

# ORDER FORM

To order e<sup>2</sup>TANGO-600, -800, -1000, -1200 bay controller, please fill in this form in accordance to FORM INSTRUCTIONS on the next page.

## STEP 1

① panel type	<input type="checkbox"/> 600	<input checked="" type="checkbox"/> 800	<input type="checkbox"/> 1000	<input type="checkbox"/> 1200	
② main unit type	<input checked="" type="checkbox"/> J6	<input type="checkbox"/> J10	<input type="checkbox"/> J14		
TR measurement card type	<input checked="" type="checkbox"/> TRS (for synchrocheck, 4I+5U)	<input type="checkbox"/> TR (for Cap. Bank bays 5I+4U)	<input type="checkbox"/> TRU (for ATS, 9U)	<input type="checkbox"/> TRSG (5I+5U)	<input type="checkbox"/> TRP (5I+3Ip+4U)
③ change the way of measurement method (from core transformer) <sup>1)</sup>	<input type="checkbox"/> TRC (Rogowski coils 3I <sub>CR</sub> +1I+5U) <input type="checkbox"/> TRCZ [Rogowski coils 3I <sub>CR</sub> +1I+ voltage sensors 3U+1Us (synchronizing voltage)]				
④ rated current of the measurement card <sup>2)</sup>	<input checked="" type="checkbox"/> 5 A, 100 V (for TR, TRS, TRP, TRSG card) <sup>2)</sup>	<input type="checkbox"/> 100 V, 230 V (TRU)	<input type="checkbox"/> 200k (for TRCZ card)	<input type="checkbox"/> 2M (for TRCZ card)	<input type="checkbox"/> X (none for TRC card)
⑤ binary input voltage	<input checked="" type="checkbox"/> UNI (110/230 V AC/DC)	<input type="checkbox"/> UNIH <sup>3)</sup> (110/230 V AC/DC)	<input type="checkbox"/> 24V (24/48 V AC/DC) <sup>4)</sup>	<input type="checkbox"/> 24VH <sup>3)</sup> (24/48 V AC/DC) <sup>4)</sup>	<input type="checkbox"/> other (on consultation with the manufacturer)
communication ETHERNET (standard equipment in each central unit)					
⑥ COM1	<input checked="" type="checkbox"/> X-none	<input type="checkbox"/> RS485	<input type="checkbox"/> CANx2	<input type="checkbox"/> OPTOMM	<input type="checkbox"/> OPTOSM
		<input type="checkbox"/> OPTOP	<input type="checkbox"/> Profibus	<input type="checkbox"/> ProfiNET	<input type="checkbox"/> others
⑦ COM2	<input checked="" type="checkbox"/> X-none	<input type="checkbox"/> RS485	<input type="checkbox"/> CANx2	<input type="checkbox"/> OPTOMM	<input type="checkbox"/> OPTOSM <sup>5)</sup>
		<input type="checkbox"/> OPTOP	<input type="checkbox"/> Profibus	<input type="checkbox"/> ProfiNET	<input type="checkbox"/> others
⑧ mounting method	<input checked="" type="checkbox"/> Z- flush	<input type="checkbox"/> N1- wall version 1	<input type="checkbox"/> N3-wall version 3 <sup>6)</sup>	<input type="checkbox"/> N4-wall version 4	<input type="checkbox"/> M-mixed
⑨ panel-main unit cable length <sup>7)</sup>	<input checked="" type="checkbox"/> S-1 m	<input type="checkbox"/> L-2 m	<input type="checkbox"/> other (in agreement with manufacturer)		
⑩ IP protection level	<input checked="" type="checkbox"/> IP4X	<input type="checkbox"/> IP54 <sup>8)</sup>			
⑪ communication IEC 61850 <sup>9)</sup>	<input checked="" type="checkbox"/> EX-none	<input type="checkbox"/> EG	<input type="checkbox"/> E2G	<input type="checkbox"/> E	<input type="checkbox"/> E2
		<input type="checkbox"/> OG	<input type="checkbox"/> O2G	<input type="checkbox"/> O	<input type="checkbox"/> O2
⑫ language version	<input type="checkbox"/> PL	<input checked="" type="checkbox"/> EN	<input type="checkbox"/> other (in agreement with manufacturer)		

1) Eg. page 21.

2) 5A/1A configurable from the software level.

3) W1, W2, W3 strengthened outputs..

4) Universal card for voltages in the range of 24-48 V AC/DC.

