

# TEST CERTIFICATE

Issued to: Tekpan Teknik Elektrik Kumanda Pano San. ve Turizm Tic. As.  
Kemalpaşa O.S.B.  
İstiklal Mah.17 SK No. 8, Ulucak Kemalpaşa  
İzmir  
Turkey

For the product: Low-voltage switchgear and controlgear assembly

Trade name: Tekpan / PDS

Type/Model: Teos Series (plus+/standard) 4000A - Main busbars / Distribution busbars

Ratings:  $I_{nc}$  max. 3800 A (main busbars),  $I_{nc}$  max. 3800 A (distribution busbars)  
 $I_{cw}$  max. 85 kA - 1 s (main busbars),  $I_{cw}$  max. 80 kA - 1 s (distribution busbars)  
 $U_i$  1000 V,  $U_{imp}$  12 kV  
For more details see annex

Manufactured by: Tekpan Teknik Elektrik Kumanda Pano San. ve Turizm Tic. As.  
Kemalpaşa O.S.B.  
İstiklal Mah.17 SK No. 8, Ulucak Kemalpaşa  
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Subject: Design verification

Requirements: IEC 61439-2:2020  
Clauses 10.4, 10.5.3, 10.9, 10.10.2.3.7a, 10.10.2.3.7b, 10.11

Remarks: Date of performance of tests: March 2020 and July 2021 to March 2022  
(see general notes on tests in the report)

This Test Certificate is granted on account of an examination by DEKRA, the results of which are laid down in report no. 2254358.01-INC, dated 23 March 2022.

The examination has been carried out on one single specimen of the product, submitted by the manufacturer. The Attestation does not include an assessment of the manufacturer's production. Conformity of his production with the specimen tested by DEKRA is not the responsibility of DEKRA.

Arnhem, 23 March 2022

Number: 2254358.100

DEKRA Certification B.V.



F.S. Strikwerda  
Certification Manager

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**Overview of product evaluation according to IEC 61439-2:**

IEC 61439-2 Clause	Clause description	Tested ratings	Results
10.4	Clearances and creepage distances	Clearances > 14 mm, based on Uimp = 12 kV; Creepage distances > 16 mm, based on Ui = 1000 V, pollution degree 3, material group IIIa.	Pass
10.5	Protection against electric shock and integrity of protective circuits		
10.5.3	Short-circuit withstand strength of the protective circuit	l <sub>cw</sub> PE busbars: 25,2 kA - 0,1 s - (2x) 20 x 5 mm 39,6 kA - 0,1 s - (2x) 30 x 5 mm 39,6 kA - 0,1 s - (2x) 40 x 5 mm 39,6 kA - 0,1 s - (2x) 50 x 5 mm 39,6 kA - 0,1 s - (2x) 30 x 10 mm 51 kA - 1 s - (2x) 40 x 10 mm	Pass
10.9	Dielectric properties		
10.9.2	Power-frequency withstand voltage	Ui 1000 V (main busbars) Ui 1000 V (distribution busbars)	Pass
10.9.3	Impulse withstand voltage	Uimp 12 kV (main busbars) Uimp 12 kV (distribution busbars)	Pass
10.10	Temperature-rise		
10.10.2.3.7a	Verification of main busbars separately at normal ambient temperature	Natural ventilation Inc: 1296 A - (2x) 40 x 10 mm 1620 A - (2x) 50 x 10 mm 1725 A - (2x) 60 x 10 mm 2300 A - (2x) 80 x 10 mm 2500 A - (4x) 40 x 10 mm 2500 A - (4x) 50 x 10 mm 3000 A - (4x) 60 x 10 mm 2900 A - (4x) 80 x 10 mm	Pass
10.10.2.3.7a	Verification of main busbars separately at normal ambient temperature	Forced ventilation Inc: 3400 A - (4x) 60 x 10 mm 3800 A - (4x) 80 x 10 mm	Pass
10.10.2.3.7a	Verification of main busbars separately at 50 °C ambient temperature	Natural ventilation Inc: 1296 A - (2x) 40 x 10 mm 1620 A - (2x) 50 x 10 mm 1538 A - (2x) 60 x 10 mm 2050 A - (2x) 80 x 10 mm 2240 A - (4x) 40 x 10 mm 2167 A - (4x) 50 x 10 mm 2600 A - (4x) 60 x 10 mm 2600 A - (4x) 80 x 10 mm	Pass
10.10.2.3.7a	Verification of main busbars separately at 50 °C ambient temperature	Forced ventilation Inc: 3050 A - (4x) 80 x 10 mm	Pass

