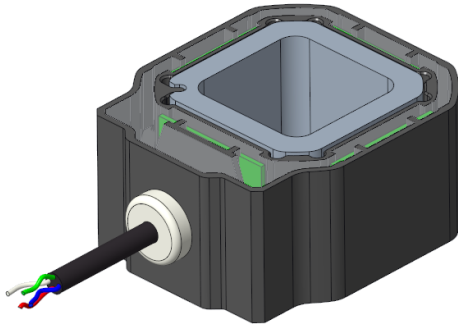




Force Evaluation Sensor

ADTEC-FS-0025-EVAL

Datasheet-Rev01








- Force ranges up to 200 kN
- Output Signal Type: Digital (1 Wire)
- Service Temperature: 0° to 70°
- Max 5Hz Analogue Bandwidth
- IP 66 Upgradable to IP67
- Perfect Choice for Technology Evaluation Sample

Product Description:

ADTEC-FS-0025-EVAL is a digital force sensor for force measurement applications. It benefits from the magnetic field measurement power of the **TI DRV425** fluxgate magnetometer connected for signal processing to get the best force evaluation sensor performance.

Featuring four independent sensing boards, the sensor provides distributed stress measurement on multiple surfaces. Each board can be individually addressed via Modbus RTU, enabling flexible data acquisition and advanced load analysis. Beyond conventional compression and tension measurements, the system can detect moments in all three sensor axes, providing enhanced insight into complex force conditions.

Force measurement is completely contactless, based on the Magneto-Mechanical Technology developed by ADTEC. This unique technology gives the opportunity to build a robust, contactless, calibration-free sensor that measures force via measuring the resulting Magneto-Mechanical field distortion by permanently magnetized metal block.

 <p>CONTACTLESS</p> <p>No physical contact ensures wear-free operation and long service life.</p>	 <p>ACCURATE</p> <p>High precision measurements with excellent repeatability.</p>	 <p>ROBUST</p> <p>Built to withstand harsh environments, shock, vibration and extreme conditions.</p>	 <p>CALIBRATION FREE</p> <p>Stable and reliable performance over years of use – no recalibration needed.</p>	 <p>STRAIN-GAUGE AND ADHESIVE FREE</p> <p>No strain gauges or adhesives required – simplifies installation and improves reliability.</p>
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Typical Use Cases:

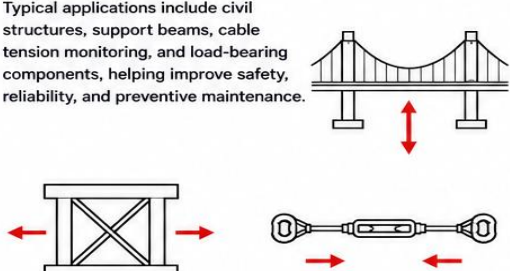
- General Force Measurement
- Press Monitoring
- Cranes and Lifting
- Rehabilitation
- Automotive Industry
- Research & Technology Evaluation

And Many Other Applications!!!

1 GENERAL FORCE MEASUREMENT

Used to monitor tensile and compressive forces in structures and mechanical systems.

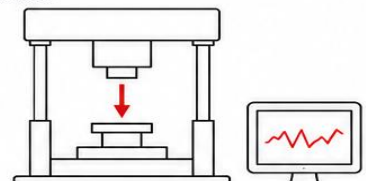
Typical applications include civil structures, support beams, cable tension monitoring, and load-bearing components, helping improve safety, reliability, and preventive maintenance.



2 PRESS MONITORING

Used in hydraulic, pneumatic, and mechanical presses to measure applied force during manufacturing processes.

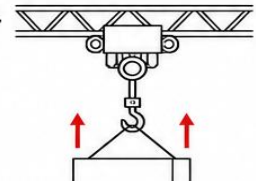
Force monitoring helps ensure consistent product quality, detect tool wear, and protect equipment from overload conditions.



3 CRANES AND LIFTING

Applied in cranes, hoists, winches, and other lifting equipment to monitor loads in real time.


Force measurement enhances operational safety, prevents overloading, and supports compliance with lifting regulations.



4 REHABILITATION

Integrated into rehabilitation equipment, exercise devices, and assistive technologies to measure patient-applied forces.

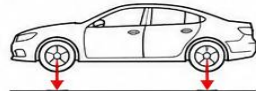
This enables progress tracking, performance assessment, and precise control of therapy and rehabilitation systems.




5 AUTOMOTIVE INDUSTRY


Used for brake force testing, chassis and suspension evaluation, component durability testing, and manufacturing quality control.

Accurate force measurement supports vehicle safety, performance optimization, and product validation.







Brake Force Testing



Chassis & Suspension Evaluation



Component Durability Testing




Manufacturing Quality Control

6 RESEARCH AND TECHNOLOGY EVALUATION

Widely used in laboratories, universities, and R&D facilities for material characterization, prototype testing, and technology validation.

Force measurements provide critical data for product development, performance analysis, and scientific research.