5) OPTOSM card required for communication with the other side in the case of line differential protection.

6) In the 3rd wall mounting version, a 0,25 m long cable is used.

7) Degree of protection for operating panel (front side).

8) IP54 protection level available only in version with flush and mixed mounting.

9) IEC 61850 communication is supported by additional communication ports located on the operator panel. If the device is ordered with IEC 61850 protocol support, it is not possible to implement additional functionality for camera preview.

Description of the symbols:

G - equipped with G00SE communication

E - connection through twisted pair with RJ-45 connector

O - connection through multimode optical fibre with SC/(ST on special order) connector

2 - equipped with two redundant ports in PRP/(HSR on special order) standard

## STEP 2

		slot													
		A	B	C	D	E	F	G	H	I	J	K	L	M	N
card type	code														
processor card CPU	-	installed in each device													
power supply card PSU - 7 binary outputs	-	installed in each device													
communication Ethernet	-	installed in each device													
8 binary inputs <sup>1)</sup>	8IN	■	□	□	□	□	□	□	□	□	□	□	□	□	□
12 binary inputs <sup>1)</sup>	12IN	□	□	■	□	□	□	□	□	□	□	□	□	□	□
8 binary inputs 24 V <sup>2)</sup>	8IN24	□	□	□	□	□	□	□	□	□	□	□	□	□	□
12 binary inputs 24 V <sup>2)</sup>	12IN24	□	□	□	□	□	□	□	□	□	□	□	□	□	□
8 binary inputs 220 V <sup>3)</sup>	8IN220	□	□	□	□	□	□	□	□	□	□	□	□	□	□
12 binary inputs 220 V <sup>3)</sup>	12IN220	□	□	□	□	□	□	□	□	□	□	□	□	□	□
8 binary outputs	8OUT	□	■	□	□	□	□	□	□	□	□	□	□	□	□
4 fast high-current binary outputs	4OUTH	□	□	□	□	□	□	□	□	□	□	□	□	□	□
4 analogue input 0-10 V	AI10	□	□	□	□	□	□	□	□	□	□	□	□	□	□
4 analogue input 4-20 mA	AI20	□	□	□	□	□	□	□	□	□	□	□	□	□	□
4 analogue output 0-10 V	AO10	□	□	□	□	□	□	□	□	□	□	□	□	□	□
4 analogue output 4-20 mA	AO20	□	□	□	□	□	□	□	□	□	□	□	□	□	□
6 PT100 temperature sensor input	PTI	□	□	□	□	□	□	□	□	□	□	□	□	□	□
3 TMP inputs (busbar temperature measurement) + 3 sensors	3TMP	□	□	□	□	□	□	□	□	□	□	□	□	□	□
6 TMP inputs (busbar temperature measurement sensors)	6TMP	□	□	□	□	□	□	□	□	□	□	□	□	□	□
6 arc detector input with CANbus communication + 3 arc detectors	ARC	□	□	□	□	□	□	□	□	□	□	□	□	□	□
6 arc detector input (passive) + 3 arc detectors	ARP	□	□	□	□	□	□	□	□	□	□	□	□	□	□
redundant power supply <sup>4)</sup>	PSU2			□	□	□	□	□	□	□	□	□	□	□	□
additional voltage set measurement with transformers card (4U) <sup>5)</sup>	TV					□	□								
additional voltage measurement set with sensors for synchro check <sup>6)</sup>	TVZ					□									
additional current measurement MV1 side <sup>7)</sup>	TRR					□									
additional current measurement MV2 side or LV side <sup>7)</sup>							□								
		J6						J10				J14			

1) Card dedicated for 110 V – operational voltage range: 80–390 V DC (276 V AC).

2) Card dedicated for 24 V – operational voltage range: 19–60 V DC.

3) Card dedicated for 220 V – operational voltage range: 176–264 V DC.

4) Card occupies 2 adjacent horizontal slots, e.g., C and E, D and F, etc. Dedicated card for 110–220 V AC/DC voltages.

5) For TV cards, available slots are E and F (maximum of 2 TV cards can be placed). The use of TRS, TRC, or TRCZ cards is required. If the card is placed in slot F, the J10 or J14 unit is required.

6) Card is placed in slot E.

