

MANUFACTURER DOCUMENT PACKAGE

Manufacturer's Manual

Reference package for procurement and maintenance review

EPRO

PR9268/203-100

ELECTRODYNAMIC VELOCITY SENSOR

Used with the applicable PR9268 electrodynamic velocity sensors configuration.

REFERENCE PACKAGE

OFFICIAL DOCUMENT

Selected official manufacturer pages follow this cover.

Source: Emerson official manufacturer documentation

Machinery Health™ Sensor

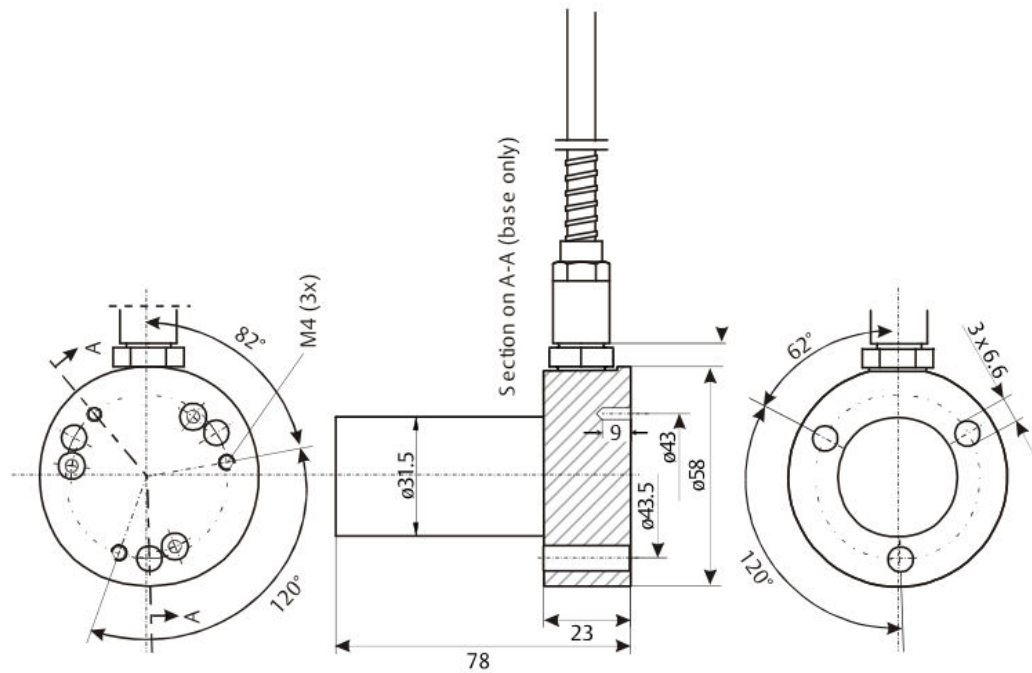
PR 9268/xxx-xxx, Absolute Vibration Transducers



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Figure 4-5: Position of mounting threads



All dimensions in mm.

Install the cable without torsion and elongation and protect it against damage. If you install a transducer with a metal protection hose, use a clamp to fix the metal protection hose as closely as possible to the transducer.

See [Figure 4-6](#) and [Table 4-3](#) for wire colors of PR 9268/20x-x00, PR 9268/30x-x00, and PR 9268/x0x-100-OPR transducers with open cable end. The cable shield is not connected to the transducer housing.

Figure 4-6: Wire colors – PR 9268/20x-x00, PR 9268/30x-x00, and PR 9268/x0x-100-OPR

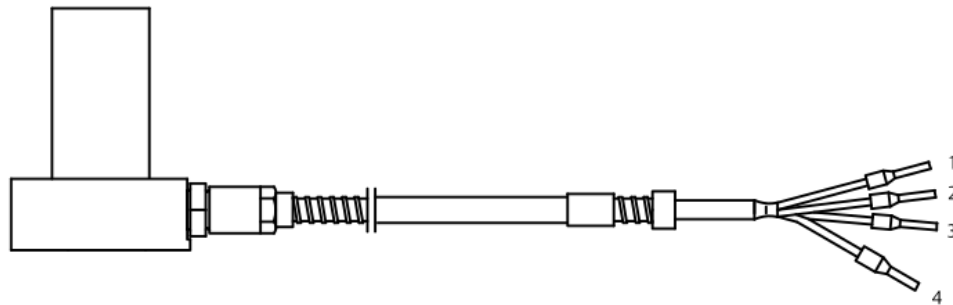
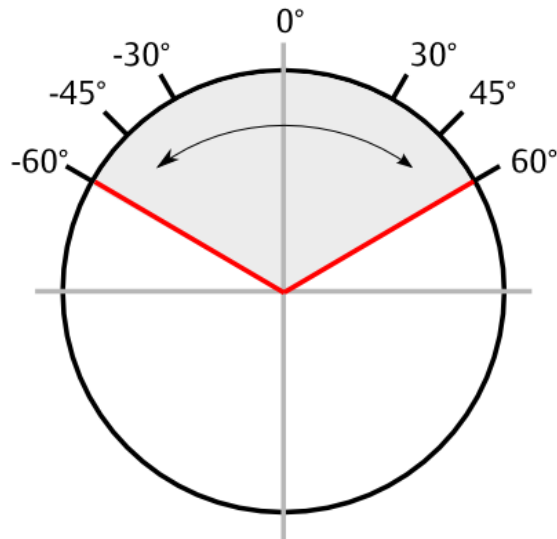


