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Mining electrical engineering

Flame-proof encoder type OE-1.*

*Flameproof encoder type OE-1.**

Properties

- measurement of rotation angle,
- measurement of rotational speed,
- small overall dimensions.

Description

Flameproof encoders type OE-1* are intended for measurement of rotation angle and/or rotational speed of equipment operating in group I hazard zones (methane and/or coal dust explosion) and in group IIA hazard zones. Thanks to a compact and massive construction it can be used in harsh operation conditions without necessity to use additional mechanical covers.

Measurement of angle is carried out using absolute encoder, whose output signal specifies unequivocally angle of position of the measuring shaft with possibility to specify zero point of the encoder.

Measurement of rotational speed is carried out using incremental encoder equipped with dephased two pulse outputs allowing specifying speed and direction of rotation.

Signal-supply barrier allowing supplying non-intrinsically safe encoder from intrinsically safe voltage 12V (100mA) and separation of intrinsically safe and non-intrinsically safe output signals.

Signal of SSI protocol, which is consistent with voltage levels of RS422 standards, is separated in execution OE-1.A (absolute). Use of quick barriers and special receiving module of SSI protocol is recommended for receiving signal from encoder. Maximum distance of transmission 100 m. Maximum length of cable is equal to 2m with possibility to shorten it depending on customer needs. In both versions cable is ended with plug type EX GOT GG 6 M20**** **

Explosion-proof protection

Marking

Ⓔx I M2 Ex d [ib] I Mb

Ⓔx II 2G Ex d [ib] IIA T4 Gb

Ambient temperature

-20°C to +40°C

CE Type Examination Certificate

OBAC 08 ATEX 255

Rated data

Ingress protection

IP65

Parameters of intrinsically safe outputs of signal (3,4)

Co = 7000uF
Lo = 220mH
Io = 65mA
Uo = 6.51V
Po = 0.212mW

Parameters of intrinsically safe intputs of signal (5,6)

Ci - negligible
Lo - negligible
Ii = 14mA
Ui = 5.5V

Supply parameters (1,2)

Ui = 12.8V
Ii = 0.427A
Ci - negligible
Li - negligible

Dimensions

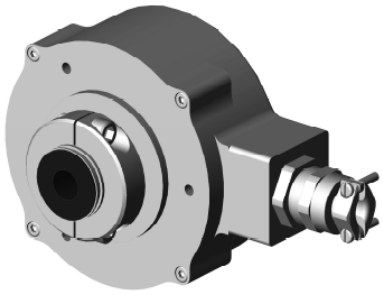
length: 170mm,
diameter: 130 mm

Weight

approx. 11 kg

Selection chart

Execution type	Code
incremental	I
absolute	A
Code: **OE - 1.**	



Intrinsically safe incremental encoder type IEI-1

Properties

- measurement of rotational speed,
- small overall dimensions.

Description

Intrinsically safe incremental encoder type IEI-1 is intended for measurement of rotational speed of equipment operating in group I hazard zones (methane and/or coal dust explosion hazard) and group IIB. Thanks to a compact and massive construction it can be used in harsh operation conditions without necessity to use additional mechanical covers.

These encoders were executed according to the good engineering practices rules within the scope of safety and they meet the requirements of the standards PN-EN 60079-0 and PN-EN 60079-11.

Explosion-proof protection

Marking

Ⓔx I M1 Ex ia I

Ⓔx II 1G Ex ia tDA20 IP66 IIB T4

Ambient temperature

-20^0C to $+70^0$C

CE Type Examination Certificate

OBAC 09 ATEX 255

Rated data

Ingress protection

IP66

Parameters of intrinsically safe outputs of signal (2-3;2-4;2-5)

Io = 95.45mA
Uo = 27.5V
Po = 0.66W
Co for I = 3.55 µF
Lo for I = 51.22 mH
Co for IIA = 2.42 µF
Lo for IIA = 31.22 mH
Co for IIB = 0.672 µF
Lo for IIB = 15.61 mH

Supply parameters (1-2)

