S.E.M.C.

SHOMAL Engineering & Manufacturing Co.

OPERATING INSTRUCTION

GTB SERIES OF GRP ENCLOSURES

WI-29(PCD-P-01)/00

THIS GUIDE SHOULD BE READ CAREFULLY BEFORE INSTALLATION.
INCORRECT INSTALLATION AND USE OF THE ENCLOSURES CAN INVALIDATE THE GUARANTEE!

Product group:

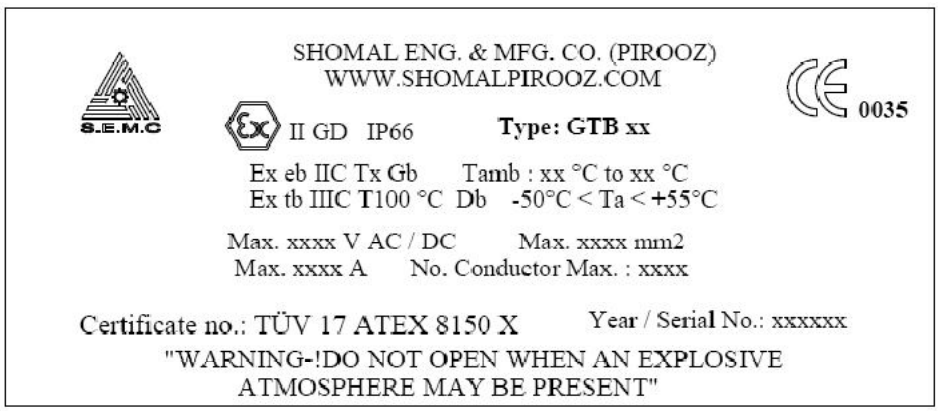
The basic safety and health requirements are met in conformity with IEC/EN 60079-0 ,IEC/EN 60079-7 and IEC/EN 60079-31.The low voltage regulations apply to enclosures.

Description of the Enclosure
The Glass Reinforced Polyester (GRP) enclosure types GTB Series, as operating devices for areas with explosion hazards, fulfill the requirements of EN/IEC 60079-0, EN/IEC 60079-7 for Increased Safety and EN/IEC 60079-31 for dust ignition protection by enclosure. It is an electrical operating material made from GRP black with cover and bottom part are screwed together by means of captive lid - Tightening torque for: M4(1 to 2) Nm, M6 (2 to 4) Nm. The sealing type is a key and slot system with a silicone sealing. For the internal installation there are fixing screw threads in the bottom ribs to which the carrying rails for clamps will be screw fastened. Fastening is also possible by inserting amounting plate. Screw fastening channels outside the sealing space are provided for supporting the enclosure.

Technical data for enclosures
Protection against contact, foreign particles, and water IP66 - IEC 60529

Technical data for terminal enclosures
Rated voltage max - 690V (depending on terminal type)
Cross section for connection max. 70 mm²
PE cross section max. 70 mm²
Protection against contact, foreign particles, and water IP66 i.a.w. IEC 60529
Ambient temperature range max – 50°C ... ≤+40°C T6
Ambient temperature range max – 50°C ... ≤+55°C T5
Ambient temperature range max – 50°C ... ≤+70°C T4
Ambient temperature range max – 50°C ... ≤+55°C T100°C

EXPLOSION PROTECTION:
Ⓔx II 2 GD IP66
Ex eb IIC Tx Gb
Ex tb IIIC T100°C Db
TUV 17 ATEX 8150X
IECEx TUR 17.0061X



Model Number Details :

S.no	SEMC Part Number	Original Model Number
1	GTB 01	Ex-E-GRJ-807555
2	GTB 02	Ex-E-GRJ-1107555
3	GTB 03	Ex-E-GRJ-12212090
4	GTB 04	Ex-E-GRJ-1607555
5	GTB 05	Ex-E-GRJ-1607575
6	GTB 06	Ex-E-GRJ-16016090
7	GTB 07	Ex-E-GRJ-1907555
8	GTB 08	Ex-E-GRJ-22012090
9	GTB 09	Ex-E-GRJ-255250120
10	GTB 10	Ex-E-GRJ-26016090
11	GTB 11	Ex-E-GRJ-36016090
12	GTB 12	Ex-E-GRJ-400250120
13	GTB 13	Ex-E-GRJ-400405120

Connection of PE conductor

Ex enclosures have to be grounded in accordance with the defaults in EN/IEC 60079-0, Per each inserted line, one PE conductor terminal is provided. The width of the PE conductor bus or brackets depends on the size of the terminal straps. As from 10 mm^2 onward a PE conductor terminal strip must be inserted, or respectively, a bracket clamp on a PE conductor bus. An external strap serving as output connection is screwed on by means of bolts. Suitable grounding should be between din rail and external earth stud with the help of suitable conductor of cross section from 4 mm^2 to 50mm^2 depending upon the requirement of combination.

