



TAMING THE POWER

F99 SERIES INCLINATION AND ACCELERATION SENSORS



Do you want to monitor the inclination angle of your machine components or the acceleration values of sensitive system components?

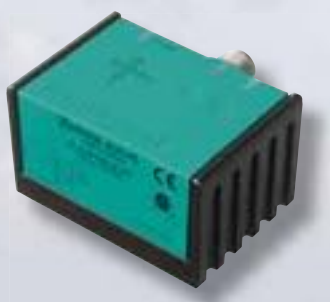
The F99 series inclination and acceleration sensors from Pepperl+Fuchs offer the ideal solution. Our accurate and easily programmable sensors for inclination and acceleration monitoring in the areas of mobile equipment, renewable energies and factory automation offer ideal yet simple solutions for safeguarding your investment.

HIGHLIGHTS

- Customer-specific configuration of measuring ranges and outputs
- Innovative mounting concept provides protection against mechanical shock and vibration
- High protection degree IP68 and IP69K
- Robust housing suitable for outdoor use
- Extended temperature range -40 °C ... +85 °C
- Highly resistant to mechanical shock 100 g
- Increased noise immunity 100 V/m
- European e1 approval for use on public roads
- CSA approval for worldwide use
- Wear-free and without a target



F99 inclination sensor

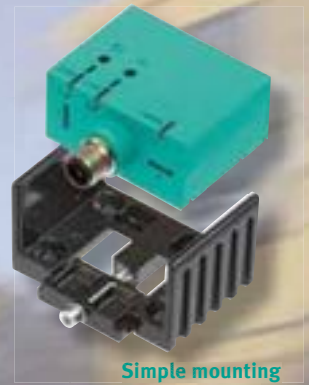


F99 acceleration sensor

BENEFITS

MOUNTING CONCEPT

- Series F99 consists of a robust metal bracket and a sensor module that can be inserted and replaced easily with only one integrated fastener without having to remove the bracket
- A captive locking wedge in the bracket ensures optimum distribution of force with heavy machine vibration



Simple mounting with a central screw

CONFIGURING

- All F99 series products can be configured by the customer
- Filters and angle range can be adapted to your specific application

HOUSING

- Specially suitable for applications under extreme conditions and for outdoor applications
- The high density, resin-filled housing ensures extreme resilience and a long service life

TYPICAL APPLICATIONS

F99 INCLINATION SENSOR

- **Commercial vehicles**
to level cranes, liftgates, container-loading equipment, etc.
- **Construction machinery**
e.g. to monitor the inclination position of excavators
- **Transport and loading units**
for automatic horizontal alignment of inclination angle
- **Solar plants**
for optimum solar tracking
- **Automotive production plants**
to monitor rotation during assembly
- **Rail and marine vessels**
to ensure even loading
- **Metal processing**
to monitor the motion of stamping and pressing machines

F99 ACCELERATION SENSOR

- **Wind power plants or large machines**
to shut down when defined vibration values are exceeded
- **Lifts**
to control acceleration
- **Large plants**
for equipment condition monitoring
- **Machinery**
to measure vibrations
- **Robots and grippers**
to control acceleration



IN SHORT – WHAT DOES YOUR APPLICATION NEED?

INCLINATION...

Measurement suitable for moving sequences that are not subject to erratic movement. The measurement for the inclination is used to permanently monitor the machine in order to identify when readjustment is necessary.

... BASED ON THE EXAMPLE OF THE LIFTING PLATFORM

Continuous monitoring and leveling of the vehicle, working platform or overall system.

ACCELERATION...

Movement that needs to be monitored in order to quickly identify short-term dynamic influences on the machine.

... BASED ON THE EXAMPLE OF THE LIFTING PLATFORM

In order to prevent a dangerous situation when the lifting platform is extended, for example a sudden gust of high wind. This will permit early detection and adjustment before an allowable inclination angle is exceeded.

