

SBEx-B BISTATE SEPARATOR



Intrinsically safe output with relay contact

- “group I” “category M1” and “group II” “category 1” accompanying device
- intrinsically safe output circuit with protection level ia – compliance with ATEX,
- EC Type Examination Certificate: KDB 04ATEX061

FEATURE: I (M1) [Ex ia] I; II (1) G [Ex ia] IIC; II (1) D [Ex ia] IIIC

Protection level IP20

Operating temperature range -25..+70°C

- **intrinsically safe output in the form of a relay contact separated from input and power,**
- **input and output with common terminal “minus” – ground,**
- **input for proximity sensors, contacts, voltage, current signals and NAMUR,**

- Intrinsically safe output circuit can work with other intrinsically safe input circuit of “ia” or “ib” protection level that is in a device that is installed in hazardous zone “0, 1, 2, 20, 21, 22” of any mixtures. It can also operate with a “simple device”, which is defined in norm PN-EN 60079-11. If output circuit operated with circuits with ic or nL protection level, it cannot operate with ia or ib protection level circuit any more.
- Input and supply circuits can operate with non-intrinsically safe circuits of devices operating with voltage $U_m=253V$, e.g. supplied from 230Vac network.
- Separator can be installed only in an explosion safe, dry and dust free room that is protected against access of persons not trained in maintenance and operation of the transducer.
- Separator can be mounted in hazardous zone in flameproof enclosure. In group I, after turning off power supply it can be removed from the housing without time delay, because it does not contain energy storage components nor does it overheat. In group II (gas and dust zones) a 10-minute delay is required.

Application:

The SBEx-B separator transfers state of bistate input signal from a safety zone to corresponding bistate state of relay contacts working in the explosive zone.

The separator is designed to galvanically separate input circuit located in a safe zone from output circuit co-operating with the devices in the hazardous zone.

Typical use is to control equipment such as solenoid valves, sound and light indicators installed in hazardous zone. Using the separator allows you to control devices in hazardous zone from any ordinary device in a safe zone.

How to order:

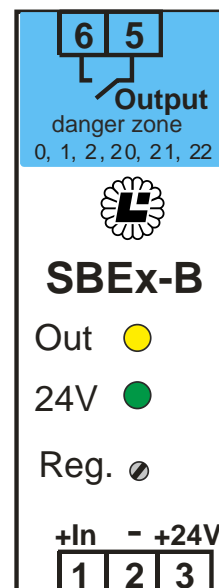
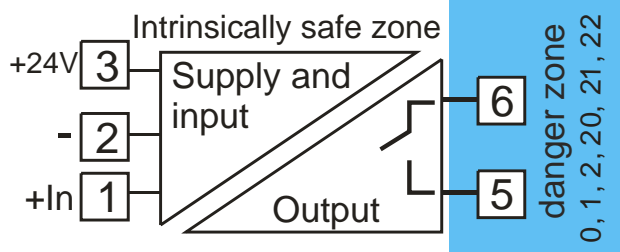
- SBEx-B Binary separator
- describe the input signal
 - specify switching level
 - specify hysteresis
 - describe output phase

Order example:

Bistat separator SBEx-B, input signal 0÷10V, level of switching 5V, hysteresis 1V, $U_{in}<4,5V \Rightarrow$ output relay open: type SBEx-B

Technical specification:

- Input signal:**
- any bistate or analogue signal – for comparison
- Input resistance
- for current signals - 50 Ω
 - for voltage signals - ≥ 100 k Ω
 - switching level - as agreed
 - hysteresis - as agreed
- Output signal for Ex zone**
- short or open state of relay
- switching parameters
- closing contact:
 - current: $\leq 0.5A$
 - voltage $\leq 200V$
 - resistance: max 0.15 Ω
 - $t_{ON}=2ms$, $t_{OFF}=2.5ms \Rightarrow 50$ Hz
 - contact capacity: 0.5pF
 - output phase - as agreed and described
- Power supply
- 20V \pm 27Vdc, 20mA
 - 24Vac, 30mA
- Galvanic separation of the circuits**
- Output contact separated from galvanically connected power supply and input circuits
- Isolation voltage test**
- 2kV, 50Hz



Intrinsically safe parameters for SBEx-B – input circuit with “ia” protection level:

Separator transfers state of the bistate input signal from safety zone to the corresponding state of relay output operating with device in explosion hazardous zone.

