAMS

Nº 01



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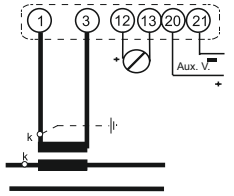

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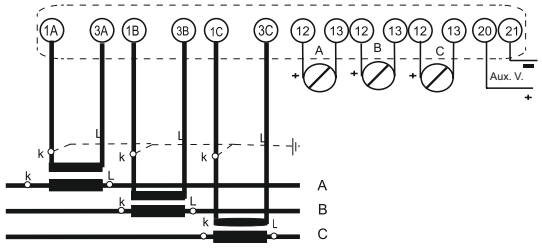

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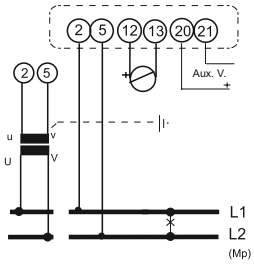

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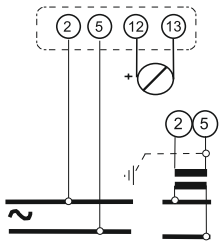

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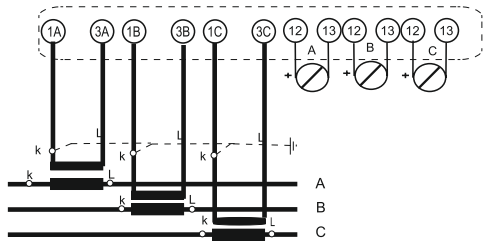

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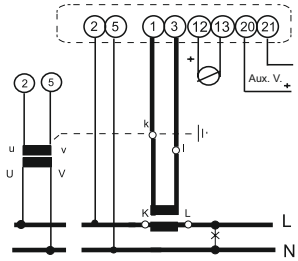

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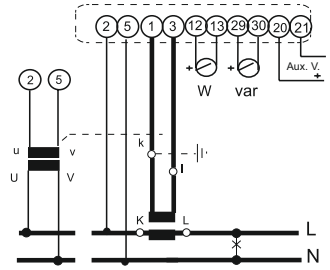

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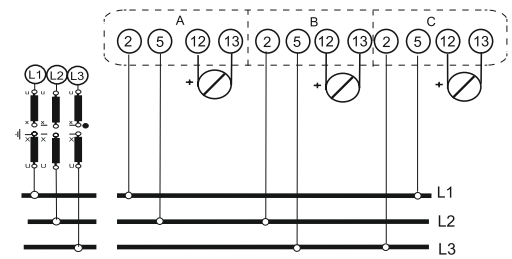

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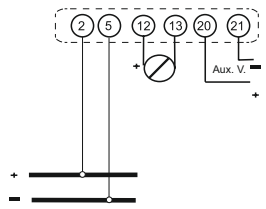

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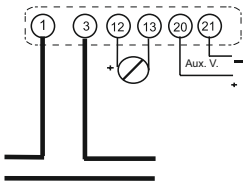

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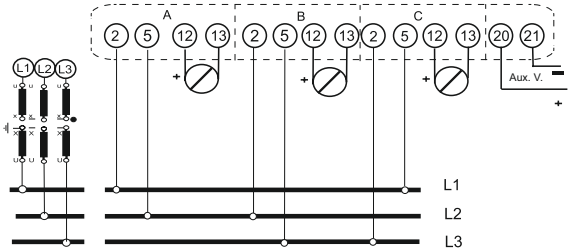

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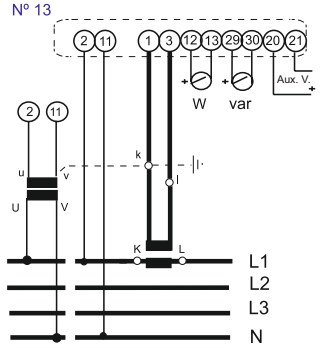

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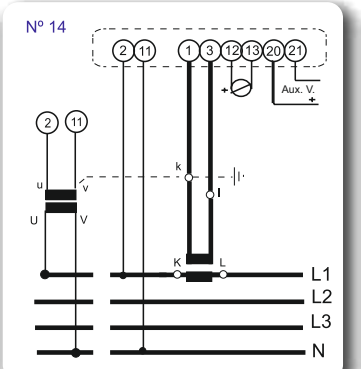

