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1. MANUFACTURER

TEP Ex d.o.o.
Prilaz dr. Franje Tuđmana 6 HR-49210 ZABOK
Telephone: +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, SKX 16-N, SKX 18, SKX 20 are intended for use in control, distribution and signaling circuits in 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 60079-10-1:2009 and EN 60079-10-2:2009.

4. PRODUCT COMPLIANCE

Design and construction of products are in accordance with apparatus standards EN 60947-1:2007/A1:2011, EN 60947-5-1:2004/C1:2005/A1:2009, EN 60947-5-5:2007, EN 60204:2006/C1:2010 and all other related standards.



The product complies with the ATEX Directive 94/9 EC and standard:

- EN 60079-0:2012+A11:2013,
- EN 60079-1:2007,
- EN 60079-7:2007,
- EN 60079-11:2012,
- EN 60079-18:2009,
- EN 60079-31:2009.

The product has been developed, manufactured and tested according to the existing state of technique accordance with the standards EN 9001:2008 and EN ISO / IEC 80079-34:2011.

- 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 EMC Directive 2014/30/EU.

5. DEGREE OF PROTECTION AND TECHNICAL DATA

Certificate:	EXA 14 ATEX 0029					
Marking:						
Category and explosion protection:		II 2G Ex d e mb ia/ib 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					
Resistance to shock:	IK 08					
Class of protection:	I (PE - protective earthing)					
Rated insulation voltage U _i :	- up to 690 V AC					
Rated operating voltage U _e :	- depending on the equipment installed					
Maximum safe voltage for Ex i terminal blocks U _m :	- 60 V _{peak}					
Rated thermal current I _{th} :	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			
PE terminals (inside of the enclosure):	- max. 2x4 mm ² +2x2,5 mm ² , 3x4 mm ² , 2x6 mm ² - solid, stranded, flexible					
Cover fixing::	- combo head screw M5x25/10-Z4 A2 ISO 7045 with plate 4,5 A2 DIN 6905, - tightening torque 2,0 Nm					
Cable glands:	- Pressure torque of the nuts and glands of the body depending on the size according to the manufacturer's instructions					
Surface resistance:	< 10 ⁹ Ω					
Resistance to shock:	7 J					
Color:	black, RAL 9005					
Dimensions: (LxWxH) without cable glands	MMK 16-1 – 255x250x120 mm	MMK 16-2 – 255x250x160 mm				
	MMK 16-N/1-1 – 300x250x120mm	MMK 16/1-2 – 300x250x160 mm				
Weight (only GRP boxes):	MMK 16-N/2-1 – 300x250x120mm	MMK 16/2-2 – 300x250x160 mm				
	MMK 18-1 – 400x250x120 mm	MMK 18-2 – 400x250x160 mm				
Mounting:	MMK 20-1 – 600x250x120 mm	MMK 20-2 – 600x250x160 mm				
	MMK 16-1 - 3,00 kg	MMK 16-2 - 3,30 kg				
Mounting:	MMK 16-N/1-1 - 3,3 kg	MMK 16-N/1-2 - 4,1 kg				
	MMK 16-N/2-1 - 3,3 kg	MMK 16-N/2-2 - 4,1 kg				
	MMK 18-1 - 4,50 kg	MMK 18-2 - 4,80 kg				
	MMK 20-1 - 6,80 kg	MMK 20-2 - 7,10 kg				
Mounting:	- with screw kit M6x16 of the housing in the tops of the rectangle:					
	SKX 16: 235 x 200 mm SKX 16-N: 280 x 200 mm					

