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AC 083
QMS

S2Ex[ic]-ZAS

Barrier-separator with output intrinsically safe circuit. SUPPLIER



ATEX

- "group II and III" "category (3)" accompanying device with "[Ex ic]" protection level
- "group II" "category 3" device with "Ex nA" protection level

Designation: II (3)G [Ex ic] IIC, II (3)D [Ex ic] IIIA or IIIB or IIIC

Housing protection level: IP20 **Operating temperature range:** -25...+60 °C

- Intrinsically safe output circuit can operate with circuits of devices installed in explosion hazardous zone "2, 22" of any explosive mixtures.
- Non-intrinsically safe input circuit can work with non-intrinsically safe circuits of devices with voltage $U_m=253V$ e.g. supplied from 230Vac network.
- The device as accompanying device should be installed in explosion safe zone. Atmosphere should be 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 in "2, 22" only in flameproof enclosure Ex d (or another in accordance to the relevant standards).

APPLICATION:

The S2Ex[ic]-ZAS supplier is a source of voltage transferred to explosion hazardous zone with any value from range $3.3V \div 28.5V$.

The output circuit which supplies voltage to hazardous zone is galvanically separated from non-intrinsically safe input circuit which gives power to the supplier.

Typical application of S2Ex[ic]-ZAS is bistate control of e.g. electrovalves, sound and light indicators and supplying devices installed in hazardous Ex zone. Devices in Ex zone can be then controlled from any devices installed in safe zone.

Values of output voltage and maximal load current are given in the table below.

Output voltage tolerance is " $-10\% \div +5\%$ ".

Version	„28,5”	„24”	„22”	„20”	„18”	„16”	„15”
U_{OUT} [V]	25,7	21,6	19,8	18,0	16,2	14,4	13,5
I_{LOAD} [mA]	58	97	117	126	135	144	149

Version	„14”	„12”	„12/79”	„10”	„8,2”	„3,3÷6,2”
U_{OUT} [V]	12,6	10,8	10,8	9,0	7,4	$3,0 \div 5,6$
I_{LOAD} [mA]	153	162	74	171	180	180

Power supply for the S2Ex[ic]-ZAS can be any 22÷28V voltage source e.g. operating with a network with $U_m \leq 253V$.

Note: it is recommended to leave 5mm distance from both sides on TS35 rail for better cooling.

TECHNICAL PARAMETERS:

Output to Ex zone

- voltage range: - $3.3V \div 28.5V$
- load current (continuous) - acc. to the table above
- changes of output voltage due to changes of load current - " $-10\% \div +5\%$ "

Supply voltage: - $22V \div 28V$
current drawn from voltage source - max 200mA

Note: In case of supply voltage >29V the protection barrier fuse blowing can occur – repair by the producer.

- Galvanic separation of the circuits - output galvanically separated from input
- Isolation voltage test: - 2,5 kV, 50Hz

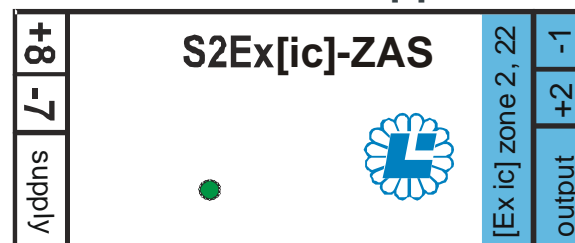
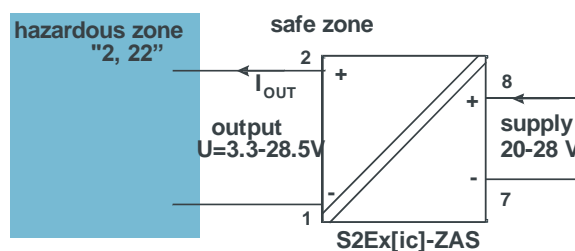
Order example:

Supplier in rail housing 22.5 mm, output voltage 12V: type S2Ex[ic]-ZAS-12V.

Ordering code:

S2Ex[ic]-ZAS supplier with output for zone 2 and 22

- $3.3V \div 28.5V$ output voltage from range $3.3 \div 28.5V$



ATEX directive compliance: 2014/34/UE: PN-EN 60079-0:2013, PN-EN 60079-11:2012, PN-EN 60079-15:2010
EMC directive compliance: 2014/30/UE - PN-EN 61326-1:2013-06

Safety parameters for S2Ex[ic]-ZAS – output circuit with “ic” protection level:

a) Intrinsically safe output circuit: “output” – terminals “1-2” – with “ic” protection level.

Values of L_o , C_o and connection cable L/R parameters should be taken from the table below:

Note: it is possible to order customized version on requested safety parameters: $0 < U_o < 25,2V$

$I_o \leq I_o$ shown in the table.