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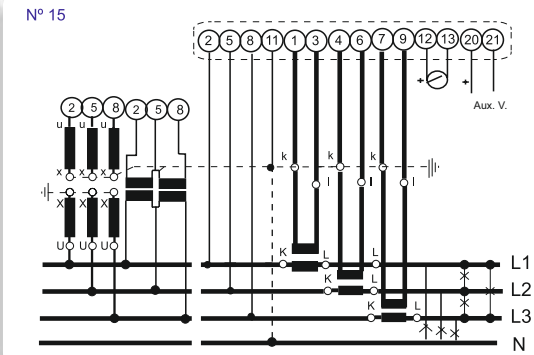
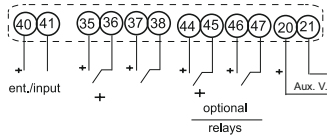


CONNECTION DIAGRAMS

Nº 16



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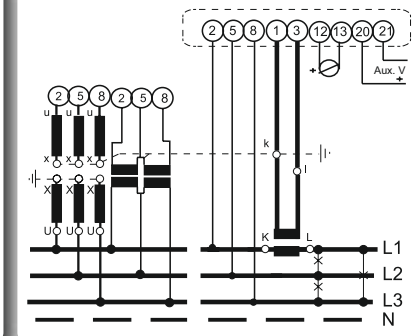

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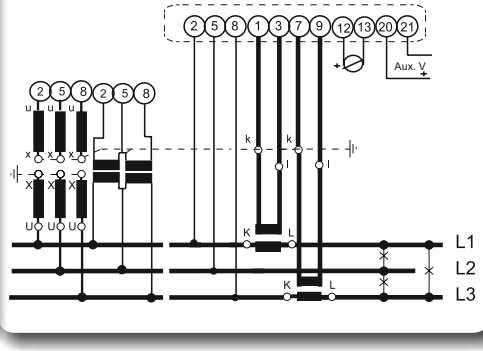

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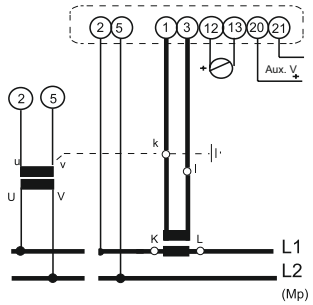

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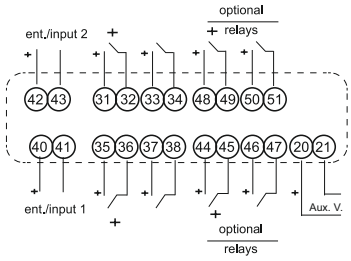

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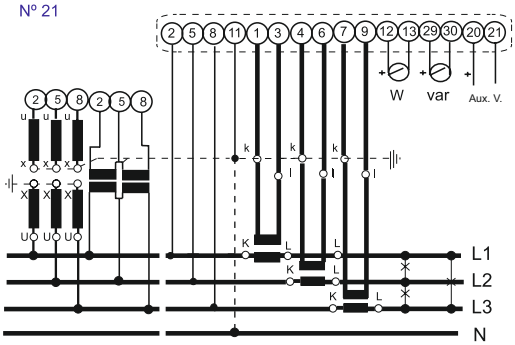

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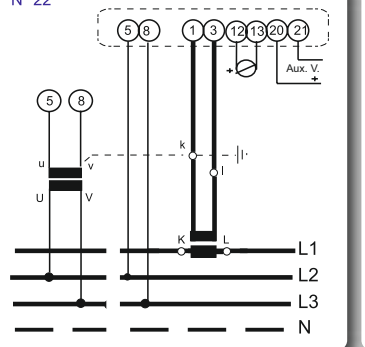

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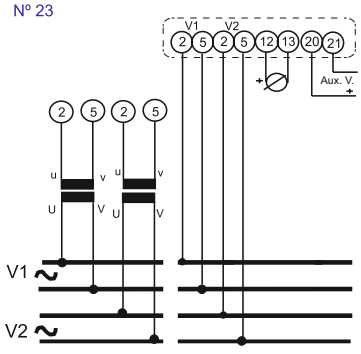

