TEMA Programmable transducer



Installation manual











Contents

Dangers and warnings	4
Preliminary operations	4
Introduction	5
Installation	6
Configuration	7
Display	15
Technical features	20
List of acronyms	22



Dangers and warnings

These devices must only be installed by professionals. Failure to comply with the information contained in these instructions releases the manufacturer from any liability.

Risk of electrocution, burns or explosion:

- installation and maintenance of this equipment must only be carried out by qualified personnel
- before any work is carried out on the device, cut off the voltage inputs, short-circuit the secondary of each current transformer and cut off the auxiliary power supply to the device
- always use an appropriate voltage detection device to confirm the absence of voltage
- refit all devices, doors and covers before connecting the voltage to the device
- always apply the indicated nominal voltage to power this device
- failure to take these precautions could result in serious injury

Risk of deterioration of the device; make sure to respect the following:

- the auxiliary power supply voltage
- the network frequency at 50 or 60 Hz
- a maximum voltage at the voltage input terminals of 500 V AC phase/phase or 300 V AC phase/neutral
- a maximum current of 6 A at the current input terminals (I1, I2 and I3)

Preliminary operations

For the safety of personnel and material, it is essential to read the contents of this booklet carefully before putting the device into operation.

Upon receipt of the box containing the device, the following must be checked:

- the condition of the packaging
- the absence of damage or breakage due to transport
- correspondence between device code and ordered code
- the presence in the packaging of both the device and the instructions



Introduction



- 1 Backlit LCD display
- 2 Values
- 3 Phase
- 4 Current input
- 5 Service connection clamps *
- 6 Analog output clamps in mA or V
- 7 Unit of measure
- 8 4-button dual function keypad (display/configuration)

* These terminals are reserved exclusively for use by service personnel



Installation

Precautions

• Avoid proximity to electromagnetic disturbance generating systems

Connection

- For the maximum clamping torque see the table **Wiring diagrams**
 - 1N1E: single-phase network
 - 3-1E: balanced three-phase network, 3 wires, 1 sensor
 - 3N1E: balanced three-phase network, 4 wires, 1 sensor
 - 3N3E: three-phase network, 4 wires, 3 sensors
 - 3-2E: three-phase network, 3 wires, 2 sensors



0000000000	• V1, V2,	- Amm	1 x 2,5 mm ²	8
	V3, N Aux		1 x 2,5 mm ²	3 mm - PHO
	Output 3/+ 4/-	- Senm	1 x 4 mm ²	0,6 Nm





