IME

ISTRUMENTI MISURE ELETTRICHE SpA

Transducers

PRODUCT GUIDE

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Model	Tema I		Tema I4		Tema I4e	
Code	TM2I...		TM3I...		TM4I...	
Ordering codes see page	73		75		75	
Measuring	single-phase alternating current		single-phase alternating current		single-phase alternating current	
Measuring type, wave form	average value, calibration according to R.M.S. value sinusoidal form factor 1,11		average value, calibration according to R.M.S. value sinusoidal form factor1,11		true R.M.S. distorted sinusoidal	
A.C. auxiliary supply	self-supplied		115V or 230...240V		115V or 230...240V	
D.C. auxiliary supply			20...150V or 150...250V		20...150V or 150...250V	
Current analogue output	0-5mA or 0-10mA or 0-20mA		0-5/0-10/0-20/4-20mA selectable		0-5/0-10/0-20/4-20mA selectable	
Voltage analogue output	0-5V or 0-10V		0-5/0-10/2-10V selectable		0-5/0-10/2-10V selectable	
Response time	≤ 300ms		≤ 300ms		≤ 100ms or ≤ 50ms (option)	
Accuracy	0,5 (20...120%In)		0,5 (0...120%In)		0,5 (0...120%In)	
Current input	1A or 1,2A	5A or 6A	1A or 1,2A	5A or 6A	1A or 1,2A	5A or 6A
Frequency	47...63Hz		47...63Hz		47...63Hz	
Dimensions	2 module DIN		2 module DIN		2 module DIN	
Technical Note	NT546		NT554		NT628	
Price						
Extra price d.c. auxiliary supply			•	•	•	•
Extra price response time ″ 50msec					•	•

wiring connections page 84 overall dimensions page 88

Model	Tema U		Tema U4		Tema U4e	
Codes	TM2U...		TM3U...		TM4U...	
Ordering codes see page	74		75		76	
Measuring	single-phase alternating voltage		single-phase alternating voltage		single-phase alternating voltage	
Measuring type,wave form	average value, calibration according to r.m.s. value sinusoidal form factor 1,11		average value, calibration according to r.m.s. value, sinusoidal form factor 1,11		true r.m.s. distorted r.m.s.	
A.C. auxiliary supply	self-supplied		115V or 230...240V		115V or 230...240V	
D.C. auxiliary supply			20...150V or 150...250V		20...150V or 150...250V	
Current analogue output	0-5mA or 0-10mA or 0-20mA		0-5/0-10/0-20/4-20mA selectable		0-5/0-10/0-20/4-20mA selectable	
Voltage analogue output	0-5V or 0-10V		0-5/0-10/2-10V selectable		0-5/0-10/2-10V selectable	
Response time	≤300ms		≤300ms		≤100ms o ≤50ms (option)	
Accuracy	0,5 (20...120%Un)		0,5 (0...120%Un)		0,5 (0...120%Un)	
Voltage input	100V or 110V or 120V or 250V or 400V or 440V	other value on request of 50...440V	100V or 110V or 120V or 250V or 400V or 440V or 500V	other value on request of 50...500V	100V or 110V or 120V or 250V or 400V or 440V or 500V	other value on request of 50...500V
Frequency	47...63Hz		47...63Hz		47...63Hz	
Dimensions	2 module DIN		2 module DIN		2 module DIN	
Technical note	NT547		NT555		NT629	
Price						
Extra price d.c. auxiliary supply			•	•	•	•
Extra price respnse time ≤50msec					•	•

Model	Tema fP	
Codes	TM8P...	
Ordering codes see page	76	
Measuring	**programmable apparent-reactive-active power, power factor, phase angle, average power, frequency**	
Line type	programmable balanced/unbalanced load, 3/4 wire single - three phase	
Measuring type, wave form	true R.M.S., distorted sinusoidal	
A.C. auxiliary supply	115V or 230...240V	
D.C. auxiliary supply	20...150V or 150...250V	
Current analogue output	0-5/5-0-5/0-10/10-0-10/0-20/20-0-20/4-20mA programmable	
Voltage analogue output	0-10/10-0-10/1-5V programmable	
Output range setting	1 fully programmable measuring coupled with analogue output	
Display	all measuring made on LCD display in diffferent pages at manual scrolling	
Response time	≤300ms	
Accuracy	0,5 (power) - 1 (cosφ) - ±0,2Hz (frequency)	
Current input	1A direct or from C.T. programmable ratio	5A direct or from C.T. programmable ratio
Voltage input	80...500V (phase-phase) - 50...300V (single-phase) direct or from V.T. programmable ratio	
Frequency	45...65Hz	
Dimensions	8 module DIN	
Technical note	NT514	
Price		
Extra price d.c. auxiliary supply	•	•

wiring connections page 85 overall dimensions page 88

Model	Tema Hz	
Codes	TM1F...	
Ordering codes see page	72	
Measuring	**network frequency**	
Wave form	sinusoidal	
A.C. auxiliary supply	self-supplied	115/230V or 240V
D.C. auxiliary supply		20...150V or 150...250V
Current analogue output	0-20mA or 4-20mA	0-5mA or 0-10mA or 0-20mA o 4-20mA
Voltage analogue output		0-10V
Measuring range	45-55Hz or 55-65Hz or 45-65Hz	
Line voltage	115/230V or 230/400V	50...200V or 200...450V
Response time	≤300ms	
Accuracy	0,5	
Dimensions	6 module DIN	
Technical note	NT347	
Price		
Extra price d.c. auxiliary supply		•

wiring connections page 84 overall dimensions page 88

Model	Tema DC			
Codes	TM1A...		TM1V...	
Ordering codes see page	72		73	
Measuring	direct current		direct voltage	
Measuring type, wave form	average value, direct or pulsating with frequency ≥ 10Hz		average value, direct or pulsating with frequency ≥ 10Hz	
A.C. auxiliary supply	115/230V or 240V		115/230V or 240V	
D.C. auxiliary supply	20...30V or 40...60V or 90...140V or 180...250V		20...30V or 40...60V or 90...140V or 180...250V	
Current analogue output	0-20mA or 4-20mA	20-0-20mA or 4-20mA	0-20mA or 4-20mA	20-0-20mA or 4-20mA
Voltage analogue output	0-10V	10-0-10V	0-10V	10-0-10V
Response time	≤300ms		≤300ms	
Accuracy	0,5		0,5	
Current input	4-20mA or other values on request from 400µA...1,5A (unidirectional)	or other values on request from 250µA...750mA (bidirectional)		
Voltage input			1-5V or 2-10V or other value on request from 10mV...600V (unidirectional)	values on request from 5mV...300V (bidirectional)
Dimensions	6 module DIN		6 module DIN	
Technical note	NT239		NT238	
Price				
Extra price d.c. auxiliary supply	•		•	

wiring connections page 84 overall dimensions page 88

Model	Tema SG		
Codes	TM1G...	TM2G...	TM3G...
Ordering codes see page	72	73	74
Measuring	**direct current signal separator**	**direct current or voltage signal separator**	**direct current signal separator**
Measuring type, wave form	average value, direct with ≤ 10% alternating component	average value, direct with ≤ 10% alternating component	average value, direct with ≤ 10% alternating component
A.C. auxiliary supply	self-supplied	115/230V or 240V	115/230V or 240V
D.C. auxiliary supply		20...30V or 40...60V or 90...140V or 180...250V	20...30V or 40...60V o 90...140V or 180...250V
Current analogue output	0-5/0-10/0-20/4-20mA	0-5mA or 0-20mA or 4-20mA	0-5mA or 0-20mA or 4-20mA
Voltage analogue output			0-10V
Response time	≤ 100ms	≤ 150ms	≤ 150ms
Accuracy	0,5	0,5	0,5
Current input	0-5/0-10/0-20/4-20mA	4-20mA or other values on request 1...500mA (unidirectional)	4-20mA
Voltage input		0-60mV or other values on request 50mV...400V (unidirectional)	
Dimensions	4 module DIN	4 module DIN	4 module DIN
Technical note	NT227	NT229	NT228
Price			
Extra price d.c. auxiliary supply		•	•