Ui = 28V
Pi = 2.33 W
Ci - 0.6 µF
Li - 0 H

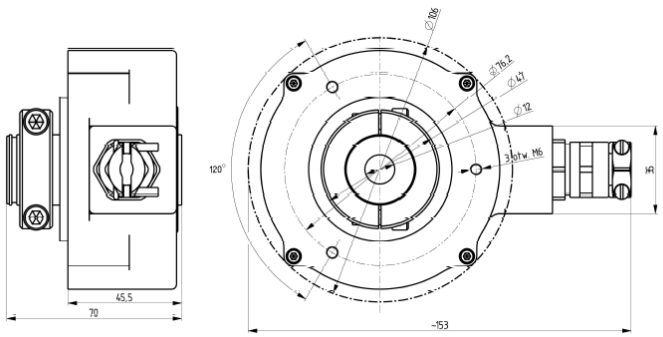
Number of pulses of incremental encoder

up to 1024 imp./rev.

Maximum rotational speed

to 3600 rev./min

Dimensions /mm/



Intrinsically safe encoders converter type PEI-*.*

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Intrinsically safe encoders converter

Properties

- supplies incremental encoders with intrinsically safe voltage,
- separation of signals from encoder,
- possibility to use as intrinsically safe power unit and signals sepa-

Description

Converter of intrinsically safe encoders type PEI-*.* is intended for supplying incremental encoders with intrinsically safe voltage and separation of signals from encoder.

Converter of intrinsically safe encoders type PEI-*.* is an intrinsically safe equipment with “ia” protection level and ensures galvanic separation between intrinsically safe encoder and non-intrinsically safe supply-decoding parts.

PEI-*.* consists of :

- supply system with high-frequency converter to ensure galvanic separation (4kV) and diode barrier to achieve “ia” protection level,
- three transmission channels with galvanic separation between intrinsically safe and non-intrinsically safe part.

Quick transoptors, ensuring quick transmission of signals up to 10 MBit/s, of electric strength input-output (intrinsically safe/non-intrinsically safe) min. 2.5kV rms are used for separation of signals.

Whole is installed in enclosure ME-22,5 and colour-coded plugs were used for external connections.

Explosion-proof protection

Marking

Ex I M2 [Ex ia] I

Ex II 2G [Ex ia] IIB T4

Ambient temperature

-20°C to +70°C

CE Type Examination Certificate

OBAC 09 ATEX 408U

Rated data

Ingress protection

IP20

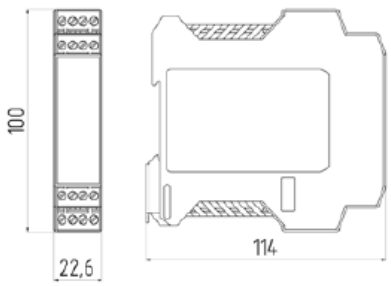
Please refer to the Owner’s Handbook for details of the Start Up Procedure.

Selection chart

Supply voltage	code	execution	code
24V DC	1	OC (open collector of transistor)	1
		TTL (outputs 5V max 1mA)	2
42V AC	2	HTL (voltage output 30V max 5mA from terminals 1, 8)	3

➡ **Code:** **PEI -** ☐ ☐

Wymiary /mm/



Relay control module type PMS-*/*/*

Description

Relay control module type PMS-*/*/* consists of two modules: measuring and executive. Each module can operate independently or can be connected with each other.

Measuring module: PMS-1/*/*, PMS-2/*/*, PMS-3/*/*, is equipped with intrinsically safe measuring circuit. These modules differs by allowable resistance of measuring line. Measuring module is equipped with 2 redundant intrinsically safe input circuits of "ia" protection level controlled using rectifying diode e.g. 1N4007. Each input circuit (measuring) is controlled with respect to short circuit, gap and direction of current flow. For control purposes the resistance of measuring circuit of relay control module PMS cannot exceed 600Ω, for the purposes of control of continuity of earthing wire in cables and conductors supplying the equipment, the resistance of circuit cannot exceed 100Ω, (for supply voltages of voltage to 1000V) and cannot exceed resistance of 50Ω, (for supplying networks of voltage over 1000V).

