



Inertial measurement unit

IMU360D-F99-B20-V15

- Measurement of inclination, acceleration and rotation rate in 3 axes each
- Compensation of dynamic disturbance
- F99-Fusion technology
- CAN bus with SAE J1939 protocol
- High EMC resistance

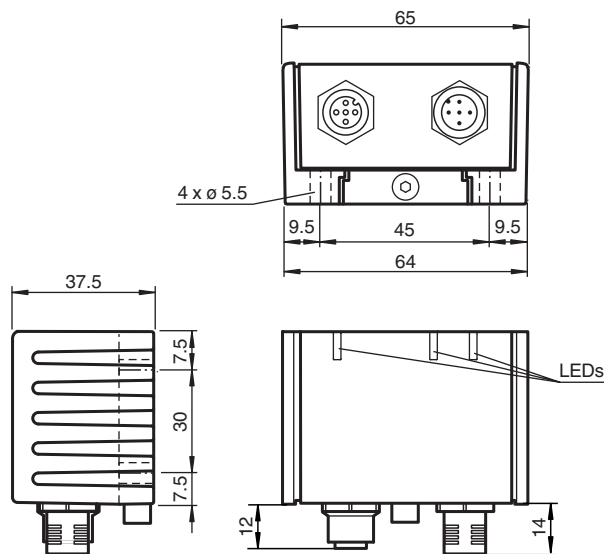
Inertial measurement unit 6-axis



Function

The IMU360D-F99, with the F99-Fusion technology, is optimized to provide gyroscopic stabilized inclination and acceleration data as well as rotation rate data. Several selectable output values such as acceleration, rotational speed, inclination (Euler angle, Euler value, quaternions) and programmable filters allow you to perfectly adapt the measuring system to your application.

Dimensions



Technical Data

General specifications

Type	Inertial measurement unit
Measurement range	acceleration: ± 2 g inclination: 0 ... 360 ° rotation rate: ± 250 °/s
Static accuracy	

Release date: 2020-10-01 Date of issue: 2020-10-01 Filename: 287211_eng.pdf

Refer to "General Notes Relating to Pepperl+Fuchs Product Information".

Pepperl+Fuchs Group
www.pepperl-fuchs.com

USA: +1 330 486 0001
fa-info@us.pepperl-fuchs.com

Germany: +49 621 776 1111
fa-info@de.pepperl-fuchs.com

Singapore: +65 6779 9091
fa-info@sg.pepperl-fuchs.com

PF PEPPERL+FUCHS

Technical Data

Measurement range $\leq 150^\circ$		$\leq \pm 0.5^\circ$
Measurement range $> 150^\circ$		$\pm 1^\circ$
Dynamic accuracy		
Measurement range $\leq 150^\circ$		linear acceleration: $\leq \pm 0,5^\circ$ up to $0,5 \text{ m/s}^2$ for an acceleration time $\leq 2\text{s}$
Measurement range $> 150^\circ$		linear acceleration: $\leq \pm 1^\circ$ up to $0,5 \text{ m/s}^2$ for an acceleration time $\leq 2\text{s}$
Resolution		0.01°
Repeat accuracy		$\leq \pm 0.1^\circ$
Cycle time		internal 10 ms
Temperature influence		max. $\pm 1.5^\circ$ at $15 \dots 85^\circ\text{C}$ ($59 \dots 185^\circ\text{F}$)
Functional safety related parameters		
MTTF _d		530 a
Mission Time (T _M)		10 a
Diagnostic Coverage (DC)		0 %
Indicators/operating means		
Operation indicator		LED, green
Status indicator		LED, yellow
Error indicator		LED, red
Electrical specifications		
Operating voltage	U _B	5 ... 30 V DC
No-load supply current	I ₀	$\leq 80 \text{ mA}$
Power consumption	P ₀	$\leq 0.6 \text{ W}$
Interface		
Interface type		CAN bus with SAE J1939 protocol
Node ID		0 ... 253 , programmable
Transfer rate		10 ... 1000 kBit/s , programmable
Termination		external
Cycle time		output interval programmable
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 EN 60947-5-2/A1:2012 IEC 60947-5-2:2007 IEC 60947-5-2 AMD 1:2012
Approvals and certificates		
UL approval		cULus Listed, Class 2 Power Source
E1 Type approval		10R-04
Ambient conditions		
Ambient temperature		$15 \dots 85^\circ\text{C}$ ($59 \dots 185^\circ\text{F}$)
Storage temperature		$-40 \dots 85^\circ\text{C}$ ($-40 \dots 185^\circ\text{F}$)
Mechanical specifications		
Connection type		5-pin, M12 x 1 connector 5-pin, M12 x 1 socket internal bridged
Housing material		PA
Degree of protection		IP68 / IP69K
Mass		240 g
Factory settings		
Node ID		128
Transfer rate		250 kBit/s

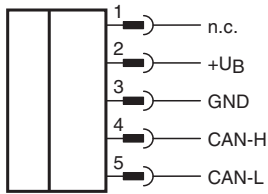
Release date: 2020-10-01 Date of issue: 2020-10-01 Filename: 287211_eng.pdf

Refer to "General Notes Relating to Pepperl+Fuchs Product Information".

