

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 CONTROL UNITS TYPE SKX 16 I, SKX 18 I-2, SKX 20 I-1, SKX 20 I-2	
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1. MANUFACTURER

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Telefon: +385 49 222 900
Internet: www.tepex.hr

2. GENERAL SAFETY INFORMATION'S



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 control units type SKX 16 I, SKX 18 I-2, SKX 20 I-1, SKX 20 I-2 are intended for distribution, control and signaling circuits in areas with potentially explosive atmosphere of gases, vapors and dusts in hazardous areas 1, 2, 21, 22 in accordance with EN 60079-10-1 i EN 60079-10-2.

4. PRODUCT COMPLIANCE

Control unit design complies with EN 60947-1, EN 60947-5-1, EN 60947-5-5, EN 60204 and all other related standards. The product is compliant with the Regulations on equipment and protective systems intended for use in potentially explosive atmospheres.

The product complies with the ATEX Directive 2014/34/EU and standards:

- EN IEC 60079-0:2018,
- EN 60079-1:2014,
- EN IEC 60079-7:2015/A1:2018,
- EN 60079-11:2012,
- EN 60079-18:2015/A1:2017,
- 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/IEC 80079-34 and EN ISO 14001.



The product complies with the ATEX Directive 2014/34/EU.

The product is compliant with LVD Directive 2014/34 EU.

The product is compliant with RoHS Directive 2011/65 EU.

The product complies with the EMC Directive 2014/30/EU.

5. DEGREE OF PROTECTION AND TECHNICAL DATA

Certificate:	FIDI 19 ATEX 0053		
Category and explosion protection:	 0722 	II 2G Ex db eb ia/ib [ia] mb IIC T4 - T6 Gb II 2D Ex tb IIIC T80°C Db	
Ambient temperature:	-20°C ≤ T _a ≤ +40°C/50°C		
Mechanical protection:	IP 66 – SKX 16 I, SKX 18 I-2, SKX 20 I-1, IP 65 – SKX 20 I-2		
Resistance to shock:	IK 09		
Class of protection:	I (PE - protective earthing)		
Rated insulation voltage U _i :	- up to 690 V		
Rated operating voltage U _e :	- up to 690 V, depending on the equipment installed		
Maximum safe voltage for Ex i terminal blocks U _m :	- 60 V _{peak}		
Rated thermal current I _{th} :		Connection Cable H07Z-K	Temperature class
			-20°C ≤ T _a ≤ +40°C -20°C ≤ T _a ≤ +50°C
	≤ 16 A	≥ 2,5 mm ²	T6 T6
	≤ 25 A	≥ 4 mm ²	T6 T5
	≤ 35 A	≥ 6 mm ²	T5 T4
	≤ 50 A	≥ 10 mm ²	T5 T4
	≤ 63 A	≥ 25 mm ²	T4 T4
≤ 80 A	≥ 35 mm ²	T4 T4	
Terminal for internal grounding of housing and cover:	- M5 screw terminals for mechanical lugs 5 DIN 46234 - SKX 16 I, SKX 18 I, SKX 20 I-1 - M8 screw terminals for mechanical lugs 8 DIN 46234 - SKX 20 I-2		
Terminal for external grounding:	- Saddle clamp max. 16mm ² s (r), f		
Screw cover:	- Combi screw M6x30 / 10 - Z4 A2 ISO 7045 with baseplate A2 4,5 DIN 6905 - Tightening torque of 3.0 Nm		
Cable glands:	- adequate ATEX certificate II 2G/D Ex eb/tb IP66 cable glands ISO 16 – ISO 75		
Mounting dimensions:	- with screw kit M6 / M10 din. at the carrier of the housing in the tops of the rectangle:		
	SKX 16 I:	330 x 245 mm	
	SKX 18 I-2:	330 x 325 mm	
	SKX 20 I-1:	530 x 440 mm	
	SKX 20 I-2:	850 x 800 mm	