- a) Intrinsically safe contact of the output circuit (**terminals 5-6**) with protection level "ia" can cooperate with any intrinsically safe circuit installed in a hazardous zone. Intrinsically safe contact is a „simple device” with parameters $U_o=0$, $I_o=0$, $P_o=0$, $C_i \approx 0$, $L_i \approx 0$. Terminals do not generate or store energy and can be connected to any intrinsically safe circuit with parameters as in "b".
- b) Intrinsically safe switching parameters of bistate circuit: **“output” – terminals “5-6”** with protection level “ia”: $L_i \approx 0$, $C_i \approx 0$.

Version	U _i	I _i
SBEx-B	≤ 200V _{DC, AC}	0.5 A _{DC, AC}

- c) Non-intrinsically safe circuits:
“input” – terminals “1-2” and “supply” - terminals „2-3”: $U_m=253V$.

Operating conditions:

Maximal values of capacitance and inductance connected to intrinsically safe terminals "1-2-3" of the separator shall be selected according to criteria of connected circuits (C_o, L_o, L / R specified in the conditions of use of the device which will be controlled by the output of the SBEx-B separator).

The SBEx-B separator output circuit (terminals 5-6) can operate with any intrinsically safe circuit installed in the "0, 1, 2" zone of explosive mixtures with air, classified as explosive group IIA, IIB, IIC and zone “20, 21 and 22” dust explosion hazards (IIIA, IIIB, IIIC). It can also operate with a “simple device”, which is defined in norm PN-EN 60079-11. If output circuit operated with circuits with ic or nL protection level, it cannot operate with ia or ib protection level circuit any more.

Input terminals "1, 2" and power terminals "2, 3" can cooperate with non-intrinsically safe circuits of devices with a voltage of $U_m = 253V$, e.g. powered by a 230Vac power supply.

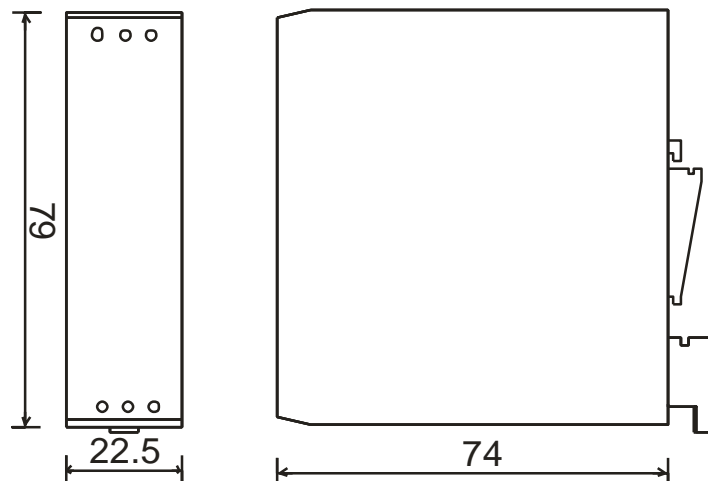
The separator is in a self-extinguishing plastic casing (polyamide PA 6.6) for mounting on a TS35. Level of protection of housing and terminals is IP20.

External connections have to be connected with conductor's wires of $0.5 \div 2.5 \text{ mm}^2$.

ATEX compliant - directive 94/9/WE: PN-EN 60079-0:2009, PN-EN 60079-11:2012, PN-EN 50303:2004

Operating conditions:

- Ambient temperature for safe - $-30 \div +70^\circ\text{C}$
- Ambient temperature for working - $-25 \div +70^\circ\text{C}$
- Relative humidity - max 90%
- Ambient atmosphere - dust and corrosive gases free
- Working position - all



Dimensions of the housing.