

- ◆ single-channel vibration monitor with a vibration sensor to the environment with the explosive risk
- ◆ permanent vibration measurement
- ◆ measured quantity is the RMS of vibration (true RMS)
- ◆ frequency band range from 3Hz to 1kHz
- ◆ vibration evaluation in 4 adjustable bands
- ◆ outputs on relay contacts
- ◆ digital indicator of measured value with the permanent data lighting
- ◆ interior diagnostics of monitor's failures



Purpose

Vibration monitor 120.3 is determined for the permanent measurement of vibration capability of machine placed especially in the environment with the explosive risk. The set of vibration monitor 120.3 contains the vibration sensor ASV3EX, connecting cable and evaluation and power supply apparatus NAP3EX. Vibration sensor ASV3EX is placed in the environment with the explosive risk and is solved as the spark-safe circuit. This sensor can be connected only to the NAP3EX unit placed out of the dangerous environment. The NAP3EX unit will present the vibration capability on the digital display, will sort vibration into one of the four adjustable bands and will switch relevant relays. Contacts of relay outputs with the rating 60V/1A are applicable both for an autonomous action into the technology (e.g. machine shut-down by means of the switching relay) and for alarm starting or command transmission to the superior control system.

ASV3EX sensor

The ASV3EX sensor consists of the piezoelectric accelerometer of the same type with a charge amplifier and electronics transmitting the signal from accelerometer to the output current of standard industrial analog interface 4 and 20 mA.

The size of this current is commensurable to the measured quantity and depends on the measuring range of ASV3EX sensor, set by the producer. Sensors ASV3EX are standardly produced with the measuring range 20, 50 or 100 mm/s and with the frequency range from 3 or 10 Hz to 1 kHz. ASV3EX sensor's electronics is power supplied directly by the two-wire connecting cable from NAP3EX apparatus. ASV3EX behaves like the passive pick-up with the taken-off current, commensurable to the measured quantity. The connecting cable is connected to the terminal board, placed inside of a sensor's housing and is brought out by the cable grommet. The sensor's housing is made from the special semiconducting plastic material (polyester) and is determined for the using in the environment with the explosive risk. The housing isn't galvanically connected with the interior electronics.

Connecting cable

The connecting cable between ASV3EX and NAP3EX sensors isn't the standard part of the delivery of vibration monitor 120.3, but it has to meet the conditions given by the producer in technical conditions of the monitor 120.3. It concerns mechanically resistant unshielded twin-lead, total length of the connecting cable must not be longer than 500 m. The connecting cable on the line between ASV3EX and NAP3EX has to be only complete, the cable must not be splice or repair anywhere. The manufacturer provides the delivery of customized suitable cable of necessary length.

NAP3EX apparatus

Power supply and evaluation apparatus NAP3EX is constructed in the plastic box and consists of three circuits: from the power supply circuit 230 V/50 Hz, from the measurement circuit and digital presentation of measured quantity and from the circuit of signalization. The output from this apparatus in the signalization circuit are three switching relay contacts J0, J1 and J2, from which J1 and J2 serve as the signalization of vibration set level overrun and J0 signals the fault-tolerant function of the whole vibration monitor 120.3. To the signalling contacts can be brought and switched the voltage max. size 60V.

Measurement circuit of NAP3EX apparatus consists of a digital indicator of measured quantity and set elements (trimmer) for setting of three compare levels of measured quantity. When overrun the output relays status will change. Compare levels are set by means of trimmers with the simultaneous digital presentation of the compare level. Adjustable levels are marked V1, V2 and H. The overrun of some levels is signalling both by the light of indicating diodes on the apparatus and simultaneously by the change of status of output relays J1 a J2.

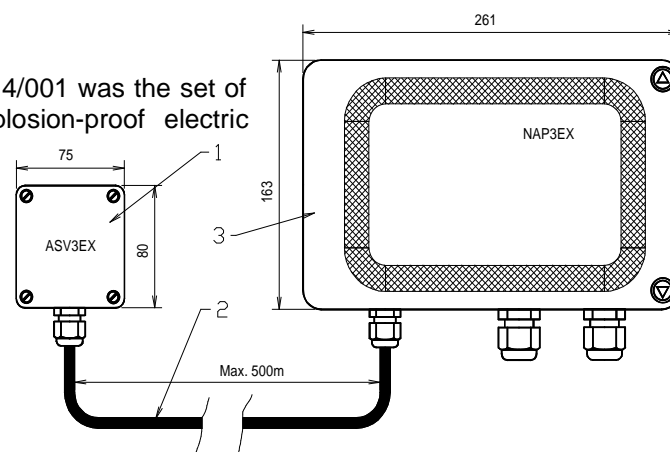
The relay J0 is switched in case that the interior power supply source in NAP3EX apparatus operates fault-tolerantly, ASV3EX sensor is connected to NAP3EX in correct polarity and vibration level of ASV3EX doesn't overrun the measurable range.

Monitor authorization

By the State Testing Institute No. 210 No. 18.96.014/001 was the set of Vibration monitor 120.3 authorized like the explosion-proof electric device with the enlistment of the ASV3EX sensor into the group EX ia IIC T6 according to ČSN EN 50 014. The NAP3EX apparatus is used out of the environment with the explosive risk.

Vibration monitor 120.3

- 1 - ASV3EX sensor
- 2 - Connecting cable
- 3 - NAP3EX apparatus



Parameters	
ASV3EX sensor	
Measured quantity	RMS of vibration acceleration
Selectable input range	20, 50 or 100 mm/s
Frequency range (3 dB)	3 Hz or 10 Hz to 1 kHz
Accuracy class	5
Shock resistance	5 km/s ²
Max. measured acceleration	20 m/s ² for input range 100 mm/s
Output	two-wire current passive 4 – 20 mA, to NAP3EX
Power supply	by the connecting cable from NAP3EX
Sealing	IP 65
Dimensions	80 x 75 x 56,5 mm
Mass	c. 400 g
Operating environment	environment with the explosive risk of combustible steams and gases ia IIS T6 according to ČSN EN 60 079-0 (SNV3 – hydrogen)
Operating temperature	-5 to 80 for the temperate environment with explosive risk - cat.M2,2G,3G -5 to 60 for zone 0, cat. 1G and M1
NAP3EX apparatus	
Input	current 4 – 20 mA, to output ASV3EX
Outputs	3 x switching relay contact, digital display
Output relays contacts load	max. 60 V, max. 1 A
Power supply	230 V/50 Hz according to ČSN IEC 38
Power input	5 VA
Protection	1 piece protective instrument fuse T 0,05 A
Sealing	IP 65
Dimensions	261 x 163 x 100 mm
Mass	c. 2500 g
Operating environment	environment without the explosive danger
Operating temperature	5 - 40°C