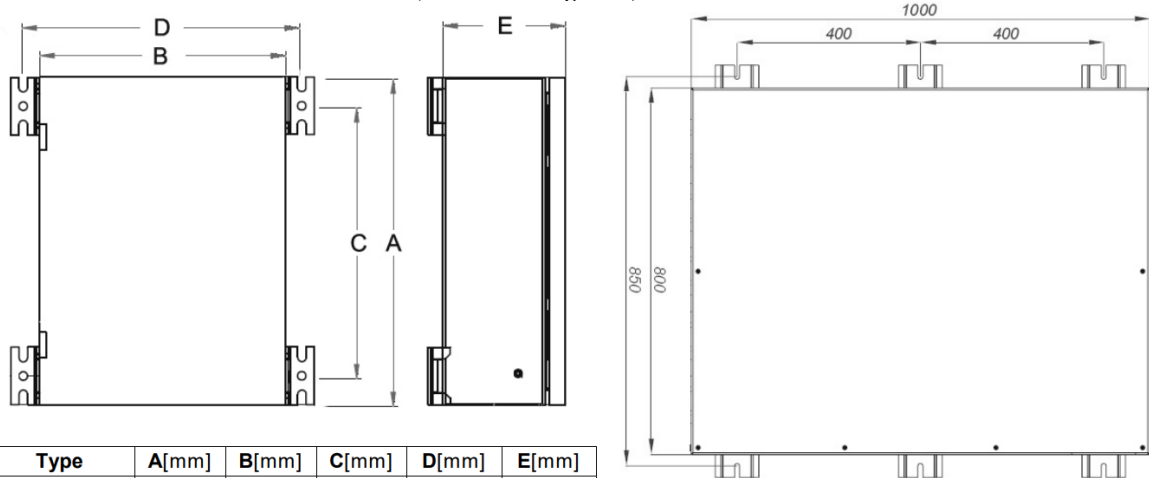
6. TYPE

Control combinations SKX 16 I, SKX 18 I-2, SKX 20 I-1, SKX 20 I-2 are the product configured according to customer demand.

Type designation consists of a basic type designation - SKX 16 I, SKX 18 I-2, SKX 20 I-1, SKX 20 I-2 - and SRU number that represents the number of production and assigns to the increment, for example.

- SKX 18 I-2 / SRU - 1280 - managing the combination of the housing MMK 403015 performed by production number 1280th.

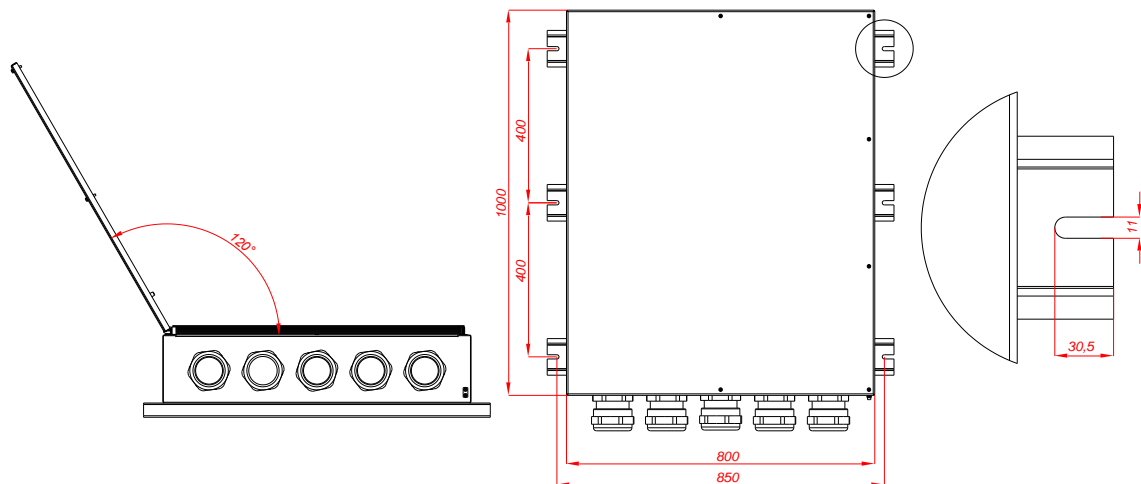
7. DIMENSIONS OF CONTROL UNITS (without cable glands)



