

TEPEX d.o.o. tel. 049 222 900 fax. 049 426 450 e-mail: tepex@tepex.hr www.tepex.hr	USER MANUAL FOR EXPLOSION PROTECTED DISTRIBUTION CABINETS R3002 – R3006	
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1. MANUFACTURER

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e-mail: tepex@tepex.hr, www.tepex.hr

2. GENERAL SAFETY INFORMATIONS



WARNING!

The user manual contains basic information about the product. Mounting, installation, usage and maintenance should be carried out under this user manual to provide and ensure safe operation within the nominal characteristics. This user manual complement national Regulation and Standards. The responsible person shall ensure their implementation. Failure off implement this user manual can reduce explosion protection and endanger people, property and the environment. Any improper and illegal actions as well as non-compliance with the provisions of this user manual excludes all responsibility by manufacturer side.

Before installation/commissioning:

- Carefully read all instructions,
- Execute proper training of responsible personnel,
- Check that the contents of these instructions is fully understandable by the responsible personnel,
- Make sure that all the requirements and national Regulations as well as all special security measures are applied.

In lack of understanding:

- Contact the manufacturer.

During operation:

- Ensure that this user manual and other work instructions are available to the responsible staff at all times,
- Check the implementation of these instructions and all other safety user's instructions.

3. PURPOSE

Explosion-protected distribution cabinets can be equipped with a low voltage switching devices to the nominal value of 630V, 500A, and accessories.

Explosion-protected distribution cabinets are suitable for installation to:

- areas where an explosive gas and/or dust atmosphere may be present, respectively in hazardous areas 1, 2, 21, 22 in accordance with the standards EN 60079-10-1 and EN 60079-10-2
- mining at sites with endangered mining gas, coal dust and their combinations.

4. DEGREE OF PROTECTION

The product complies with the standards:

- EN IEC 60079-0:2018,
- EN 60079-1:2014,
- EN IEC 60079-7:2015/A1:2018,
- EN 60079-11:2012,
- EN 60079-31:2014.

The product has been developed, manufactured and tested according to the existing state of technique accordance with the standards EN ISO 9001, EN ISO 80079-34 and EN ISO 14001.

The product is in compliance with the ATEX Directive 2014/34/EU.

The product is in compliance with the LVD Directive 2014/35/EU.



The product is in compliance with the RoHS Directive 2011/65/EU.

The product is in compliance with the EMC Directive 2014/30/EU.

The sign X after the certificate number indicates that the equipment or protective system is subject to specific conditions:

- Distribution cabinet intended for mining, Category M2, incorporating certified components (FIDI 19 ATEX 0016U) or reduced impact resistance, must be installed in places with a lower risk of impact,
- The length of flameproof joints are greater and gaps are narrowed than the standard value given in standard EN 60079-1, which shall be taken into account when joint is repaired.

5. TECHNICAL DATA

Certificate:	FIDI 19 ATEX 0058X
Category and explosion protection:	  0722 II 2(1)G Ex db eb [ib] [iaGa] ia/ib IIC T6 Gb II 2D Ex tb IIIC T80°C Db I M2(M1) Ex db eb [ib] [iaMa] ia/ib I Mb
Ambient temperature:	$-20^{\circ}\text{C} \leq T_a \leq +40^{\circ}\text{C}$
Mechanical protection:	IP 66
Class of protection:	I (PE – protective earthing)
Voltage Un:	up to 690 V
Current In:	up to 500 A
Maximum power dissipation (R3002)	200 W
Maximum power dissipation (R3004)	100 W
Connection terminals	up to 300 mm ²
Colour	Yellow, RAL 1016 (other on request)
Dimension (DxSxV) without cable glands:	
- R3002	470 x 470 x 330 mm
- R3003	470 x 315 x 240 mm
- R3004	315 x 315 x 333 mm
- R3005	315 x 315 x 240 mm
- R3006	240 x 315 x 200 mm
Weight:	
- R3002	70 kg
- R3003	18 kg
- R3003S	16 kg
- R3004	47 kg
- R3005	15 kg
- R3006	9 kg
Housing Material:	
- Ex db enclosures (R3002 i R3004)	steel sheet 12 mm
- Ex eb enclosures (R3003, R3005 i R3006)	steel sheet 2,5 mm

6. DESIGN

The empty enclosure type R3... is a welded sheet steel construction with steel screw cap. It is used for housing switching, control, measuring and display devices. Cover and side walls can be equipped with control axles and/or viewing panes. It is connected via flameproof built-in cable bushings or cable bushings with terminal compartment in the type of protection "increased safety e" or via direct cable entries. The empty enclosures can be combined with one another and/or with connection boxes of type of protection "increased safety e".