wiring connections page 84 overall dimensions page 88

Tema DC — Direct current transducer

Ordering code	Description	Stock		Data to be shown in addition to ordering code
TM1A114	µAdc A115/230V 0-µA/0-20mA			unidirectional input (400...800µA) corrisponding to output
TM1A115	µAdc A115/230V 0-µA/4-20mA			unidirectional input (400...800µA) corrisponding to output
TM1A118	µAdc A115/230V 0-µA/0-10V			unidirectional input (400...800µA) corrisponding to output
TM1A124	mAdc A115/230V 0-mA/0-20mA			unidirectional input (1...800mA) corrisponding to output
TM1A125	mAdc A115/230V 0-mA/4-20mA			unidirectional input (1...800mA) corrisponding to output
TM1A128	mAdc A115/230V 0-mA/0-10V			unidirectional input (1...800mA) corrisponding to output
TM1A134	Adc A115/230V 0-A/0-20mA			unidirectional input (1...1,5A) corrisponding to output
TM1A135	Adc A115/230V 0-A/4-20mA			unidirectional input (1...1,5A) corrisponding to output
TM1A138	Adc A115/230V 0-A/0-10V			unidirectional input (1...1,5A) corrisponding to output
TM1A144	mAdc A115/230V 4-20mA/0-20mA			
TM1A145	mAdc A115/230V 4-20mA/4-20mA			
TM1A148	mAdc A115/230V 4-20mA/0-10V			
TM1A155	µAdc A115/230V +-µA/4-20mA			bidirectional input (250...800µA) corrisponding to output
TM1A15E	µAdc A115/230V +-µA/+-20mA			bidirectional input (250...800µA) corrisponding to output
TM1A15H	µAdc A115/230V +-µA/+-10V			bidirectional input (250...800µA) corrisponding to output
TM1A165	mAdc A115/230V +-mA/4-20mA			bidirectional input (1...750mA) corrisponding to output
TM1A16E	mAdc A115/230V +-mA/+-20mA			bidirectional input (1...750mA) corrisponding to output
TM1A16H	mAdc A115/230V +-mA/+-10V			bidirectional input (1...750mA) corrisponding to output

Other executions

TM1A....	auxiliary supply
4	240Vac
C	20...30Vdc
D	40...60Vdc
E	90...140Vdc
F	180...250Vdc

Tema Hz — Network frequency transducers

Ordering code	Description	Stock		
TM1F1132	A115/230V 45-55Hz 50-200V 0-5mA			
TM1F1133	A115/230V 45-55Hz 50-200V 0-10mA			
TM1F1134	A115/230V 45-55Hz 50-200V 0-20mA			
TM1F1135	A115/230V 45-55Hz 50-200V 4-20mA			
TM1F1138	A115/230V 45-55Hz 50-200V 0-10V			
TM1F1142	A115/230V 45-55Hz 200-450V 0-5mA			
TM1F1143	A115/230V 45-55Hz 200-450V 0-10mA			
TM1F1144	A115/230V 45-55Hz 200-450V 0-20mA			
TM1F1145	A115/230V 45-55Hz 200-450V 4-20mA			
TM1F1148	A115/230V 45-55Hz 200-450V 0-10V			
TM1FA114	SELFSUPPLIED 45-55Hz 115/230V 0-20mA			
TM1FA115	SELFSUPPLIED 45-55Hz 115/230V 4-20mA	•		
TM1FA124	SELFSUPPLIED 45-55Hz 230/400V 0-20mA			
TM1FA125	SELFSUPPLIED 45-55Hz 230/400V 4-20mA			

Other executions

TM1F....	measuring range	auxiliary supply*
2	55-65Hz	
3	45-65Hz	
4		240Vac
H		20...150Vdc
L		150...250Vdc

* variables, not valid for selfsupplied frequency transducers (codes starting with TM1FA...)

Tema SG — Selfsupplied direct current signal separator/transducer

Ordering code	Description	Stock		
TM1GA00	1/1 0-5/0-10/0-20/4-20mA	•		

Tema DC — Direct voltage transducer

Ordering code	Description	Stock		Data to be shown in addition to ordering code
TM1V114	mVdc A115/230V 0-mV/0-20mA			unidirectional input (10...600mV) corresponding to output
TM1V115	mVdc A115/230V 0-mV/4-20mA			unidirectional input (10...600mV) correspondin to output
TM1V118	mVdc A115/230V 0-mV/0-10V			unidirectional input (10...600mV) corresponding to output
TM1V124	Vdc A115/230V 0-V/0-20mA			unidirectional input (1...600V) corresponding to output
TM1V125	Vdc A115/230V 0-V/4-20mA			unidirectional input (1...600V) corresponding to output
TM1V128	Vdc A115/230V 0-V/0-10V			unidirectional input (1...600V) corresponding to output
TM1V134	Vdc A115/230V 1-5V/0-20mA			
TM1V135	Vdc A115/230V 1-5V/4-20mA			
TM1V138	Vdc A115/230V 1-5V/0-10V			
TM1V144	Vdc A115/230V 2-10V/0-20mA			
TM1V145	Vdc A115/230V 2-10V/4-20mA			
TM1V148	Vdc A115/230V 2-10V/0-10V			
TM1V155	mVdc A115/230V ±mV/4-20mA			bidirectional input (5...600mV) corresponding to output
TM1V15E	mVdc A115/230V ±mV/±20mA			bidirectional input (5...600mV) corresponding to output
TM1V15H	mVdc A115/230V ±mV/±10V			bidirectional input (5...600mV) corresponding to output
TM1V165	Vdc A115/230V ±V/4-20mA			bidirectional input (1...300V) corresponding to output
TM1V16E	Vdc A115/230V ±V/±20mA			bidirectional input (1...300V) corresponding to output
TM1V16H	Vdc A115/230V ±V/±10V			bidirectional input (1...300V) corresponding to output

Other executions

TM1V	auxiliary supply
4	240Vac
C	20...30Vdc
D	40...60Vdc
E	90...140Vdc
F	180...250Vdc

Tema SG — Direct current/voltage signal separator/transducers

Ordering code	Description	Stock		Data to be shown in addition to ordering code
TM2G142	A115/230V 4-20mA/0-5mA			
TM2G144	A115/230V 4-20mA/0-20mA			
TM2G145	A115/230V 4-20mA/4-20mA			
TM2G152	A115/230V 0-60mV/0-5mA			
TM2G154	A115/230V 0-60mV/0-20mA			
TM2G155	A115/230V 0-60mV/4-20mA			
TM2G1P2	A115/230V INPUT/0-5mA			unidirectional input (1...500mA or 50mV...400V) corresponding to output
TM2G1P4	A115/230V INPUT/0-20mA			unidirectional input (1...500mA or 50mV...400V) corresponding to output
TM2G1P5	A115/230V INPUT/4-20mA			unidirectional input (1...500mA or 50mV...400V) corresponding to output

Other executions

TM2G	auxiliary supply
4	240Vac
C	20...30Vdc
D	40...60Vdc
E	90...140Vdc
F	180...250Vdc

Tema I — Selfsupplied single-phase alternating current transducer

Ordering code	Description	Stock		
TM2IA12	1A 0-5mA			
TM2IA13	1A 0-10mA			
TM2IA14	1A 0-20mA	•		
TM2IA16	1A 0-5V			
TM2IA18	1A 0-10V			
TM2IA22	1,2A 0-5mA			
TM2IA23	1,2A 0-10mA			
TM2IA24	1,2A 0-20mA			
TM2IA26	1,2A 0-5V			
TM2IA28	1,2A 0-10V			
TM2IA32	5A 0-5mA	•		
TM2IA33	5A 0-10mA			
TM2IA34	5A 0-20mA	•		
TM2IA36	5A 0-5V			
TM2IA38	5A 0-10V	•		
TM2IA42	6A 0-5mA			

table follow ▶

Ordering code	Description	Stock		
TM2IA43	6A 0-10mA			
TM2IA44	6A 0-20mA			
TM2IA46	6A 0-5V			
TM2IA48	A 0-10V			

