holthausen elektronik GmbH

Technical data
ESW®-Mini-Ex-_Duo-C-210

ESW®-Mini-Duo_C-Ex-d_210

Operating voltage	24VDC ±10%
Power consumption	max. 45mA
Temperature range	-20°C to 65°C
Degree of protection	IP 68
Housing	Stainless steel V4A
Housing dimensions	(78mm + 23mm) x 77mm, (h1 + h2) x d see also housing drawing
Weight	approx. 1,8kg (without cable), approx. 2,0kg (with cable)
Connecting cable	2m, 10 x 0,34mm²/**SD200 C 12x0,34mm²**, with shield, cover material: PUR/**PUR**, temperature range: -40°C to +90°C, min. bending radius: 70,00mm/**50,25mm**
Cable gland	ADE 1F, M20, Di4, nickel-plated brass, sealing ring made of neoprene/ O-Ring : perbunan
Sensor	integrated acceleration sensor
Measuring variable	Vibration speed in mm/s
Measuring range	0 to 10mm/s, 0 to 20mm/s, 0 to 50mm/s adjustable using DIP switches in housing
Signal assessment	arithmetic average, compared on RMS
Frequency range	10Hz to 1kHz (-3dB)
Filter	Butterworth, 40dB/dek and/or 12dB/okt
Analogue output	4 to 20mA power source proportional to the set measuring range
Load	max. 500Ohm
Switching outputs	two potential-free switching contacts K1 and K2 (30V, 1A)
Switching thresholds	10% to 100% of the measuring range, adjustable using two potentiometers in the housing
Response delay	K1 = 10s, K2 = 10s
De-energisation delay	K1 = 0.5s, K2 = 0.5s
Line monitoring	The relays are energised during normal operation, the switching contacts are closed. In the event of an alarm, voltage loss, or cable rupture, the relays switch back to their standby position.
Functional monitoring	complete start-up test, complete self-test upon request
Identification gases	II 2G Ex d IIC T6 Gb
Identification dusts	II 2D Ex tb IIIC T80°C Db

Cable assignment

red	+Ub	blue	Ground
yellow	NOC K1	green	Centre contact K1
pink	NCC K1	white	NOC K2
brown	Centre contact K2	black	NCC K2
grey	Analogue output	purple	nc
grey-pink	**nc**	**red-blue**	**nc**

At the time of delivery, the shield is connected to the housing and not to the ground.

optional	threaded pin M10x25mm, V4A
Ground connection	Ground terminal, BARTEC, 4.0mm^2 nominal cross-section

Attention: Within the framework of the self-test, the analogue output and the pre-contact K1 are not monitored and must therefore not be used for monitoring safety-relevant functions. The output signal and the switching state of the pre-contact relay are of a purely informative character.

Functional monitoring:

Line monitoring	The relays are energised during normal operation, the switching contacts are closed. In the event of an alarm, voltage loss, or cable rupture, the relays switch back to their standby position.
Permanent test	Test of voltages, sensor and controller functions
Self-test:	When testing upon start-up or when testing upon request via the internal DIP switches, the OK relay will switch 1x and the alarm relay will switch 2x for testing purposes. During the automatic test, the relays will not be energised
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	If the self-test or the permanent functional test detects an error, the alarm-relay will be de-energised - the contacts open and the analogue output provides 22mA.
Starting the self-test	- after activating the power supply, duration approx. 12s - through the internal DIP switch, duration approx. 12s - automatically approx. every 24h,if the 24h test has been activated (S3 at Power-On set to ON) duration approx. 5-6s

In order to check the entire functionality of the device, it is necessary to regularly conduct a start-up test to also include the alarm relay into the test and to check its switching capacity. The frequency for the test must be specified by the operator.

The technical construction complies with:

Performance-Level PL-c (in accordance with EN13849)

Category Cat.-2

Diagnostic coverage DC = low

DC = λDD/λD = 90.88%

Mean time to dangerous failure MTTFd = high

MTTF = 1 / ∑λ = 235.9 years