Type	A[mm]	B[mm]	C[mm]	D[mm]	E[mm]
SKX 16I	300	300	245	330	150
SKX 18I-2	400	300	325	330	
SKX 20I-1	600	400	530	440	200
SKX 20I-2	1000	800	800	850	

Max.number of cable glands entry:

TYPE Dimension	SKX 16I/SRU 300x300x150		SKX 18I/SRU 400x300x150		SKX 20I-1/SRU 600x400x200		SKX 20I-2/SRU 1000x800x200	
	A-C	B-D	A-C	B-D	A-C	B-D	A-C	B-D
Cable gland								
M20x1.5	11	11	17	11	30	17	60	48
M25x1.5	9	9	15	9	26	15	48	36
M32x1.5	5	5	9	5	14	9	28	20
M40x1.5	3	3	6	3	12	6	22	14
M50x1.5	3	3	5	3	6	5	10	8
M63x1.5	2	2	4	2	6	4	8	6



The cover of the control unit SKX 20 I-2 has the ability to rotate over the hinge up to max. 120°.





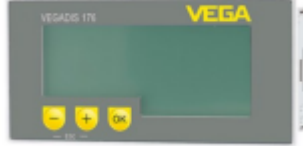



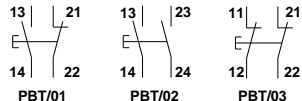

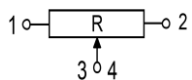
8. ACTUATOR/INDICATOR COMPONENTS:

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>DOUBLE PUSHBUTTON ACTUATOR CZ4000-P2</p> <p>Marking of explosion protection: II 2G Ex eb IIC Gb II 2D Ex tb IIIC Db</p> 	<p>MEASURING INSTRUMENT FRONT PANEL 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/. Marking of explosion protection: II 2G Ex eb IIC Gb II 2D Ex tb IIIC Db</p>  <table border="1" data-bbox="544 775 810 1144"> <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 Marking of explosion protection: II 2G Ex eb IIC Gb II 2D Ex tb IIIC Db</p> 
Tip SPO 01/.																							
SPO 01/01	0																						
SPO 01/02	I																						
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SPO 01/08	STOP																						
SPO 01/09	ON																						
SPO 01/10	OFF																						
<p>FRONT ELEMENT OF SIGNAL LAMP SPO 02/. Marking of explosion protection: II 2G Ex eb IIC Gb II 2D Ex tb IIIC Db</p>  <table border="1" data-bbox="544 1211 810 1379"> <thead> <tr> <th colspan="2">Tip SPO 02/.</th> </tr> </thead> <tbody> <tr><td>SPO 02/01</td><td>RED</td></tr> <tr><td>SPO 02/02</td><td>GREEN</td></tr> <tr><td>SPO 02/03</td><td>YELLOW</td></tr> <tr><td>SPO 02/04</td><td>TRANSPARENT</td></tr> </tbody> </table>	Tip SPO 02/.		SPO 02/01	RED	SPO 02/02	GREEN	SPO 02/03	YELLOW	SPO 02/04	TRANSPARENT	<p>POTENTIOMETER ACTUATOR CZ4000-DW</p> <p>Marking of explosion protection: II 2G Ex eb IIC Gb II 2D Ex tb IIIC Db</p> 												
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SPO 02/04	TRANSPARENT																						
<p>KEY-OPERATED PUSHBUTTON ACTUATOR CZ4000-Y1 Marking of explosion protection: II 2G Ex eb IIC Gb II 2D Ex tb IIIC Db</p> 	<p>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</p> 																						
<p>PUSH BUTTON ACTUATOR - CZ4000-SB5204., CZ4000-KB5204. Marking of explosion protection: II 2G Ex eb IIC Gb II 2D Ex tb IIIC Db</p> 	<p>INSPECTION WINDOW - CZ8002/1, CZ8002/2 Marking of explosion protection: II 2G Ex eb IIC Gb II 2D Ex tb IIIC Db</p> 																						

