Hand in hand for tomorrow

SCHUNK®

Product data sheet

Force/torque sensor FT-AXIA 130

Precise. Reliable. Robust.

6-axis force/torque sensor FT-AXIA

Rigid 6-axis force/torque sensor for precision measuring in all six degrees of freedom

Field of application

Universally applicable in robotic applications such as haptics, medicine, grinding, testing, inserting, and research and development

Advantages – Your benefits

Compact design due to space-saving set-up with integrated electronics

Two calibrations are available whereby two measurement ranges can be controlled via web interface

Plug & Work directly compatible for KUKA and Universal Robots via software module

Cost saving despite high precision due to optimized manufacturing

Robust design ensures due to a high overload range with protection against damage even with short-term overload

Version with LED display for status display on the sensor without evaluation via the controller

Sizes Quantity: 3	Measuring range of force ±75 .. 4000 N	Measuring range of moment load ±4 .. 300 Nm

Functional description

The strain gauges (DMS) of the 6-axis force/torque sensors measure the strain applied in all six degrees of freedom (Fx, Fy, Fz, Mx, My und Mz). The signals of the DMS are evaluated in the sensor and provided.

① **Electronics**
no interfering contour, as integrated in the housing

② **Resistance strain gauges**
Silicon gauges provide a signal 75 times stronger than conventional foil gages. This signal is amplified resulting in near-zero noise distortion.

③ **Interfaces**
Data evaluation via Ethernet, EtherCAT, RS-422 or RS-485

④ **Protection class IP**
FT-AXIA 80 with IP64
Sizes FT-AXIA 90 and FT-AXIA 130 with IP67

Detailed functional description

The 6-axis force/moment sensor is connected to the control line via the sensor cable. The control line is divided into voltage supply and data transfer. The connection between the controller and sensor is made via EtherNet or EtherCAT depending on the model. The following components are included in the scope of delivery:

1. FT-AXIA
2. Sensor cable
3. Control line

General notes about the series

Measuring accuracy: < 2% of the upper limit value of the measuring range at 22 °C

evaluation via: EtherCAT, Ethernet, RS-422, RS-485

Warranty: 12 months

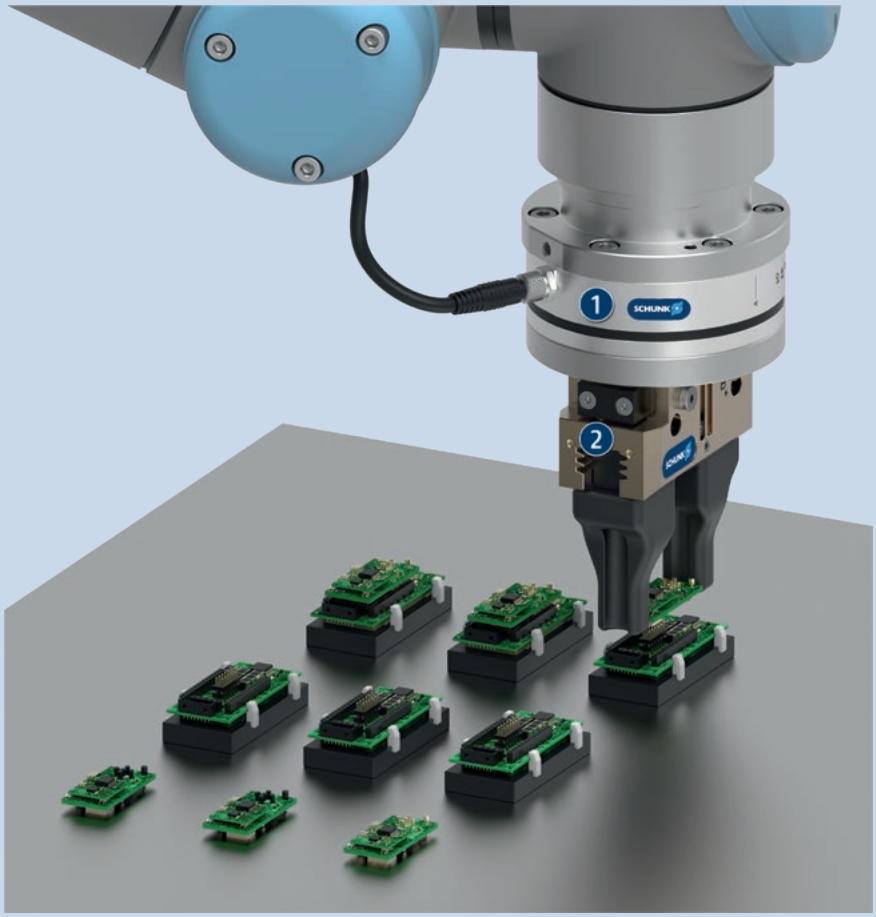
Harsh environmental conditions: Please note that use under harsh environmental conditions (e.g. in the coolant area, cast and grinding dust) can considerably reduce the service life of the units, and we will not take over any warranty. However, in many cases we can find a solution. Please contact us for assistance.