Table 4-3: Wire colors – PR 9268/20x-x00 and PR 9268/30x-x00

Number	Color	Meaning
1	Green	Signal high

Figure 4-13: Deviation of $\pm 60^\circ$ from the nominal direction



If the transducer is mounted in a position between -30° and -60° or $+30^\circ$ and $+60^\circ$, a sinking current is necessary to lower the seismic mass of the transducer to the middle of the working range. Define the required sinking current in the configuration of the used protection card (for example, A6120 or A6500-UM). The specified maximum sinking current for the PR 9268/20x-x00 is approximately 3.6 mA and for the PR 9268/60x-000 approximately 2.0 mA. These value are automatically used in the configuration when selecting the PR9268/20x-x00 or PR 9268/60x-000 from the sensor list of the configuration software. The configuration software calculates and sets the necessary lifting current in relation to measuring direction and mounting angle. See [Table 4-6](#) for some examples.

Table 4-6: Angle deviations and resulting sinking currents

Angle deviation	Sinking current	
	PR9268/20x-x00	PR 9268/60x-000
$\pm 30^\circ$	0.48 mA	0.27 mA
$\pm 45^\circ$	1.05 mA	0.59 mA
$\pm 60^\circ$	1.8 mA	1.0 mA

4.3.3 PR 9268/30x-x00 and PR 9268/70x-000 – without lifting/sinking current

The vibration transducers PR 9268/30x-x00 and PR 9268/70x-000 are designed for the horizontal measurement direction (90° position). Without a lifting/sinking current, the maximum admissible deviation from the nominal position is $\pm 10^\circ$ in positive and negative direction. See [Figure 4-14](#).

If the transducer is mounted in a position between -80° and -60° or 60° and 80° a lifting current is necessary to raise the seismic mass of the transducer to the middle of the working range. Define the required lifting current in the configuration of the used protection card (for example, A6120 or A6500-UM). The specified maximum lifting current for the PR 9268/30x-x00 is approximately 3.6 mA and for the PR 9268/70x-000 approximately 2.0 mA. These value are automatically used in the configuration when selecting the PR9268/30x-x00 or PR9268/70x-000 from the sensor list of the configuration software. The configuration software calculates and sets the necessary lifting current in relation to measuring direction and mounting angle. See [Table 4-7](#) for some examples.

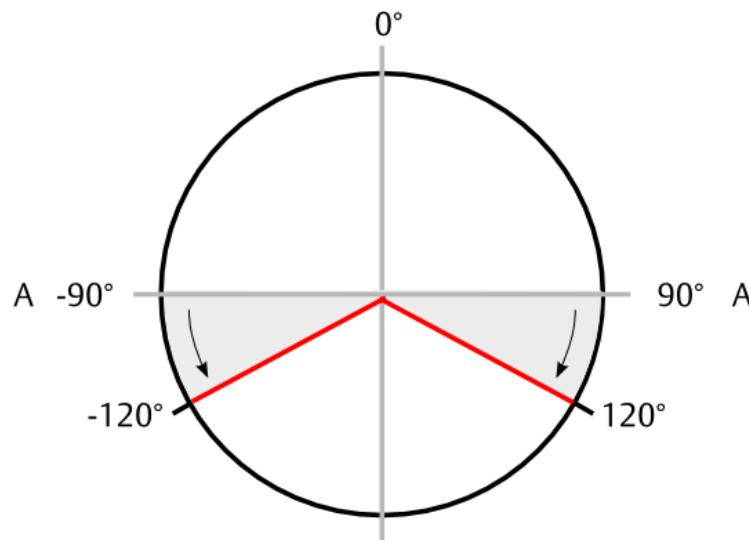
Table 4-7: Angle deviations and resulting lifting currents

