

Датчики наклона и ускорения серии F99

Технические характеристики

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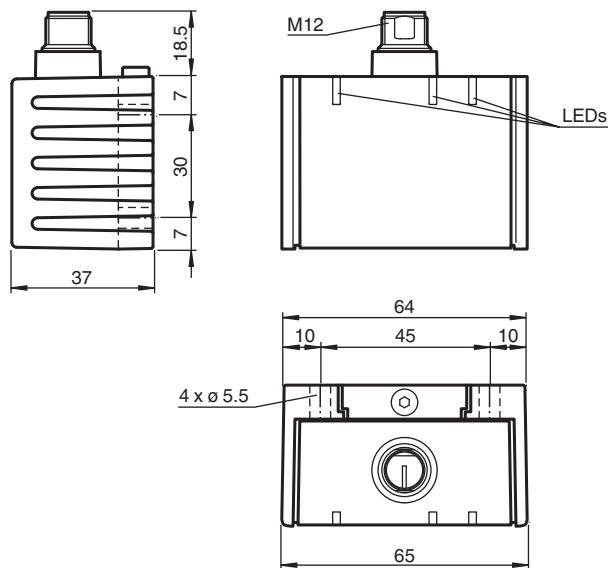
Acceleration sensor ACY04-F99-2I-V15

- E1-Type approval
- Analog output 4 mA ... 20 mA
- Fixed evaluation limits
- High shock resistance
- Teachable zero point
- Measuring range -2 g ... +2 g
- Increased noise immunity 100 V/m

2 axis acceleration sensor



Dimensions



Technical Data

General specifications

Type	2 axis acceleration sensor
Measurement range	-2 ... 2 g
Resolution	≤ 5 mg
Repeat accuracy	≤ ± 5 mg
Frequency range	0 ... 100 Hz

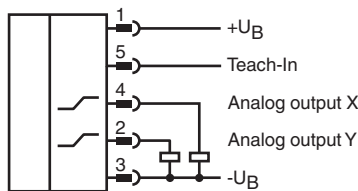
Functional safety related parameters

MTTF _d	304 a
Mission Time (T _M)	20 a

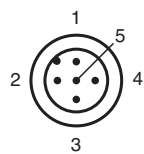
Technical Data

Diagnostic Coverage (DC)		0 %
Indicators/operating means		
Operation indicator		LED, green
Teach-In indicator		LED, yellow
Electrical specifications		
Operating voltage	U _B	10 ... 30 V DC
No-load supply current	I ₀	≤ 25 mA
Time delay before availability	t _v	≤ 100 ms
Analog output		
Output type		2 current outputs 4 ... 20 mA (one output for each axis)
Zero signal		12 mA
Slope of output characteristic		4 mA / g
Linearity error		± 1.2 %
Load resistor		0 ... 200 Ω at U _B = 10 ... 18 V 0 ... 500 Ω at U _B = 18 ... 30 V
Temperature influence		
Offset		≤ ± 4 μA / K
Slope		≤ ± 20 μA / g
Compliance with standards and directives		
Standard conformity		
Shock and impact resistance		100 g according to DIN EN 60068-2-27
Standards		EN 60947-5-2:2007 IEC 60947-5-2:2007
Approvals and certificates		
UL approval		cULus Listed, Class 2 Power Source
CCC approval		CCC approval / marking not required for products rated ≤36 V
E1 Type approval		10R-04
Ambient conditions		
Ambient temperature		-40 ... 85 °C (-40 ... 185 °F)
Storage temperature		-40 ... 85 °C (-40 ... 185 °F)
Mechanical specifications		
Connection type		5-pin, M12 x 1 connector
Housing material		PA
Degree of protection		IP68 / IP69K
Mass		240 g