Handling weight: is the weight of the total load attached to the flange. When designing, the permissible forces and moments have to be paid attention to. Please note that exceeding the recommended handling weight will shorten the lifespan.

Application example

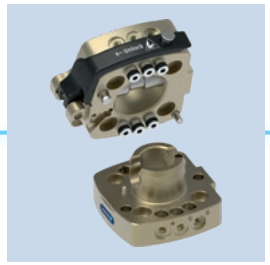
Gripping unit in combination with force/torque sensor for delicate assembly of printed circuit boards

1. 6-axis force/torque sensor FT-AXIA
2. 2-finger parallel gripper PGN-plus-P

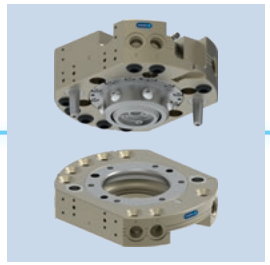


SCHUNK offers more ...

The following components make the product even more productive – the suitable addition for the highest functionality, flexibility, reliability, and controlled production.

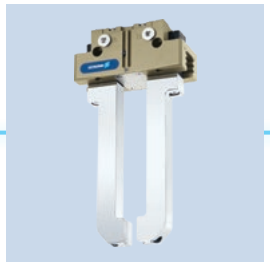


Manual change system



Tool changer

Rotary feed-through



Universal gripper

Universal gripper

ⓘ For more information on these products can be found on the following product pages or at schunk.com.

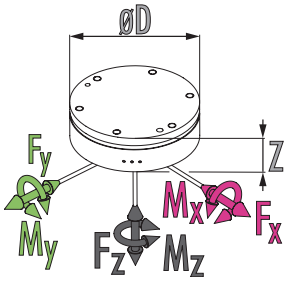
Options and special information

6-axis force/torque sensor: Strain gauges (DMS) measure the strain applied in all six degrees of freedom (Fx, Fy, Fz, Mx, My and Mz). The signals from the DMS are directly processed in the sensor, and are made available as forces and moments via various communication protocols.
Sensor cable: The sensor cable connects the sensor to the control line via an M8 connector or an M12 connector through an 8-pin M12 connector. The voltage supply and communication line are integrated into the sensor cable and shielded. The highly flexible sensor line protects the sensor signals against electrical fields and mechanical loads.
Control line: The control line is a Y-distribution cable and is connected to the sensor line via an M12 socket. It supplies the sensor with voltage via a 3-pin open wire strand and allows separate communication with the sensor via EtherNet or EtherCAT via an RJ-45 connector, depending on the version.