Angle deviation	lifting current	
	PR9268/30x-x00	PR 9268/70x-000
$\pm 80^\circ$	0.63 mA	0.35 mA
$\pm 70^\circ$	1.23	0.68 mA
$\pm 60^\circ$	1.8 mA	1.0 mA

4.3.5 PR 9268/30x-x00 and PR 9268/70x-000 – with sinking current

The vibration transducers PR 9268/30x-x00 and PR 9268/70x-000 are designed for the horizontal measurement direction (90° position). They can be used with a maximum deviation of $+30^\circ$ (related to the nominal direction 90°). See [Figure 4-16](#).

Figure 4-16: Deviation of $+30^\circ$ from the nominal direction



A. Nominal position

If the transducer is mounted in a position between -100° and -120° or 100° and 120° a sinking current is necessary to lower the seismic mass of the transducer to the middle of the working range. Define the required sinking current in the configuration of the used

protection card (for example, A6120 or A6500-UM). The specified maximum sinking current for the PR 9268/30x-x00 is approximately 3.6 mA and for the PR 9268/70x-000 approximately 2.0 mA . These values are automatically used in the configuration when selecting the PR9268/30x-x00 or PR 9268/70x-000 from the sensor list of the configuration software. The configuration software calculates and sets the necessary sinking current in relation to measuring direction and mounting angle. See [Table 4-8](#) for some examples.

Table 4-8: Angle deviations and resulting sinking currents

Angle deviation	Sinking current	
	PR9268/30x-x00	PR 9268/70x-000
±100°	0.63 mA	0.35 mA
±110°	1.23 mA	0.68 mA
±120°	1.8 mA	1.0 mA

6 Technical data

Only specifications with indicated tolerances or limit values are required. Data without tolerances or without error limits are informative data and not guaranteed. Technology is under constant development, and specifications are subject to change without notice.

Technical data of PR 9268/20x-x00 also applies to PR 9268/20x-100-OPR and technical data of PR 9268/30x-x00 also applies to PR 9268/30x-100-OPR.

6.1 Measuring principle

Common

Low tuned measuring principle for absolute vibrations	
Mechanical / electrical conversion	Electro-dynamic

PR 9268/01x-x00

Measuring direction	Omni directional
---------------------	------------------

PR 9268/20x-x00, PR 9268/30x-x00, PR9268/20x-100-RAD, and PR9268/30x-100-RAD

Measuring direction	PR 9268/20x-...: vertical	
	PR 9268/30x-...: horizontal	
Maximum deviation from nominal measuring direction	PR 9268/20x-.. .	± 30° without sinking current
		± 60° with sinking current ¹
	PR 9268/30x-.. .	± 10° without lifting/sinking current
		± 30° with lifting/sinking current ¹

¹ Reduced accuracy without lifting/sinking current.

PR 9268/60x-000, 9268/70x-000, PR9268/60x-100-RAD, and PR9268/70x-100-RAD

Measuring direction	PR 9268/60x-...: vertical	
	PR 9268/70x-...: horizontal	
Maximum deviation from nominal measuring direction	PR 9268/60x-.. .	± 30° without sinking current
		± 60° with sinking current ¹
	PR 9268/70x-.. .	± 10° without lifting/sinking current
		± 30° with lifting/sinking current ¹

¹ Reduced accuracy without lifting/sinking current.

PR 9268/60x-100-RAD and PR 9268/70x-100-RAD

Resistance only measuring coil	900 $\Omega \pm 5\%$ (at 20°C)
Insulation resistance	see PR 9268/60x-000 and PR 9268/70x-000
Recommended maximum lifting current for installation deviating from nominal measuring direction	

6.4 Environmental conditions and dimensions

Common

Temperature range for storage and transport		-40 to +100°C without packing
		-40 to +70°C with packing
Relative humidity		0 to 100%, (non-condensing in housing and plug)
Connection cable	PR 9268/20x-x00, PR 9268/30x-x00, PR 9268/60x-000, and 9268/70x-000	3 x 0.5 mm ² , shielded, coating PTFE, length: see Table 3-2 or Table 3-3
	PR 9268/01x-x00	FEP (coating) / PTFE (Isolation), 3 wires, AWG 20
	PR 9268/20x-100-RAD, PR 9268/30x-100-RAD, PR 9268/60x-100-RAD, and PR 9268/70x-100-RAD	PVC, 3 wires, AW G24, length see Table 3-2 or Table 3-3
Metal protection hose		Stainless steel
Minimum bending radius for cable and protection hose		35 mm