Installation instructions

The degree of ingress protection of IP66 to IEC 60529 is only achieved if certified IP66 cable entries are used that that are suitable for the application and correctly installed. There are only cable entries used, for which an IECEx Certificate of Conformity has been issued by a recognized testing institution. There are the manufacturer's specifications to be considered.

- Alterations or modifications to the enclosure or its contents may invalidate the certification.
- Observe information marked on the external certification label, e.g. Type's of Protection, Gas Group and Temperature Class.
- Observe the maximum or minimum ratings specified on the internal rating label.
- The installer is permitted to drill entries in areas specified on the as per the details given in installation instruction of component, document numberWI-28(PCD-P-01)/00.
- Ensure that all lid screws are fully tightened after installation.
- The conductor insulation within the enclosure shall have a temperature rating appropriate to the T-class of the apparatus.
- Wiring within the enclosure must not be grouped or bunched where there is a risk of creating temperatures that increase the rating the conductor insulation or exceed the T-class of the apparatus.

● The conductor insulation shall extend to within 1mm of the terminal block clamp or cable lug.
●Minimum creepage and clearance distances specified in the appropriate standard must be maintained.
● Observe minimum wiring distance specified on the certified drawings.
● Conditions or limitations listed on the relevant terminal Component Certificates must be observed.
● When installing cable or conduit entries, the cable/conduit entries must be ATEX certified as increased safety "e" and protection by enclosure "tb" and have a minimum IP66 rating equal to the marking on the enclosure.
● All unused conduit/cable openings must be fitted with an ATEX certified close up plug equivalent of the apparatus and must be marked with an IP66rating.
● After installation, all creepage distances and clearances shall be according to Table 1 in EN 60079-7.
● Each terminal shall not be specified to accommodate more than one individual conductor in a clamping point.
● For screwless connections intended for Class 5 or Class 6 fine stranded conductors according to IEC 60228, the fine stranded wire shall be equipped with a ferrule or the termination shall have a method to open the clamping mechanism so that the conductors are not damaged during installation of the conductor.
● The end user shall provide bonding means as necessary.

Identification
The type tag consists of a self-adhesive polyester foil.

List of standards applicable:
EN 60079-0: 2012+A11:2013, IEC 60079-0: 2011
EN 60079-7: 2015, IEC 60079-7: 2015
EN 60079-31: 2014, IEC 60079-31: 2013
EN 60529: 2013, IEC 60529: 1989 AMD1: 1999, AMD2: 2013
And directive 2014/34/EU: equipment and protective systems intended for use in potentially explosive atmospheres.

Tabulation of Additional Previous Editions Applied

The following additional previous editions of Standards noted under the “Standards” section of this Certificate where applied to integral Component as itemized below. There are no significant safety related changes between these previous editions and the editions noted under the “Standards” section.	
IEC 60079-0:2004, IEC 60079-7:2001	Weidmuller Part No. PDU, PPE, AKZ, AKE, WDU, WPE, SAK, ZDU,ZDBU series terminal blocks
IEC 60079-0:2009, IEC 60079-7:2007	PHONIX CONTTACT Make , UK, MBK, PT, UT & QTC Series
IEC 60079-0:2009, IEC 60079-7:2007	RAAD RTP series
IEC 60079-0:2009, IEC 60079-7:2007	WAGO 2000 series
IEC 60079-0:2004, IEC 60079-7:2003	WAGO 2006 series

Terminal Combination

For selection of undefined number of terminals combination for all the models listed below following selection criteria shall be follow.

 In the area shown in green, any number of terminals may be added inaccordance with spacing requirements and Manufacturer instructions.

 In the area shown in pink, number of terminal to be determined by test asspecified by the Manufacture, after approval by notifying body.

Equipment name		GTB 01	
Voltage Max.		690	
Max No. of Terminals		8	8
Conductor cross Section in sq mm		1.5	2.5
Max. No. Of DIN rail		1	1
Current (A)	6		
	10	26	
	16	9	18
	20	3	10
	25		5
A- Overall Length of Din-Rail – 63 mm			
B- Usable length of Din-Rail – 50 mm			

Equipment name		GTB 02	
Voltage Max.		690	
Max No. of Terminals		7	7
Conductor cross Section in sq mm		1.5	2.5
Max. No. Of DIN rail		1	1
Current (A)	6		
	10	27	
	16	9	18
	20	4	10
	25		5
A- Overall Length of Din-Rail – 98 mm			
B- Usable length of Din-Rail – 80 mm			