The distribution cabinet is installed on the mounting holder that is an integral part of the product. The design and construction of distribution cabinets are in accordance with EN 60439-1 and all other related standards.

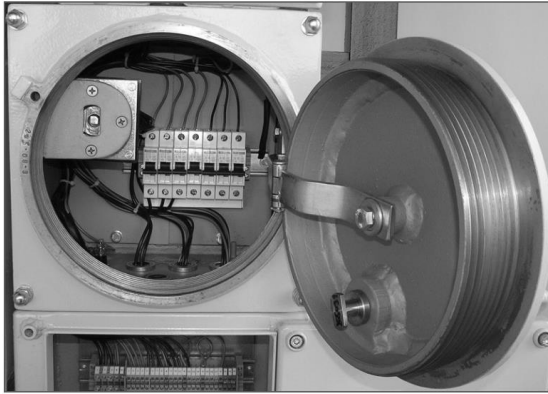


Fig. 1. Ex d enclosures equipped with switch, automatic circuit breakers connected to the Ex e enclosures by multi wire Ex d busbar.

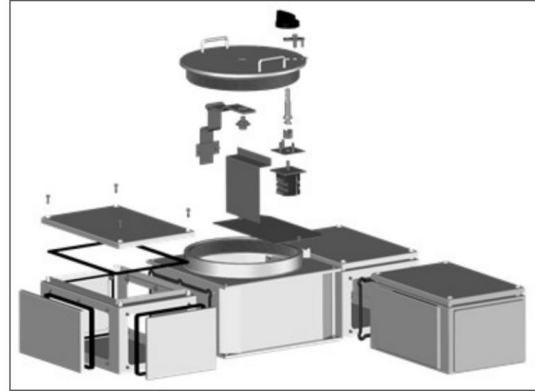
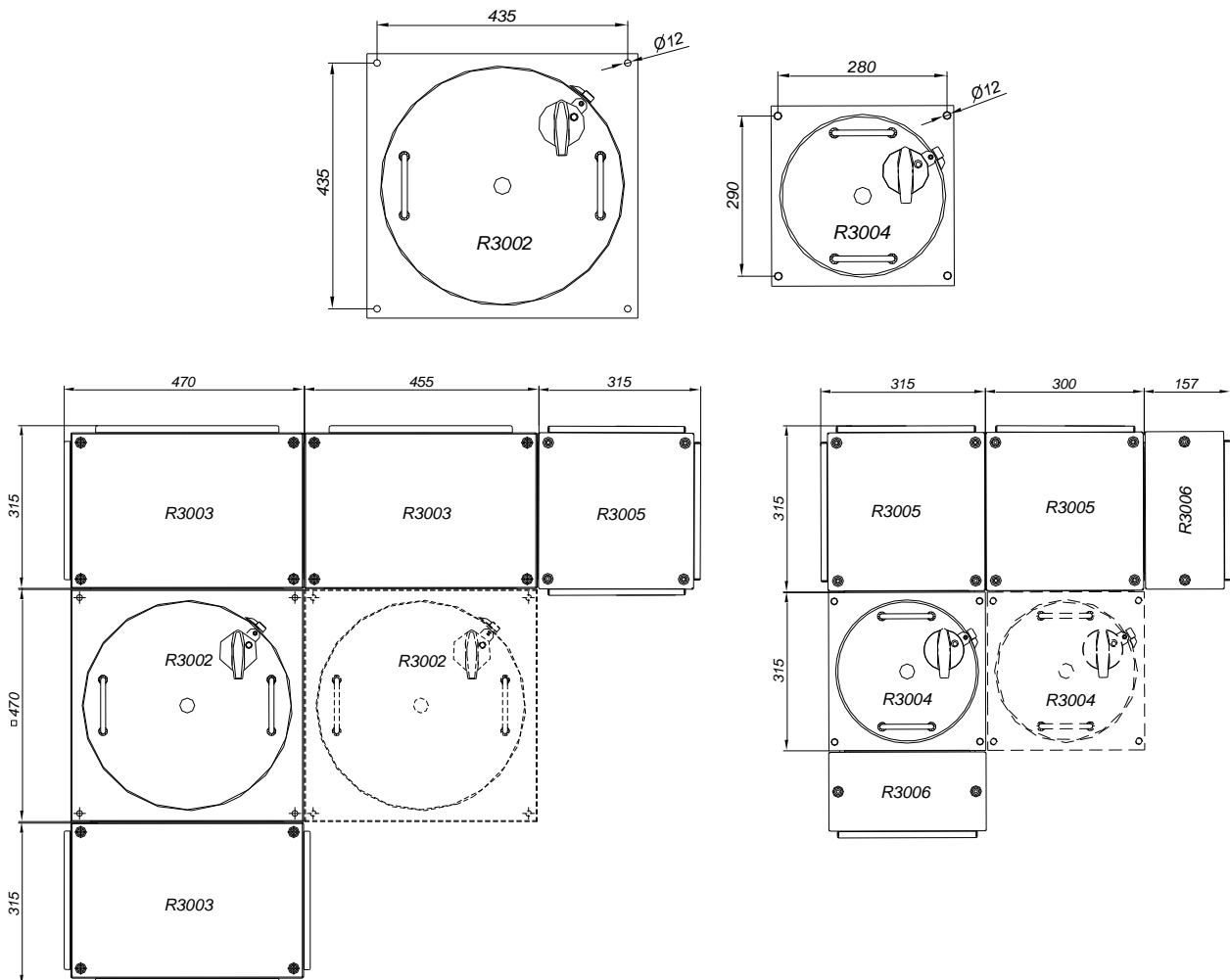
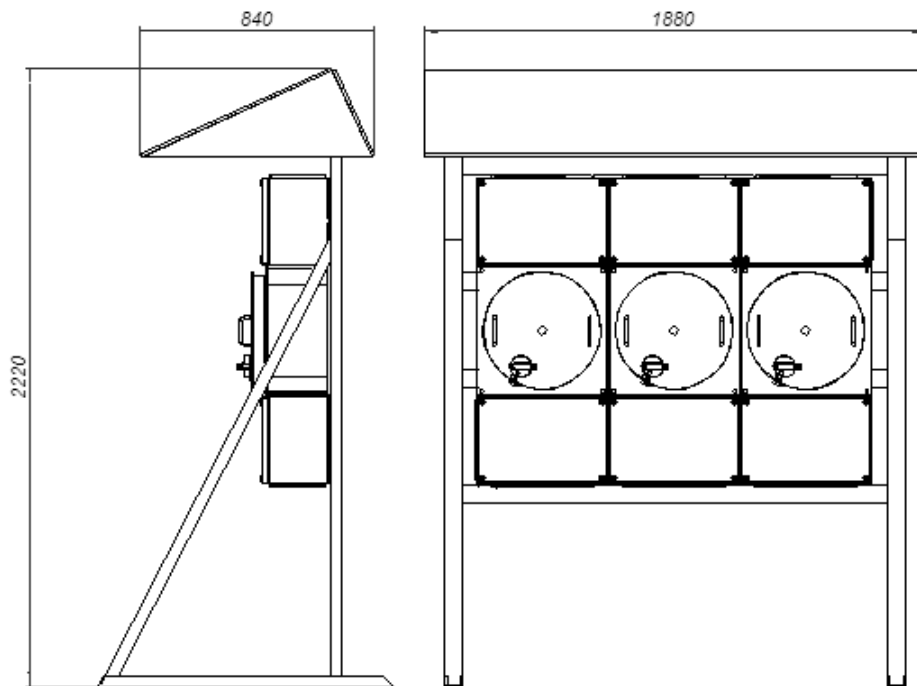