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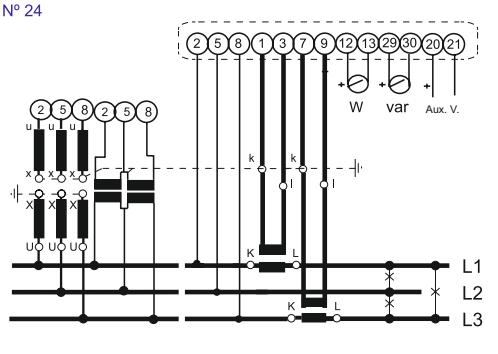

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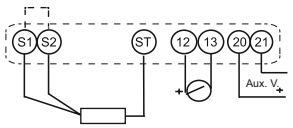

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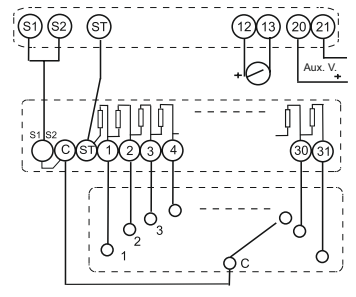

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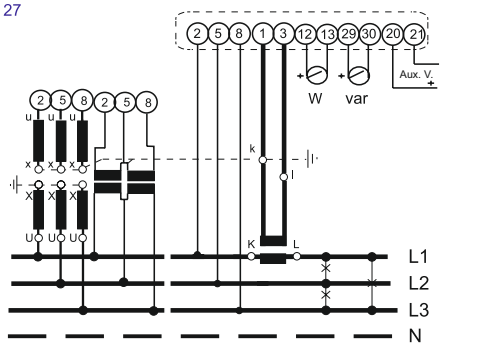


TRANSFORMER WITH BUILT-IN MEASURING TRANSDUCER

OUTPUT 0-20 mA

Without auxiliary voltage.
Class 1.
Operating range: 10-120%.
Maximum open circuit voltage: 30 V.
Frequency: 50-60 Hz.
Maimum load impedance: 600 Ω.
Response time: <200 ms.

TC_

	BUS-BAR TRANSFORMERS		
MODEL	TC40	TC60	TC80
Bus-Bar	40x10	60x10	80x30
Cable	Ø32	Ø51	Ø65
Accuracy Class	1	1	1
Ipn (A)	Output (mA)	Output (mA)	Output (mA)
50 - 400	0 - 20		
400 - 2000		0 - 20	
400 - 2500			0 - 20

OUTPUT 4-20 mA

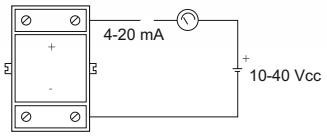
Auxiliary voltage: 10-40 V D.C.
Selectable primary current.
Class 1.
Operating range: 10-120%.
Frequency: 50-60 Hz.
Maximun load impedance 600 Ω.
Response time: <200 ms.

Selection of transformer ratio by switch.

TC_CV

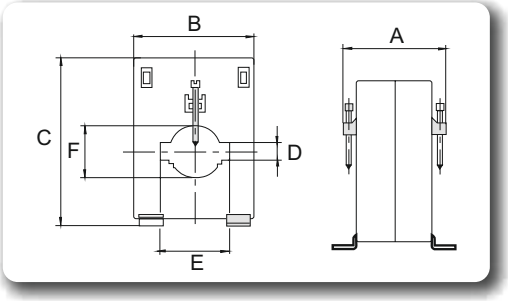
	BUS-BAR TRANSFORMERS		
MODEL	TC20CV	TC30CV	TC40CV
Bus-Bar	20x5	30x10	40x10
Cable	Ø16	Ø22	Ø30
Accuracy Class	1	1	1
Ipn (A)	Output (mA)	Output (mA)	Output (mA)
10; 12,5; 15 & 20	4-20		
20; 25; 30 & 40	4-20	4-20	
50; 60; 75 & 100	4-20	4-20	4-20
125; 150; 200 & 250	4-20	4-20	4-20
300; 400; 500 & 600		4-20	4-20

Connection diagram



TC_CV

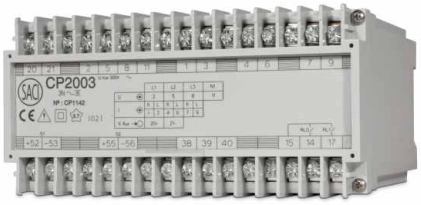
DIMENSIONS



	TC20CV	TC30CV	TC40CV	TC40	TC60	TC80
F	ø =16	ø =22	ø =30	ø =30	ø =51	ø =65
A	48,5	51,5	61	61	76	76
B	56	60	71	71	105	131
C	74	79	96	96	136,5	161,5
D	5,5	10,5	10,5	10,5	11	31
E	20,5	31	41	41	61	81

Dimensions in mm.

