Intrinsically safe barrier
S2Ex-ZasLin

- "group I" "category M1"; "group II and III" "category 1 and 3" accompanying device
- intrinsically safe output circuit of protection level "ia" – ATEX compliance,
- EC-Type Examination Certificate: KDB 04ATEX120

ATEX

FEATURE: II (1) G [Ex ia] IIC, II (1) D [Ex ia] IIIC, I (M1) [Ex ia] I
Protection level IP20 Operating temperature range -30...+70°C

- Intrinsically safe output circuit can supply intrinsically safe circuits of devices with "ia" or "ib" protection level of device installed in hazardous area "0, 1, 2, 20, 21, 22" of explosive mixtures of group I and II. Safety parameters: voltage **Uo**, current **Io** and maximal power **Po** are shown in technical data.
- Supplying input circuit can work with any non-intrinsically safe supplying circuits of voltage 22÷28V of devices supplied from network of maximum voltage **Um≤253Vac**, e.g. supplied from 230Vac network.
- The supplier should be installed in explosion safe zone in atmosphere dry, dust free and protected against access of people not trained in maintenance and operation of the device.
- The device can be installed in explosion hazardous zone only in flameproof enclosure. In the case of explosion group I (underground mines) after switching off the power supply, the device can be removed from the flameproof enclosure without time delay. In the case of using the device in the group II gaseous or group III dust explosion group, the device cannot be removed from the flameproof enclosure without a time delay and on the outside of the enclosure the warning sign should be placed: "Do not open the casing within 10 min after turning off the power.".

Application:

Power supplier S2Ex-ZasLin is a source of intrinsically safe voltage which is passed to hazardous area with value from range 5.1÷27V.

Intrinsically safe output circuit of the supplier is galvanically separated from non-intrinsically safe input circuit which gives power to supplied device.

On page 3 are given maximal values of load current with 10% voltage drop from ordered value.

Output voltage can be any e.g 5.1V, 6.2V, 8.2V, 10V, 12V, 15V, 18V, 22V, 24V, 27V.

A typical application is powering installed in Ex hazardous zone measurement converters, solenoid valves, light and sound signaling devices.

Power source for S2Ex-Zasilacz supplier can be any 22÷28Vdc voltage source working with Uac≤253V network.

Technical specification:

Output to Ex zone
voltage range: Uout=5.1÷27V - Uo, Io, Po: according to table on page 2
continuous load current - according to table on page 3
Supply voltage: - **22V ÷ 28V**
current from supply source - max 200mA

Note: If supply voltage exceeds 29V the fuse of the protection barrier may be burnt – repair only by the manufacturer.

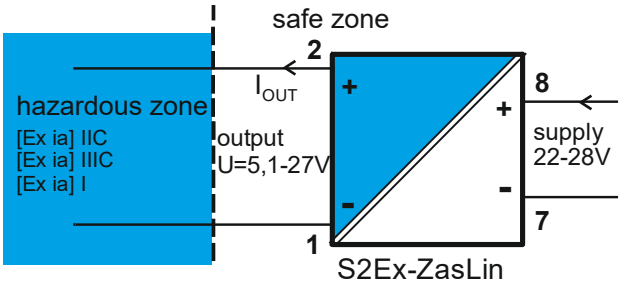
Circuits galvanic separation - **output galvanically separated from the input**
Isolation test voltage: - **2,5 kV, 50Hz**
between input and output
Housing dimensions: 22.5 mm x 99 mm x 114.5 mm
(width x height x depth)

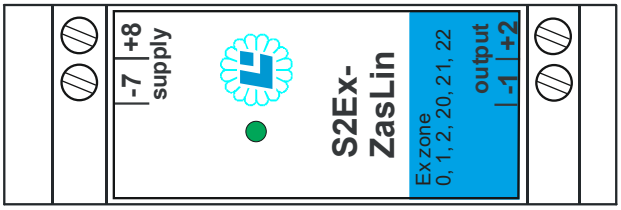
Ordering code:

S2Ex-ZasLin	supplier with intrinsically safe output circuit
- version	output voltage from range 5.1 ÷ 27V

Order example:

Supplier in rail housing 22.5mm, output voltage 12V:
type S2Ex–ZasLin-12





Supplier is in housing made of self-extinguishing plastic (poliamid PA 6.6) and can be mounted on TS35 rail.