Connection



Connection Assignment

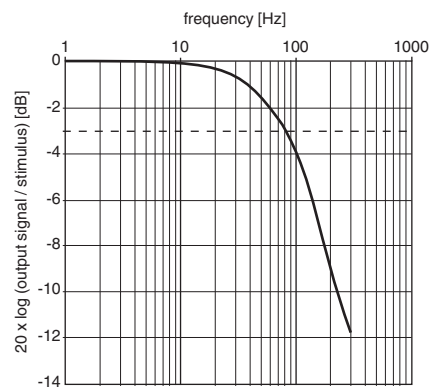


Wire colors in accordance with EN 60947-5-2

1	BN	(brown)
2	WH	(white)
3	BU	(blue)
4	BK	(black)
5	GY	(gray)

Characteristic Curve

Frequency response



Accessories

	V15-G-2M-PUR	Female cordset, M12, 5-pin, PUR cable
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Mounting

Installation orientation

On delivery, the zero position of the sensor axes is achieved when the sensor is mounted flat on a horizontal plane and the electrical connection of the sensor points horizontally sideways.

Additional Information

LED display

Displays dependent on the operating state	LED green: Power	LED yellow 1	LED yellow 2
Normal operation	on	off	off
Teach In of reference point Teach In (Pin 5 connected to +U_B) for 1 s ... 10 s falling slope at Teach In input then sensor returns to normal operation.	on on on	on flashes 3 x off	off off off
Reset to factory settings: Teach In (Pin 5 connected to +U_B) for 20 s ... 25 s falling slope at Teach In input then sensor returns to normal operation.	on on on	on flashes 3 x off	off flashes 3 x off
Undervoltage	flashes	off	off

Factory settings

see Technical Data

Teach-in of reference point (output S1)

1. Move sensor to reference position
2. Apply supply voltage (+U_B) to Teach In input (Pin 5) for 1 s ... 10 s
3. Teach In LED lights up for confirmation
4. Disconnect Teach In input (Pin 4) before the 10 s time elapses
5. Teach In LED flashes 3 x for confirmation
6. Reference point is now programmed and the sensor returns to normal operation (see LED display)

Resetting the sensor to factory settings

1. Apply supply voltage (+U_B) to Teach In input (Pin 5) for 20 s ... 25 s
2. Teach In LED lights up for confirmation
3. Disconnect Teach In input (Pin 4) before the 25 s time elapses
4. Teach In LED and Out LED flash 3 x for confirmation
5. The sensor is now reset to factory settings and returns to normal operation (see LED display)

Undervoltage detection

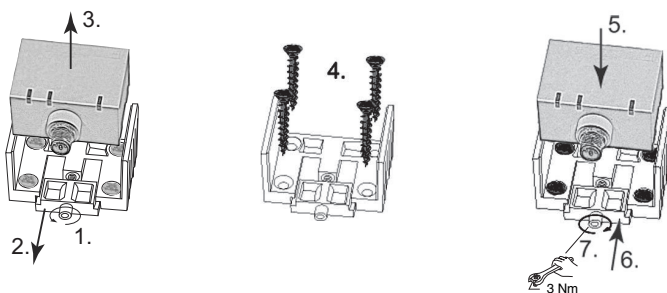
If the supply voltage falls below a value of approx. 7 V, all outputs and yellow LEDs are deactivated. The green "power" LED flashes rapidly. If the supply voltage rises above a value of approx. 8 V, the sensor continues with normal operation.

Mounting

Mounting of the sensor

Sensors from the -F99 series consist of a sensor module and accompanying cast aluminum housing. Select a horizontal flat surface with minimum dimensions of 70 mm x 50 mm to mount the sensor.

Mount the sensor as follows:



1. Loosen the central screw under the sensor connection.
2. Slide back the clamping element until you are able to remove the sensor module from the housing.
3. Remove the sensor module from the housing
4. Position the housing at the required mounting location and secure using four countersunk screws. Make sure that the heads of the screws do not protrude.
5. Place the sensor module in the housing.