Tema U — Selfsupplied single-phase alternating voltage transducer

Ordering code	Description	Stock		Data to be shown in addition to ordering code
TM2UA12	100V 0-5mA	•		
TM2UA13	100V 0-10mA			
TM2UA14	100V 0-20mA	•		
TM2UA16	100V 0-5V			
TM2UA18	100V 0-10V			
TM2UA22	110V 0-5mA			
TM2UA23	110V 0-10mA			
TM2UA24	110V 0-20mA			
TM2UA26	110V 0-5V			
TM2UA28	110V 0-10V			
TM2UA32	120V 0-5mA			
TM2UA33	120V 0-10mA			
TM2UA34	120V 0-20mA			
TM2UA36	120V 0-5V			
TM2UA38	120V 0-10V			
TM2UA72	250V 0-5mA			
TM2UA73	250V 0-10mA			
TM2UA74	250V 0-20mA	•		
TM2UA76	250V 0-5V			
TM2UA78	250V 0-10V			
TM2UA92	400V 0-5mA			
TM2UA93	400V 0-10mA			
TM2UA94	400V 0-20mA	•		
TM2UA96	400V 0-5V			
TM2UA98	400V 0-10V			
TM2UAA2	440V 0-5mA			
TM2UAA3	440V 0-10mA			
TM2UAA4	440V 0-20mA			
TM2UAA6	440V 0-5V			
TM2UAA8	440V 0-10V			
TM2UAP2	0-5mA			input (50…440V) corresponding to output
TM2UAP3	0-10mA			input (50…440V) corresponding to output
TM2UAP4	0-20mA			input (50…440V) corresponding to output
TM2UAP6	0-5V			input (50…440V) corresponding to output
TM2UAP8	0-10V			input (50…440V) corresponding to output

Tema SG — Direct current signal separator/transducer

Ordering code	Description	Stock		
TM3G112	A115/230V 0-5mA/0-5mA			
TM3G114	A115/230V 0-5mA/0-20mA			
TM3G115	A115/230V 0-5mA/4-20mA			
TM3G118	A115/230V 0-5mA/0-10V			
TM3G132	A115/230V 0-20mA/0-5mA			
TM3G134	A115/230V 0-20mA/0-20mA			
TM3G135	A115/230V 0-20mA/4-20mA			
TM3G138	A115/230V 0-20mA/0-10V			
TM3G142	A115/230V 4-20mA/0-5mA			
TM3G144	A115/230V 4-20mA/0-20mA			
TM3G145	A115/230V 4-20mA/4-20mA			
TM3G148	A115/230V 4-20mA/0-10V			

Other executions

TM3G.....	auxiliary supply
4	240Vac
C	20...30Vdc
D	40...60Vdc
E	90...140Vdc
F	180...250Vdc

Tema I4 — Single-phase alternating current transducer

Ordering code	Description	Stock		
TM3I210	A115V 1A	•		
TM3I220	A115V 1,2A			
TM3I230	A115V 5A	•		
TM3I240	A115V 6A			
TM3I310	A230-240V 1A	•		
TM3I320	A230-240V 1,2A			
TM3I330	A230-240V 5A	•		
TM3I340	A230-240V 6A			
TM3IH10	A20-150Vdc 1A	•		
TM3IH20	A20-150Vdc 1,2A			
TM3IH30	A20-150Vdc 5A	•		
TM3IH40	A20-150Vdc 6A			
TM3IL10	A150-250Vdc 1A			
TM3IL20	A150-250Vdc 1,2A			
TM3IL30	A150-250Vdc 5A			
TM3IL40	A150-250Vdc 6A			

Tema U4 — Single-phase alternating voltage transducer

Ordering code	Description	Stock		Data to be shown in addition to ordering code
TM3U210	A115V 100V	•		
TM3U220	A115V 110V	•		
TM3U230	A115V 120V			
TM3U270	A115V 250V	•		
TM3U290	A115V 400V	•		
TM3U2A0	A115V 440V			
TM3U2C0	A115V 500V	•		
TM3U2P0	A115V			input (50…500V) corresponding to output
TM3U310	A230-240V 100V	•		
TM3U320	A230-240V 110V	•		
TM3U330	A230-240V 120V			
TM3U370	A230-240V 250V	•		
TM3U390	A230-240V 400V	•		
TM3U3A0	A230-240V 440V			
TM3U3C0	A230-240V 500V	•		
TM3U3P0	A230-240V			input (50…500V) corresponding to output
TM3UH10	A20-150Vdc 100V	•		
TM3UH20	A20-150Vdc 110V	•		
TM3UH30	A20-150Vdc 120V			
TM3UH70	A20-150Vdc 250V			
TM3UH90	A20-150Vdc 400V	•		
TM3UHA0	A20-150Vdc 440V			
TM3UHC0	A20-150Vdc 500V			
TM3UHP0	A20-150Vdc			input (50…500V) corresponding to output
TM3UL10	A150-250Vdc 100V			
TM3UL20	A150-250Vdc 110V			
TM3UL30	A150-250Vdc 120V			
TM3UL70	A150-250Vdc 250V			
TM3UL90	A150-250Vdc 400V			
TM3ULA0	A150-250Vdc 440V			
TM3ULC0	A150-250Vdc 500V			
TM3ULP0	A150-250Vdc			input (50…500V) corresponding to output

Tema I4e — RMS single-phase alternating current transducer

Ordering code	Description	Stock		
TM4I210	A115V 1A 100ms			
TM4I220	A115V 1,2A 100ms			
TM4I230	A115V 5A 100ms			
TM4I240	A115V 6A 100ms			
TM4I310	A230-240V 1A 100ms			
TM4I320	A230-240V 1,2A 100ms			
TM4I330	A230-240V 5A 100ms			
TM4I340	A230-240V 6A 100ms			
TM4IH10	A20-150Vcc 1A 100ms			
TM4IH20	A20-150Vcc 1,2A 100ms			

table follow ▸

Ordering code	Description	Stock		
TM4IH30	A20-150Vdc 5A 100ms			
TM4IH40	A20-150Vdc 6A 100ms			
TM4IL10	A150-250Vdc 1A 100ms			
TM4IL20	A150-250Vdc 1,2A 100ms			
TM4IL30	A150-250Vdc 5A 100ms			
TM4IL40	A150-250Vdc 6A 100ms			

Other executions

TM4I.....	response time
2	50ms

Tema U4e

RMS single-phase alternating voltage transducer

Ordering code	Description	Stock		Data to be shown in addition to ordering code
TM4U210	A115V 100V 100ms			
TM4U220	A115V 110V 100ms			
TM4U230	A115V 120V 100ms			
TM4U270	A115V 250V 100ms			
TM4U290	A115V 400V 100ms			
TM4U2A0	A115V 440V 100ms			
TM4U2C0	A115V 500V 100ms			
TM4U2P0	A115V 100ms			input (50…500V) corresponding to output
TM4U310	A230-240V 100V 100ms			
TM4U320	A230-240V 110V 100ms			
TM4U330	A230-240V 120V 100ms			
TM4U370	A230-240V 250V 100ms			
TM4U390	A230-240V 400V 100ms			
TM4U3A0	A230-240V 440V 100ms			
TM4U3C0	A230-240V 500V 100ms			
TM4U3P0	A230-240V 100ms			input (50…500V) corresponding to output
TM4UH10	A20-150Vdc 100V 100ms			
TM4UH20	A20-150Vdc 110V 100ms			
TM4UH30	A20-150Vdc 120V 100ms			
TM4UH70	A20-150Vdc 250V 100ms			
TM4UH90	A20-150Vdc 400V 100ms			
TM4UHA0	A20-150Vdc 440V 100ms			
TM4UHC0	A20-150Vdc 500V 100ms			
TM4UHP0	A20-150Vdc 100ms			input (50…500V) corresponding to output
TM4UL10	A150-250Vdc 100V 100ms			
TM4UL20	A150-250Vdc 110V 100ms			
TM4UL30	A150-250Vdc 120V 100ms			
TM4UL70	A150-250Vdc 250V 100ms			
TM4UL90	A150-250Vdc 400V 100ms			
TM4ULA0	A150-250Vdc 440V 100ms			
TM4ULC0	A150-250Vdc 500V 100ms			
TM4ULP0	A150-250Vdc 100ms			input (50…500V) corresponding to output