Maximal values of capacitance and inductance which can be connected to intrinsically safe terminals "1-2" should be selected taking into account safety parameters of the connected circuits (given in the conditions of use of the supplied device). However, they cannot exceed the values given in the table below.

Outer connections should be led with wires of core diameter 0,5÷2.5 mm^2.

Supply terminals "7-8" can work with non-intrinsically safe circuits of devices working with voltage **Um≤253V** e.g. supplied from 230Vac network.

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Intrinsically safe parameters for S2Ex-ZasLin – output circuit with "ia" protection level:

a) Intrinsically safe output circuit: **„output" – terminals 1-2"** – with "ia" protection level:

The values of Lo, Co and L/R connection cable parameters should be adopted according to the table shown below:

Version Uout [V]	Uo [V]	Io [mA]	Po [W]	L/R [mH/Ω]			Lo [mH]			Co [µF]		
				I and IIA	IIB and III	IIC	I and IIA	IIB and III	IIC	I and IIA	IIB and III	IIC
S2Ex-ZasLin-27 Uout=27V	28	98	0,688	0,413	0,206	0,051	22,0	12,0	0,69	2,15	0,65	0,083
S2Ex-ZasLin-24 Uout=24V 200Ω-5%=190	25	132	0,82	0,345	0,172	0,043	12	6,9	0,35	2,97	0,84	0,11
S2Ex-ZasLin-22 Uout=22V	22,9	161	0,92	0,309	0,154	0,038	8,2	4,9	0,34	3,75	1,04	0,145
S2Ex-ZasLin-18 Uout =18V	18,9	219	1,0	0,275	0,137	0,034	4,9	3,1	0,47	6,39	1,60	0,26
S2Ex-ZasLin-15 Uout=15V	15,8	268	1,0	0,26	0,13	0,033	3,6	2,4	0,47	11,6	2,88	0,478
S2Ex-ZasLin-13 Uout=13V	13,7	193	0,66	0,43	0,21	0,053	7,4	5,0	1,1	18,1	5,0	0,79
S2Ex-ZasLin-5,1\190 Uout=5,1V	5,4	190	0,26	1,1	0,55	0,138	9,3	6,5	1,6	1000	1000	65
S2Ex-ZasLin-12 Uout = 12V	12,6	368	1,16	0,24	0,12	0,03	2,2	1,5	0,34	27	7,4	1,15
S2Ex-ZasLin-10 Uout = 10V	10,5	369	0,97	0,29	0,14	0,036	2,3	1,7	0,38	75	16,8	2,41
S2Ex-ZasLin-8,2 Uout=8,2V	8,6	377	0,81	0,35	0,17	0,043	2,4	1,7	0,41	1000	55	6,2
S2Ex-ZasLin-6,2 Uout=862V	6,5	428	0,70	0,40	0,20	0,051	2,0	1,5	0,36	1000	570	25
S2Ex-ZasLin-5,1 Uout=5,1V	5,4	437	0,59	0,48	0,24	0,06	2,0	1,5	0,36	1000	1000	65
Characteristic of the circuits is linear. For clustered values should be taken half of the values of Co, Lo given in this table remembering that Co cannot exceed 1µF for group I, IIA, IIB and 0,6µF for IIC.												

b) Non-intrinsically safe parameters: **„supply" – terminals „7-8": Um=253V.**

Safety parameters for group III (dusts) are the same as for group IIB (gases).

Application condition:

The output circuit of supplier S2Ex-ZasLin with "ia" protection level can work with intrinsically safe circuit of devices installed in zone "0, 1 and 2" of hazardous mixtures with air, which are in explosion groups I, IIA, IIB, IIC and in zone "20, 21 and 22" of dust explosion hazard (group III), according with its terms of use.