IEC 61439-2 Clause	Clause description	Tested ratings	Results
10.10.2.3.7b	Verification of distribution busbars separately at normal ambient temperature	Natural ventilation Inc: 440 A - (2x) 20 x 5 mm 660 A - (2x) 30 x 5 mm 880 A - (2x) 40 x 5 mm 1100 A - (2x) 50 x 5 mm 1320 A - (2x) 60 x 5 mm 1296 A - (2x) 40 x 10 mm 1620 A - (2x) 50 x 10 mm 1725 A - (2x) 60 x 10 mm 2300 A - (2x) 80 x 10 mm 2500 A - (4x) 40 x 10 mm 2417 A - (4x) 50 x 10 mm 2900 A - (4x) 60 x 10 mm 2900 A - (4x) 80 x 10 mm	Pass
10.10.2.3.7b	Verification of distribution busbars separately at normal ambient temperature	Forced ventilation Inc: 2500 A - (4x) 40 x 10 mm 3200 A - (4x) 60 x 10 mm 3800 A - (4x) 80 x 10 mm	Pass
10.10.2.3.7b	Verification of distribution busbars separately at 50 °C ambient temperature	Natural ventilation Inc: 2600 A - (4x) 80 x 10 mm	Pass
10.10.2.3.7b	Verification of distribution busbars separately at 50 °C ambient temperature	Forced ventilation Inc: 3050 A - (4x) 80 x 10 mm	Pass
10.11	Short-circuit withstand strength	Icw main busbars (3-phase): 42 kA - 1 s - (2x) 40 x 10 mm 66 kA - 1 s - (2x) 50 x 10 mm 66 kA - 1 s - (2x) 60 x 10 mm 66 kA - 1 s - (2x) 80 x 10 mm 66 kA - 1 s - (4x) 40 x 10 mm 66 kA - 1 s - (4x) 50 x 10 mm 66 kA - 1 s - (4x) 60 x 10 mm 85 kA - 1 s - (4x) 80 x 10 mm  Icw main busbars (neutral): 25,2 kA - 1 s - (2x) 40 x 5 mm 39,6 kA - 1 s - (2x) 50 x 5 mm 39,6 kA - 1 s - (2x) 60 x 5 mm 39,6 kA - 1 s - (2x) 40 x 10 mm 39,6 kA - 1 s - (2x) 50 x 10 mm 39,6 kA - 1 s - (2x) 60 x 10 mm 51 kA - 1 s - (2x) 80 x 10 mm	Pass
		Icw distribution busbars (3-phase): 25 kA - 1 s - (2x) 20 x 5 mm 25 kA - 1 s - (2x) 30 x 5 mm 25 kA - 1 s - (2x) 40 x 5 mm 25 kA - 1 s - (2x) 50 x 5 mm 25 kA - 1 s - (2x) 60 x 5 mm 42 kA - 1 s - (2x) 40 x 10 mm 66 kA - 1 s - (2x) 50 x 10 mm 66 kA - 1 s - (2x) 60 x 10 mm 66 kA - 1 s - (2x) 80 x 10 mm 66 kA - 1 s - (4x) 40 x 10 mm 66 kA - 1 s - (4x) 50 x 10 mm 66 kA - 1 s - (4x) 60 x 10 mm 80 kA - 1 s - (4x) 80 x 10 mm  Icw distribution busbars (neutral): 60% of 3-phase	Pass

**Product details:**

	<b>Description</b>
<b>Main busbars</b>	Horizontal busbars (top): (2x) 40 x 10 mm (3-phase) and (2x) 40 x 5 mm (neutral) (2x) 50 x 10 mm (3-phase) and (2x) 50 x 5 mm (neutral) (2x) 60 x 10 mm (3-phase) and (2x) 60 x 5 mm (neutral) (2x) 80 x 10 mm (3-phase) and (2x) 40 x 10 mm (neutral) (4x) 40 x 10 mm (3-phase) and (2x) 40 x 10 mm (neutral) (4x) 50 x 10 mm (3-phase) and (2x) 50 x 10 mm (neutral) (4x) 60 x 10 mm (3-phase) and (2x) 60 x 10 mm (neutral) (4x) 80 x 10 mm (3-phase) and (2x) 80 x 10 mm (neutral)  All busbars are Copper
<b>Distribution busbars</b>	Vertical busbars: (2x) 20 x 5 mm (3-phase and neutral) (2x) 30 x 5 mm (3-phase and neutral) (2x) 40 x 5 mm (3-phase and neutral) (2x) 50 x 5 mm (3-phase and neutral) (2x) 60 x 5 mm (3-phase and neutral) (2x) 40 x 10 mm (3-phase and neutral) (2x) 50 x 10 mm (3-phase and neutral) (2x) 60 x 10 mm (3-phase and neutral) (2x) 80 x 10 mm (3-phase and neutral) (4x) 40 x 10 mm (3-phase and neutral) (4x) 50 x 10 mm (3-phase and neutral) (4x) 60 x 10 mm (3-phase and neutral) (4x) 80 x 10 mm (3-phase and neutral)  All busbars are Copper