Other executions

TM4U.....	response time
2	50ms

Tema fP

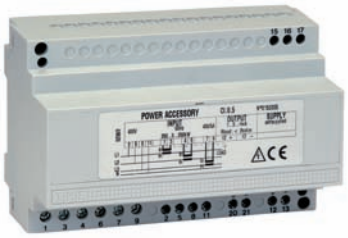
Active - reactive - apparent power, power factor, phase angle, average power, frequency

Ordering code	Description	Stock		
TM8P02110	A115V 1A 500V			
TM8P02120	A115V 5A 500V	•		
TM8P03110	A230-240V 1A 500V			
TM8P03120	A230-240V 5A 500V	•		
TM8P0H110	A20-150Vdc 1A 500V	•		
TM8P0H120	A20-150Vdc 5A 500V	•		
TM8P0L110	A150-250Vdc 1A 500V			
TM8P0L120	A150-250Vdc 5A 500V			

Model	Tesi P				
Codes	TN1P1...	TN1P2...	TN1P3...	TN1P4...	TN1P5...
Ordering codes see page:	79	79	80	80	80
Measuring	active power				
Line type	single-phase	3-phase, 3 wire balanced load	3-phase, 4 wire balanced load	3-phase, 3 wire unbalanced load	3-phase, 4 wire unbalanced load
Measuring type, wave form	true R.M.S. distorted sinusoidal				
Analog output	1-0-1mA				
Measuring range	Pn...0...Pn or other value on request in the range 0,5...1,2Pn				
Response time	≤300ms				
Accuracy	0,5				
Current input	1A or 5A				
Voltage input	100V or 110V or 230V or 240V	100V or 110V or 400V or 415V or 440V			
Frequency	50-60Hz				
Dimensions	8 module DIN				
Technical	NT468	NT469	NT470	NT471	NT472
Price					
Extra price 1A current input	•	•	•	•	•

wiring connections page 86 overall dimensions page 88

Non-insulated Transducers



Model	Tesi Q			Tesi PF	
Codes	TN1Q2...	TN1Q4...	TN1Q5...	TN1C1...	TN1C2...
Ordering codes see page	80	80	81	79	79
Measuring	reactive power			cosφ	
Line type	3-phase, 3/4 wire balanced load	3-phase, 3 wire unbalanced load	3-phase, 4 wire unbalanced load	single or 3-phase, 4 wire, balanced load	3-phase, 3 wire balanced load
Measuring type, wave form	True R.M.S., distorted sinusoidal			True R.M.S., distorted sinusoidal	
Analog output	1-0-1mA			1-0-1mA	
Measuring range	Qn...0...Qn or other value on request in the range 0,5...1,2Qn			ind0,5-1-0,5cap or ind0-1-0cap	
Response time	≤300ms			≤300ms	
Accuracy	0,5			0,5	
Current input	1A o 5A			1A o 5A	
Voltage input	100V or 110V or 400V or 415V or 440V			100V or 110V or 230V or 240V	100V or 110V or 400V or 415V
Frequency	50-60Hz			50-60Hz	
Dimensions	8 module DIN			6 module DIN	
Technical note	NT473	NT661	NT474	NT506	NT507
Price					
Extra price 1A current input	•	•	•	•	•

wiring connections page 86-87 overall dimensions page 88

Tesi PF — Single-phase or three-phase 4 wire balanced non-insulated cosφ Transducer

Ordering code	Description	Stock		
TN1C1 1A1 1A	SELFSUPPLIED 100V 1A 0,5-1-0,5/±1mA			
TN1C1 1A1 2A	SELFSUPPLIED 100V 5A 0,5-1-0,5/±1mA			
TN1C1 1A2 1A	SELFSUPPLIED 110V 1A 0,5-1-0,5/±1mA			
TN1C1 1A2 2A	SELFSUPPLIED 110V 5A 0,5-1-0,5/±1mA			
TN1C1 1A3 1A	SELFSUPPLIED 230V 1A 0,5-1-0,5/±1mA			
TN1C1 1A3 2A	SELFSUPPLIED 230V 5A 0,5-1-0,5/±1mA			
TN1C1 1A4 1A	SELFSUPPLIED 240V 1A 0,5-1-0,5/±1mA			
TN1C1 1A4 2A	SELFSUPPLIED 240V 5A 0,5-1-0,5/±1mA			
TN1C1 2A1 1A	SELFSUPPLIED 100V 1A 0-1-0/±1mA			
TN1C1 2A1 2A	SELFSUPPLIED 100V 5A 0-1-0/±1mA			
TN1C1 2A2 1A	SELFSUPPLIED 110V 1A 0-1-0/±1mA			
TN1C1 2A2 2A	SELFSUPPLIED 110V 5A 0-1-0/±1mA			
TN1C1 2A3 1A	SELFSUPPLIED 230V 1A 0-1-0/±1mA			
TN1C1 2A3 2A	SELFSUPPLIED 230V 5A 0-1-0/±1mA			
TN1C1 2A4 1A	SELFSUPPLIED 240V 1A 0-1-0/±1mA			
TN1C1 2A4 2A	SELFSUPPLIED 240V 5A 0-1-0/±1mA			

Tesi PF — Three-phase 3 wire balanced non-insulated cosφ Transducer

Ordering code	Description	Stock		
TN1C2 1A1 1A	SELFSUPPLIED 100V 1A 0,5-1-0,5/±1mA			
TN1C2 1A1 2A	SELFSUPPLIED100V 5A 0,5-1-0,5/±1mA			
TN1C2 1A2 1A	SELFSUPPLIED 110V 1A 0,5-1-0,5/±1mA			
TN1C2 1A2 2A	SELFSUPPLIED 110V 5A 0,5-1-0,5/±1mA			
TN1C2 1A5 1A	SELFSUPPLIED 400V 1A 0,5-1-0,5/±1mA			
TN1C2 1A5 2A	SELFSUPPLIED 400V 5A 0,5-1-0,5/±1mA			
TN1C2 1A6 1A	SELFSUPPLIED 415V 1A 0,5-1-0,5/±1mA			
TN1C2 1A6 2A	SELFSUPPLIED 415V 5A 0,5-1-0,5/±1mA			
TN1C2 2A1 1A	SELFSUPPLIED 100V 1A 0-1-0/±1mA			
TN1C2 2A1 2A	SELFSUPPLIED 100V 5A 0-1-0/±1mA			
TN1C2 2A2 1A	SELFSUPPLIED 110V 1A 0-1-0/±1mA			
TN1C2 2A2 2A	SELFSUPPLIED 110V 5A 0-1-0/±1mA			
TN1C2 2A5 1A	SELFSUPPLIED 400V 1A 0-1-0/±1mA			
TN1C2 2A5 2A	SELFSUPPLIED 400V 5A 0-1-0/±1mA			
TN1C2 2A6 1A	SELFSUPPLIED 415V 1A 0-1-0/±1mA			
TN1C2 2A6 2A	SELFSUPPLIED 415V 5A 0-1-0/±1mA			

Tesi P — Single-phase non-insualed active power Transducer

Ordering code	Description	Stock		Data to be shown in addition to ordering code
TN1P1 PA1 1A	SELFSUPPLIED 100V 1A ±1mA			V.T. and C.T. ratio and the power value corresponding to output
TN1P1 PA1 2A	SELFSUPPLIED 100V 5A ±1mA			V.T. and C.T. ratio and the power value corresponding to output
TN1P1 PA2 1A	SELFSUPPLIED 110V 1A ±1mA			V.T. and C.T. ratio and the power value corresponding to output
TN1P1 PA2 2A	SELFSUPPLIED 110V 5A ±1mA			V.T. and C.T. ratio and the power value corresponding to output
TN1P1 PA3 1A	SELFSUPPLIED 230V 1A ±1mA			C.T. ratio and the power value corresponding to output
TN1P1 PA3 2A	SELFSUPPLIED 230V 5A ±1mA			C.T. ratio and the power value corresponding to output
TN1P1 PA4 1A	SELFSUPPLIED 240V 1A ±1mA			C.T. ratio and the power value corresponding to output
TN1P1 PA4 2A	SELFSUPPLIED 240V 5A ±1mA			C.T. ratio and the power value corresponding to output

