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TEST REPORT

N. 11-0071-01 issued on 2011-04-04

Test Object	Busbar trunking system
Model	BLINDOCOMPATTO BX-E
Type	2000 A 3P+N+PE
Identification	- drawings: BX-E 0009/DD; BX-E 0010/DD; BX-E 0011/DD; by POGLIANO BUSBAR S.p.A. (pages 8÷10/18);
Manufacturer	POGLIANO BUSBAR s.r.l. - C.so Allamano 43 – Grugliasco (TO) - Italy
Date of the tests	2010-07-07, 2010-02-14
Test specification	Standards: IEC 60439-2 Ed.2.0 (2000-11) / IEC 60439-2/A1 (2006-08) Subclauses: 8.2.3 Verification of short circuit withstand streght; 8.2.4 Verification of the effectiveness of the protective circuit Rating assigned by the Customer to the test object: - Rated operational voltage (Ue): 1000 V; - Rated frequency : 50/60 Hz; - Rated short circuit current (Icw): 80 kA; The characteristics of the test object are listed in page 2/18.
Laboratory logbook	R-EM-09-01
Customer	POGLIANO BUSBAR s.r.l.
Address	C.so Allamano 43 Grugliasco (TO) Italy

Tested by

(Luca Cinnirella)

Authorized signatory
The Head of the Electromagnetics Division

(Vincenzo Lacquaniti)

This report states that the measurements have been carried out using devices traceable to the Italian National Standards (Ministerial Decree no. 591/1993) and to the measurement units realized or maintained by INRIM, according to the Italian law no. 273/1991.
The results reported in this document refer exclusively to the items described and to the specified measurement conditions. The authenticity of this report is proved by the original signatures and the embossing stamp.
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Description and characteristics of the test object

- Manufacturer	: POGLIANO BUSBAR s.r.l
- Model	: BLINDOCOMPATTO BX-E;
- Type	: 2000 A;
- Number of phases	: 3 + N
- Alluminium Alloy busbars (R-S-T-N) cross-section	: (6,45 x 195) mm^2;
- Iron zinc coated enclosure PE conductor cross-section	: 1230 mm^2;
- Rated Frequency	: 50/60 Hz
- Rated current (I_n)	: 2000 A;
- Rated operational voltage (U_e)	: 1000 V;
- Rated insulation voltage (U_i)	: 1000 V
- Rated peak withstand current (I_{pk})	: 176 kA;
- Rated short-time withstand current (I_{cw})	: 80 kA (r.m.s. value) for 1 s;
- Overall element dimensions in mm	: Height : 208; Width: 140; Length: 2000.

Checked by:
(A. Sardi)

2 - MEASUREMENT PROCEDURES, CONDITIONS AND RESULTS

2.1 Verification short circuit strength - Subclause 8.2.3;

Testing of the main circuits - Subclause 8.2.3.2.3 b);

2.1.1 Verification of rated short time current

Kind of test and requirements			Test values results
Test object			
- Compact busbar trunking system		:	BX-E; 2000 A
- Rated short-time withstand current		I_{cw} = 80 kA	
- Phases under test			L_1, L_2, L_3
Test circuit arrangement			
- Supply point		A:	D.4 (page 13/18)
- Short-circuit point		B:	D.4 (page 13/18)
- General view of the test object in the test plant is shown in photographs		:	F.1-F.2 (page 11/18)
- Test circuit		:	D.7 (page 14/18)
- Arrangement of the busbar trunking system			
Total length of busbar system		≤6m	4 m
Number of joints included		1	1
Test requirements			
- Short-time withstand current		I_{cw} = 80 kA	
- I^2t		6,4 GA^2s:	
- Peak value		I_{pk} = 176 kA:	
Test results for each phase of the test object:			
- Peak current value (I_{pk}):	- Phase:	- L_1 :	126,0 kA
		- L_2 :	126,0 kA
		- L_3 :	125,9 kA
- Current duration:	- Phase:	- L_1 :	2,98 s
		- L_2 :	2,98 s
		- L_3 :	2,97 s
- Thermal strength corresponding to a symmetrical short-time withstand current (I_{cw}) for 1 s:			
	- Phase:	- L_1 (I_{cw} - I^2t):	88,7 kA - 7,87 GA^2s
		- L_2 (I_{cw} - I^2t):	89,3 kA - 7,97 GA^2s
		- L_3 (I_{cw} - I^2t):	88,2 kA - 7,78 GA^2s
- Average values of the three-phases		(I_{cw} – I^2t):	88,7 kA - 7,87 GA^2s
- Test frequency			from 49,8 Hz to 38,1 Hz
- RMS current value (0,1 s after current initiation):		80 kA:	81,5 kA
		Phase	L2
- Enclosed record			no.13839 (page 15/18)
Results to be obtained:		(Yes/No/Not Applicable)	
- Conductors show no undue deformation.			Y
- No significant signs of deterioration of the conductor insulation and the support.			Y
- Minimum clearances and creepage distances maintained.			Y
- Detection device indicates no fault current.			Y
- No loosening of parts used for connection and no conductor is separated from the terminal.			Y
- Safety protection degree is not impaired.			Y
- Function of withdrawable and removable units is not impaired.			N A
- Dielectric properties			Y