ATEX conformity - directive 2014/34/UE: PN-EN 60079-0, PN-EN 60079-11

EMC conformity - directive 2014/30/UE: PN-EN 61326-1

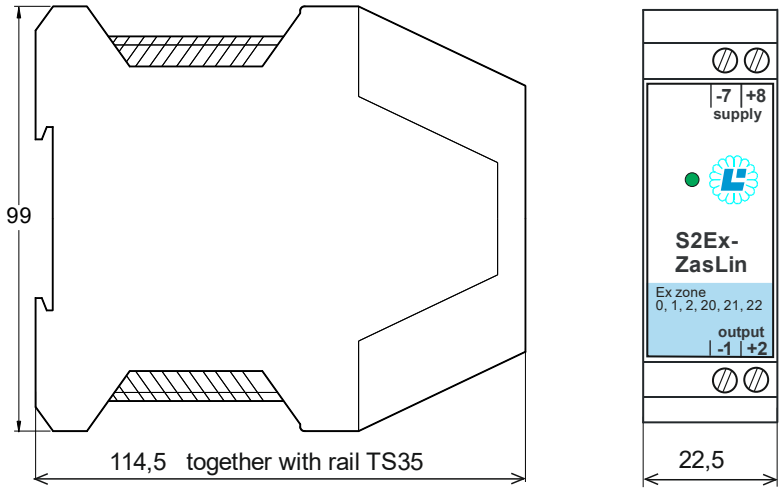
In general cables and wires of intrinsically safe circuits should be led separately regarding to non-intrinsically safe cables and wires. If intrinsically safe cable is shielded and is blue it can be in cable trays together with other non-intrinsically safe cables. Shield of the cable should be connected to the ground PE only from one side e.g. only in safe zone with a wire of 2,5mm2 diameter. Maintain a distance of 50mm from the end of the shield braid to the stripped ends of the cable cores in both the hazardous and safe zones. Put the crimping sleeves on the stripped ends of the cable cores. If in a multicore intrinsically safe cable are several intrinsically safe circuits the cables must be of A or B type with insulation test of 500V and the insulation cannot be thinner than 0.2mm. Cables and wires must be permanently fixed and protected against the possibility of mechanical damage. It is recommended to use blue cables. Compare the parameters Uo, Io, Po, Co, Lo, Ui, Ii, Pi, Ci, Li (L, C of the cable and Li, Ci of the device installed in the hazardous area).

If the L, C clustered parameters in the connected circuit (and this is how the Li, Ci parameters of the connected device should be treated) exceed 1% of the Lo, Co value, for the calculation should be taken of the Lo, Co parameters given in the certificate for the clustered values. If such parameters are not provided, then half of the Co, Lo value from the certificate should be taken for calculations with the assumption that the Co value cannot exceed 1 µF for groups I, IIA, IIB and III and 0.6 µF for IIC.