Tesi P — Three-phase 3 wire balanced load non-insulated active power Transducer

Ordering code	Description	Stock		Data to be shown in addition to ordering code
TN1P2 PA1 1A	SELFSUPPLIED 100V 1A ±1mA			V.T. and C.T. ratio and the power value corrisponding to output
TN1P2 PA1 2A	SELFSUPPLIED 100V 5A ±1mA			V.T. and C.T. ratio and the power value corrisponding to output
TN1P2 PA2 1A	SELFSUPPLIED 110V 1A ±1mA			V.T. and C.T. ratio and the power value corrisponding to output
TN1P2 PA2 2A	SELFSUPPLIED 110V 5A ±1mA			V.T. and C.T. ratio and the power value corrisponding to output
TN1P2 PA5 1A	SELFSUPPLIED 400V 1A ±1mA			C.T. ratio and the power value corrisponding to output
TN1P2 PA5 2A	SELFSUPPLIED 400V 5A ±1mA			C.T. ratio and the power value corrisponding to output
TN1P2 PA6 1A	SELFSUPPLIED 415V 1A ±1mA			C.T. ratio and the power value corrisponding to output
TN1P2 PA6 2A	SELFSUPPLIED 415V 5A ±1mA			C.T. ratio and the power value corrisponding to output
TN1P2 PA7 1A	SELFSUPPLIED 440V 1A ±1mA			C.T. ratio and the power value corrisponding to output
TN1P2 PA7 2A	SELFSUPPLIED 440V 5A ±1mA			C.T. ratio and the power value corrisponding to output

Tesi P — Three-phase 4 wire balanced load non-insulated active power Transducer

Ordering code	Description	Stock		Data to be shown in addition to ordering code
TN1P3PA11A	SELFSUPPLIED 100V 1A ±1mA			V.T. and C.T. ratio and the power value corresponding to output
TN1P3PA12A	SELFSUPPLIED 100V 5A ±1mA			V.T. and C.T. ratio and the power value corresponding to output
TN1P3PA21A	SELFSUPPLIED 110V 1A ±1mA			V.T. and C.T. ratio and the power value corresponding to output
TN1P3PA22A	SELFSUPPLIED 110V 5A ±1mA			V.T. and C.T. ratio and the power value corresponding to output
TN1P3PA51A	SELFSUPPLIED 400V 1A ±1mA			C.T. ratio and the power value corresponding to output
TN1P3PA52A	SELFSUPPLIED 400V 5A ±1mA			C.T. ratio and the power value corresponding to output
TN1P3PA61A	SELFSUPPLIED 415V 1A ±1mA			C.T. ratio and the power value corresponding to output
TN1P3PA62A	SELFSUPPLIED 415V 5A ±1mA			C.T. ratio and the power value corresponding to output
TN1P3PA71A	SELFSUPPLIED 440V 1A ±1mA			C.T. ratio and the power value corresponding to output
TN1P3PA72A	SELFSUPPLIED 440V 5A ±1mA			C.T. ratio and the power value corresponding to output

Tesi P — Three-phase 3 wire unbalanced load non-insulated active power Transducer

Ordering code	Description	Stock		Data to be shown in addition to ordering code
TN1P4PA11A	SELFSUPPLIED 100V 1A ±1mA			V.T. and C.T. ratio and the power value corresponding to output
TN1P4PA12A	SELFSUPPLIED 100V 5A ±1mA			V.T. and C.T. ratio and the power value corresponding to output
TN1P4PA21A	SELFSUPPLIED 110V 1A ±1mA			V.T. and C.T. ratio and the power value corresponding to output
TN1P4PA22A	SELFSUPPLIED 110V 5A ±1mA			V.T. and C.T. ratio and the power value corresponding to output
TN1P4PA51A	SELFSUPPLIED 400V 1A ±1mA			C.T. ratio and the power value corresponding to output
TN1P4PA52A	SELFSUPPLIED 400V 5A ±1mA			C.T. ratio and the power value corresponding to output
TN1P4PA61A	SELFSUPPLIED 415V 1A ±1mA			C.T. ratio and the power value corresponding to output
TN1P4PA62A	SELFSUPPLIED 415V 5A ±1mA			C.T. ratio and the power value corresponding to output
TN1P4PA71A	SELFSUPPLIED 440V 1A ±1mA			C.T. ratio and the power value corresponding to output
TN1P4PA72A	SELFSUPPLIED 440V 5A ±1mA			C.T. ratio and the power value corresponding to output

Tesi P — Three-phase 4 wire unbalanced load non-insulated active power Transducer

Ordering code	Description	Stock		Data to be shown in addition to ordering code
TN1P5PA11A	SELFSUPPLIED 100V 1A ±1mA			V.T. and C.T. ratio and the power value corresponding to output
TN1P5PA12A	SELFSUPPLIED 100V 5A ±1mA			V.T. and C.T. ratio and the power value corresponding to output
TN1P5PA21A	SELFSUPPLIED 110V 1A ±1mA			V.T. and C.T. ratio and the power value corresponding to output
TN1P5PA22A	SELFSUPPLIED 110V 5A ±1mA			V.T. and C.T. ratio and the power value corresponding to output
TN1P5PA51A	SELFSUPPLIED 400V 1A ±1mA			C.T. ratio and the power value corresponding to output
TN1P5PA52A	SELFSUPPLIED 400V 5A ±1mA			C.T. ratio and the power value corresponding to output
TN1P5PA61A	SELFSUPPLIED 415V 1A ±1mA			C.T. ratio and the power value corresponding to output
TN1P5PA62A	SELFSUPPLIED 415V 5A ±1mA			C.T. ratio and the power value corresponding to output
TN1P5PA71A	SELFSUPPLIED 440V 1A ±1mA			C.T. ratio and the power value corresponding to output
TN1P5PA72A	SELFSUPPLIED 440V 5A ±1mA			C.T. ratio and the power value corresponding to output

Tesi Q — Three-phase 3/4 wire balanced load non-insulated reactive power Transducer

Ordering code	Description	Stock		Data to be shown in addition to ordering code
TN1Q2PA11A	SELFSUPPLIED 100V 1A ±1mA			V.T. and C.T. ratio and the power value corresponding to output
TN1Q2PA12A	SELFSUPPLIED 100V 5A ±1mA			V.T. and C.T. ratio and the power value corresponding to output
TN1Q2PA21A	SELFSUPPLIED 110V 1A ±1mA			V.T. and C.T. ratio and the power value corresponding to output
TN1Q2PA22A	SELFSUPPLIED 110V 5A ±1mA			V.T. and C.T. ratio and the power value corresponding to output
TN1Q2PA51A	SELFSUPPLIED 400V 1A ±1mA			C.T. ratio and the power value corresponding to output
TN1Q2PA52A	SELFSUPPLIED 400V 5A ±1mA			C.T. ratio and the power value corresponding to output
TN1Q2PA61A	SELFSUPPLIED 415V 1A ±1mA			C.T. ratio and the power value corresponding to output
TN1Q2PA62A	SELFSUPPLIED 415V 5A ±1mA			C.T. ratio and the power value corresponding to output
TN1Q2PA71A	SELFSUPPLIED 440V 1A ±1mA			C.T. ratio and the power value corresponding to output
TN1Q2PA72A	SELFSUPPLIED 440V 5A ±1mA			C.T. ratio and the power value corresponding to output

Tesi Q — Three-phase 3 wire unbalanced load non-insulated reactive power Transducer