Executive relay module PMS-0/*/* can be supplied with non-intrinsically safe or intrinsically safe voltage.

Depending on user's needs the relay control module can be used for galvanic separation of intrinsically safe and/or non-intrinsically safe circuits.

Measuring module of relay control module has safety integrity level SIL-3.

Executive module of relay control module has safety integrity level SIL-2 or SIL-3 depending of type of connection of working contacts of executive relays. SIL-3 is obtained with serial connection of executive contacts of both channels.

Relay control module was executed according to the rules of good engineering practice within the scope of safety and meets the requirements of the standards PN-EN 60079-0:2006; PN-EN 60079-11:2007; IEC 61508; PN-EN ISO 13849-1; PN-EN 62061.

Explosion-proof protection

Marking

I M2 [Ex ia] I

II 2G [Ex ia] IIB T4

Ambient temperature

-20°C to +70°C

CE Type Examination Certificate

OBAC 08 ATEX 268U

Rated data

Ingress protection

IP20

■ **PMS-0/*/***

Supply voltage

12V, 24V DC ± 10%

Power consumption

max 1.5VA

Own time of activation

10 ms

Electric strength between intrinsically safe and non-intrinsically safe part

4 kV

■ **PMS-1/*/***

Supply voltage

24V, 42V AC/DC ± 20%

Power consumption

max 3VA

Measuring voltage

5V Vp-p± 5%

Short-circuit current of measuring current

max 5.3mA

Control of input circuit

diode 1N4001...7

Own time of activation

<50ms

Electric strength between intrinsically safe and non-intrinsically safe part

11.6kV for CNY65 Exi

4kV for supply transformer

Selection chart

Version	Channels number	Code	Voltage	Code	Execution	code
Executory relay module (without measuring module)	0	0	12 V DC	1 *	T/T	1
Measuring module to 600 Ω (with diode) U_0 = 5.36V	2	1	24 V AC/ DC	2	T/i	2 *
Measuring module to 100 Ω (with diode) U_0 = 5.36V	2	2	42 V AC/ DC	3 **	i/T	3
Measuring module to 50 Ω (with diode) U_0 = 5.36V	2	3			i/i	4 *
Measuring module to 400 Ω (with diode) U_0 = 15.75V	2	4				
Measuring module to 600 Ω (with diode) U_0 = 5.36V	4	5				
Measuring module to 600 Ω (with diode) U_0 = 5.36V Special version	4	6				
Measuring module to 100 Ω (with diode) U_0 = 5.36V	4	7				
Measuring module to 50 Ω (with diode) U_0 = 5.36V	4	8				

Code PMS-*/*/*

** - not concerns PMS-0/*/*

* - concerns only PMS-0/*/*

Central-interlocking leakage protection type ER 100 im

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ER 100w


ED 100i

Central-interlocking leakage protection

Description

Protection type ER 100im is intended for control of insulation state in isolated electric LV networks Depending on type of connection of the protections to controlled network it can fulfil the following functions:

- Central leakage protection of three-phase alternating voltage network. In this case three chokes ED100i connected with one end to three phases of the network, and the second end connected in one point creating system of “artificial zero” where measuring relay ER100im of the protections connected,
- Central leakage protection of three-phase alternating voltage network. In this case two chokes ED100i connected with one end to phase conductors of the network, and the second end connected in one point where measuring relay ER100im of the protections is connected,
- Interlocking leakage protection in alternating voltage three-phase and one-phase networks,

Measuring circuit of measuring relay ER100im can cooperate with controlled network only through ED100i chokes.

The following functions are executed in the mentioned applications:

- Signaling and/or switching off in case of decrease of insulation state below set reference value, when relay with controlled separation times separates, which contacts are signaling actuation and/or executes switching off the switch or contactor,
- Measurement and indication of insulation state, while to intrinsically safe analogue output there can be intrinsically safe voltage indicator (0÷10V) connected, scaled for readout of insulation resistance e.g. ER100W and/or intrinsically safe voltage converter to other analog signal to sent this information to the other control and monitoring systems.

