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6-axis FTS force-torque sensor

**Robotic sense of touch**

**The SCHUNK 6-axis FTS force-torque sensor operates with precision, high resolution, and flexibility.  These features make it an end-of-arm solution that ensures maximum efficiency and process reliability in automation. It is used in a wide range of applications, such as quality control, process monitoring, and grinding or assembly processes.**

Robots increase efficiency and quality in manufacturing and save costs. However, they can only ensure scrap-free production if all production steps and their monitoring operate with absolute reliability. This places very high demands on each individual component. SCHUNK provides the basis for this with its new Robot PLUS portfolio. It covers the area between the robot flange and the end effector, including tool changers, compensation units, and force-torque sensors.

Part of the portfolio is the SCHUNK 6-axis FTS force-torque sensor. Its strength: Where robots reach their limits due to a lack of tactile sensitivity, it gives them the necessary finesse to handle even the most challenging tasks. The extensive expertise of SCHUNK's development team is packed into this sensor. It measures with the highest accuracy and resolution, enabling precise process monitoring across diverse applications.

**Versatile in application - from battery cells to rehabilitation**

A delicate tough is required when assembling battery cells for **e-vehicles**. When placing them into the battery tray, the robot positions the battery modules onto adhesive strips. Here, the FTS ensures that the robot glues each battery with the same contact force, creating the foundation for functional and secure batteries of consistently high quality.

In the **field of electronics,** the FTS plays a key role in automated assembly of circuit boards. Thanks to its high sensitivity, it ensures that the robot reliably places small and fragile components into the designated holes with the correct contact force, without causing damage.

In medical technology, the FTS is used directly with patients: it is integrated into therapy robots for patient mobilization. With the help of the 6-axis force-torque sensor, the robot enables movements of single or multiple joints in passive, actively assisted, or active modes, which can be combined with targets such as force, range of motion, or coordination. The sensor evaluates various parameters and can monitor the patient's progress.

**Intelligent sensor system**

To achieve maximum precision, the FTS is equipped with strain gauges. They detect the mechanical deformation of the sensor body and convert it into highly precise signals across all six degrees of freedom (Fx, Fy, Fz, Mx, My, Mz). Combined with noise-reduced signal processing, the foil strain gauges ensure high resolution and signal quality. The robust base body’s high rigidity makes it durable and ensures high measurement accuracy even in dynamic applications. The force-torque sensor complies with the IP67 protection class and can be used in challenging environments. Integrated LEDs for power, communication, and sensor status facilitate status monitoring.

**Assembly made easy**

The SCHUNK FTS is user-friendly: standardized ISO mounting patterns on the tool side and adapter plates on the robot side allow quick and convenient assembly. Using the interface box with EtherNet/IP, EtherCAT and PROFINET interfaces, the sensor connects easily and seamlessly to existing network topologies. Its intuitive interface simplifies commissioning and enhances synergies with other SCHUNK products.

With nine sizes and measurement ranges (Fxy: 125-16,000N, Fz: 300-32,000 N, Mxyz: 4,5-2,800 Nm), the FTS force-torque sensor provides the ideal solution for various measurement needs across a wide range of applictions.

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**Captions:**

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|  | The FTS force-torque sensor records process forces and torques with high resolution and precision, producing precise results and consistent quality in automated production.  Image source: SCHUNK SE & Co. KG |
| *FTS\_Anwendungsbild\_Haptikmessung\_02\_06\_2025.jpg* | |
|  | Haptic measurement in the automotive sector is carried out via gripping and moving the joystick, as well as pressing the buttons with an inspection peak  Image source: SCHUNK SE & Co. KG |
| *FTS\_Anwendungsbeispiel\_Automobil\_0625.jpg* | |
| *Ein Bild, das Im Haus, Wand, Mobiliar, Kleidung enthält.  KI-generierte Inhalte können fehlerhaft sein.* | In therapy robots, similar to the device in the image, help to support the precise movement of single or multiple joints during patient mobilization.  Image source: SCHUNK SE & Co. KG |
| *FTS\_ Anwendungsbeispiel\_Medizintechnik.jpg* | |

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