MODEL OVERVIEW AND TECHNICAL DATA

F99 INCLINATION SENSOR FOR INCLINATION ANGLES 0° ... 360°

- Noncontact sensing of the inclination angles between 0° ... 360°
- 1 or 2 independent, orthogonal axes
- Programmable switch points and analog ranges via teach-in buttons
- Analog output 4 mA ... 20 mA or 0 V ... 5 V
- Operating voltage 10 V ... 30 V
- Accuracy $\leq \pm 0.5^\circ$
- Repeat accuracy $\leq \pm 0.1^\circ$
- Resolution $\leq 0.1^\circ$
- Temperature drift $0.027^\circ/\text{K}$
- Housing dimensions: 65 mm x 44 mm x 37 mm

Model number: INX360D-F99-... (single axis)
INY360D-F99-... (dual axes)

F99 INCLINATION SENSOR WITH OPTIMIZED ACCURACY -15° ... +15°

- Noncontact measuring in a reduced angle range of -15° ... +15°
- Analog output 4 mA ... 20 mA
- Improved accuracy of $\leq \pm 0.2^\circ$
- Improved repeat accuracy $\leq \pm 0.02^\circ$
- Enhanced temperature drift $0.004^\circ/\text{K}$

Model number: INY030D-F99-... (dual axes)



F99 INCLINATION SENSOR WITH CANOPEN

Do you need reliable inclination-position information together with the benefits of fieldbus technology?
Then our F99 sensors with CANopen interface are the ideal choice.

- 1 or 2 independent, orthogonal axes
- Operating voltage 10 V ... 30 V
- The devices conform to CANopen device profile CiA 410 according to specification CiA 301
- Configuration via CANopen bus system
- Accuracy $\leq \pm 0.5^\circ$
- Repeat accuracy $\leq \pm 0.1^\circ$
- Temperature drift $0.027^\circ/\text{K}$

Model number:
INX360D-F99-B16-... (single axis)
INY360D-F99-B16-... (dual axes)



F99 ACCELERATION SENSOR



- Measuring range -2 g ... +2 g
- 1 or 2 independent, orthogonal axes
- Teachable zero point
- Analog output 4 mA ... 20 mA
- Operating voltage 10 V ... 30 V
- Resolution ≤ 5 mg
- Repeat accuracy ± 5 mg
- Frequency 0 Hz ... 100 Hz
- Housing dimensions:
65 mm x 44 mm x 37 mm

Model number:
ACX03-F99-... (single axis)
ACY03-F99-... (dual axes)



F99 SERIES MODELS

ACCELERATION SENSORS

| Model number | x-axis | y-axis | Current outputs | Voltage outputs | Switching outputs | Connection |
|------------------|--------|--------|-----------------|-----------------|-------------------|---------------|
| ACX03-F99-I-V15 | ■ | | 1 | | | M12 connector |
| ACY03-F99-2I-V15 | ■ | ■ | 2 | | | M12 connector |