PROGRAMMABLE MEASURING TRANSDUCER
CP200_ - CP300_ - CP400_



- Measuring transducer controlled by a 16-bit microprocessor.
- Settable through software.
- Two, three or four analogue outputs.
- Two outputs with contacts (settable as energy pulses, alarm or programmable contacts).
- RS-232, RS-485 or RS-232 and RS-485 serial port.

MEASURING PARAMETER	
Line-to-neutral voltage	Sen φ per phase and total
Line-to-line voltage	Frequency
Current (true effective value)	Active energy +
Active power, per phase and total	Active energy -
Reactive power, per phase and total	Inductive reactive energy
Apparent power, per phase and total	Capacitive reactive energy
Cos φ per phase and total	THD Current and Voltage

ANALOGUE OUTPUTS

Selectable measuring parameter for each analogue output.
Programmable zero and full scale in the output range.
Rated values of full scale 1, 5 and 20 mA DC. and 1, 5 and 10 V DC., uni or bidirectional.
Insulation by optocoupler.

DIGITAL OUTPUTS

Two relay outputs (10 A, 30 V DC. / 250 V AC.).
Programmable as:
Active or reactive energy pulses.
- Maximum or minimum alarm signalling for any of the parameters measured.
- Output contacts (operated from the central unit).

SERIAL PORT

RS-232, RS-485 or RS-232 and RS-485, bidirectional:
- Reading only: Electrical parameters and data.
- Writing only; Program data, reset and activating of output contacts.

2 or 4 wire direct to the device.
MODBUS / JBUS communication protocol.
Insulation by optocoupler.

SETTING

Via serial port:
- Baud rate: default 9600 bauds.
  Address: 0-255.
- Primary current.
- Primary voltage.
  Analogue outputs: Measuring parameter, zero and full scale.
- Digital outputs, settable as:
  1.- Energy pulses:
  2.- Alarm: Measuring parameter, value and alarm mode (max. or min.).
  3.- Output contacts operated from the computer

TECHNICAL SPECIFICATIONS

ACCURACY 0,2

INPUTS	
Alternating current (A.C.)	5 A or 1 A(.../5 or.../1 A)
Measuring range	0-120 %
Alternating voltage (A.C.)	100, 110, 230, 400 or 440 V

ANALOGUE OUTPUTS (D.C)	
1, 5, 10, 20 or 4-20 mA	
1, 5, 10, 1-5 or 2-10 V	
Load impedance	Ro (kΩ) = 12 V / Io (mA) Max. Ro (kΩ) = Vo / 30 mA Min.
Saturation Limit	1,2 Io – 1,2 Vo

OTHER CHARACTERISTICS	
Digital outputs	2 Relays
Serial port	RS-232, RS-485 or both
Protocol	JBUS/MODBUS
Baud rate	Selectable 300 – 19200 Bauds
Operating frequency	50 and 60 Hz
Reference temperature	23 ºC ±1ºC

OTHER CHARACTERISTICS	
Temperature coefficient	2 Relays
Operating temperature	-10 ºC to +55 ºC
Linearity error	≤0,05
Ripple	≤0,1 %
Response time	≤200 ms (0-90 % Io)
Frequency coefficient	Not affected

MODELS

CP2000 – 2 Analogue outputs

	Network	Diagram
CP2000	SINGLE-PHASE	Nº 28
CP2001	BALANCED THREE-PHASE	Nº 29 or 30
CP2002	UNBALANCED THREE-PHASE, 3 WIRE	Nº 31
CP2003	UNBALANCED THREE-PHASE, 4 WIRE	Nº 32