SKX 18: 380 x 200 mm
 SKX 20: 580 x 200 mm

6. TYPES

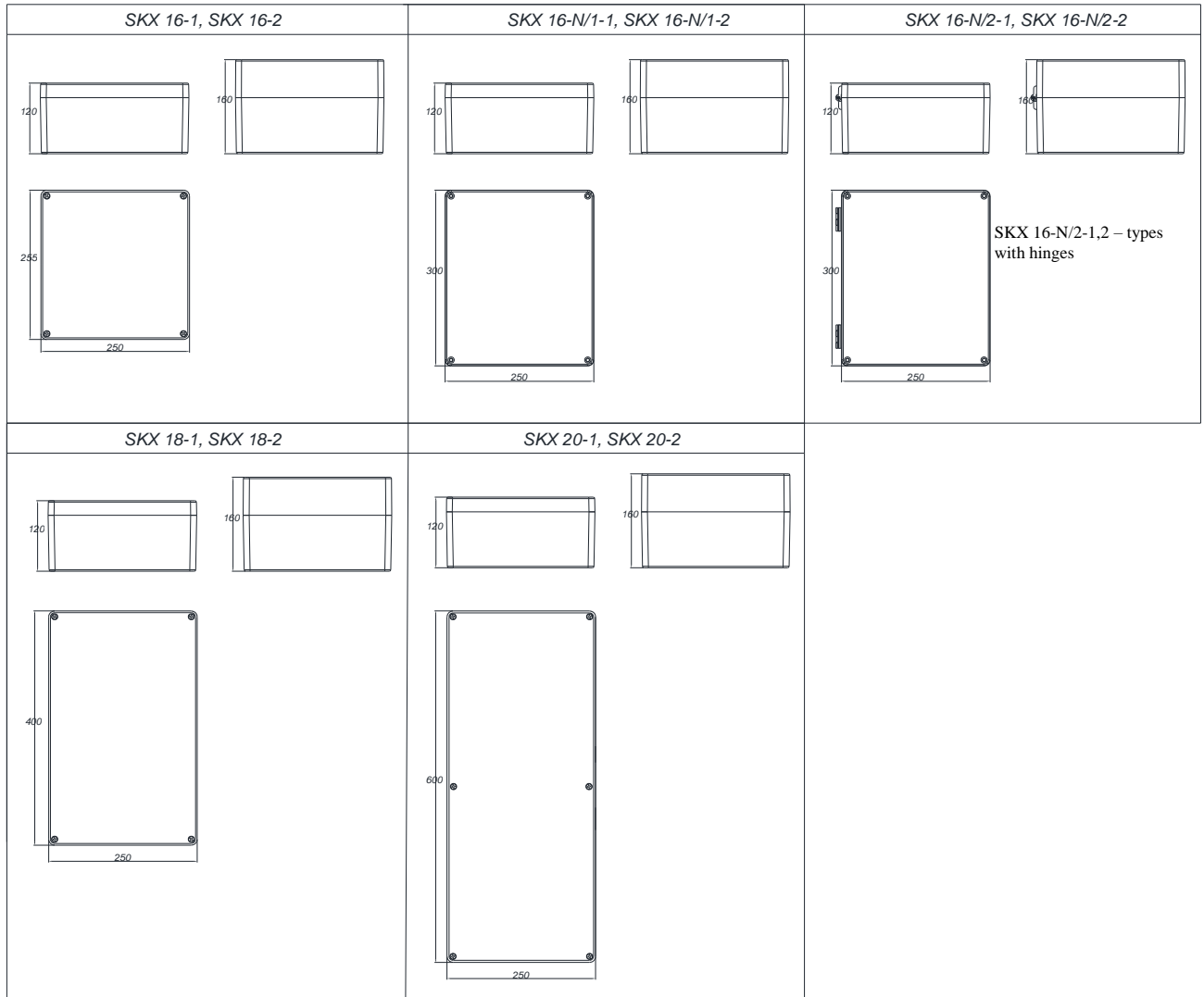
Control unit according to customer's request is marked with standard model code - SKX 16, SKX 16-N, SKX 18, SKX 20 and MSRU number. MSRU number represents the factory serial number.

For example SKX 16/MSRU 1280

Control unit, as a single unit formed of more enclosures, are marked with standard model code of each used enclosure - SKX 16, SKX 16-N, SKX 18, SKX 20 and MSRU number. MSRU number represents the factory serial number.

For example SKX 18/SKX 20/MSRU 1281

7. DIMENSIONS OF CONTROL UNITS (without cable glands)

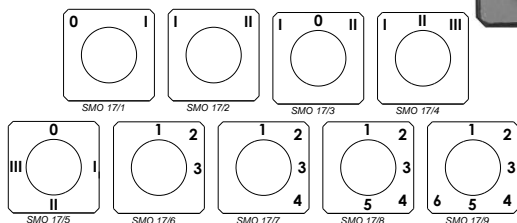


8. ACTUATOR/INDICATOR COMPONENTS:

Description, type, display

SWITCH ACTUATOR SMO 17/.