Contacts and coil of relay as well as supply of the protection are non-intrinsically safe circuit. Analogue output can be connected to intrinsically safe circuits of “ia” protection levels (e.g. ER 100W or to intrinsically safe signals separator), while its measuring circuit through set of chokes ED 100i sends intrinsically safe signal of “ia” protection level to the controlled network.

Protection meets the requirements of the machinery directive within the scope of redundant equipment and has safety integrity level: SIL 1 , or PL c or category 2.

Explosion-proof protection

Marking
Ⓔx I M2 (M1) [Ex ia] I

Ambient temperature
-20°C to +70°C

CE Type Examination Certificate
OBAC 06 ATEX 059U

Rated data

Ingress protection
IP20

Supply voltage
42V AC ±20%, 24V ±20% DC

Power consumption
1 VA

Measuring voltage
18V DC ±5%

Rated voltage of controller network
to 1140V AC,

Internal impedance
57.5kΩ

Internal resistance
47.5kΩ

Maximum output current of measuring circuit
Io=0.42mA

Internal inductance
Li = 404H

Internal capacity
Ci = negligible

Range of setting
2 ÷ 100kΩ

Own time of activation
<100, <70, <60
(depending on settings for networks, resp. to 42V ; to 500V , to 1140V)

Contacts
1 normally open contact / 1 switchable contact

Operational voltage
max 250V

Operational current
Imax 5A

Central-interlocking leakage protection

Description

Protection type ER 600im is intended for control of insulation condition in isolated MV power networks of 3.3kV as interlocking protection. Measuring circuit of ER600im protection can cooperate with controlled network only through integrated set of glands ER600d and optionally with 3 glands ED600z for three-phase connection of protection to the controlled network) and it fulfils the following function:

- Signaling in case of decrease of insulation state below set reference value, when relay with controlled separation times separates, which contacts are signaling actuation and precludes actuation of switch or contactor, supplying voltage to controlled section of network.

Protection meets the requirements of the machinery directive within the scope of redundant equipment and has safety integrity level SIL 2 or PL d, category 2.

Explosion-proof protection

Marking
Ⓔx I M2 [Ex ib] I Mb
Ambient temperature
-20°C to +70°C

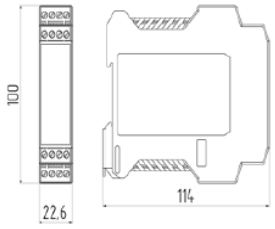
CE Type Examination Certificate
OBAC 11 ATEX 441U

Rated data

Ingress protection
IP20
Supply voltage
230V or 42V AC ±20%
Power consumption
1 VA
Measuring voltage
24V DC ±5%
Rated voltage of controller network
to 3600V AC,
Internal impedance
1.96MΩ
Internal resistance
123.8kΩ
Maximum output current of measuring circuit
Io=0,214mA
Internal inductance ER600d (U=25.2V)
Li = 5500H
Internal inductance ER600z (U=25.2V)
Li = 1930H
Internal capacity
Ci = negligible
Setting range for network 3.3 kV
220 kΩ ±20%
Own time of activation
<70, ms
Contacts
2 switchable contacts
Operational voltage
max 250V AC/DC
Operational current
Imax 5A

Temperature protection type TMA100Am

Dimensions /mm/



Description

Temperature protection type TMA100-Am is an intrinsically safe device intended for protection of equipment against excessive increase of temperature. It uses temperature sensors type PTC installed in the devices.

Temperature protection type TMA-100Am was executed according to the rules of good engineering practice within the scope of safety and it meets the requirements of the standards PN-EN 60079-0:2009;PN-EN 60079-11:2007.

Temperature protection type TMA-100Am is intended for operation in the additional flameproof cover with marking Exd or in zone without explosion hazard with cover having ingress protection IP54(65), while intrinsically safe circuits of “ia” protection level can be lead out to gas and dust explosion hazard zones.