Outputs: Nº.35

CP3000 – 3 Analogue outputs

	Network	Diagram
CP3000	SINGLE-PHASE	Nº 28
CP3001	BALANCED THREE-PHASE	Nº 29 or 30
CP3002	UNBALANCED THREE-PHASE, 3 WIRE	Nº 31
CP3003	UNBALANCED THREE-PHASE, 4 WIRE	Nº 32

Outputs: Nº.35

CP4000 – 4 Analogue outputs

	Network	Diagram
CP4000	SINGLE-PHASE	Nº 28
CP4001	BALANCED THREE-PHASE	Nº 29 or 30
CP4002	UNBALANCED THREE-PHASE, 3 WIRE	Nº 31
CP4003	UNBALANCED THREE-PHASE, 4 WIRE	Nº 32

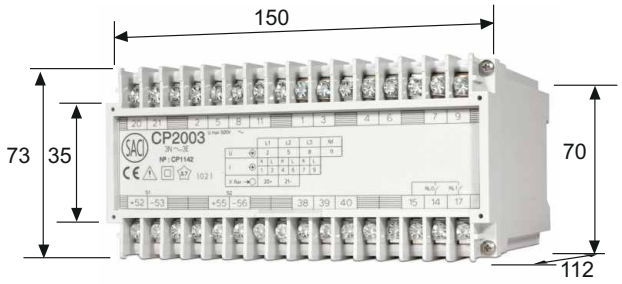
Outputs: Nº.35

CP2000	
Auxiliary voltage UNIVERSAL A.C.- D.C	85...264 V C.A.
	90...300 V C.C.
Auxiliary voltage A.C.	110 or 230 V ±20%
Auxiliary voltage D.C.	18…72 V
Burden	4VA/4W
Energy measuring	Only in the digital outputs (relays)
Maximum open circuit voltage	30 V
THD harmonic distortion	Not included
Without insulation between serial port and analogue output S2	

CP3000 - CP4000	
Auxiliary voltage UNIVERSAL A.C.- D.C	85...264 V C.A.
	90...300 V C.C.
Auxiliary voltage D.C.	18…72 V
Burden	5W (CP3000)
	6W (CP4000)
Energy measuring	Digital outputs (relays)
	Serial port (option)
Maximum open circuit voltage	15 V
Double line, CP3000 series	RS232-RS485 (optional)

OPTIONAL

Setting and reading software.
Management software - SACIGEST.



DIMENSIONS CP2000 – CP3000 – CP4000

ORDERING INFORMATION

1.- Type of transducer.
For example: a) CP2001
b) CP3003
c) CP4002
2.- Secondary rated voltage and current.
3.- Auxiliary voltage.
4.- Analogue outputs, mA (1, 5, 20) or V (1, 5, 10).
5.- RS-232, RS-485 or RS-232 and RS-485 serial port.

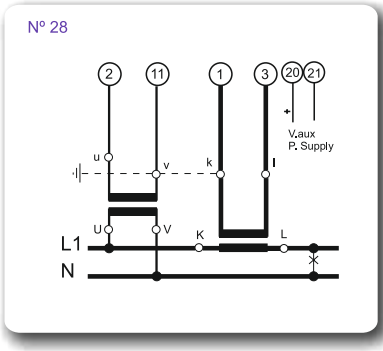
SETTING DATA

1.- Primary rated voltage and current.
2.- Analogue output range.
3.- Transfer curves (page MT.21).
4.- Digital outputs type: Energy pulses (incl. energy constant), alarm mode or free contacts.
5.- Serial port: Baud rate

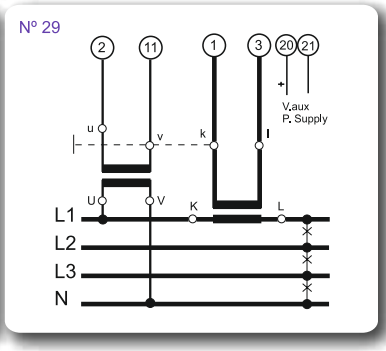
ACCESORIES

IFR1 RS485/232 Converter.
IFRA RS485/232 Converter with galvanic separation.
IFR4 4RS485/1RS232 Converter.
C01 RS232-DB9 power cable (2m).
C02 RS485-IFRA power cable (2m).
C03 IFRA-DB9(PC) power cable (2m).
SF2 WINDOWS-Programming software CP2000.
SF3 WINDOWS-Programming software CP3000.
SF4 WINDOWS-Programming software CP4000.