Checked by:

(A. Sardi)

2.1.2 Verification of rated peak current

Kind of test and requirements				Test values results
Test results for each phase of the test object:				
- Peak current value (I_{pk}):	- Phase:	- L_1	:	142,2 kA
		- L_2	:	152,5 kA
		- L_3	:	176,3 kA
- Current duration (≥ 3 cycles):	- Phase:	- L_1	:	96,2 ms
		- L_2	:	90,6 ms
		- L_3	:	95,8 ms
- Test frequency				48,4 Hz
- Enclosed record				no.13842 (page 16/18)
Results to be obtained:	(Yes/No/Not Applicable)			
- Conductors show no undue deformation.				Y
- No significant signs of deterioration of the conductor insulation and the support.				Y
- Minimum clearances and creepage distances maintained.				Y
- Detection device indicates no fault current.				Y
- No loosening of parts used for connection and no conductor is separated from the terminal.				Y
- Safety protection degree is not impaired.				Y
- Function of withdrawable and removable units is not impaired.				N A
- Dielectric properties				Y

2.2 Verification short circuit strength - Subclause 8.2.3;
Testing of the main circuits - Subclause 8.2.3.2.3 d);

Kind of test and requirements		Test values results
Test object		
- Compact busbar trunking system	:	BX-E; 2000 A
- Rated short-time withstand current	I_{cw} = 48 kA	
- Neutral-phase test		L_1-N
Test circuit arrangement		
- Supply point	A:	D.5 (page 13/18)
- Short-circuit point	B:	D.5 (page 13/18)
- General view of the test object in the test plant is shown in photographs	:	F.1-F.2 (page 11/18)
- Test circuit	:	D.7 (page 14/18)
- Arrangement of the busbar trunking system		
Total length of busbar system	≤6m	4 m
Number of joints included	1	1
Test results:		
- Short-time withstand current	I_{cw} = 48 kA	49,7 kA
- I^2t	2,3 GA^2s:	2,47 GA^2s
- Peak value	101 kA:	103,3 kA
- Current duration:	:	1,95 s
- Thermal strength corresponding to a symmetrical short-time withstand current (I_{cw}) for 1 s:	(I_{cw} - I^2t):	49,7 kA - 2,47 GA^2s
- Test frequency		from 49,8 Hz to 45,7,1 Hz
- RMS current value (0,1 s after current initiation):	48 kA:	50,1 kA
- Enclosed record		no.13866 (page 17/18)
Results to be obtained:	(Yes/No/Not Applicable)	
- Conductors show no undue deformation.		Y
- No significant signs of deterioration of the conductor insulation and the support.		Y
- Minimum clearances and creepage distances maintained.		Y
- Detection device indicates no fault current.		Y
- No loosening of parts used for connection and no conductor is separated from the terminal.		Y
- Safety protection degree is not impaired.		Y
- Function of withdrawable and removable units is not impaired		N A
- Dielectric properties		Y

Checked by:

(A. Sardi)

2.3 Verification of the short-circuit strength of the protective circuit by test - Subclause 8.2.4.2;

Kind of test and requirements		Test values results
Test object		
- Compact busbar trunking system	:	BX-E; 2000 A
- Rated short-time withstand current	I_{cw} = 48 kA	
- PE conductors-phase test		L_3-PE
Test circuit arrangement		
- Supply point: A		D.6 (page 13/18)
- Short-circuit point: B		D.6 (page 13/18)
- General view of the test object in the test plant is shown in photographs	:	F.1-F.3 (pages 11-12/18)
- Test circuit	:	D.7 (page 14/18)
- Arrangement of the busbar trunking system		
Total length of busbar system	≤6m	4 m
Number of joints included	1	1
Test results		
- Short-time withstand current	I_{cw} = 48 kA	48,5 kA
- I^2t	2,3 GA^2s:	2,35 GA^2s
- Peak value	101 kA:	106,3 kA
- Current duration:	:	1,64 s
- Thermal strength corresponding to a symmetrical short-time withstand current (I_{cw}) for 1 s:	(I_{cw} - I^2t):	48,5 kA - 2,35 GA^2s
- Test frequency		from 49,8 Hz to 45,7 Hz
- RMS current value (0,1 s after current initiation):	48 kA:	49,8 kA
- Enclosed record		no.13903 (page 18/18)
Results to be obtained:	(Yes/No/Not Applicable)	
- Conductors show no undue deformation.		Y
- No significant signs of deterioration of the conductor insulation and the support.		Y
- Minimum clearances and creepage distances maintained.		Y
- Detection device indicates no fault current.		Y
- No loosening of parts used for connection and no conductor is separated from the terminal.		Y
- Safety protection degree is not impaired.		Y
- Function of withdrawable and removable units is not impaired		N A
- Dielectric properties		Y

Checked by:

(A. Sardi)