Ordering code	Description	Stock		Data to be shown in addition to ordering code
TN1Q4PA11A	SELFSUPPLIED 100V 1A ±1mA			V.T. and C.T. ratio and the power value corresponding to output
TN1Q4PA12A	SELFSUPPLIED 100V 5A ±1mA			V.T. and C.T. ratio and the power value corresponding to output
TN1Q4PA21A	SELFSUPPLIED 110V 1A ±1mA			V.T. and C.T. ratio and the power value corresponding to output
TN1Q4PA22A	SELFSUPPLIED 110V 5A ±1mA			V.T. and C.T. ratio and the power value corresponding to output
TN1Q4PA51A	SELFSUPPLIED 400V 1A ±1mA			C.T. ratio and the power value corresponding to output
TN1Q4PA52A	SELFSUPPLIED 400V 5A ±1mA			C.T. ratio and the power value corresponding to output
TN1Q4PA61A	SELFSUPPLIED 415V 1A ±1mA			C.T. ratio and the power value corresponding to output
TN1Q4PA62A	SELFSUPPLIED 415V 5A ±1mA			C.T. ratio and the power value corresponding to output
TN1Q4PA71A	SELFSUPPLIED 440V 1A ±1mA			C.T. ratio and the power value corresponding to output
TN1Q4PA72A	SELFSUPPLIED 440V 5A ±1mA			C.T. ratio and the power value corresponding to output

Tesi Q — Three-phase 4 wire unbalanced load non-insulated reactive power Transducer

Ordering code	Description	Stock		Data to be shown in addition to ordering code
TN1Q5PA11A	SELFSUPPLIED 100V 1A ±1mA			V.T. and C.T. ratio and the power value corrisponding to output
TN1Q5PA12A	SELFSUPPLIED 100V 5A ±1mA			V.T. and C.T. ratio and the power value corrisponding to output
TN1Q5PA21A	SELFSUPPLIED 110V 1A ±1mA			V.T. and C.T. ratio and the power value corrisponding to output
TN1Q5PA22A	SELFSUPPLIED 110V 5A ±1mA			V.T. and C.T. ratio and the power value corrisponding to output
TN1Q5PA51A	SELFSUPPLIED 400V 1A ±1mA			C.T. ratio and the power value corrisponding to output
TN1Q5PA52A	SELFSUPPLIED 400V 5A ±1mA			C.T. ratio and the power value corrisponding to output
TN1Q5PA61A	SELFSUPPLIED 415V 1A ±1mA			C.T. ratio and the power value corrisponding to output
TN1Q5PA62A	SELFSUPPLIED 415V 5A ±1mA			C.T. ratio and the power value corrisponding to output
TN1Q5PA71A	SELFSUPPLIED 440V 1A ±1mA			C.T. ratio and the power value corrisponding to output
TN1Q5PA72A	SELFSUPPLIED 440V 5A ±1mA			C.T. ratio and the power value corrisponding to output

Note:
For transducers Tesi P - Tesi Q the power value corresponding to output should be between 50% and 120% of rated power.
Single-phase line rated power Pn = V x I.
Three-phase line rated power Pn/Qn = $\sqrt{3}$ x V x I.
V = voltage rated value or VT primary value, I = current rated value or CT primary value.

Multifunction Transducer
with RS485 output

Model	XTEMCJM
Codes	PF22...
Ordering codes see page	83
Measuring	**phase and linked voltage, phase current, frequency, power factor, (active, reactive, apparent) power, active and reactive energy**
Line type	Three-phase 4 wire unbalanced load
Measuring type, wave form	True R.M.S., sinusoidal distorted
Accuracy	0,5 (voltage, current) - 1,5 (power) - 2 (power factor) ±0,15Hz (frequency) - 2 active energy - 3 reactive energy
Output	RS485 communication protocol JBUS/MODBUS
Current input	1A or 5A direct or from CT programmale ratio
Voltage input	50...450V (phase-phase) direct or from VT programmale ratio
Frequency	47...63Hz
A.C. auxiliary supply	115V or 230V or 240V
D.C. auxiliary supply	20...150V or 150...250V
Dimensions	8 module DIN
Technical note	NT653
Price	
Extra price d.c. auxiliary supply	•
Extra price 1A auxiliary supply	•

wiring connections page 87 overall dimensions page 88

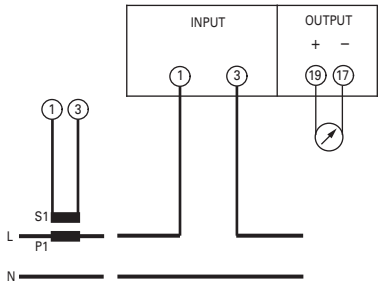
XTEMCJM Three-phase multifunction with RS485 serial output

Ordering code	Description	Stock		
PF22E113	A115V 1A 450V			
PF22E116	A230V 1A 450V			
PF22E117	A240V 1A 450V			
PF22E11H	A20-150Vdc 1A 450V			
PF22E11L	A150-250Vdc 1A 450V			
PF22E153	A115V 5A 450V			
PF22E156	A230V 5A 450V			
PF22E157	A240V 5A 450V			
PF22E15H	A20-150Vdc 5A 450V			
PF22E15L	A150-250Vdc 5A 450V			

Tema I

TM2I...

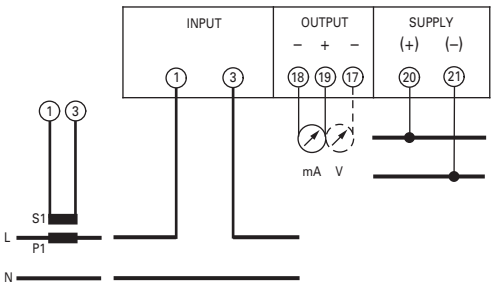
S.306/26



Tema I4 / Tema I4e

TM3I... / TM4I...

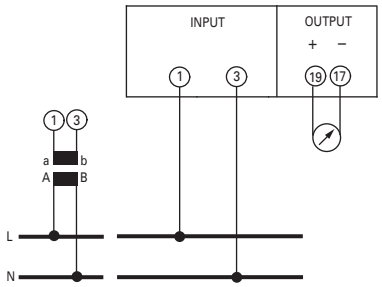
S.306/23



Tema U

TM2U...

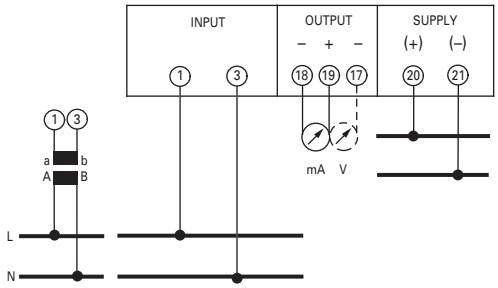
S.306/25



Tema U4 / Tema U4e

TM3U... / TM4U...

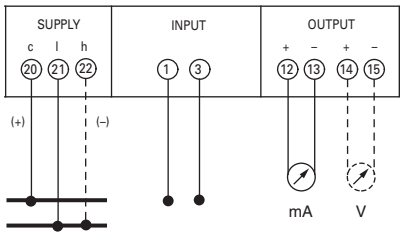
S.306/24



Tema Hz

TM1F...

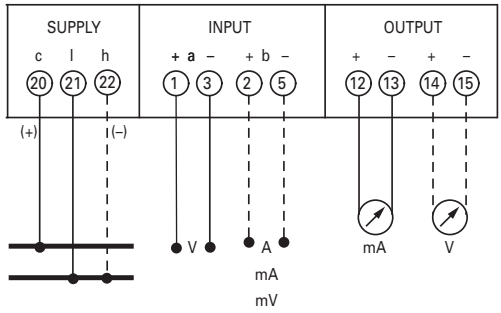
S.250/89



Tema DC

TM1A... / TM1V...

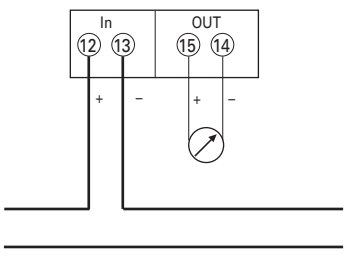
S.250/80



Tema SG

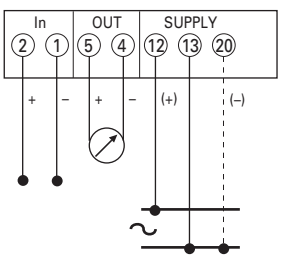
TM1G...