Equipment name		GTB 03			
Voltage Max.		690			
Max No. of Terminals		14	14	14	10
Conductor cross Section in sq mm		1.5	2.5	4	6
Max. No. Of DIN rail		1	1	1	1
Current (A)	6				
	10	41			
	16	14	27	104	
	20	5	16	30	
	25		7	17	33
	35			5	11
A- Overall Length of Din-Rail – 107 mm					
B- Usable length of Din-Rail – 82 mm					

Equipment name		GTB 04		
Voltage Max.		690		
Max No. of Terminals		14	14	7
Conductor cross Section in sq mm		1.5	2.5	4
Max. No. Of DIN rail		1	1	1
Current (A)	6			
	10	28		
	16	9	18	73
	20	4	11	21
	25		5	12
	35			3

Equipment name		GTB 05		
Voltage Max.		690		
Max No. of Terminals		14	14	7
Conductor cross Section in sq mm		1.5	2.5	4
Max. No. Of DIN rail		1	1	1
Current (A)	6			
	10	33		
	16	11	22	85
	20	4	13	25
	25		6	14
	35			4
A-Overall Length of Din-Rail – 148 mm				
B-Usable length of Din-Rail – 130 mm				

Equipment name		GTB 06					
Voltage Max.		690					
Max No. of Terminals		28	23	19	15	11	9
Conductor cross Section in sq mm		1.5	2.5	4	6	10	16
Max. No. Of DIN rail		1	1	1	1	1	1
Current (A)	6						
	10	48					
	16	16	32	123			
	20	6	18	36			
	25		9	20	38		
	35			6	14	37	
	50				2	12	31
	63					3	14
	80						5
A-Overall Length of Din-Rail – 144 mm							
B-Usable length of Din-Rail – 119 mm							

Equipment name		GTB 07	
Voltage Max.		690	
Max No. of Terminals		24	24
Conductor cross Section in sq mm		1.5	2.5
Max. No. Of DIN rail		1	1
Current (A)	6		
	10	28	
	16	9	18
	20	4	11
	25		5
A-Overall Length of Din-Rail – 174 mm			
B-Usable length of Din-Rail – 160 mm			

Equipment name		GTB 08					
Voltage Max.		690					
Max No. of Terminals		42	23	19	21	10	8
Conductor cross Section in sq mm		1.5	2.5	4	6	10	16
Max. No. Of DIN rail		1	1	1	1	1	1
Current (A)	6						
	10	45					
	16	15	30	114			
	20	6	17	34			
	25		8	19	37		
	35			5	14	36	
	50				2	11	29
	63					3	14
	80						5
A-Overall Length of Din-Rail – 205 mm							
B-Usable length of Din-Rail – 179 mm							

Equipment name		GTB 09							
Voltage Max.		690							
Max No. of Terminals		102	82	38	29	12	10	14	14
Conductor cross Section in sq mm		1.5	2.5	4	6	10	16	25	35
Max. No. Of DIN rail		2	2	2	2	1	1	1	1
Current (A)	6								
	10	70							
	16	24	46	181					
	20	9	27	52					
	25		13	29	57				
	35			8	21	55			
	50				3	17	45		
	63					3	21	75	
	80						8	23	84
	100							10	22
	125								9
A-Overall Length of Din-Rail – 238 mm									
B-Usable length of Din-Rail – 213 mm									

Equipment name		GTB 10							
Voltage Max.		690							
Max No. of Terminals		28	23	19	26	12	10	10	8
Conductor cross Section in sq mm		1.5	2.5	4	6	10	16	25	35
Max. No. Of DIN rail		1	1	1	1	1	1	1	1
Current (A)	6								
	10	52							
	16	18	34	135					
	20	7	20	39					
	25		9	22	42				
	35			6	16	41			
	50				2	13	34		
	63					4	16	56	
	80						6	17	63
	100							7	16
	125								6
A-Overall Length of Din-Rail – 245 mm									
B-Usable length of Din-Rail – 219 mm									

Equipment name		GTB 11							
Voltage Max.		690							
Max No. of Terminals		76	23	19	15	12	10	20	8
Conductor cross Section in sq mm		1.5	2.5	4	6	10	16	25	35
Max. No. Of DIN rail		1	1	1	1	1	1	1	1
Current (A)	6								
	10	53							
	16	18	35	138					
	20	7	20	40					
	25		9	22	43				
	35			6	17	42			
	50				2	13	35		
	63					3	16	58	
	80						6	18	63
	100							7	17
	125								6
A-Overall Length of Din-Rail – 343 mm									
B-Usable length of Din-Rail – 319 mm									