Device protection

• Recommended fuse 0.5 A type gG





Configuration

Key guide



Access code 1: 1000 - configuration access





Configuration screens

Screen 02Average Power Integration Time in minutesScreen 03Average Power Type to be Associated with the Analog Output *Screen 04Reset of the Average Power PeaksScreen 05Analog Output Response TimeScreen 06Rated CurrentScreen 07Start pageScreen 08Current or voltage Analog Output RangeScreen 10Decimal point position, unit of magnitude, sign and scale start valueScreen 11Decimal point position, unit of magnitude, sign and full scale valueScreen 12Firmware model and versionScreen 13Saving the configuration parameters	Screen 01	Network
Screen 03Average Power Type to be Associated with the Analog Output *Screen 04Reset of the Average Power PeaksScreen 05Analog Output Response TimeScreen 06Rated CurrentScreen 07Start pageScreen 08Current or voltage Analog Output RangeScreen 09Electrical magnitude to be associated with the Analog OutputScreen 10Decimal point position, unit of magnitude, sign and scale start valueScreen 11Decimal point position, unit of magnitude, sign and full scale valueScreen 12Firmware model and versionScreen 13Saving the configuration parameters	Screen 02	Average Power Integration Time in minutes
Screen 04Reset of the Average Power PeaksScreen 05Analog Output Response TimeScreen 06Rated CurrentScreen 07Start pageScreen 08Current or voltage Analog Output RangeScreen 09Electrical magnitude to be associated with the Analog OutputScreen 10Decimal point position, unit of magnitude, sign and scale start valueScreen 11Decimal point position, unit of magnitude, sign and full scale valueScreen 12Firmware model and versionScreen 13Saving the configuration parameters	Screen 03	Average Power Type to be Associated with the Analog Output *
Screen 05Analog Output Response TimeScreen 06Rated CurrentScreen 07Start pageScreen 08Current or voltage Analog Output RangeScreen 09Electrical magnitude to be associated with the Analog OutputScreen 10Decimal point position, unit of magnitude, sign and scale start valueScreen 11Decimal point position, unit of magnitude, sign and full scale valueScreen 12Firmware model and versionScreen 13Saving the configuration parameters	Screen 04	Reset of the Average Power Peaks
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Screen 07Start pageScreen 08Current or voltage Analog Output RangeScreen 09Electrical magnitude to be associated with the Analog OutputScreen 10Decimal point position, unit of magnitude, sign and scale start valueScreen 11Decimal point position, unit of magnitude, sign and full scale valueScreen 12Firmware model and versionScreen 13Saving the configuration parameters	Screen 06	Rated Current
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Screen 09Electrical magnitude to be associated with the Analog OutputScreen 10Decimal point position, unit of magnitude, sign and scale start valueScreen 11Decimal point position, unit of magnitude, sign and full scale valueScreen 12Firmware model and versionScreen 13Saving the configuration parameters	Screen 08	Current or voltage Analog Output Range
Screen 10 Decimal point position, unit of magnitude, sign and scale start value Screen 11 Decimal point position, unit of magnitude, sign and full scale value Screen 12 Firmware model and version Screen 13 Saving the configuration parameters	Screen 09	Electrical magnitude to be associated with the Analog Output
Screen 11 Decimal point position, unit of magnitude, sign and full scale value Screen 12 Firmware model and version Screen 13 Saving the configuration parameters	Screen 10	Decimal point position, unit of magnitude, sign and scale start value
Screen 12 Firmware model and version Screen 13 Saving the configuration parameters	Screen 11	Decimal point position, unit of magnitude, sign and full scale value
Screen 13 Saving the configuration parameters	Screen 12	Firmware model and version
	Screen 13	Saving the configuration parameters

* This setting is only valid when choosing Average Power to be associated with the Analog Output

Sreen 01 Network





Screen 02 Average Power Integration Time in minutes



Screen 03 Average Power Type to be Associated with Analog Output



Screen 04 Reset of the Average Power Peaks





Screen 05 Analog Output Response Time





Screen 07 Start page





IM-TM4PT0W Programmable transducer

Screen 08 Current or voltage Analog Output Range



Screen 09 Electrical magnitude to be associated with the Analog Output







Screen 10 Decimal point position, unit of magnitude, sign and scale start value***

** **;



Screen 11 Decimal point position, unit of magnitude, sign and full scale value***



FUAD

U 1.00

Installation manual

Screen 12 Firmware model and version Next page PF.F OK

Screen 13 Saving the configuration parameters

TEMA

P05 T PEF OK



* This selection takes back to configuration screen 1







Screen 1 tA ratio configuration



Screen 2 tV ratio configuration

Press the 'I' or 'PQS' keys to scroll through the following options	0001.00 3000.00	Confirm	РЕЕ ОК

Note: tAxtV \leq 220000 (In 5A) ; tAxtV \leq 2000000 (In 1A)

Screen 3 Saving the configuration parameters



IM-TM4PT0W





IME



Currents		
Display screens		
Screen 1	Phase Currents	

Screen 1 Phase Currents



Powers	
Display screens	
Screen 1	Active, reactive and apparent Three-phase Power
Screen 2	Active Phase Power
Screen 3	Reactive Phase power
Screen 4	Apparent Phase power
Screen 5	Active, reactive and apparent Average Power
Screen 6	Active, reactive and apparent Average Power Peak



1234 ° , 2345 °, 456,7 × w Σ - I -Touch to display the screen P·Q·S tés**x1** POS V PF-F CK TEMA Screen 2 Active Phase Power 1 34 UÞ 2 Touch to display the screen P·Q·S V **x2** 3 P05 7 PF-F CK Screen 3 Reactive Phase Power 1234 × 2345 × 4567 × 1 UP 2 Touch to display P·Q·S Cg-3 the screen х3 P-Q-5 V PF-F OK TEMA Screen 4 Apparent Phase Power 1 1234 * U > 2 k VA Touch to display P-Q-S V C the screen 3 k VA **x4** P05 7 PFF CK TEMA