S.306/13



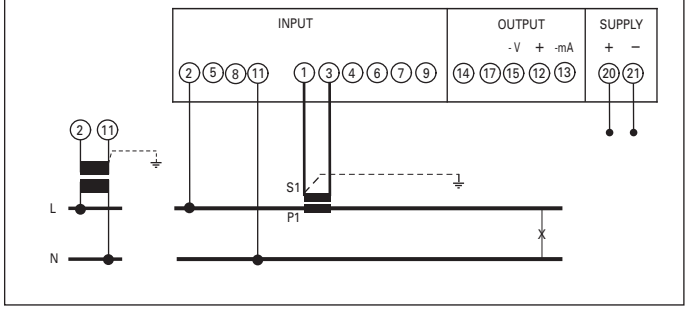
TM2G... / TM3G...

S.306/12



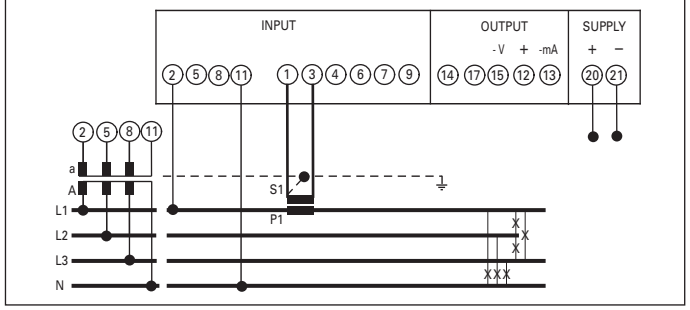
TM8P...

S.250/97



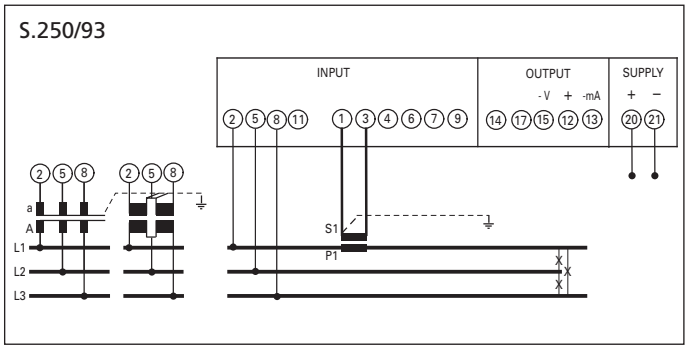
Single-phase line

S.250/95



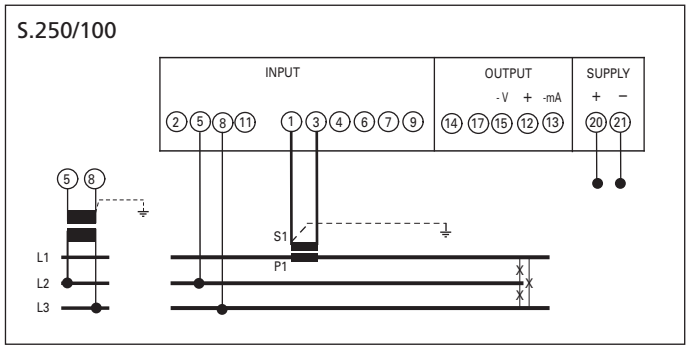
4-wire three-phase, balanced load

S.250/93



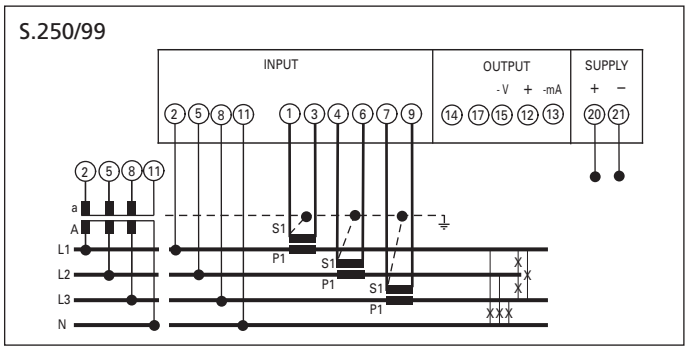
3-wire three-phase, balanced load

S.250/100



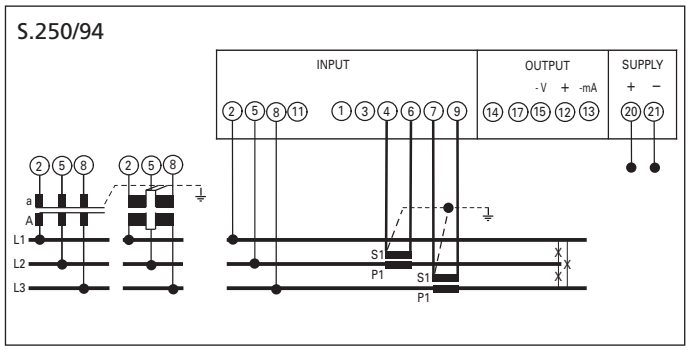
3-wire three-phase, balanced load

S.250/99



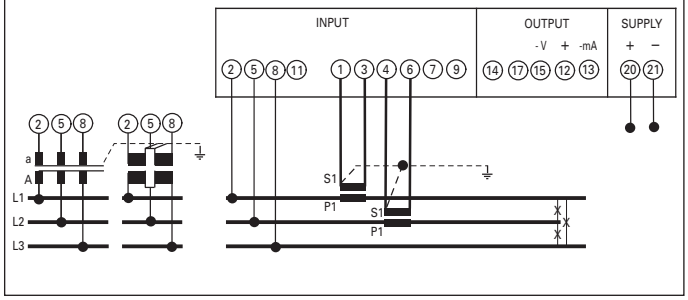
4-wire three-phase, unbalanced load

S.250/94



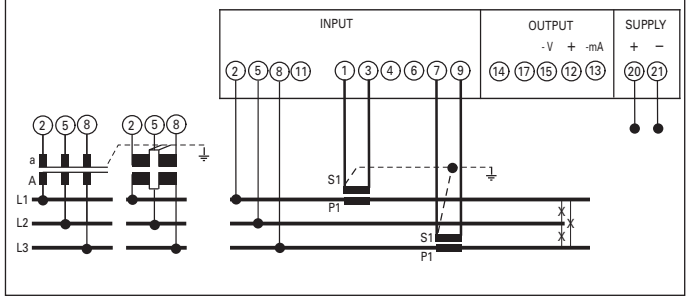
3-wire three-phase, unbalanced load (ARON L2-L3)

S.250/96



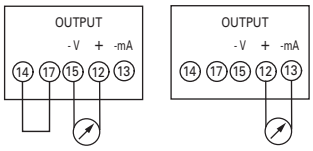
3-wire three-phase, unbalanced load (ARON L1-L2)

S.250/98



3-wire three-phase, unbalanced load (ARON L1-L3)

V mA

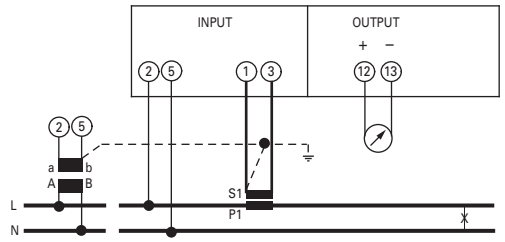


ANALOG OUTPUT

Tesi P

TN1P1...

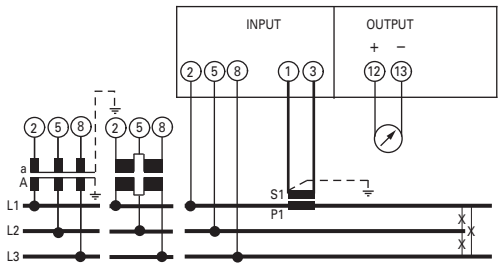
S.200/2



Single-phase line

TN1P2...