- 6. Slide the clamping element flush into the housing. Check that the sensor element is seated correctly.
 - 7. Finally tighten the central screw.
- The sensor is now mounted correctly.

Technical Features

EMC Properties

Interference immunity in accordance with
DIN ISO 11452-2: 100 V/m
Frequency band 20 MHz up to 2 GHz
Mains-borne interference in accordance with ISO 7637-2:

Pulse	1	2	2	3	3	4
		a	b	a	b	
Severity level	I	I	I	I	I	I
	I	I	I	I	I	I
	I	I	I	I	I	I
Failure criterion	C	A	C	A	A	C
EN 61000-4-2:	CD: 8 kV			AD: 15 kV		
	/					
Severity level	IV			IV		
EN 61000-4-3:	30 V/m (80...2500 MHz)					
Severity level	IV					
EN 61000-4-4:	2 kV					
Severity level	III					
EN 61000-4-6:	10 V (0.01...80 MHz)					
Severity level	III					
EN 55011:	Klasse A					



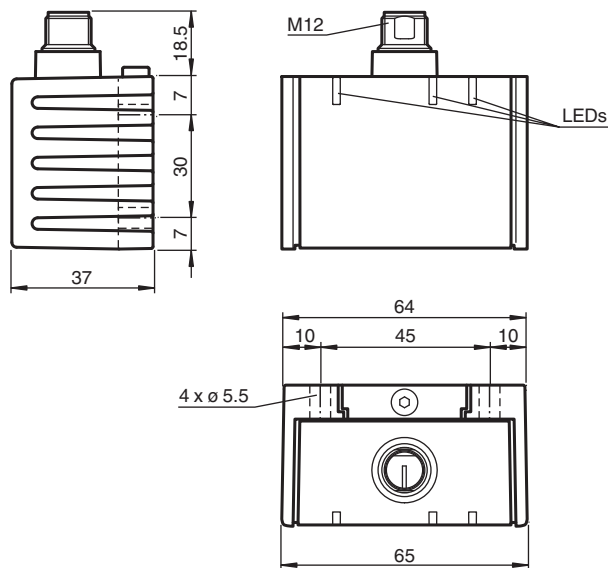
Acceleration sensor ACX04-F99-I-V15

- E1-Type approval
- Analog output 4 mA ... 20 mA
- Fixed evaluation limits
- High shock resistance
- Teachable zero point
- Measuring range -2 g ... +2 g
- Increased noise immunity 100 V/m

1 axis acceleration sensor



Dimensions



Technical Data

General specifications

Type	1 axis acceleration sensor
Measurement range	-2 ... 2 g
Resolution	≤ 5 mg
Repeat accuracy	≤ ± 5 mg
Frequency range	0 ... 100 Hz

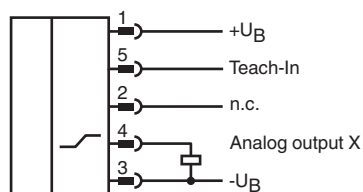
Functional safety related parameters

MTTF _d	304 a
Mission Time (T _M)	20 a

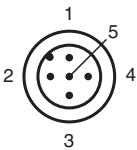
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Indicators/operating means		
Operation indicator		LED, green
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Electrical specifications		
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Time delay before availability	t_v	≤ 100 ms
Analog output		
Output type		1 current output 4 ... 20 mA
Zero signal		12 mA
Slope of output characteristic		4 mA / g
Linearity error		± 1.2 %
Load resistor		0 ... 200 Ω at $U_B = 10 \dots 18$ V 0 ... 500 Ω at $U_B = 18 \dots 30$ V
Temperature influence		
Offset		$\leq \pm 4$ μ A / K
Slope		$\leq \pm 20$ μ A / g
Compliance with standards and directives		
Standard conformity		
Shock and impact resistance		100 g according to DIN EN 60068-2-27
Standards		EN 60947-5-2:2007 IEC 60947-5-2:2007
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Ambient temperature		-40 ... 85 °C (-40 ... 185 °F)
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Mechanical specifications		
Connection type		5-pin, M12 x 1 connector
Housing material		PA
Degree of protection		IP68 / IP69K
Mass		240 g