Max. number of inspection windows on one cover:

	CZ8002/2		CZ8002/1	
	Horizontal mounting	Vertical mounting	Horizontal mounting	Vertical mounting
SKX 16 I	1	1	-	-
SKX 18 I	2	1	1	-
SKX 20 I-1	4	4	2	2
SKX 20 I-2	-	8	-	4

9. BUILD-IN COMPONENTS:

Description, type, display	Description, type, display					
<p>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</p>  	<p>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</p> 					
<p>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</p> 	<p>BUILD IN SOCKET 16 A (3p/5p), 32A (4p) 16, 32A Marking of explosion protection: II 2G Ex de IIC II 2D Ex tD A21 IP66</p> 					
<p>DIGITAL INDIKATOR VEGADIS 176 Ex Marking of explosion protection: II 2G Ex ib IIC T6 Gb</p> 	<p>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</p>  					
<p>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</p> <p>PTB/ . G – gold-plated contacts For voltage up to 60 V and current from 1 mA to 200 mA</p>  	<p>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 Protueksplodzijska 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</p> <p>Resistance R:</p> <table> <tr><td>1,0 kΩ</td></tr> <tr><td>2,2 kΩ</td></tr> <tr><td>4,7 kΩ</td></tr> <tr><td>10 kΩ</td></tr> <tr><td>470 kΩ</td></tr> </table>  	1,0 kΩ	2,2 kΩ	4,7 kΩ	10 kΩ	470 kΩ
1,0 kΩ						
2,2 kΩ						
4,7 kΩ						
10 kΩ						
470 kΩ						

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



DOUBLE PUSHBUTTON- CZ0201

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



**TRANSFORMATOR Ex e
 STA 0,1, STA 0,2, STA 0,3, STA 0,4**

Marking of explosion protection:
 II 2G Ex eb IIC Gb
 Installation allowed only in SKX 18 I, SKX 20 I-1
 and SKX 20 I-2 - Tamb ≤ +40° C
 It is factory-protected against overload



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



		SMS 03/1
		SMS 03/2
		SMS 03/3
		SMS 03/4
		SMS 03/5
		SMS 03/6
		SMS 03/7
		SMS 03/8
		SMS 03/9
		SMS 03/10
		SMS 03/11
		SMS 03/12

		060
		062
		065
		061
		063
		067
		011
		034
		037
		049
		023
		019
		033
		024

**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



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}

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

2 x 16 mm² CTS16U

5 x 4 mm² CTS4UN

5 x 4 mm² CTS4UN RAL 5012

Screw connection terminals 2x16 mm² or 5 x 4 mm² on the apparatus carrier TH 35-7,5

Marking of explosion protection:

II 2G Ex eb IIC Gb

Rated voltage: 630 V

Rated current: 10/16 A

Screw connection terminals 5 x 4 mm² RAL 5012 on the apparatus carrier TH 35-7,5

Marking of explosion protection:

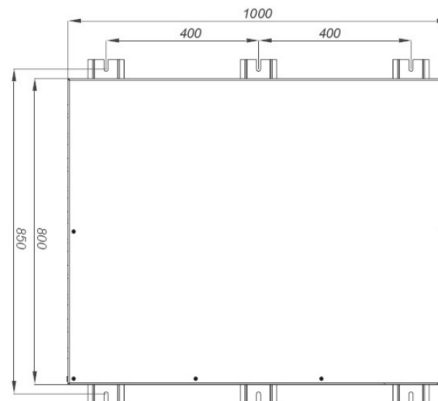
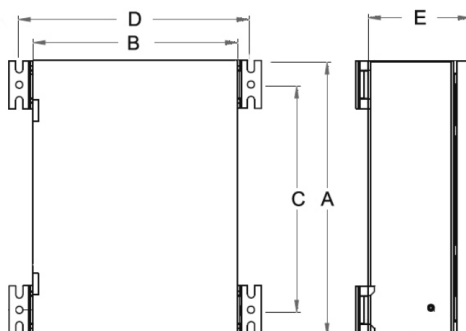
II 2G Ex ib IIC Gb

Maximum safe voltage: 60 V



10. MOUNTING AND INSTALATION

Mounting of explosion protected control unit is done by tightening on a flat surface or wall with a screw kit M6x16 minimal on the given dimensions. The explosion protected control unit carrier can be turn in two possible positions according to the drawing for control units SKX 16 I, SKX 18 I-2, SKX 20 I-1 and SKX 20 I-1.



Type	A[mm]	B[mm]	C[mm]	D[mm]	E[mm]
SKX 16I	300	300	245	330	150
SKX 18I-2	400	300	325	330	
SKX 20I-1	600	400	530	440	
SKX 20I-2	1000	800	800	850	

11. SPARE PARTS AND ACCESSORIES

- housing with cover (MMK 303015, MMK 403015, MMK 604020, SKX 1008020),
- cable glands and plugs,
- build-in components,
- actuator/indicator components.

12. 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.

13. 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:

- Regulations concerning equipment and protective systems intended for use in potentially explosive atmospheres EU directive 2014/34/EU and
- 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.

14. STORAGE AND TRANSPORT

Storage and transport should only be made in the original packaging, as outlined in the cardboard box.

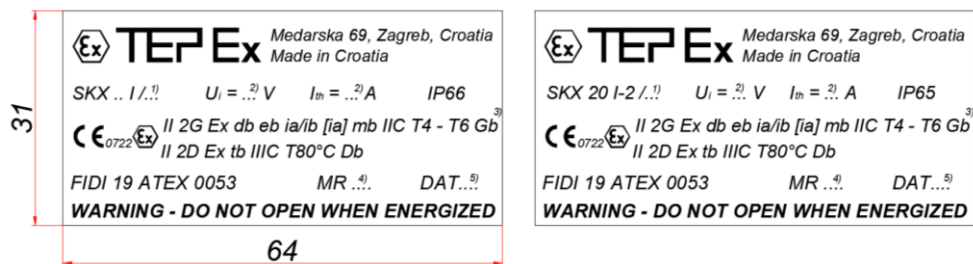
15. MANUFACTURER'S WARRANTY

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.

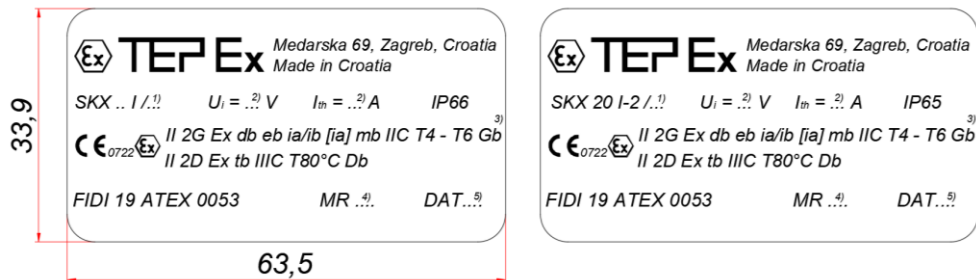
16. MARKING

Explosion protected control units SKX 16 I, SKX 18 I-2, SKX 20 I-1, SKX 20 I-2 are marked:

- marking aluminium plate with technical data on the housing cover:



- marking paper label with technical data in the housing:



- 1) type code of the explosion protected control unit,
- 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),
- 5) manufacturing date (month / year).