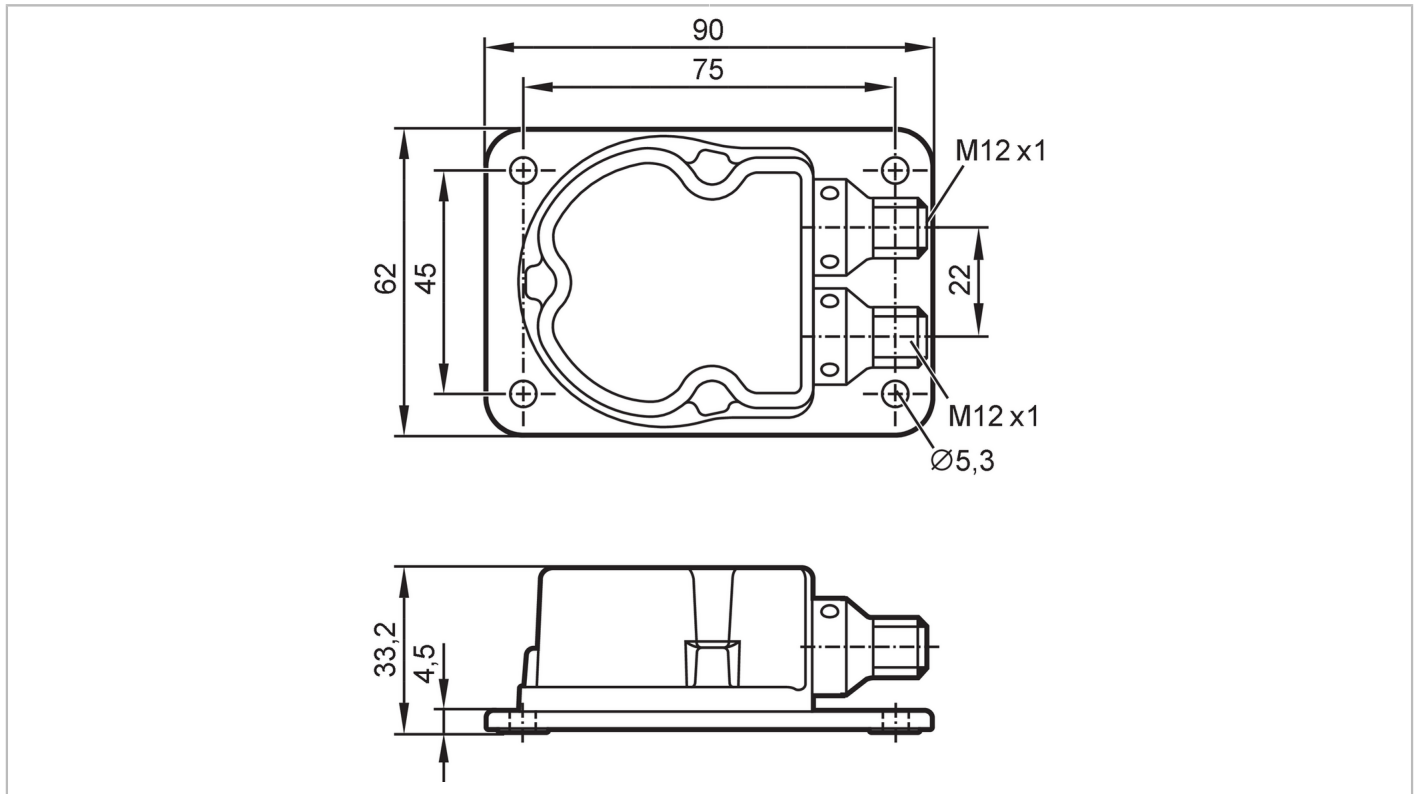


JN2200



Inclination sensor

INC-M2M360ABIAG/US



Product characteristics	
Measuring principle	MEMS capacitive
Communication interface	IO-Link
Inclination measurement	
Number of measurement axes	2
Angular range [°]	± 180
Application	
Function principle	static
Application	High-precision inclination measurement in 2 axes for mobile and industrial applications
Electrical data	
Operating voltage [V]	9.2...30 DC; (voltage output: 12...30 DC; IO-Link: 18...30 DC)
Current consumption [mA]	90; (24 V DC, 25 °C)
Max. current consumption [mA]	330; (9,2 V DC; -40 °C)
Protection class	III
Reverse polarity protection	yes
Reverse polarity protection	yes
Power-on delay time [s]	300; (warm-up time; Max. initialization time: 1000 ms)
Inputs / outputs	
Number of inputs and outputs	Number of digital outputs: 2; Number of analog outputs: 2
Outputs	
Total number of outputs	4