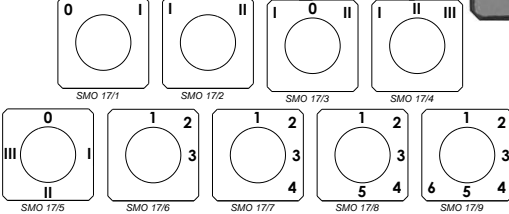





Fig. 2. Components of the distribution cabinet in 3D view

7. DIMENSION (all dimensions in mm)





8. ACTUATOR/INDICATOR COMPONENTS:

Description, type, display	Description, type, display																						
<p>SWITCH ACTUATOR SMO 17/. Marking of explosion protection: II 2G Ex eb IIC Gb II 2D Ex tb IIIC Db I M2 Ex eb I Mb</p>  	<p>SWITCH ACTUATOR 40A/80A GHG 263 ...R...., GHG 264 ...R.... Marking of explosion protection: II 2G Ex eb IIB/IIC T6/T5 Gb II 2D Ex tb IIIC T80°C Db CZ 8003/3 Marking of explosion protection: II 2G Ex eb IIC Gb II 2D Ex tb IIIC Db</p> 																						
<p>PUSH BUTTON ACTUATOR WITH TWO SHAFTS CZ4000-P2</p> <p>Protueksplozijska zaštita: II 2G Ex eb IIC Gb II 2D Ex tb IIIC Db</p> 	<p>MEASURING INSTRUMENT SAM 72</p> <p>Marking of explosion protection: II 2G Ex eb IIC Gb II 2D Ex tb IIIC Db I M2 Ex eb I Mb</p> 																						
<p>PUSH BUTTON ACTUATOR SPO 01/.</p> <p>Marking of explosion protection: II 2G Ex eb IIC Gb II 2D Ex tb IIIC Db</p>  <table border="1" data-bbox="510 1556 774 1926"> <thead> <tr> <th colspan="2">Tip SPO 01/.</th> </tr> </thead> <tbody> <tr><td>SPO 01/01</td><td>0</td></tr> <tr><td>SPO 01/02</td><td>I</td></tr> <tr><td>SPO 01/03</td><td>II</td></tr> <tr><td>SPO 01/04</td><td>RED</td></tr> <tr><td>SPO 01/05</td><td>GREEN</td></tr> <tr><td>SPO 01/06</td><td>WHITE</td></tr> <tr><td>SPO 01/07</td><td>START</td></tr> <tr><td>SPO 01/08</td><td>STOP</td></tr> <tr><td>SPO 01/09</td><td>ON</td></tr> <tr><td>SPO 01/10</td><td>OFF</td></tr> </tbody> </table>	Tip SPO 01/.		SPO 01/01	0	SPO 01/02	I	SPO 01/03	II	SPO 01/04	RED	SPO 01/05	GREEN	SPO 01/06	WHITE	SPO 01/07	START	SPO 01/08	STOP	SPO 01/09	ON	SPO 01/10	OFF	<p>MUSHROOM-HEAD PUSHBUTTON ACTUATOR (EMERGENCY-STOP) CZ4000-P3</p> <p>Marking of explosion protection: II 2G Ex eb IIC Gb II 2D Ex tb IIIC Db</p> 
Tip SPO 01/.																							
SPO 01/01	0																						
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SPO 01/06	WHITE																						
SPO 01/07	START																						
SPO 01/08	STOP																						
SPO 01/09	ON																						
SPO 01/10	OFF																						

FRONT ELEMENT OF SIGNAL LAMP SPO 02/.

Marking of explosion protection:
II 2G Ex eb IIC Gb
II 2D Ex tb IIIC Db



Tip SPO 02/.

SPO 02/01	RED
SPO 02/02	GREEN
SPO 02/03	YELLOW
SPO 02/04	TRANSPARENT

POTENTIOMETER ACTUATOR CZ4000-DW

Marking of explosion protection:
II 2G Ex eb IIC Gb
II 2D Ex tb IIIC Db



KEY-OPERATED PUSHBUTTON ACTUATOR CZ4000-Y1

Marking of explosion protection:
II 2G Ex eb IIC Gb
II 2D Ex tb IIIC Db



KEY-OPERATED MUSHROOM-HEAD PUSHBUTTON ACTUATOR (EMERGENCY-STOP) CZ4000-Y0

Marking of explosion protection:
II 2G Ex eb IIC Gb
II 2D Ex tb IIIC Db



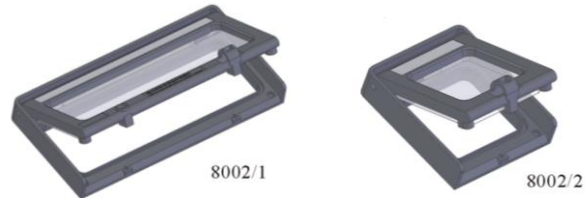
PUSH BUTTON ACTUATOR - CZ4000-S., CZ4000-K.