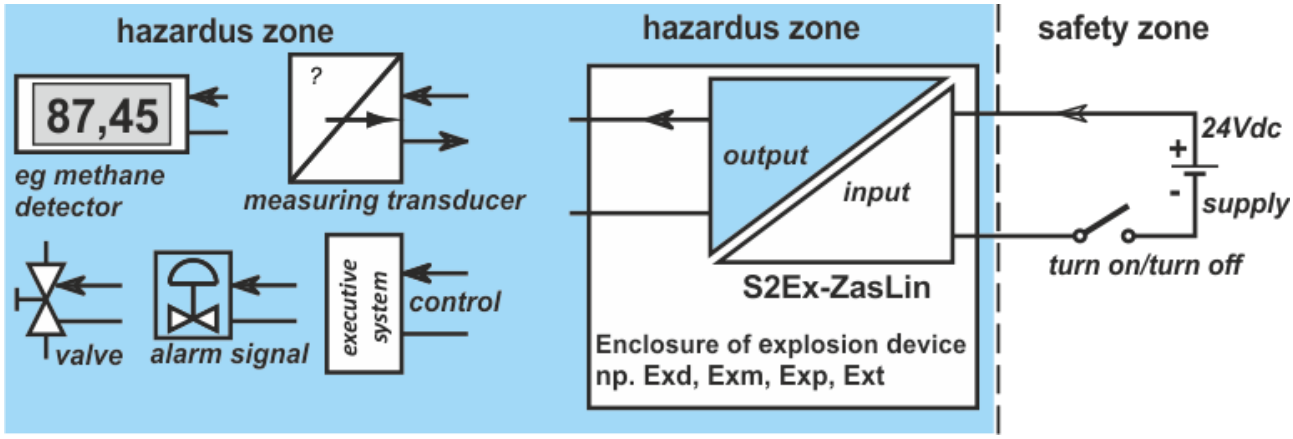
If a "simple device" made of plastic is installed in the hazardous area, the risk of electrostatics should be assessed. In the case of cable routes with high energy (power grid) or interferences, cables with measurement signals susceptible to the impact of interferences, apart from the use of shielded twisted-pair cables, should be led at a distance, e.g. in a separate tray, and the routes crossing each other should be at right angles.

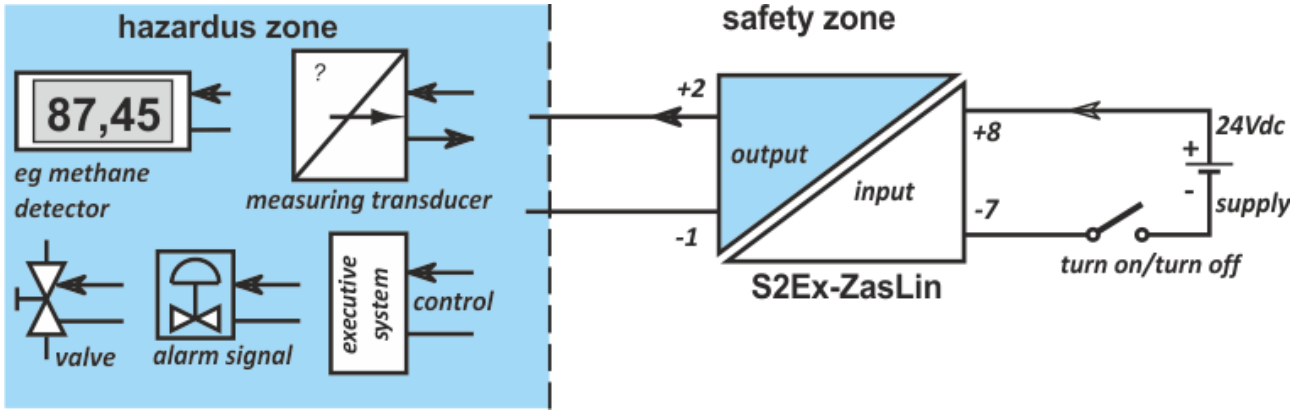
Operation conditions:

Ambient temperature - work	-	-30°C ÷ +70°C
Ambient temperature - storage	-	-30°C ÷ +70°C
Relative humidity	-	max 90%
Ambient atmosphere	-	no dust and aggressive gases
Working place	-	any



Housing draft





Load characteristic:

Version	27V	24V	22V	18V	15V	13
Load current	20 mA	20 mA	20 mA	20 mA	20 mA	20 mA
Ro [Ω]	300	200	150	91	62	75
Output voltage	21V	20 V	19 V	16,2 V	13,8V	11,5 V

Version	12V	10V	8,2V	6,2V	5,1V	5,1V/190
Load current	20 mA	20 mA	20 mA	20 mA	20 mA	20 mA
Ro [Ω]	36	30	24	16	13	30
Output voltage	11,3 V	9,4 V	7,7 V	5,9 V	4,8 V	4,5 V