Screen 5 Active, reactive and apparent Average Power



Screen 6 Active, reactive and apparent Average Power Peak



CosΦ, Frequency, Electrical Degrees

Screen 1 Three-phase Power Factor and Frequency Screen 2 Phase Power Factor Screen 3 Electrical degrees between voltages and currents	Display screens	
Screen 2 Phase Power Factor Screen 3 Electrical degrees between voltages and currents	Screen 1	Three-phase Power Factor and Frequency
Screen 3 Electrical degrees between voltages and currents	Screen 2	Phase Power Factor
	Screen 3	Electrical degrees between voltages and currents

Screen 1 Three-phase Power Factor and Frequency





Screen 2 Phase Power Factor



Screen 3 Electrical degrees between voltages and currents



Attention: in the event of incorrect connection, this screen appears



Restore the connection and press "U" to exit



Technical features

Enclosure	
Dimensions (w x h x d)	71,2 x 90 x 65mm
Connections	Image: Second product of the second
Protection index:	IP52 front, IP20 clamps
Weight:	218 g
Display	
Туре:	Backlit LCD
Auxiliary power supply	
Uaux value:	24 240 V AC/DC ± 10%
Measurement	
Three-phase network, 3 and 4 wires	
Voltage (TRMS) Direct measurement	
Rated three-phase voltage Un:	3x230V~ / 3x400V~ 3x100V~
Voltage circuit self-consumption:	Max. ≤ 0.6VA three-phase
Current (TRMS) Direct measurement	In: 1A I _{max} : 1,2A In: 5A I _{max} : 6A
Frequency	
Rated frequency	Fn 50Hz; 60Hz
Permitted variation	4565Hz



Analog Output	
Precision class (IEC/EN 60688):	cl.0.5 (power), cl.1 (power factor), ±0.2Hz (frequency)
Voltage:	-10+10V, 010V, 15V
Current:	-20+20mA,-10+10mA,420mA,020mA, 010mA, 05mA, -5+5mA
Conditions of use	
Operating temperature:	(-10°C) ÷ (55°C)
Storage temperature:	(-25°C) ÷ (70°C)
Maximum dissipated power:	< 5 W
Mechanical environment:	M1
Electromagnetic environment:	E2
Installation:	Assembly of an IP51 panel
Use:	Indoor use

CE Marking

The devices comply:

- With the provisions of the European Electromagnetic Compatibility (EMC), Directive No. 2014/30/EU
- With the Low Voltage Directive, No. 2014/35/EU
- With the 2011/65/EU Directive, as amended by Directive 2015/863 (RoHS 2)

Electromagnetic Compatibility

Tests in accordance with IEC/EN 61326-1

Insulation (EN 61010-1)	
Category of measurement:	ш
Pollution index:	2
Reference voltage for insulation:	300V (Phase-Neutral)
Test voltages:	Dielectric strength between circuits: - alternate voltage, 50 Hz/1min 3kV Dielectric strength between circuits and enclosure: - alternate voltage, 50 Hz/1min 4kV Measuring input pulse and auxiliary power supply: - wave 1.2/50us 0.5J:6kV



List of acronyms

PASS	Password
SYS	Type of network
3n3E	Three-phase network, 4 wires, 3 sensors
3-2E	Three-phase network, 3 wires, 2 sensors
3n1E	Balanced three-phase network, 4 wires, 1 sensor
3-1E	Balanced three-phase network, 3 wires, 1 sensor
1n1E	Single-phase network
Pd	Average power
MIn	Minutes
Σ	Total
ACt	Active
APP	Apparent
rEA	Reactive
rES	Reset
MPd	Maximum average power:
٨	Peak
rESP	Response
nOM	Rated
CUrr	Current
Inlt	Initial
VAL	Value
Р	Power
PF	Power factor
An	Analog
3-PH	Three-phase
PH1	Phase 1
PH2	Phase 2
PH3	Phase 3

COSt	Cosφ three-phase
COS1	Cosφ phase 1
COS2	Cosφ phase 2
COS3	Cosφ phase 3
dEgr °	Electrical degrees
F	Frequency
bS	Scale start
ES	Full scale
tA	Current transformation ratio
tV	Voltage transformation ratio
1,2,3	Phase number
р	Positive
n	Negative



Notes

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BTicino S.p.A Viale Borri, 231 21100 Varese (VA) ITALY www.bticino.com

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