Connection



Connection Assignment

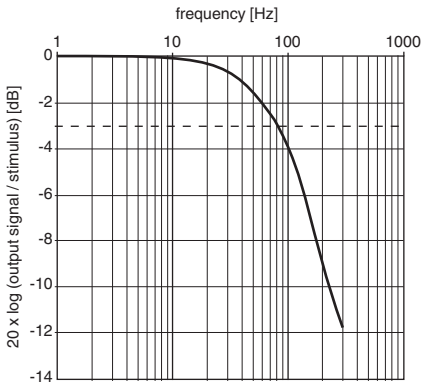


Wire colors in accordance with EN 60947-5-2

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Characteristic Curve

Frequency response



Accessories

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Reset to factory settings: Teach In (Pin 5 connected to +U _B) for 20 s ... 25 s falling slope at Teach In input then sensor returns to normal operation.	on on on	on flashes 3 x off	off flashes 3 x off
Undervoltage	flashes	off	off

Factory settings

see Technical Data

Teach-in of reference point (output S1)

1. Move sensor to reference position
2. Apply supply voltage (+U_B) to Teach In input (Pin 5) for 1 s ... 10 s
3. Teach In LED lights up for confirmation
4. Disconnect Teach In input (Pin 4) before the 10 s time elapses
5. Teach In LED flashes 3 x for confirmation
6. Reference point is now programmed and the sensor returns to normal operation (see LED display)

Resetting the sensor to factory settings

1. Apply supply voltage (+U_B) to Teach In input (Pin 5) for 20 s ... 25 s
2. Teach In LED lights up for confirmation
3. Disconnect Teach In input (Pin 4) before the 25 s time elapses
4. Teach In LED and Out LED flash 3 x for confirmation
5. The sensor is now reseted to factory settings and returns to normal operation (see LED display)

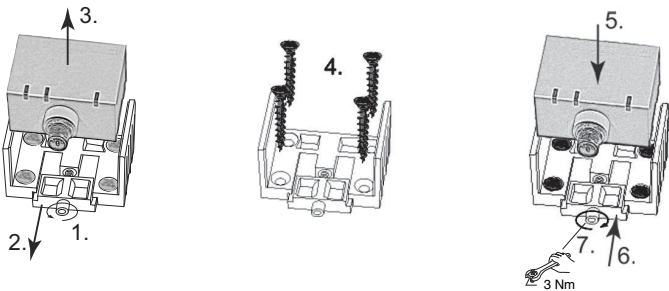
Undervoltage detection

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Mounting

Mounting of the sensor

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Mount the sensor as follows:



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3. Remove the sensor module from the housing
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5. Place the sensor module in the housing.

- 6. Slide the clamping element flush into the housing. Check that the sensor element is seated correctly.
 - 7. Finally tighten the central screw.
- The sensor is now mounted correctly.

Technical Features

EMC Properties

Interference immunity in accordance with
DIN ISO 11452-2: 100 V/m
Frequency band 20 MHz up to 2 GHz
Mains-borne interference in accordance with ISO 7637-2:

Pulse	1	2	2	3	3	4
		a	b	a	b	
Severity level	I	I	I	I	I	I
	I	I	I	I	I	I
	I	I	I	I	I	I
Failure criterion	C	A	C	A	A	C
EN 61000-4-2:	CD: 8 kV			AD: 15 kV		
	/					
Severity level	IV			IV		
EN 61000-4-3:	30 V/m (80...2500 MHz)					
Severity level	IV					
EN 61000-4-4:	2 kV					
Severity level	III					
EN 61000-4-6:	10 V (0.01...80 MHz)					
Severity level	III					
EN 55011:	Klasse A					

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