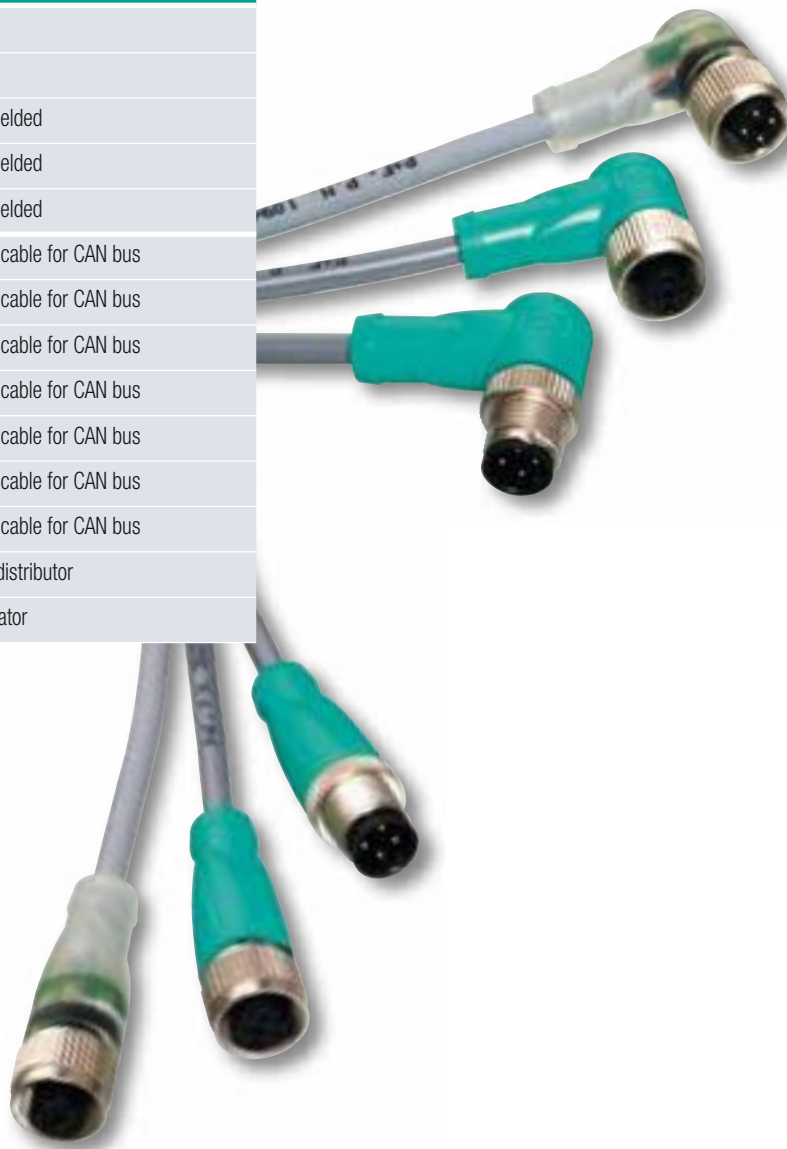
INCLINATION SENSORS

| Model number | x-axis | y-axis | Current outputs | Voltage outputs | Switching outputs | Connection |
|-----------------------|--------|--------|-----------------|-----------------|-------------------|---------------|
| INX360D-F99-I2E2-V15 | ■ | | 1 | | 2 | M12 connector |
| INX360D-F99-I2E2-5M | ■ | | 1 | | 2 | 5 m cable |
| INX360D-F99-U2E2-V15 | ■ | | | 1 | 2 | M12 connector |
| INX360D-F99-U2E2-5M | ■ | | | 1 | 2 | 5 m cable |
| INY360D-F99-2I2E2-V17 | ■ | ■ | 2 | | 2 | M12 connector |
| INY360D-F99-2I2E2-5M | ■ | ■ | 2 | | 2 | 5 m cable |
| INY360D-F99-2U2E2-V17 | ■ | ■ | | 2 | 2 | M12 connector |
| INY360D-F99-2U2E2-5M | ■ | ■ | | 2 | 2 | 5 m cable |
| INX360D-F99-B16-V15 | ■ | | | | CANopen | M12 connector |
| INY360D-F99-B16-V15 | ■ | ■ | | | CANopen | M12 connector |
| INY030D-F99-2I2E2-V17 | ■ | ■ | 2 | | 2 | M12 connector |
| INY030D-F99-2I2E2-5M | ■ | ■ | 2 | | 2 | 5 m cable |

Does your application have any special requirements? Talk to us!
We will be happy to customize a solution to your specific application.

Pepperl+Fuchs offers you an extensive choice of electrical and mechanical accessories for your sensor system solution.

| | Model number | Description |
|----------------------|--------------------------|------------------------------|
| STANDARD ACCESSORIES | V15-G-2M-PUR | Cordset |
| | V15-W-2M-PUR | Cordset |
| | V17-G-2M-PUR | Cordset, shielded |
| | V17-G-5M-PUR | Cordset, shielded |
| | V17-G-10M-PUR | Cordset, shielded |
| CAN ACCESSORIES | V15-W-0.6M-PUR-CAN-V15-W | Connection cable for CAN bus |
| | V15-G-1M-PUR-CAN-V15-G | Connection cable for CAN bus |
| | V15-G-2M-PUR-CAN-V15-G | Connection cable for CAN bus |
| | V15-G-3M-PUR-CAN-V15-G | Connection cable for CAN bus |
| | V15-G-5M-PUR-CAN-V15-G | Connection cable for CAN bus |
| | V15-G-10M-PUR-CAN-V15-G | Connection cable for CAN bus |
| | V15-G-15M-PUR-CAN-V15-G | Connection cable for CAN bus |
| | V15S-T-CAN/DN-V15 | CAN bus T distributor |
| | ICZ-TR-CAN/DN-V15 | CAN terminator |



Contact

Pepperl+Fuchs GmbH
Lilienthalstrasse 200
68307 Mannheim · Germany
Tel. +49 621 776-4411 · Fax +49 621 776-27-4411
E-mail: fa-info@pepperl-fuchs.com

Worldwide Headquarters

Pepperl+Fuchs GmbH · Mannheim · Germany
E-mail: fa-info@pepperl-fuchs.com

USA Headquarters

Pepperl+Fuchs Inc. · Twinsburg, OH · USA
E-mail: fa-info@us.pepperl-fuchs.com

Asia Pacific Headquarters

Pepperl+Fuchs Pte Ltd · Singapore
Company Registration No. 199003130E
E-mail: fa-info@sg.pepperl-fuchs.com

www.pepperl-fuchs.com

PEPPERL+FUCHS
SENSING YOUR NEEDS