Explosion-proof protection

Marking

I M2 [Ex ia] I

II 2 GD [Ex ia] IIC T4

Ambient temperature

-20°C to +70°C

CE Type Examination Certificate

OBAC 10 ATEX 081X

Rated data

Ingress protection

IP20

Parameters of the intrinsically safe circuits

Terminals 14,15,16

Ex ia	I	IIA	IIB	IIC
Io	0,85mA	0,85mA	0,85mA	0,85mA
Uo	8,61V	8,61V	8,61V	8,61V
Po	1,9 mW	1,9 mW	1,9 mW	1,9 mW
Co	450 uF	1000 uF	50 uF	5,9 uF
Lo	640 H	390 H	195 H	49 H

Io=0,85 mA Ri= 10,12 k ∧ Li , Ci - negligible

Terminals 13,15

Ex ia	I	IIA	IIB	IIC
Io	16,8mA	16,8mA	16,8mA	16,8mA
Uo	8,61V	8,61V	8,61V	8,61V
Po	37,8mW	37,8mW	37,8mW	37,8mW
Co	450 uF	1000 uF	50 uF	5,9 uF
Lo	1,6 H	1,0 H	0,5 H	0,12 H

Io= 16.8 mA , Ri= 511.8 ∧ Li , Ci - negligible

Parameters of the non-intrinsically safe circuits

On output terminals : 1,2,5,6,7,8

Umax = 250V

Imax = 1 A

Pmax= 100W

On input terminals (supply) : 3 , 4

Umax = 42VAC

Imax =0.06 A

Relay separator of intrinsically safe and non-intrinsically safe circuits type PSOI

Description

Intrinsically safe relay separator is intended for separation between non-instrinsically safe and intrinsically safe circuits.

Coil of relay separator PSOI-*/* is located in the non-intrinsically safe circuit, while its contact can be connected to intrinsically safe circuits with “ia” or “ib” protection level.

Relay separator of intrinsically safe and non-intrinsically safe circuits PSIO-*/* allows transmission of information from non-intrinsically safe control circuits to intrinsically safe or non-intrinsically safe circuits of automation systems.

Explosion-proof protection

Marking
I M2 [Ex ia] I
II 2G [Ex ia] IIC T6

Ambient temperature
-40°C to +55°C

CE Type Examination Certificate
OBAC 05 ATEX 021X

Rated data

Ingress protection
IP20

■ **Intrinsically safe contacts**

Material of contact
Au

Operational-load current
3 / 2 / 0.6 A

Operational voltage of intrinsically safe AC/DC circuit
250 V

Rated operational power AC
25 VA

Max switching capacity AC (250V)
25 VA

Max load current DC: 30/110/
250 V
3 / 0.2 / 0.1 A

Minimum operational current
12 / 5 V/mA

■ **Coil of relay**

AC control voltages (50/60Hz)/DC
12–24-42/48-60-110…125-230..240 V

Range of AC voltages (50/60Hz)
(0.8…1.1)Un

Range of DC voltages
(0.7…1.2)Un

■ **Mechanical data**

Mechanical resistance
10 x 106

Electric-operational strength
60 x 104

Switching time
7 / 11 ms

Resistance of insulation EN 61810-5
4 kV / 3

Resistance of insulations of open contacts (AC/DC)
1000 V

Selection chart

Contact type	Code	Coil voltage	co-de
Change-over contact (Umax = 60V)	1	Coil voltage 12V AC/DC	1
Make contact with diode (Umax =250V)	2	Coil voltage 24V AC/DC	2
Make contact with NAMUR system (Umax = 24V)	3	Coil voltage 42/48V AC/DC	3
Make contact (Umax = 250V)	4	Coil voltage 60V AC/DC	4
		Coil voltage 110…125V AC/DC	5
		Coil voltage 220…240V AC/DC	6

Code: PSOI -*/*

Video signal separator type SSW-*/*

Description

Video signal separator is intended for separation between high-frequency non-instrinsically safe and intrinsically safe video circuits. Separator type SSW-*/* can be connected to the intrinsically safe circuits with ia or ib protection level.