FT-AXIA 130

Force/torque sensor

Dimensions and maximum loads



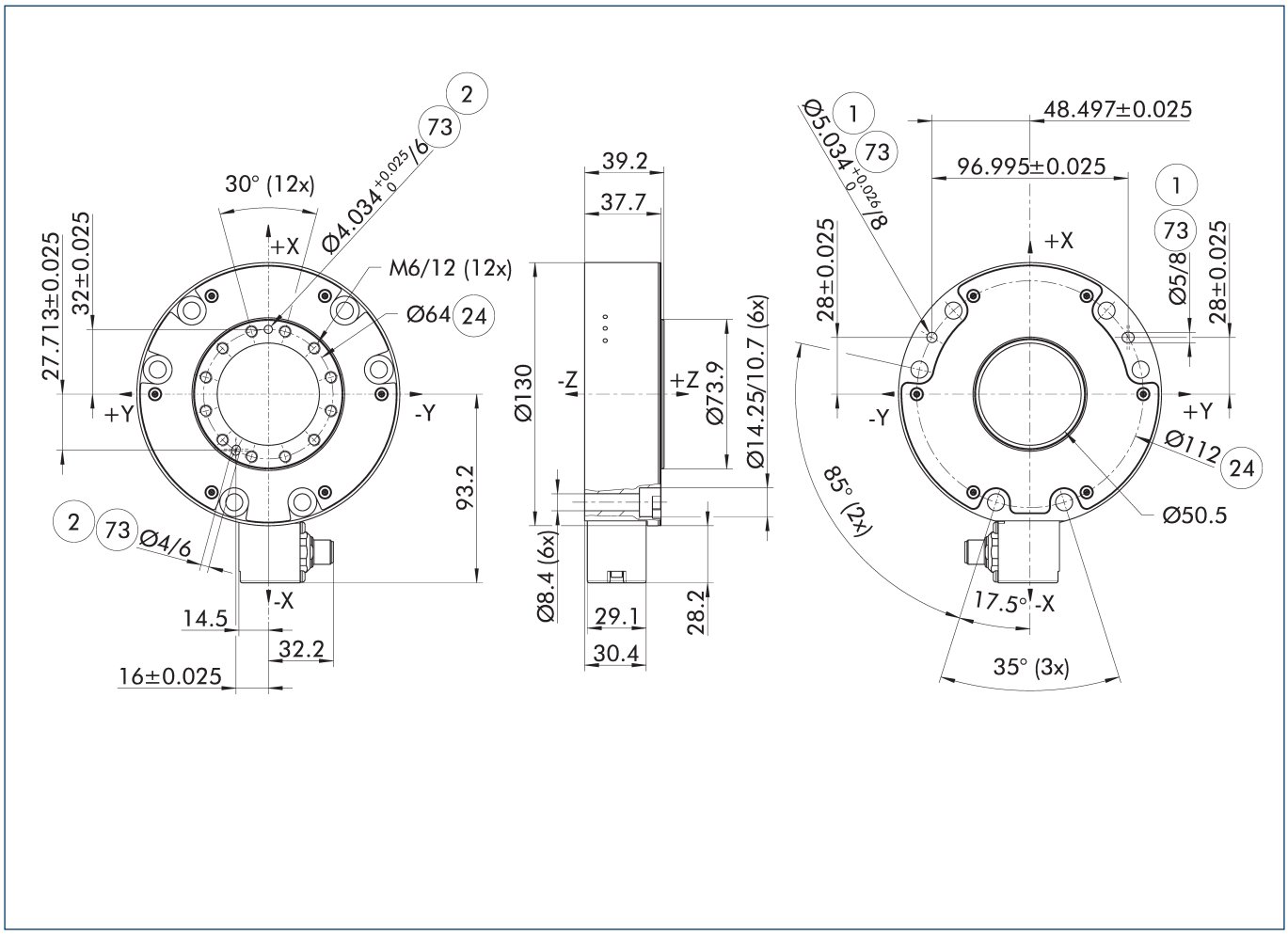
For values see technical data table

ⓘ All forces and torques acting on the sensor must be within the specified measurement range.Exceeding the measurement range will reduce the maximum number of load cycles and may lead to damage of the sensor. Please contact us if your application exceeds the measurement range.

Technical data

Description		FTN-AXIA130 SI-2000-125	FTN-AXIA130 SI-4000-300
ID		1512886	1512788
evaluation via		EtherNet	EtherNet
Housing material		Aluminum	stainless steel
Weight	[kg]	0.86	1.88
Calibration 1		SI-2000-125	SI-4000-300
Measuring range Fx, Fy/measuring range Fz	[N]	±2000/±4000	±4000/±6000
Measuring range Mx, My/measuring range Mz	[Nm]	±125/±125	±300/±300
Overload Fx, Fy/overload Fz	[N]	±10000/±20000	±20000/±30000
Overload Mx, My/overload Mz	[Nm]	±620/±620	±1500/±1500
Resonant Frequency Fx, Fy, Mz	[Hz]	2500	2450
Resonant Frequency Fz, Mx, My	[Hz]	4000	2900
Resolution Fx, Fy/resolution Fz	[N]	0.625/0.625	1.67/1.67
Resolution Mx, My/resolution Mz	[Nm]	0.025/0.025	0.07/0.07
IP protection class		67	67
Dimensions Ø D x Z	[mm]	130 x 39.2	130 x 39.2
Technical data deviations for FTE			
Description		FTE-AXIA130 SI-2000-125	FTE-AXIA130 SI-4000-300
ID		1512887	1512871
evaluation via		EtherCAT	EtherCAT
Technical data deviating from FTRS			
Description		FTRS422-AXIA130 SI-2000-125	FTRS422-AXIA130 SI-4000-300
ID		1512783	1512877
evaluation via		serial interface (RS-422)	serial interface (RS-422)

