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Certyfikat nr QS/14/07



AC 083
QMS

SBEx-1 APPLICATION OF BISTATE SEPARATOR type SBEx-1/21mA for control of the protective line continuity in version “N” and “P”.



ATEX

- rail housing (TS35, 22.5mm width),
- intrinsically safe input circuit,
- EC-Type Examination Certificate: KDB 04ATEX061

FEATURE I (M1) [Ex ia] I

Protection level IP 20

II (1) G [Ex ia] IIC

Operating temperature range -25...+70°C

II (1) D [Ex ia] IIIC

- output – relay contact,
- input, output and power supply circuit mutually galvanically separated.

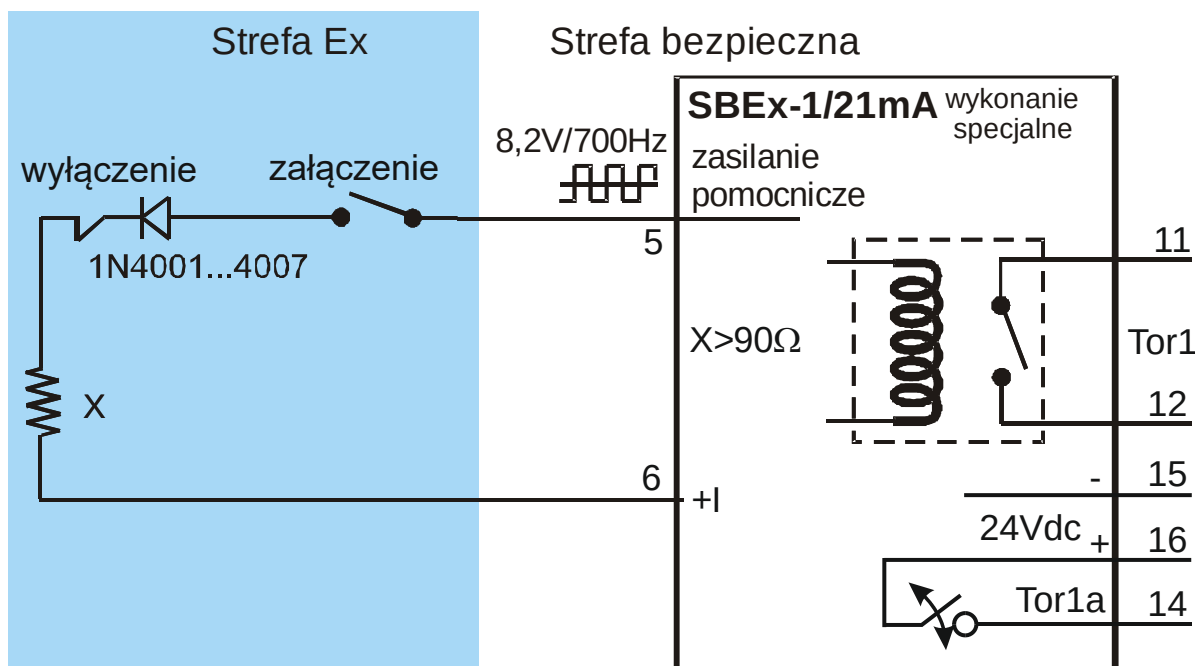
Intrinsically safe input circuit can operate with intrinsically safe circuit of protection level i_a or i_b of a device installed in explosive hazardous area (zones 0, 1, 2, 20, 21, 22).

Output circuits and power supply circuit can operate with non-intrinsically safe devices circuits of max voltage $U_m=253V$ e.g. supplied from the 230Vac network.

The separator can be installed only in a room that is safe in terms of explosion or in flameproof housing. The separator should be protected against access of persons not trained in maintenance and operating of the separator.

The function of the separator is to check resistance “X” of the protective line (so called control of the protective line continuity or control of the protective circuit).

Connection diagram of the separator SBEx-1/21mA in version for control of the protective line continuity (or protective circuit) installed in explosion hazardous zone in version “N” and “P”.



It is possible to order different switching thresholds: $X > 90\Omega$, (hysteresis 17Ω)

$X > 45\Omega$, (hysteresis 8Ω)

Immunity to interference with a 5V sinusoidal signal with frequencies: 50Hz, 100Hz, 150Hz, 200Hz, 250Hz.

Allowable capacity of the circuit under test: $C < 100\text{nF}$.

Nominal supply voltage: $U_n = 20\div 28\text{ V dc}$;

Isolation test voltage: 2 kV

The relay contacts "11, 12" open when:

- $X > 90\Omega$ - guaranteed,
- or connection line to terminals "5, 6" is short-circuited or opened,
- or diode is short-circuited,
- or separator's power supply is off (terminals "15, 16").