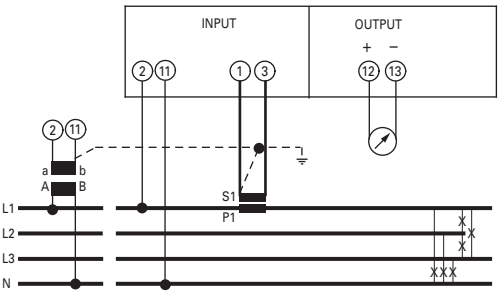
S.205/2



3-wire three-phase, balanced load

TN1P3...

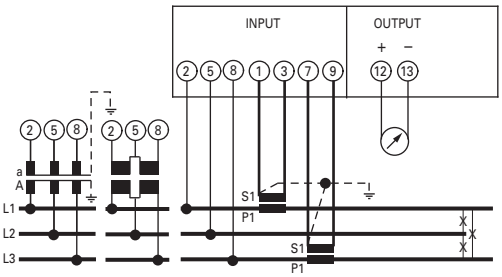
S.220/2



4-wire three-phase, balanced load

TN1P4...

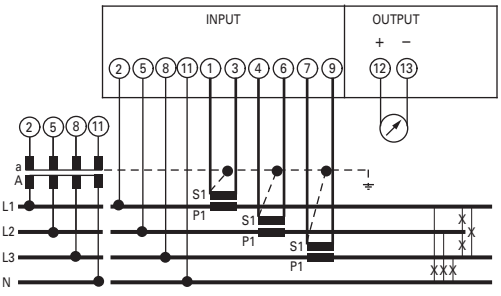
S.225/5



3-wire three-phase, unbalanced load ARON

TN1P5...

S.230/2

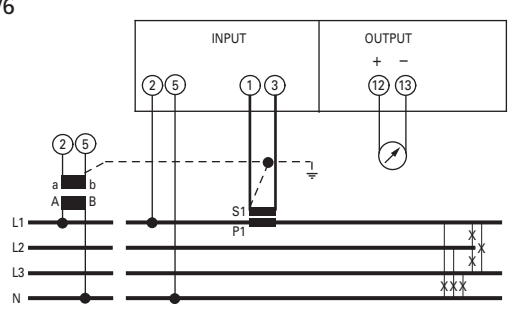


4-wire three-phase, unbalanced load

Tesi PF

TN1C1...

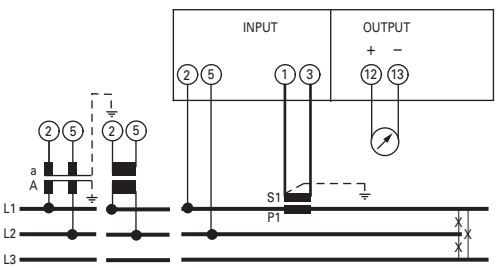
S.225/6



4-wire single or three-phase, balanced load

TN1C2...

S.225/7

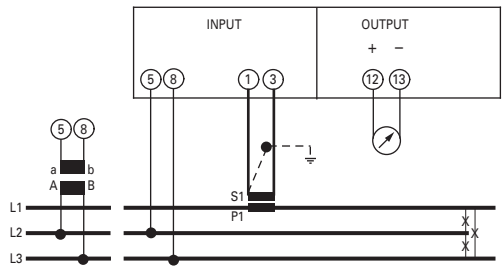


3-wire three-phase, balanced load

Tesi Q

TN1Q2...

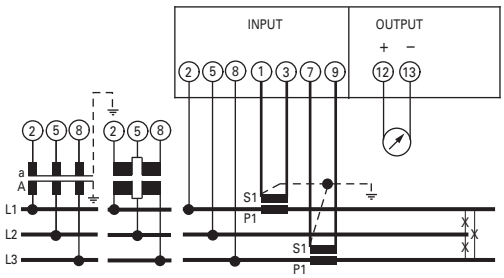
S.215/2



3/4-wire three-phase, balanced load

TN1Q4...

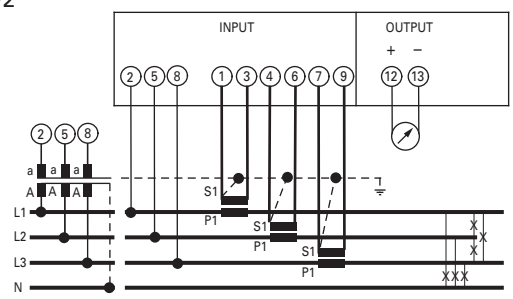
S.225/5



3-wire three-phase, unbalanced load ARON

TN1Q5...

S.235/2

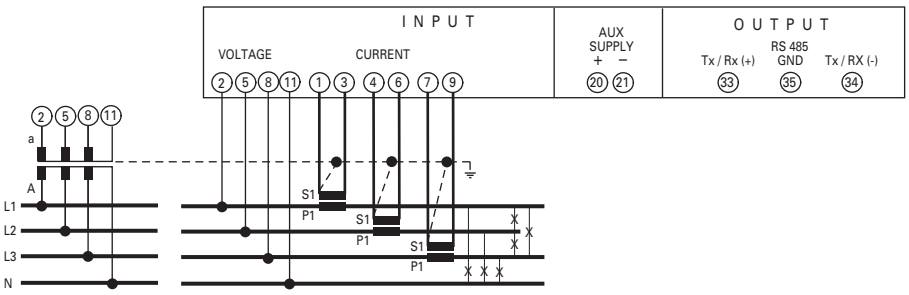


4 wire three-phase, unbalanced load

XTEMCJM

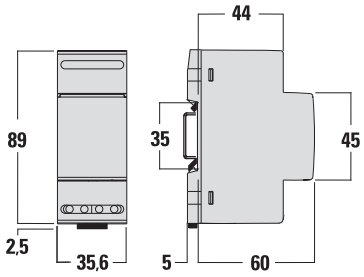
PF22...

S.1000/171



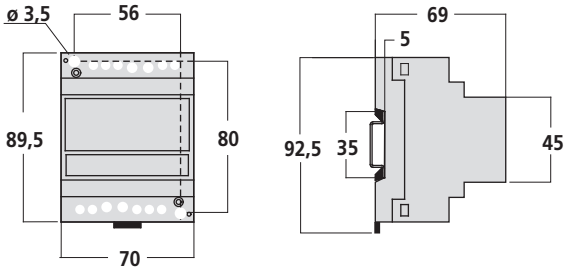
4-wire three-phase, unbalanced load

Tema I / Tema I4 / Tema I4e / Tema U / Tema U4 / Tema U4e



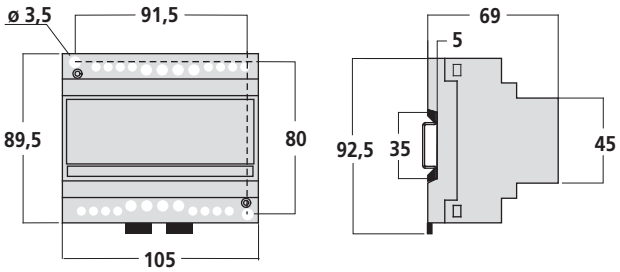
2 Module

Tema SG



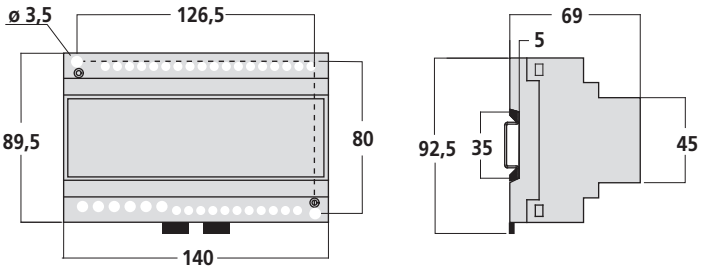
4 Module

Tema Hz / Tema DC / Tesi PF



6 Module

Tema fP / Tesi P / Tesi Q / XTEMCJM



8 Module