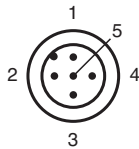
Pepperl+Fuchs Group
www.pepperl-fuchs.comUSA: +1 330 486 0001
fa-info@us.pepperl-fuchs.comGermany: +49 621 776 1111
fa-info@de.pepperl-fuchs.comSingapore: +65 6779 9091
fa-info@sg.pepperl-fuchs.com

PEPPERL+FUCHS

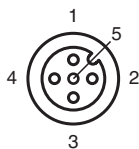
Connection



Connection Assignment



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)

Release date: 2020-10-01 Date of issue: 2020-10-01 Filename: 287211_eng.pdf

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	2a	2b	3a	3b	4	5
Severity level	III	III	III	III	III	III	IV
Failure criterion	C	A	C	A	A	A	A

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

Release date: 2020-10-01 Date of issue: 2020-10-01 Filename: 287211_eng.pdf

Refer to "General Notes Relating to Pepperl+Fuchs Product Information".

Pepperl+Fuchs Group
www.pepperl-fuchs.com

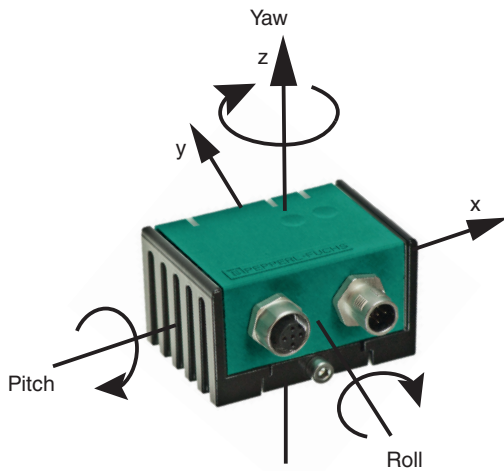
USA: +1 330 486 0001
fa-info@us.pepperl-fuchs.com

Germany: +49 621 776 1111
fa-info@de.pepperl-fuchs.com

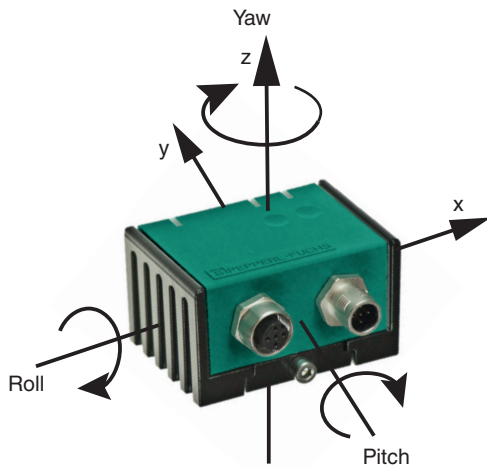
Singapore: +65 6779 9091
fa-info@sg.pepperl-fuchs.com

Orientation

Assignment of the axis to movement types with P + F angle



Assignment of the axis to movement types with Euler angle

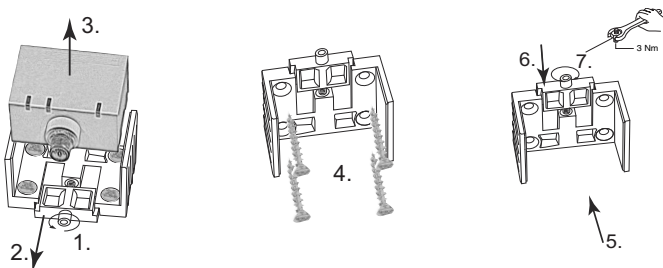


Mounting

Mounting of the sensor

Sensors from the -F99 series consist of a sensor module and accompanying cast aluminum housing. Select a 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.

Release date: 2020-10-01 Date of issue: 2020-10-01 Filename: 287211_eng.pdf

Refer to "General Notes Relating to Pepperl+Fuchs Product Information".

Pepperl+Fuchs Group
www.pepperl-fuchs.com

USA: +1 330 486 0001
fa-info@us.pepperl-fuchs.com

Germany: +49 621 776 1111
fa-info@de.pepperl-fuchs.com

Singapore: +65 6779 9091
fa-info@sg.pepperl-fuchs.com

Inertial measurement unit

IMU360D-F99-B20-V15

The sensor is now mounted correctly.

Release date: 2020-10-01 Date of issue: 2020-10-01 Filename: 287211_eng.pdf

Refer to "General Notes Relating to Pepperl+Fuchs Product Information".

Pepperl+Fuchs Group
www.pepperl-fuchs.com

USA: +1 330 486 0001
fa-info@us.pepperl-fuchs.com

Germany: +49 621 776 1111
fa-info@de.pepperl-fuchs.com

Singapore: +65 6779 9091
fa-info@sg.pepperl-fuchs.com

 **PEPPERL+FUCHS**