Table 1

Version	Po [W]	Uo [V]	Io [mA]	Lo [mH]			Co [μF]		
				IIA	IIB and III	IIC	IIA	IIB and III	IIC
Uout=28.5V	2,13	29,2	73	10	0,92	-	5,9	1,49	-
Uout=24V	3,1	25,2	125	20	4	0,3	2,6	0,77	0,10
Uout=22V	3,0	23,1	135	20	5	0,3	3,67	1,02	0,14
Uout=20V	3,0	21	145	18	5	0,4	4,78	1,27	0,188
Uout=18V	2,9	18,9	155	18	5	0,5	6,39	1,6	0,262
Uout=16V	2,7	16,8	165	15	5	0,6	9,3	2,29	0,39
Uout=15V	2,6	15,75	170	14	5	0,6	11,6	2,88	0,478
Uout=14V	2,5	14,7	175	13	5	0,7	14,9	3,86	0,62
Uout=12V	2,3	12,6	185	12	5	0,8	27	7,4	1,15
Uout=12V/79	1	12,6	79	12	5	0,8	27	7,4	1,15
Uout=10V	2,0	10,5	195	11	5	0,9	75	16,8	2,41
Uout=8,2V	1,8	8,7	205	10	5	1,0	1000	50	5,9
Uout=0÷6,2V	1,4	6,6	215	9	5	1,1	any	500	22

b) Non-intrinsically safe circuit parameters: “supply” – terminals “7-8”: $U_m=253V$.

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

The supplier is placed inside a housing made of self-extinguishing material (poliamid PA 6.6) designed to be installed on TS35 rail. Protection level of the housing and terminals is IP20.

Conditions of use:

In the event of damage, the device cannot be repaired by the end-user and must be returned to the manufacturer or his authorized representative. All unauthorized modifications should be avoided.

The intrinsically safe conductors must be identifiable, separated from non-intrinsically safe ones and wired in accordance with the relevant national / international installation standards.

Make sure that the wires are well insulated from each other and do not cause any unintentional connections.

Intrinsically safe wiring (between the intrinsically safe circuit located in the hazardous area and the intrinsically safe circuit of the device) must have a minimum insulation thickness of 0.25 mm.

Typically, the device, as an accompanying device, should be mounted in a safe zone.

The device can be installed in a hazardous area „2, 22” only in Ex d (or other according to the applicable rules). 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."

External connections should be made with wires of diameter $\varnothing \leq 2.5$ mm.

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 U_o , I_o , P_o , C_o , L_o , U_i , I_i , P_i , C_i , L_i (L , C of the cable and L_i , C_i of the device installed in the hazardous area).

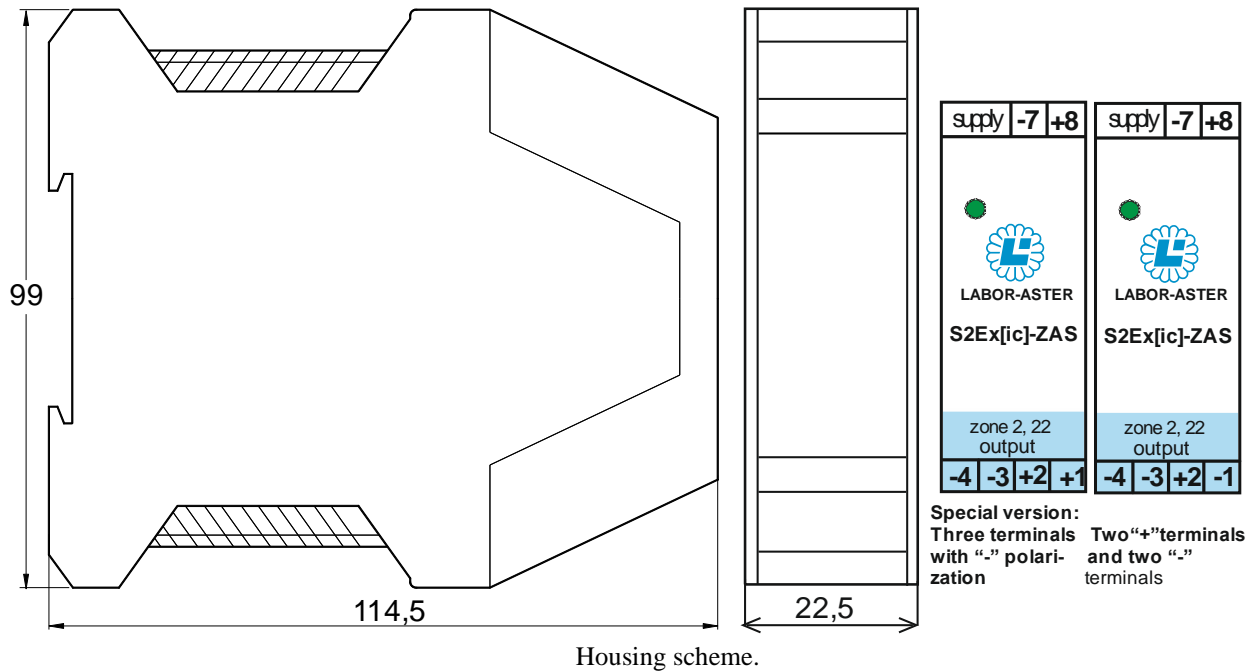
If the L , C clustered parameters in the connected circuit (and this is how the L_i , C_i parameters of the connected device should be treated) exceed 1% of the L_o , C_o value, for the calculation should be taken of the L_o , C_o parameters given in the certificate for the clustered values. If such parameters are not provided, then half of the C_o , L_o value from the certificate should be taken for calculations with the assumption that the C_o 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.

Operating and storage conditions:

Ambient temperature	- operating	- $-25 \div +60\text{ }^{\circ}\text{C}$
	- special version	- $-50 \div +60\text{ }^{\circ}\text{C}$
Ambient temperature	- storage	- $-50 \div +60\text{ }^{\circ}\text{C}$
Relative humidity		- max 90% without condensation
Ambient atmosphere		- no dusts and aggressive gases



Production and distribution:

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The manufacturer reserves the right to make changes to the product.

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