Marking of explosion protection:
 II 2G Ex e IIC Gb II 2D Ex tb IIIC Db
 I M2 Ex e I Mb



Description, type, display

SWITCH ACTUATOR 40A/80A

GHG 262 ...R...., GHG 263 ...R...., GHG 264 ...R....

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



CABLE GLAND ISO 25 SPU 25

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

CABLE GLAND ISO 16 - ISO 63 GHG 96092..P...

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



PLUG ISO 25 SPC 25

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

PLUG ISO 16 - ISO 63 GHG 960 663 P...

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



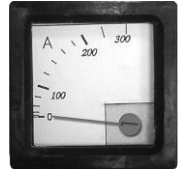
**CABLE GLAND ISO 16 - ISO 63
FGA1 – FGA4**

Marking of explosion protection:
II 2G Ex e II II 2D Ex tD A21 IP66/67



MEASURING INSTRUMENT SAM 72

Marking of explosion protection:
II 2G Ex e IIC Gb II 2D Ex tb IIIC Db
I M2 Ex e I Mb



**PUSH BUTTON
ACTUATOR
SPO 01/.**

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



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

**MUSHROOM-HEAD PUSHBUTTON ACTUATOR
(EMERGENCY-STOP)
GHG 410 1905 R0005**

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



**FRONT ELEMENT OF
SIGNAL LAMP SPO 02/.**

Marking of explosion protection:
II 2G Ex e 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 GHG 410 1944
R0010**

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



**KEY-OPERATED PUSHBUTTON
ACTUATOR
GHG 410 1904 R0012**

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









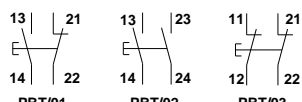

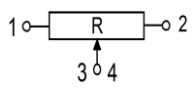




**KEY-OPERATED MUSHROOM-HEAD
PUSHBUTTON ACTUATOR
(EMERGENCY-STOP)
GHG 410 1906 R0005**

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



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 de ia/ib IIC IM2 Ex de ia/ib I</p> 	<p>MCB - MINIATUR CIRCUIT BRAKER 1p/2p/3p/4p,B/C, 0,5-40A, 6/10 kA, SIA 100 XX, 200XX, 300 XX, 400 XX Marking of explosion protection: II 2G Ex de IIC</p> 
<p>RESIDUAL CURRENT BREAKERS 2p/4p 25/40/63 A, 30 mA, 10 kA with or without auxiliary contact FSS 200 XX, 400 XX, 210 XX, 410 XX Marking of explosion protection: II 2G Ex de IIC Gb</p> 	<p>BUILD IN SOCKET 16 A (3p/5p), 32A (4p) GHG 511 8306 R0001, GHG 511 5806 R0001, GHG 512 84060R0001 Marking of explosion protection: II 2G Ex de IIC II 2D Ex tD A21 IP66 T80°C</p> 
<p>DIGITAL INDIKATOR VEGADIS 175 Ex Marking of explosion protection: II 1G EEx ia IIC T6</p> 	<p>SIGNAL LAMP SLP Marking of explosion protection: II 2G Ex de IIC Gb IM2 Ex de 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 de IIC Gb IM2 Ex de 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 de IIC 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: 1,0 kΩ 2,2 kΩ 4,7 kΩ 10 kΩ 470 kΩ</p>  
<p>MANTLE TERMINALS SL 5 Marking of explosion protection: II 2G Ex e 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</p> 	<p>MANTLE TERMINALS SL 8 Marking of explosion protection: II 2G Ex e 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</p> 

CONTROL SWITCH SMS 03/.

Marking of explosion protection:

I M2; II 2G Ex d e I/IIC

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



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

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

Marking of explosion protection:

II 2G Ex d e IIC

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

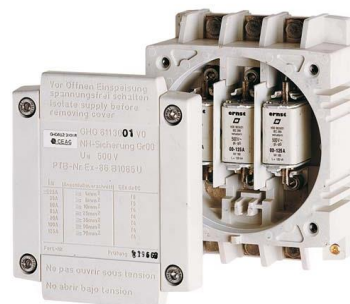


		060
		062
		065
		061
		063
		067
		011
		034
		037
		049
		023
		019
		033
		024

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

Marking of explosion protection:

II 2G Ex d e IIC I M2 Ex d e I



MEASURING INSTRUMEN AM 72

Marking of explosion protection:
 II 2G Ex e II
 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

Marking of explosion protection:
 II 2G Ex ib IIC
 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}



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 II(2) D Ex e IIC
 Rated voltage: 630 V
 Rated current: 10/16 A
 Screw connection terminals 5 x 4 mm² RAL on the apparatus carrier TH 35-7.5
 Marking of explosion protection:
 II 2G Ex ia/ib IIC
 Maximum safe voltage: 60 V

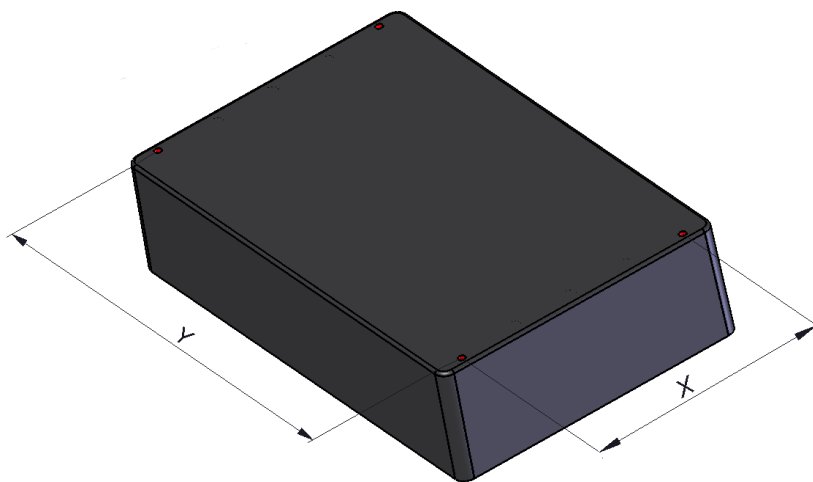


MEASURING INSTRUMEN VM 72

Marking of explosion protection:
 II 2G Ex e mb II
 Instrument with moving iron
 Measuring range : 6 - 660 V
 Measuring accuracy: class 2,5
 Overload range:l : 1,5
 Connection terminals: 2 x 1,5 - 4 mm²

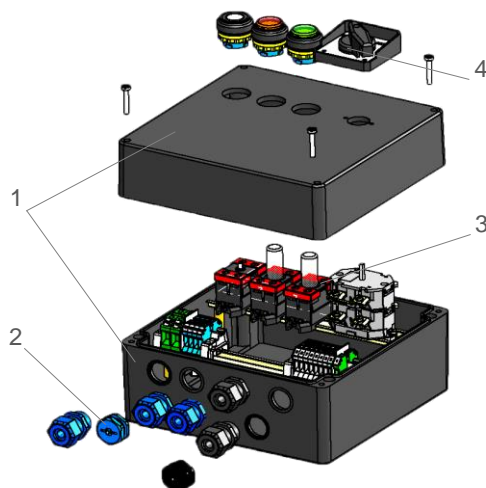
10. MOUNTING

Mounting of explosion protected control unit SKX 16 – SKX 20 is done by tightening on a flat surface or wall with a screw kit M6x16 on the given dimensions.



Enclosure	Dimension	
	X[mm]	Y[mm]
SKX 16	200	235
SKX 16-N	200	280
SKX 18	200	380
SKX 20	200	580

11. SPARE PARTS AND ACCESSORIES



1. Enclosure with cover
2. Cable glands and plugs
3. Build-in component
4. 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 complementing with 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 94/9 EC (ATEX 94)
- 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.

14. STORAGE AND TRANSPORT

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

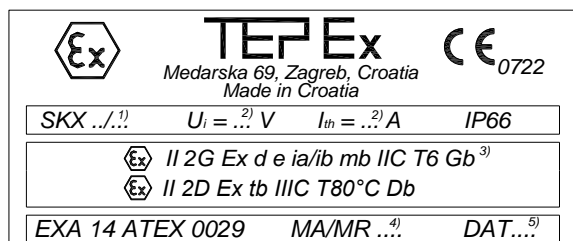
15. MANUFACTURER'S WARRANTY

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 unit SKX 16 – SKX 20 are marked:

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



- 1) type code of the explosion 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)

- warning plate on the housing cover