7) Card placed in slot E is used for measuring the differential current of the MV1 side transformer, available for J10 and J14 units, and simultaneously occupies two slots C and E. The TRR card placed in slot F is required for measuring the differential current of the motor or transformer on the MV2 side or additional currents from the low voltage side of the transformer, available for J10 and J14 units, and simultaneously occupies two slots D and F.

additional number of arc sensors

 only if the ARC or ARP card is ordered

additional requirements:

(e.g., measurement of currents, voltages, and protection on the medium and low voltage side of the transformer, insulation state control, camera view, enhanced cyber-security, health and safety plates, ferroresonance detection system, customized plugs, etc.)

## STEP 3

Your code:

e<sup>2</sup>TANGO

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪ ⑫

A B C D E F G H I J K L M N

# FORM INSTRUCTIONS

## STEP 1

In the presented table there are the basic technical parameters of the e<sup>2</sup>TANGO-600, -800, -1000, -1200 bay controller. From each position marked with a numbers from 1 to 11 there is only one position to be selected. If you choose "other", in STEP 3 in the corresponding field, please enter the requested value.

Step 1 instructions

- - recommended basic configuration
- OPTOMM - multi-mode optic fibre
- N1-wall mounting version 1
- N3-wall mounting version 3
- N4-wall mounting version 4

## STEP 2

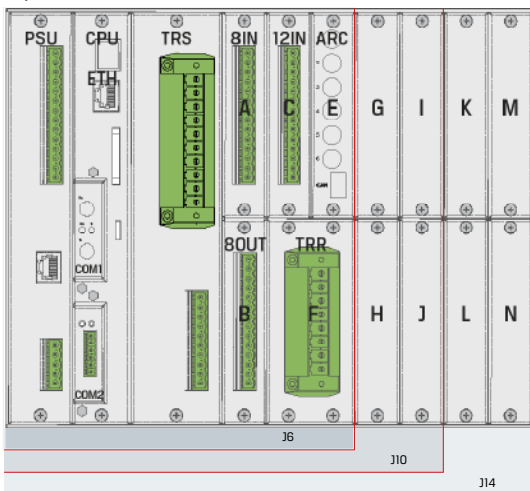
In the presented table there is a list of available expansion cards and their possible installation locations in the central unit of e<sup>2</sup>TANGO-600, -800, -1000, -1200. Missing field  for marking means that the card cannot be installed in a given place. Please choose from the list the ordered cards and mark with "X" a slot, in which they have to be installed. Arranging the cards has to be started from the A slot. Capacity of the units are marked appropriately with the background colour in the table.

Step 2 instructions

- - recommended basic configuration
- max 4 cards 8OUT
- max 1 card AI10 or 1 card AI20
- max 1 card AO10 or 1 card AO20
- max 1 card PT1
- maximum 1 3TMP or 6TMP card
- TRR card can only be installed in slot F in J10 and J14 units, occupy two slots D and F
- the ARP card can be placed in the device only if an ARC card is already installed
- TV card for additional voltage set measurement can only be installed in slot E; TV card can't be installed simultaneously with TRS card in the same equipment
- 3TMP and 6TMP cards for busbar temperature measurement is equipped with 5 m long communication fiber optic, other length on customer's request; Dimentions of the busebar must be specified as additional requirement
- the standard length of the flash sensors optical fiber is 5 m, other lengths in consultation with the manufacturer

Additional requirements have to be described in a designated area.

View of the central unit indicating the arrangement of slots for expansion cards.



### STEP 3

Selected above parameters of the e<sup>2</sup>TANGO-600, -800, -1000, -1200 bay controller have to be inserted in the corresponding space. The code created in that way together other requirements or scanned order form page has to be sent along with an order to the following address:

[eaz@elektrometal-energetyka.pl](mailto:eaz@elektrometal-energetyka.pl)

Example of e<sup>2</sup>TANGO bay controller configuration:

① e <sup>2</sup> TANGO-1000 panel	⑩ IP4X protection level
② J10 main unit	⑪ standard IEC 61850
③ TRS measurement card	⑫ EN
④ rated current of measurement card 5A: X	A slot A: 8IN card
⑤ universal binary input voltage	B slot B: 8OUT card
⑥ OPT0MM	C slot C: 12IN card
⑦ RS485	D slot D: X card
⑧ mixed mounting	E slot E: ARC card
⑨ 8 m cable	F slot F: TRR card

Example of correct filled code:

e <sup>2</sup> TANGO	1000	J10	TRS	5A	UNI	OPT0MM	RS485	M	8	IP4X	EX	EN
8IN	8OUT	12IN	X	ARC	TRR							