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Inclination sensor

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Output signal		analog signal; switching signal
Electrical design		PNP/NPN
Number of digital outputs		2
Output function		normally open / closed; (programmable)
Max. voltage drop switching output DC	[V]	2.5
Permanent current rating of switching output DC	[mA]	125; (125 mA (85° C); 200 mA (60° C); 250 mA (40° C))
Number of analog outputs		2
Analog current output	[mA]	4...20; (in case of a fault: 2 mA)
Max. load	[Ω]	220; (220 (9,2...15 V) / 500 (15...30 V))
Analog voltage output	[V]	2...10; (in case of a fault: 1 V)
Min. load resistance	[Ω]	1000; (10000 (12...13,5 V) / 1000 (13,5...30 V))
Precision analog output	[%]	≤ 1
Short-circuit protection		yes
Overload protection		yes

Measuring/setting range

Measuring principle		MEMS capacitive
Inclination measurement		
Number of measurement axes		2
Angular range	[°]	± 180
Limit frequency	[Hz]	0.5...10; (configurable)
Vibration measurement		
Measuring range of vibration	[g]	16; (± 2; ± 4; ±8 g configurable)
Measuring range of vibration	[mm/s]	3200
Frequency range	[Hz]	0.1...400
Number of measurement axes		X/Y/Z configurable

Accuracy / deviations

Accuracy	[°]	≤ ± 0,5; (absolute)
Hysteresis	[°]	≤ ± 0,05
Repeatability	[°]	≤ ± 0,1
Resolution	[°]	0.05
Temperature coefficient	[1/K]	≤ ± 0,02 °

Software / programming

Parameter setting options		angle (X/Y) / vibration (Veff / aPeak); hysteresis / window; Switch points; switching logic; fault indication; self-test; current/voltage output
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Interfaces

Communication interface		IO-Link
Transmission type		COM2 (38,4 kBaud)
IO-Link revision		1.1
SDCI standard		IEC 61131-9 CDV

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Profiles	Smart Sensor - SSP 0	Generic Profiled Sensor
	Function	Device identification
	Function	Process data variable
	Function	Device diagnosis
SIO mode		yes
Required master port class		A
Process data analog		2
Process data binary		2
Min. process cycle time [ms]		5
Supported DeviceIDs	Type of operation	DeviceID
	default	416

Operating conditions		
Ambient temperature [°C]		-40...85
Storage temperature [°C]		-40...85
Protection		IP 65; IP 67; IP 68; IP 69K

Tests / approvals		
EMC	DIN EN 61000-4-2 ESD	4 kV CD / 8 kV AD
	DIN EN 61000-4-3 HF radiated	10 V/m
	DIN EN 61000-4-4 Burst	2 kV
	DIN EN 61000-4-6 HF conducted	10 V
	DIN EN 55022 class B / CISPR 16-2-3	30 - 1000 MHz
	CISPR 25 ECE R 10	30 - 1000 MHz narrowband and broadband
	ISO 11452-2 ECE R 10	20 - 2000 MHz / 30 V/m
	ISO 7637-2 ECE R 10	pulse 1, 2a, 2b, 3a, 3b, 4, and pulse emission during operation, switching-on, switching-off
	ISO 7637-3	- 80 V pulse a / + 80 V pulse b
Shock resistance	DIN EN 60068-2-27	100 g 1 ms / 10000 Impacts per axis (X/Y)
	DIN EN 60068-2-29	30 g 6 ms / 24000 shock (bump)
Vibration resistance	DIN EN 60068-2-64	10...2000 Hz Test VII / random, mounting place car body
	DIN EN 60068-2-6	10...500 Hz / 10 g 10 cycles/axis, sine
Salt spray test	DIN EN 60068-2-52	severity level 5 (motor vehicle)
Damp heat	DIN EN 60068-2-30	55 °C cyclic upper temperature / 95 % rh 2 cycles of 24 h
MTTF [years]		176
Standard		Compliant with ECE R 10, rev. 5; ISO 7637-3: 2007-07

Mechanical data		
Weight [g]		410
Dimensions [mm]		90 x 62 x 33.2
Material		housing: diecast zinc nickel-plated
Mounting orientation		Horizontal

Displays / operating elements		
Display	Power	1 x LED, green
	Set point	1 x LED, yellow

Accessories		
Items supplied		Protective cover

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Inclination sensor

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Remarks

Remarks	the device complies with overvoltage category II
Pack quantity	1 pcs.