Marking of explosion protection:
II 2G Ex eb IIC Gb
II 2D Ex tb IIIC Db



INSPECTION WINDOW - CZ8002/1, CZ8002/2

Marking of explosion protection:
II 2G Ex eb IIC Gb
II 2D Ex tb IIIC Db



Max. number of inspection windows on one cover:

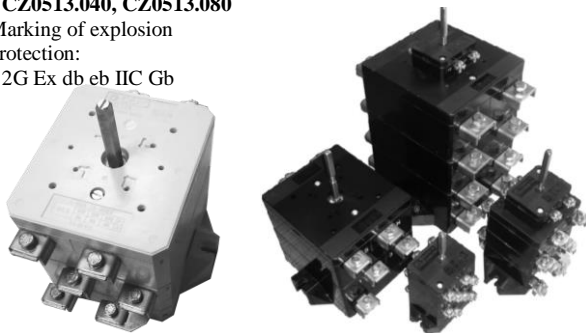
	CZ8002/2	CZ8002/1
R3003	2	1
R3005	1	-
R3006	-	-

9. BUILD-IN COMPONENTS:

Description, type, display

MAIN CONTROL SWITCH 40A/80A GHG 263 ...R...., GHG 264 ...R....

Marking of explosion protection:
II 2G Ex db eb IIC Gb
- CZ0513.040, CZ0513.080
Marking of explosion protection:
II 2G Ex db eb IIC Gb



Description, type, display

MCB - MINIATUR CIRCUIT BRAKER 1p/2p/3p/4p,B/C, 0,5-63A, 6/10 kA, GHG 622....

Marking of explosion protection:
II 2G Ex db e [ia] ib IIB/IIC Gb



RESIDUAL CURRENT CIRCUIT BREAKERS 2p/3p/4p 25/40/63 A, 30 mA, 10 kA with or without auxiliary contact GHG 624

Marking of explosion protection:
II 2G Ex db e [ia] ib IIB/IIC Gb



BUILD IN SOCKET 16 A (3p/5p), 32A (4p) Series PRE 16, 32A

Marking of explosion protection:
II 2G Ex de IIC
II 2D Ex tD A21 IP66



**DIGITAL INDIKATOR
VEGADIS 176 Ex**

Marking of explosion protection:
II 2G Ex ib IIC T6 Gb



SIGNAL LAMP SLP

Marking of explosion protection:
II 2G Ex db eb IIC Gb
I M2 Ex db eb I Mb
Rated insulation voltage: 690 V
Rated voltage: 12 to 250 V AC/DC
Rated current: 12 to 2,5 mA
Connection terminals: 2 x 1,0 -2,5 mm²

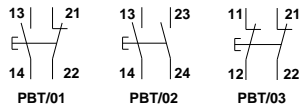


PUSHBUTTON PBT/., PTB/. G

Marking of explosion protection:
II 2G Ex db eb IIC Gb
I M2 Ex db eb I Mb
Rated voltage: 690 V
Rated current: 16 A
Application category AC 15:
250 V/6 A 500 V/4 A
Application category DC 13:
24 V/6 A 60 V/0,8 A 110 V/0,5 A
Connection terminals: 2 x 1,0 - 2,5mm²

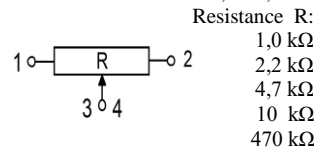


PTB/. G – gold-plated contacts
For voltage up to 60 V and current from 1 mA to 200 mA



**POTENCIOMETAR
- GHG 410 1901 R...**

Marking of explosion protection:
II 2G Ex d e IIC/IIB Gb I Mb Ex d e I Mb
- **CZ0203-A**
Protueksplozijska zaštita:
II 2G Ex db eb IIC Gb
Rated voltage: from 250 V
Rated power: 1 W
Rev range: 270°
Scale: 0-100%
Connection terminals: 2 x 1,0 - 2,5 mm²