PR 9268/01x-x00

Operating temperature range	Transducer without connector	-20 to +100°C
		Short time (<4 hours) up to 120°C
Protection class		IP 65
Housing	Dimensions	See Figure 6-3 , Figure 6-4 , and Figure 6-5
	Material	1.4104
Connector		6-pole Harting plug (only PR 9268/01x-000 types)
		2-pole C-5051 plug (only PR 9268/018-900)
Weight	Sensor without cable	approximately 280 g

- To observe the explosion protection, a mechanically reliable installation of the sensor at the measuring object must be ensured and a maximum acceleration of 10 g must not be exceeded.
- The national or local regulations have to be observed.
- Do not mount the sensor on a surface or surrounding equipment that exceeds the maximum allowed ambient temperature T_a (Table 7-4).

The following additionally points must be considered during installation of PR 9268/60x-000 and PR 9268/70x-000 sensors:

- The permission for the operating in explosive areas does only apply for the sensors with metal protection hose, these are the types PR9268/(60,70)(0-3)-000.
- Sensors without metal protection hose, are not approved for the operating in explosive areas.

Table 7-1: PR 9268/20x-x00 and PR 9268/30x-x00 – permissible types

PR 9268/		X	X	X	-	X	0	0
Measure ment	Vertical	2	0					
	Horizontal	3	0					
Cable	Armored 0 (3 m), 1 (5 m), 2 (8 m), 3 (10 m)			X				
	Non-armored 4 (3 m), 5 (5 m), 6 (8 m), 7 (10 m)			X				
Cable End	HARTING					0	0	0
	OPEN CABLE END					1	0	0

Table 7-2: PR 9268/20x-x00 and PR 9268/30x-x00 – permissible types with oil-proof PTFE covered metal protection hose

PR 9268/		X	X	X	-	X	0	0	-OPR
Measure ment	Vertical	2	0						
	Horizontal	3	0						
Cable	Armored 0 (3 m), 1 (5 m), 2 (8 m), 3 (10 m)			X					
	OPEN CABLE END					1	0	0	

Table 7-3: PR 9268/60x-000 and PR 9268/70x-000 – permissible types

PR 9268/		X	X	X	-	0	0	0
Measure ment	Vertical	6	0					
	Horizontal	7	0					
Cable	Armored 0 (3 m), 1 (5 m), 2 (8 m), 3 (10 m)			X				
Cable End	HARTING					0	0	0

Connection cable

For explosion group IIC the total line capacity Cl (between the cable cores) of the connection cables and the barriers must not exceed the maximum permitted cable capacities and inductances.

Maximum permitted cable capacity PR 9268/20x-x00, PR 9268/30x-x00, PR 9268/20x-100-OPR, and PR 9268/30x-100-OPR: 275 nF

Maximum permitted cable capacity PR 9268/60x-000 and PR 9268/70x-000: 1125 nF

There is no additional limitation of the cable length in the hazardous area because of the cable capacity. The calculated maximum cable length based on the maximum permissible cable capacity exceeds the maximum technically permissible cable length of 1000 m.

7.2 Operation requirements

On operation in hazardous areas, the transducer must not be operated permanently outside its specification regarding vibration amplitude and acceleration.

7.3 Technical data, explosion protection

Specifications according to the EC-Type-Examination Certificate for PR 9268/20x, /30x, /60x, and /70x:

Table 7-4: ATEX/IECEX

PR 9268/20x-x00, PR 9268/30x-x00, PR 9268/20x-100-OPR, and PR 9268/30x-100-OPR	
Standards	EN IEC 60079-0:2018, Equipment - general requirements EN IEC 60079-11:2012, Intrinsically safe "i" EN IEC 60079-14:2014, Electrical installations design, selection and erection
Identification	1G Ex ia IIC T6 ... T4 Ga
	-20°C ≤ T _a ≤ +68°C for T6
	-20°C ≤ T _a ≤ +108°C for T4
PR 9268/60x-000 and PR 9268/70x-000	
Standards	EN IEC 60079-0:2018, Equipment - general requirements EN IEC 60079-11:2012, Intrinsically safe "i" EN IEC 60079-14:2014, Electrical installations design, selection and erection
Identification	2G Ex ib IIC T4 ... T3 Gb
	Sensor: -20°C ≤ T _a ≤ +125°C for T4 Connector: T _a ≤ 100°C for T4
	Sensor: -20°C ≤ T _a ≤ +190°C for T3 Connector: T _a ≤ 100°C for T3

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