Video signal separator type SSW-*/* was executed in three various types of enclosures:

- Enclosure type EMG 15 with connecting terminals for installation on bus TS35
- Enclosure formed by injection moulding made of ABS plastics or metal, encapsulated with lead out conductors
- Enclosure formed by injection moulding made of ABS plastics or metal, encapsulated with lead out BNC
- Enclosure type ME 22,5 UT with cover ME 22,5 OT-MSTBO and connecting terminals for installation on bus TS35

Separator in enclosure ME22,5 UTL

Explosion-proof protection

Marking
Ex I (M1) [Ex ia Ma] I
Ex II (1)G [Ex ia Ga] IIA T4

Ambient temperature
-40°C to +70°C

CE Type Examination Certificate
OBAC 06 ATEX 074U

Rated data

Ingress protection
IP20

Supply voltage
None - passive device

Maximum continuous current
50mA

Selection chart

Type	Code	Coil voltage	Code
Video signal separator to 200MHz	1	EMG enclosure	1
Video signal separator to 900MHz	2	Execution encapsulated with cble lead outs	2
Special execution	3	Execution encapsulated with BNC lead outs	3
Signal separator xDSL	4	Special execution	4
		Enclosure ME 22,5 UT	5

Code : SSW -*/*

Intrinsically safe signals converter type IPS-**.**

Intrinsically safe signals converter type IPS-**.**

Explosion-proof protection

Marking
Ⓔx I M2 (M1) [Ex ma ia] I
Ⓔx II 2(1)GD [Ex ma ia] IIC T6

Ambient temperature
-20°C to +60°C

CE Type Examination Certificate
OBAC 08 ATEX 449U

Rated data

Ingress protection
IP20

Supply voltage
24V DC (20 to 30 VDC)

Rated current
100 mA

Maximum power
2.8W at 30V DC

Description

Intrinsically safe signals converter type IPS-**.** is intended for separation and conversion of intrinsically safe signals of serial transmissions type RS422 / RS485 from methane explosion hazard zone to non-intrinsically safe signals type RS232 / RS422 / RS485.

Table 1

Type of intrinsically safe transmission	Type of non-intrinsically safe transmission	code
RS 422	RS 422	1
RS 422	RS 232	2
RS 422	RS 485	3
RS 485	RS 422	4
RS 485	RS 232	5
RS 485	RS 485	6

Table 2

Data frame structure	Number of bits	code
7 data bits, even parity bit, 1 stop bit	9	1
7 data bits, even parity bit, 2 stop bits	10	2
7 data bits, odd parity bit, 1 stop bit		
7 data bits, even parity bit, 1 stop bit		
8 data bits, even parity bit, 1 stop bit		
7 data bits, odd parity bit, 2 stop bits	11	3
7 data bits, even parity bit, 2 stop bits		
8 data bits, even parity bit, 2 stop bits		
8 data bits, odd parity bit, 1 bit stopu		
8 data bits, even parity bit, 1 stop bit		
8 data bits, odd parity bit, 2 stop bits	12	4
8 data bits, even parity bit, 2 stop bits		

Table 3

Transmission speed [b/s]	code
1.200	1
2.400	2
4.800	3
9.600	4
14.400	5
19.200	6
38.400	7
57.600	8
115.200	9
93.750	10
187.500	11
375.000	12
500.000	13
750.000	14
1.000.000	15
1.500.000	16

Selection chart

Transmission type	Data frame structure	Transmission speed
See table 1	See table 2	See table 3

Code: IPS -.***

Intrinsically safe temperature sensor type ICT-.***

Description

Intrinsically safe temperature sensor type ICT-*.** is intended for measurement of gas, liquids, solid bodies temperatures in devices, tanks, pressure pipelines etc.

This sensor can be used in areas where dust and gas, included in group I (methane, coal dust) as well as group II, explosion hazard is present.