MANTLE TERMINALS SL 5

Marking of explosion protection:
II 2G Ex eb IIC Gb
Rated voltage: 400 V
Rated current: 10/16 A
Connection terminals:
3 x 4 mm², 2 x 4 mm² + 2 x 2,5 mm²



MANTLE TERMINALS SL 8

Marking of explosion protection:
II 2G Ex eb IIC Gb
Rated voltage: 400 V
Rated current: 10/16 A
Connection terminals:
3 x 4 mm², 2 x 4 mm² + 2 x 2,5 mm²



**PUSHBUTTON WITH TWO SHAFTS
- CZ0201**

Marking of explosion protection:
II 2G Ex db eb IIC Gb



**SECURITY BARRIER
Tip: 9001/..-...-...1**

Marking of explosion protection:
II (1) D [Ex ia Da] IIC



**HRC FUSE, Ex d HOUSING 3p NH00C the
base and fuse, GHG 6113001V0**

Marking of explosion protection:
II 2G Ex de IIC I M2 Ex de I



**MULTICORE BUSHING
Tip RSM 21 – 91**

Marking of explosion protection:
II 2G Ex db IIC Gb
I M2 Ex db I Mb



**BUSHING
Tip PLD./..., SIP 315, SIP 630**

Marking of explosion protection:
II 2G Ex db eb IIC
I M2 Ex db eb I Mb



**Ex db CABLE GLAND
- Eex d (PE d/e 1F Metrique)**

Marking of explosion protection:
II 2GD Ex db IIC Ex eb IIC Ex tb IIC



CONTROL SWITCH SMS 03/.

Marking of explosion protection:

II 2G Ex db eb IIC Gb

I M2 Ex db eb I Mb

Rated voltage: 690 V

Rated current: 16 A

Application category AC 23:

690 V/8 A

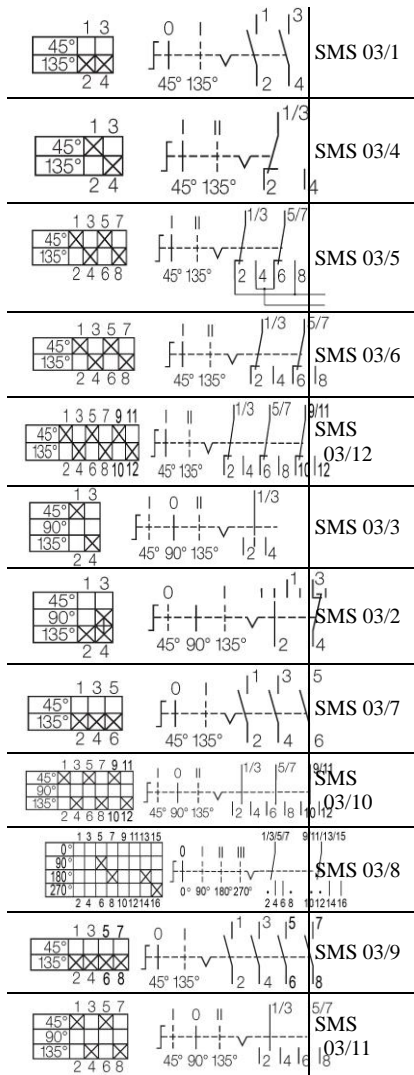
Application category AC 3:

380 V/10 A

Application category DC 21:

60 V/10 A 110 V/1,85 A 220 V/0,6 A

Connection terminals: 2 x 1,0 - 2,5mm²



CONTROL SWITCH GHG 23. ...R....

Marking of explosion protection:

I M2 Ex d e I Mb II 2G Ex d e IIB/IIC Gb

II 2G Ex d ia/ib IIB/IIC Gb

Rated voltage: 690 V

Rated current: 10 A

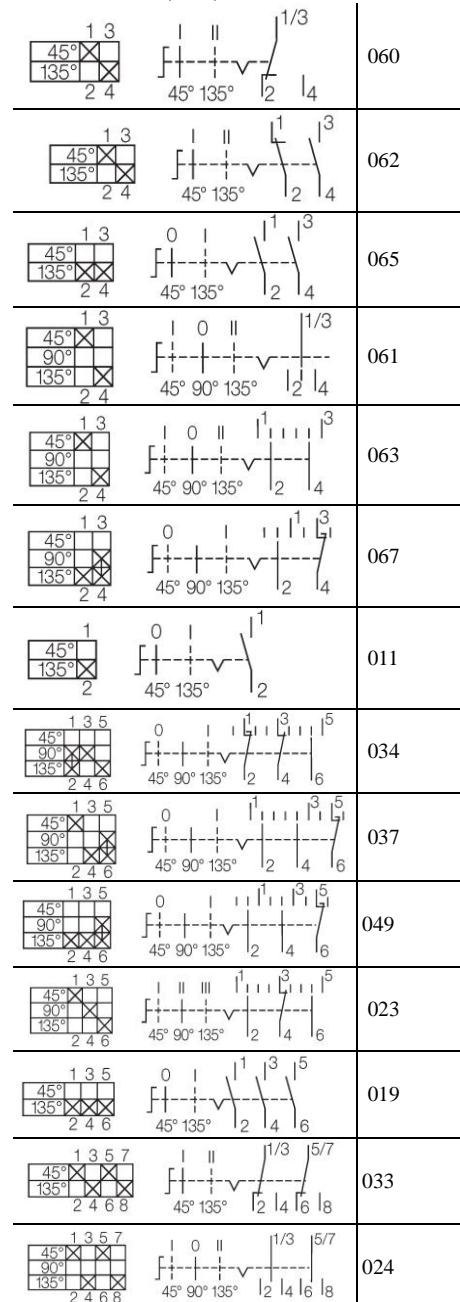
Application category AC 11:

230 V/10 A 500 V/6 A

Application category DC 11:

24 V/2 A 230 V/0,4 A

Connection terminals: 2 x 1,0 - 2,5mm²



MEASURING INSTRUMENT

- GHG 41098 08 R... (VM 72)

Marking of explosion protection:

II 2G Ex e IIC Gb II 2G Ex e mb IIC Gb

II 2G Ex ib IIC Gb

- CZ 0205-V

Marking of explosion protection:

II 2G Ex eb mb IIC Gb

II 2G Ex eb IIC Gb

Instrument with moving iron

Measuring range : 6 - 660 V

Measuring accuracy: class 2,5

Overload range: 1 : 1,5

Connection terminals: 2 x 1,5 - 4 mm²



ASSEMBLY OF TERMINAL BLOCK ON THE APPARATUS CARRIER

TH 35-7.5

-tip: CTS2,5UN (0,5-2,5 mm²), CTS4UN (0,5-4 mm²),
CTS6U (1,5-6 mm²), CTS16U (2,5-16 mm²), CTS25U (6-25 mm²),
CTS35U (10-35 mm²)

Marking of explosion protection:

II 2G Ex eb IIC Gb

II 2G Ex ib IIC Gb



MEASURING INSTRUMENT

- **GHG 41098 09 R...** (AM 72)

Marking of explosion protection:

II 2G Ex e IIC Gb II 2G Ex e mb IIC Gb

II 2G Ex ib IIC Gb

- **CZ 0205-A, CZ 0205-mA**

Marking of explosion protection:

II 2G Ex eb mb IIC Gb II 2G Ex eb IIC Gb

Instrument with moving iron

Measuring range: n / 1 A, up to 25 A direct

Overloading area: 1: 1,5

Measuring accuracy: class 2,5

Connection terminals: 2 x 1,5 - 4 mm²

Instrument with moving-coil

Measuring range: 0 - 20 mA, 4 - 20 mA

Measuring accuracy: class 1,5

Overloading area: 1 : 1,2

Connection terminals: 2 x 1,5 - 4 mm²

Parameters of Intrinsic Safety:

$L_i = 0,1$ mH max.

$C_i = 0,1$ nF max.

$U_i = 30$ V max.

$U_i = 150$ mA max.

$U_m = 690$ V_{rms}



ISOLATION AMPLIFIER:

tip: KFD2-SR2-Ex, KFD2-SOT2-Ex., KFD2-ST2-Ex., KFD2-STC4-Ex1, KFD2-STC4-Ex2, KFD2-STC4-Ex1.Y1, KFD2-SCD-Ex1.LK, KFD2-SCD2-Ex.LK, KF8-UF . - Ex D10****/D11****/PSD1001**

Marking of explosion protection:

II (1) G [Ex ia Ga] IIC

II (1) D [Ex ia Da] IIIC

I (M1) [Ex ia Ma] I



10. INSTALLATION

WARNING

Wiring diagram and all necessary documents, required for correct installing, are attached to the device.