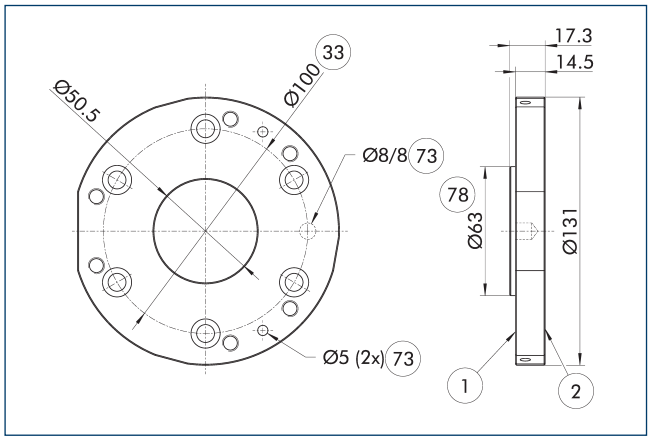
Main view



The drawing shows the unit in the basic version.

1 Robot-side connection
2 Tool-side connection
24 Bolt circle
73 Fit for centering pins

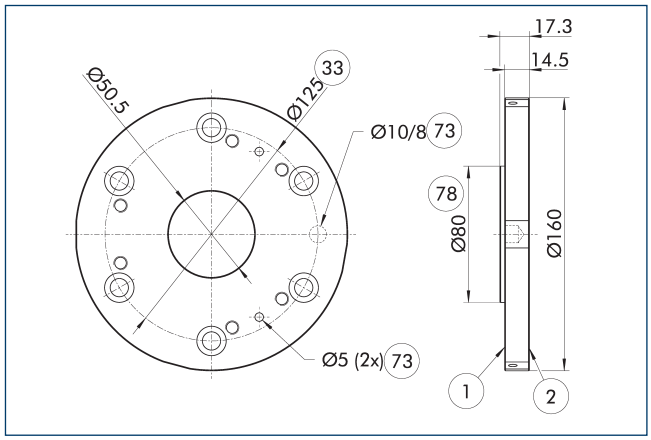
Adapter plate ISO-A100-R



1 Robot-side connection
2 Tool-side connection
33 DIN ISO-9409 bolt circle
73 Fit for centering pins
78 Fit for centering

Description	ID	
Adapter plate		
A-FT-AXIA-130-ISO-A100-R	1512897	

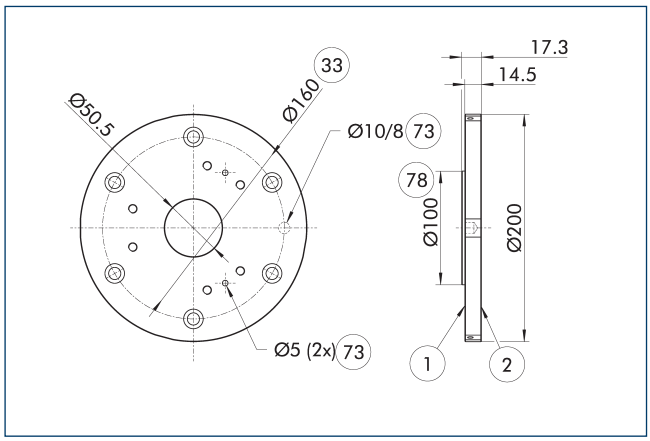
Adapter plate ISO-A125-R



1 Robot-side connection
2 Tool-side connection
33 DIN ISO-9409 bolt circle
73 Fit for centering pins
78 Fit for centering

Description	ID	
Adapter plate		
A-FT-AXIA-130-ISO-A125-R	1512898	

Adapter plate ISO-A160-R



1 Robot-side connection
2 Tool-side connection
33 DIN ISO-9409 bolt circle
73 Fit for centering pins
78 Fit for centering

Description	ID	
Adapter plate		
A-FT-AXIA-130-ISO-A160-R	1512899	

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