Technical Specifications:

- **Sensor Specifications:**

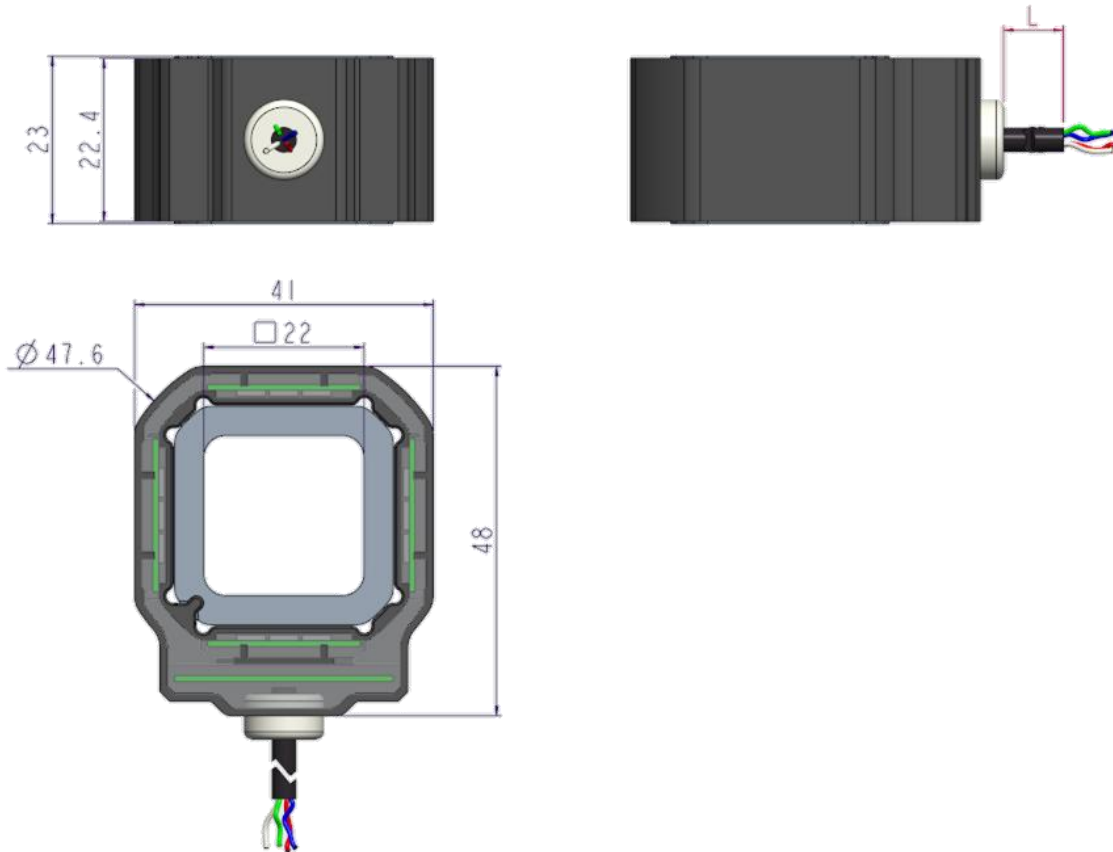
Parameter	Value	Unit
Force Sensor		
Sensing Range	40 to 200	kN
Accuracy	<1%	%FS
Hysteresis	<1%	%FS
Repeatability	<1%	%FS
Linearity	<1%	%FS
Sensitivity	4096(FS)	LSB/kN
Signal BW (-3db)	5	Hz
Operating temperature range	0 to +70	°C
Interface Specs		
Interface Type	Single Wire Modbus RTU	
Supply Voltage	5 ± 5%	VDC
Max Supply current	350	mA



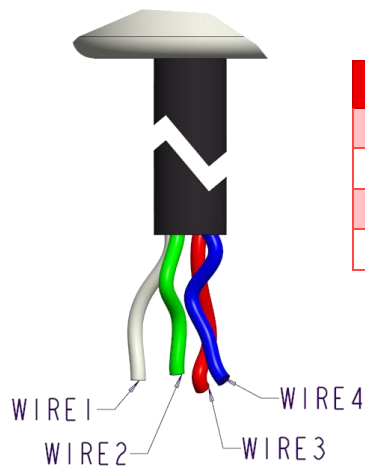
Do not Use Magnets or Magnetized Tools Close to the Sensor, as They May Alter the Metal's Magnetic Field. This Can Cause Permanent Damage to the Product and Render it Non-Functional.

Any Modification to the Product will Void the Warranty.

• **Overall Dimensions:**



• **Cable Connection:**



Pin Number	Description	Color
1	Channel A	White
2	Channel B	Green
3	VCC	Red
4	GND	Blue

Handling and Transportation:

During handling and transportation, make sure the sensor is not exposed to magnetic field (like permanent magnets).

Magnetic tools when assembling the sensor can affect its performance as well.

Important Technical Safety Instructions:

Sensor is built from 3D printed material for evaluation purposes only, it is not built to withstand:

- High temperature (Higher than 70° Can affect reading).
- Mechanical loads: drops, vibration, etc...
- Aggressive chemicals or solvents for cleaning
- Reverse polarity or overvoltage on the connector can damage the sensor.

Sensor disassembly will permanently damage the product.

The evaluation kit is not designed for safety-critical or life-support applications (For Evaluation Purposes Only).

Package Contents:

Parameter	Qty
Force Sensor unit	1
USB-TTL converter (3 rd party)	1
USB Cable	1



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