Equipment name		GTB 12									
Voltage Max.		690									
Max No. of Terminals		170	138	116	86	12	10	23	23	9	9
Conductor cross Section in sq mm		1.5	2.5	4	6	10	16	25	35	50	70
Max. No. Of DIN rail		2	2	2	2	1	1	1	1	1	1
Current (A)	6										
	10	76									
	16	26	50	196							
	20	10	29	57							
	25		14	32	62						
	35			9	24	60					
	50				3	19	50				
	63					6	23	82			
	80						9	25	92		
	100							11	24		
	125								9	24	
	160									8	21
	200										7
	225										3
A-Overall Length of Din-Rail – 381 mm											
B-Usable length of Din-Rail – 358 mm											

Equipment name		GTB 13									
Voltage Max.		690									
Max No. of Terminals		225	207	174	129	23	20	23	23	16	16
Conductor cross Section in sq mm		1.5	2.5	4	6	10	16	25	35	50	70
Max. No. Of DIN rail		3	3	3	3	2	2	1	1	1	1
Current (A)	6										
	10	91									
	16	31	61	236							
	20	13	35	68							
	25		17	39	75						
	35			11	29	72					
	50				4	23	60				
	63					3	28	99			
	80						10	31	111		
	100							13	29		
	125								11	29	
	160									10	26
	200										9
	225										3
A-Overall Length of Din-Rail – 380 mm											
B-Usable length of Din-Rail – 358 mm											

Terminal Selection Guideline:

For Terminal Combination above table to be followed, Maximum Number of conductors, depending on the conductor size and the permitted continuous current for the above enclosure size. Each conductor entering the enclosure and each internal connection conductor counts as a conductor. Bridges and grounding conductors are not counted.

Note:

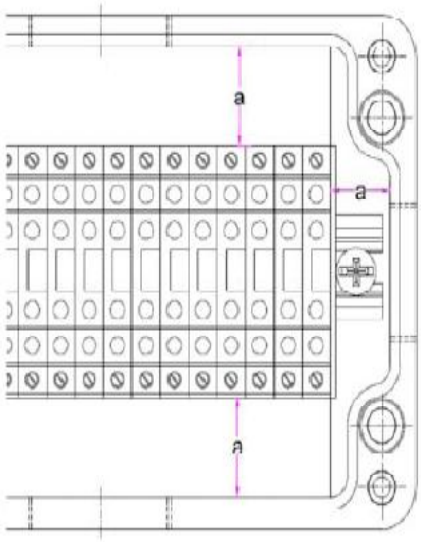
When selecting the permitted continuous current for the cross section, the maximum permitted current for the terminals and conductors should be considered. Conductors must be suitable for 80 degrees C. When using the above table, derating factors or the nominal rated current in accordance with IEC 439may be used. Different types of terminals may be used simultaneously by using the tabular values proportionally, as shown below.

Conductor Size mm2	Current, A	Max. Number of Conductor	Selected Number of Conductors		Load %	
2.5	16	30	10 (of 30)	=	33%	
16	50	48	12 (of 48)	=	25%	
25	63	90	36 (of 90)	=	40%	
					=====	
			Total	=	98%	< 100 %

Combination not covered by above table is not permitted.

Clearance for Safe Application:
A minimum distance is required to be maintained between the interior wall of the enclosure and the connector live part according to bellow table as per given in
EN/IEC 60079-7

Minimum Clearance according to Table 1 EN 60079-7	
Effective ac/dc voltage	Min. distance measure "a" Air gaps(Clearance) between two conducting parts
max. 40 V	1.9 mm
max. 80 V	2.2 mm
max. 125 V	2.5 mm
max. 250 V	5.0 mm
max. 400 V	6.0 mm
max. 500 V	8.0 mm
max. 630 V	10.0 mm
max. 800 V	12.0 mm
max. 1000 V	14.0 mm



Conductor Selection:
All conductor used must be suitable for respective below temperature.

Suitable Conductor Temperature.	**Ambient Temperature.**
80 ^{0}C	-50 ^{0}C to 40 ^{0}C
95 ^{0}C	-50 ^{0}C to 55 ^{0}C
120 ^{0}C	-50 ^{0}C to 70 ^{0}C

Conductor Stripping Length & Tightening Torque :

Conductor C/S mm²	Conductor Stripping Length (mm)	Tightening torque (Nm)
1.5	8	0.6-0.8 NM
2.5	8	0.6-0.8 NM
4	8	0.6-0.8 NM
6	10	1.5-1.8 NM
10	10	1.5-1.8 NM
16	11	1.5-1.8 NM
25	11	1.5-1.8 NM
35	11	1.5-1.8 NM
50	22	3.5-6.0NM
70	22	8-12NM

Conduit Entry
For conduit entry detail, please refer to Installation Instruction ManualWI-28(PCD-P-01)/00.

Disposal / Recycling:
When the apparatus is disposed of, the respective national regulations on waste disposal will have to be observed.