Explosion-proof protection

Marking
- I M1 Ex ia I Ma
- II 1G Ex ia IIC T6/T5/T4 Ga

Ambient temperature

for group I
-20°C to +85°C

for group II
-20°C to +40°C for T6
-20°C to +50°C for T5
-20°C to +60°C for T4

CE Type Examination Certificate
OBAC 06 ATEX 290X

Rated data

Ingress protection
IP65
Measuring element
Pt100
Connector thread
M20x1.5
Allowable pressure
1 MPa – standard execution
3 MPa - special execution
Assembly length L
5 or 10 or 15 or 20 cm or other
Minimum depth of immersion in medium medium
25 mm
Material of external cover
acidproof steel 1H18N9
Maximum value of parameters of the supply circuit terminals 1(+) i 2(-)
Ui=30 V DC
Ii=100 mA
Pi=750 mW
Internal inductance
negligible
Internal capacity
negligible
Measuring circuit of sensor
Maximum electric values, which can be supplied to terminals 3, 4, 5, 6
Uo=9.6 V DC
Io=4.5 mA
Po=11 mW
Maximum allowable value of internal inductance and capacity
Lo=4.5 mH/Co=709 nF – for IIB, IIC
Lo=8.5 mH/Co=1300 nF – for I, IIA
Maximum length of probe
500 mm

Selection chart

Execution	Code	Probe length L [cm]	Code	Pressure range for probe operation	code
With converter	1	Specify value e.g. 20 cm	20	0.05 ÷ 1 MPa Standard execution	*
Without converter	2			0.05 ÷ 3MPa	S

Code: ICT - *.**

Multi-condcutor bushings

Description

Multi-conductor bushings type *7-910*-**** are intended for transmission of electric signals in the explosion-proof enclosures. These can be connections between one flame-proof chamber and other chamber in explosion-proof enclosure conforming the PN-EN 60079-0 standard or between various flameproof enclosures.

Explosion-proof execution

Relevant standard	Marking	Certificate
EN 60079-0 and EN 60079-1	Ex II 2G Ex d II Ex I M2 Ex d I	Multi-condcutor bushing insulators type 07-91..-/…. OBAC 07 ATEX 278U
EN 60079-0 and EN 60079-1	Ex II 2G Ex de II Ex I M2 Ex de I	Fibre optic insulator type 57-91..-…./….

Ambient temperature -55°C to +110°C

Rated data

Voltage	Conductor	Cross-section mm²	Sleeve	Max. ambient temperature
250 V	H05V-K/Radox H07V-K	0.25 to 1.5	M 10 x 1 to M 42 x 1.5	+70°C/ + 110 °C
690 V	H07-K/Radox	0.25 to 70	M 10 x 1 to M 42 x 1.5	+110°C/ + 110 °C
1 000 V	NSGAFöu/ Radox	1.5 to 95	M 16 x 1 to M 42 x 1.5	+90°C/ + 110 °C
3000 V (6000V)	NSGAFöu	1.5 to 95	M 24 x 1.5 to M 42 x 1.5	+90°C

Intrinsically safe execution

250V	H05V-K, H07G-K,	0.5 to 1,5	M 10 x 1 to M 42 x 1.5	+70°C/ + 110 °C

Selection chart

Bushing type	Code	Voltage	Code	Condcutor cross-section mm²	Code	Sleeve	Code	Explosion-proof execution	Code
Supply (signal)	0	690 V	1	Optical fibre	A	M 10 x 1	0	Ex d II/I (PTB) ATEX	G
				0.25	C	M 16 x 1	1		
				0.35	D	M 24 x 1.5 Ø ≥ 22 mm	2		
		250 V	2	0.5	E				
				0.75	F	M 33 x 1.5 Ø ≥ 32 mm	3	EEx d II/I (PTB) ATEX	G
				1	G				
		1 000 V	3	1.5	H	M 36 x 1.5	4		
				2.5	J	M 38 x 1.5 Ø ≥ 36 mm	5		
				4	K			Ex d I/II (OBAC) ATEX	OB
Fibre optic	5	3 000 V	4	6	L	M 42 x 1.5	6		
				10	M	M 12 x 1.5	C		
				16	N	M 16 x 1.5	D		
		6 000 V	5	25	P	M 20 x 1.5	E	Ex d (IECEx)	IEC
				35	Q	M 25 x 1.5	F		
				50	R				
		≤ AC 50V/ DC 75 V	6	70	S				
				95	T				
				Other	Z				

Code: *7-910*-**/***

Number of conductors, e.g. 02—2 conductors, 21—21 conductors

Conductors length : should be specified during ordering.

Conductors marking : overprint with number