The relay contacts "11, 12" close when:

- $X < 55\Omega$ - guaranteed,
- and connection line to terminals "5, 6" is operational (not short-circuited or opened),
- and diode is operational,
- and separator's power supply is on (terminals "15, 16").

Type SBEx-2-P: contact „Tor1a” (terminals 14, 16) short-circuited when contact „Tor1” (terminals 11, 12) is short-circuited

Type SBEx-2-N: contact „Tor1a” (terminals 14, 16) open when contact „Tor1” (terminals 11, 12) is short-circuited

Response time measured from the moment of instant changing of protective line from $X > 100\Omega$ to short-circuited $X = 0\Omega$ is $t \leq 40\text{ms}$.

Response time measured from the moment of instant changing of protective line from $X = 0\Omega$ to open-circuited $X > 200\Omega$ is $t \leq 60\text{ms}$.

Intrinsically safe parameters of the separator type SBEx-1/21mA:

1. terminals 5-6 input

$U_o = 9,3\text{V}$, $I_o = 20,4\text{mA}$, $P_o = 61,1\text{mW}$, $L_i = 0$, $C_i = 0$,

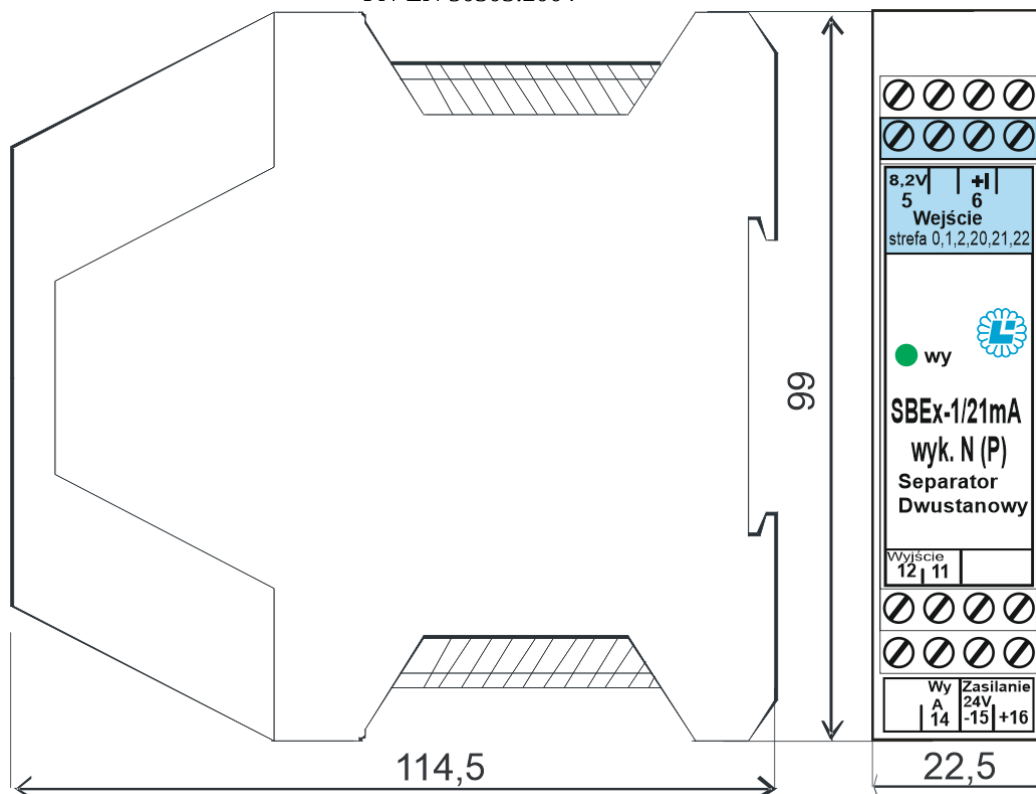
L_o and C_o cannot exceed values from this table:

Explosive group	$L_o [\text{mH}]$	$C_o [\mu\text{F}]$
I, IIA	50	3,1
IIB	20	2,5
IIC	5	0,58

2. terminals 11-12 output and terminals 13-14-16 : $U_m = 253\text{V}$

terminals 15-16 power supply: : $U_m = 253\text{V}$

Compliance with ATEX – directive 94/9/WE: PN-EN 60079-0:2009, PN-EN 60079-11:2010, PN-EN 61241-11:2007, PN-EN 50303:2004



The separator can be made in a wall-mounted housing with power supply 230V/50Hz.