Nº 28



Nº 29



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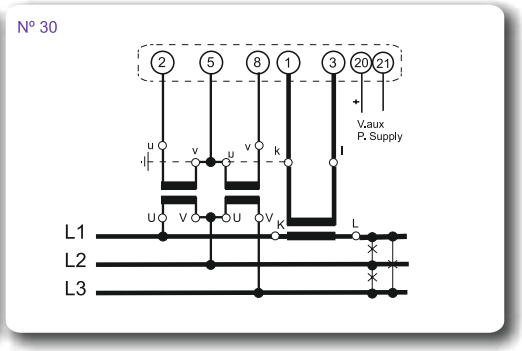

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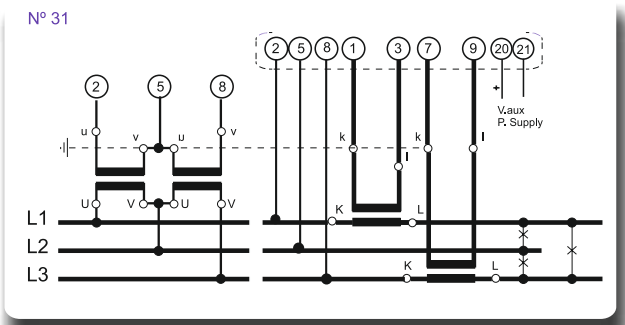

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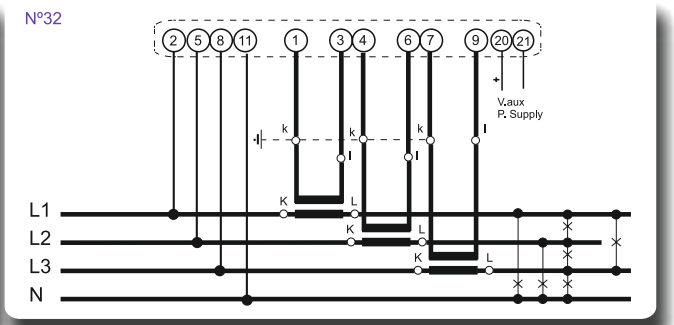
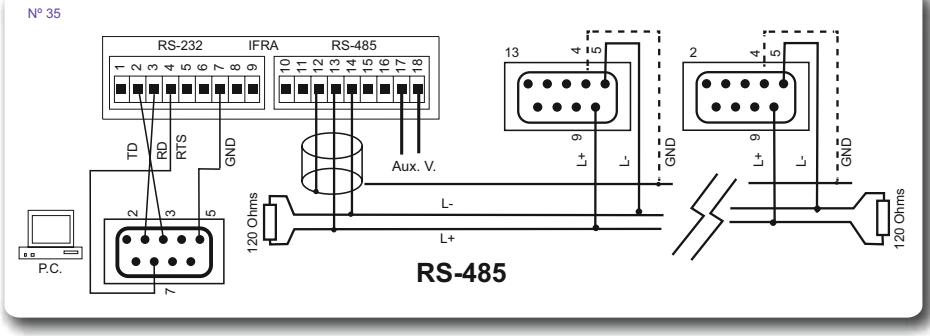
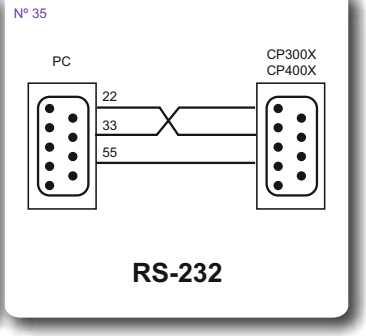


Nº 35	OUTPUT TERMINALS								
MODEL		CP2000		CP3000				CP4000	
RS232				YES				YES	
RS485		GND 38	L+ 39 L- 40	YES				YES	
DIGITAL OUTPUT	RLO	15-14		15-14				15-14	
	RL1	15-17		15-17				15-17	
ANALOGUE OUTPUT		+	-	+	V -		+ mA -	+	-
	S1	52	53	52	54	52	53	52	53
	S2	55	56	55	57	55	56	55	56
	S3			58	60	58	59	58	59
	S4							61	62

Nº 35



Nº 35



TRANSFER CURVES