OPENING AND CLOSING ENCLOSURE

Opening procedure for R3002/R3004 distribution cabinets:



- set switch handle to position 0
- unscrew M12 hexagon socket bolt with number 10 key
- unscrewing the bolt releases the cover which can then, also be unscrewed



- when opening and handling the cover, be ware not to damage threaded part by rough handling.
- in case of difficult turning, cover should be opened, thread cleaned and protected with grease (e.g. INA LIS 2)
- to energize the equipment, cover should be screwed in and positioned so that M12 hex socket bolt can be bolted in.

External earth connection at the enclosure

- the earth conductor must always be connected to the enclosure.
- connect all bare, non-energised metal parts to the protective system.
- the cable must be lead and fixed near the enclosure to prevent loosening of the cable.

Installation example:



11. INSPECTION, MAINTENANCE, REPAIR AND OVERHAUL

Inspections are carried out in accordance with EN 60079-17, general and special conditions of manufacturer and users Regulations and includes supervision of parts on which the explosion protection depends, especially:

- that the housing, cover and gasket of cover are without rupture and damage,
- that the screw of cover, cable glands, plugs and terminal are fastened with nominal torque
- that the terminals are undamaged and properly attached to a DIN rail
- that the build-in and actuator/indicator components are undamaged and properly fixed to the housing and cover, and that seals from a build-in components are intact, the screws of the connecting terminals are tightened with nominal torque,
- that the cable glands and plugs are installed in accordance with manufacturer's instructions and fasten with the nominal torque and the gaskets are undamaged.

All the repairs are performed by the manufacturer or the manufacturer's authorized personal and the original parts must be provided according to the product documentation, all in accordance with EN 60079-19.

If repair or any other procedure are performed on the product by unauthorized person, all manufacturer responsibility for the product and the warranty and the manufacturer's declaration of conformity becomes invalid.

12. RESPONSIBILITY AND AUTHORIZATION

This instruction is the basic information about the product. It is completed by the corresponding national laws and regulations.

Production, use, certification and supervision are determined at the national level:

- a) Regulations concerning equipment and protective systems intended for use in potentially explosive atmospheres EU directive 2014/34/EU and
- b) Regulations on minimum requirements for safety and health protection of workers and technical inspection of facilities, equipment, installations and equipment in hazardous areas EU directive 1999/92/EC (ATEX 137).

The responsible person shall ensure their implementation at the working facility.

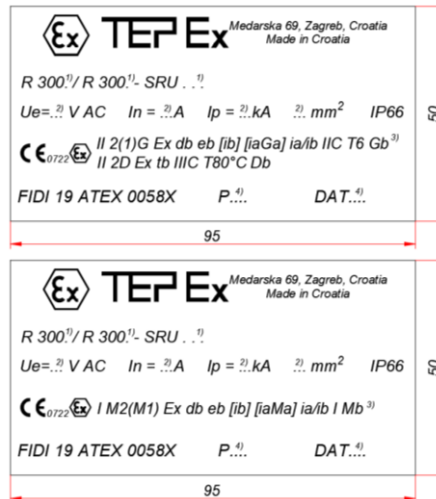
13. MANUFACTURER'S WARRANTY

The manufacturer gives guarantee on the product for a period of one year under the provisions of the Law on Obligations. This statement has the force of the guarantee list.

14. MARKING

Explosion protected distribution cabinets R300./R3000. – SRU ... are marked:

- marking plate with technical data on housing cover and in the housing



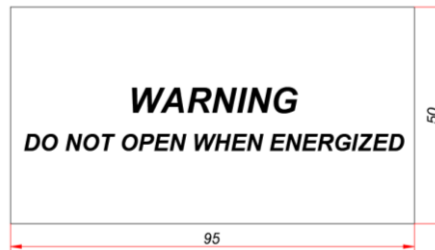
1) type code of the distribution cabinets

2) technical data of fitted equipment

3) correct explosion protection marking depending on the correct version of the fitted explosion protected elements

4) MR manufacturer marking (product number), date

- warning plate on Ex eb housing cover



- warning plate on Ex db housing cover