Electrical connection - digital

Connector: 1 x M12; coding: A



1	L+ 24 V DC (+Ub-D)
2	Switching output OUT 2
3	L - GND
4	Switching output OUT 1 / IO-Link

Electrical connection - analog

Connector: 1 x M12; coding: A



1	L+ 24 V DC (+Ub-A)
2	analog output A2
3	L - GND
4	analog output A1

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Inclination sensor

INC-M2M360ABIAKG/US

Other data

Measuring/setting range

Inclination measurement			min.	max.
Set point	SP1	[°]	-179.00	180.00
Reset point	rP1	[°]	-180.00	179.00
Set point	SP2	[°]	-179.00	180.00
Reset point	rP2	[°]	-180.00	179.00
Analog start point	ASP1	[°]	-180.00	179.00
Analog end point	AEP1	[°]	-179.00	180.00
Analog start point	ASP2	[°]	-180.00	179.00
Analog end point	AEP2	[°]	-179.00	180.00
In steps of		[°]	0.01	
Vibration measurement			min.	max.
Set point	SP1	[mm/s]	1	3200
Reset point	rP1	[mm/s]	0	3199
Analog start point	ASP3	[mm/s]	0	3199
Analog end point	AEP3	[mm/s]	1	3200
In steps of		[mm/s]	1	
Vibration measurement			min.	max.
Set point	SP2	[mg]	1	16000
Reset point	rP2	[mg]	0	15999
Analog start point	ASP4	[mg]	0	15999
Analog end point	AEP4	[mg]	1	16000
In steps of		[mg]	1	

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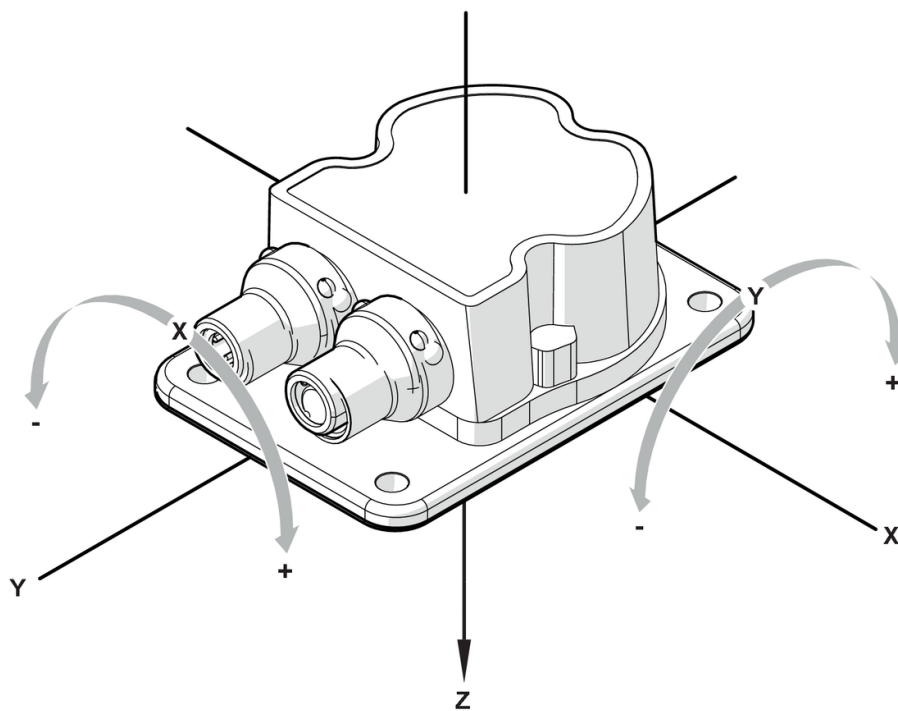


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Diagrams and graphs

measuring and installation direction



horizontal installation position / rotation about x- and y-axis