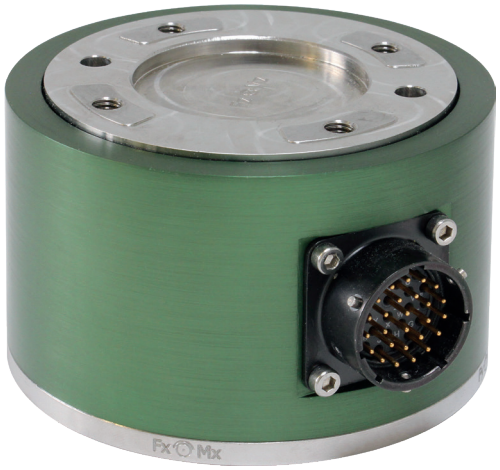
Direct line: +49 7224 645-45 or -57
Warranty: 24 months

Load cell and torque sensor – X/Y/Z

Configurable up to 3x force / 3x torque

MODEL 8565 NEW

Preliminary data sheet

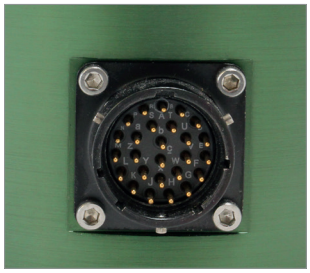


Highlights

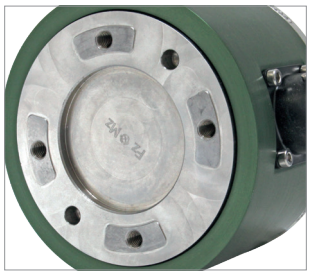
- 6-axis sensor
- Measuring range Fx: 1 kN / Fy: 1 kN / Fz: 2 kN
  Mx: 50 Nm / My: 50 Nm / Mz: 50 Nm
- Other measuring ranges available on request
- Non-linearity < 0.1 % F.S.
- Excellent price/performance ratio
- Customer-specific axis configuration

Applications

- Robot-assisted applications
- Pick & place
- Tactile sensing in manufacturing
- Collision detection
- Force-controlled machining



Strain gage output



Robot flange in accordance with DIN ISO 9049-1

Direction of action

Product description

In robotics and automation engineering, the requirements for precise, tactile handling are constantly increasing. The robust 8565 multi-axis sensor with its low crosstalk enables you to monitor and evaluate your process at any time, regardless of the sensor's orientation.

With just one sensor, you can obtain accurate three-dimensional load information. Its six independent outputs let you selectively evaluate the direction of action of the loads (axial force [Fz] / lateral forces [Fx/Fy] / torque [Mz] / bending moment [Mx/My]).

Thanks to its compact design and adaptation via the standardized robot flange in accordance with DIN ISO 9049-1, the sensor can be integrated into many applications quickly and easily.

When the slightest deviations are detected in your fast-moving and complex production processes, you can intervene immediately to make adjustments. This helps to prevent faulty parts and reduce manufacturing costs.

Technical data

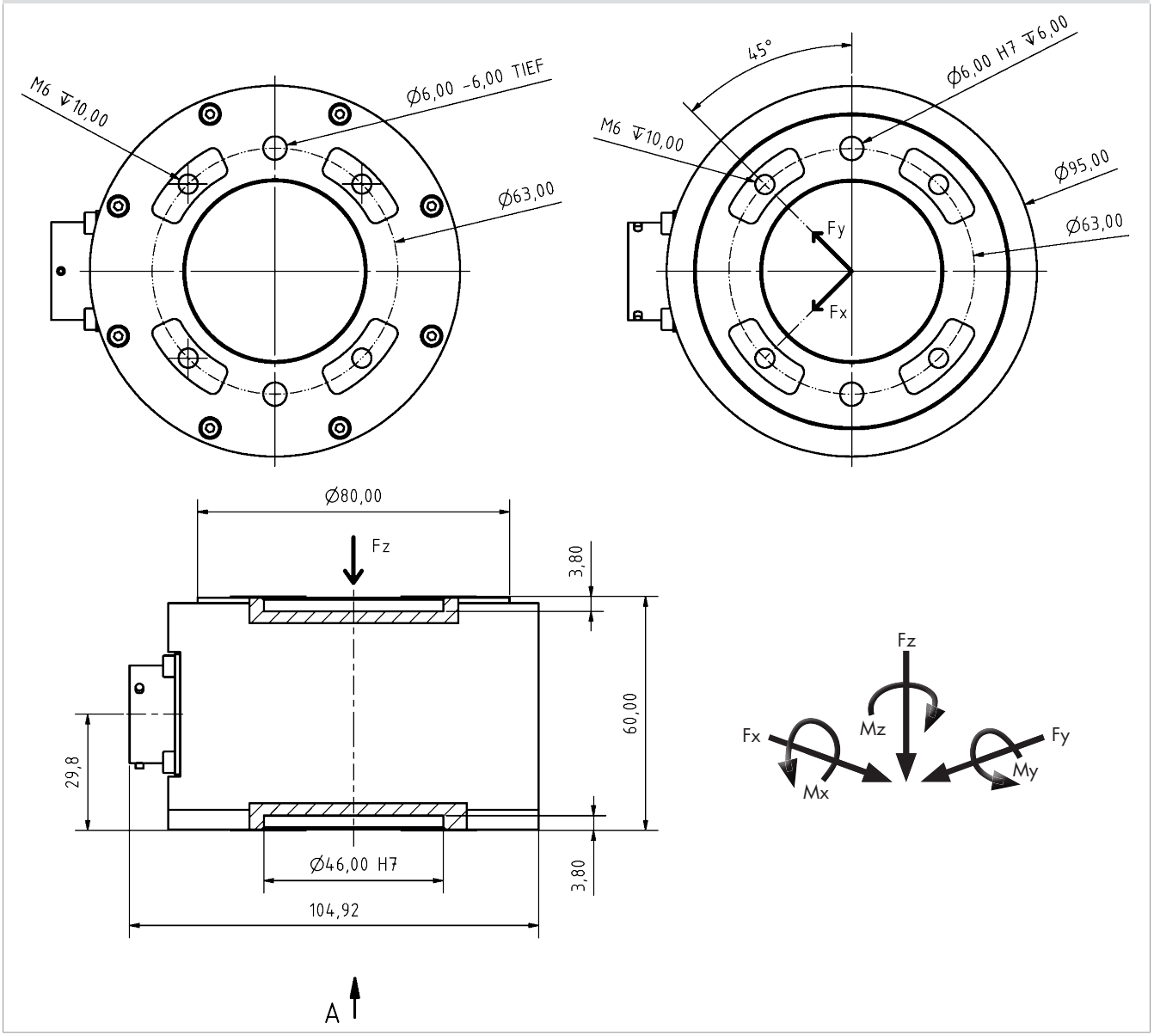
8565	–	60025050
Measuring range Fx calibrated in N from 0 …		Fx = 0 … ±1 kN (0 … ±224.8 lbs)
Measuring range Fy calibrated in N from 0 …		Fy = 0 … ±1k N (0 … ±224.8 lbs)
Measuring range Fz calibrated in N from 0 …		Fz = 0 … ±2 kN (0 … ±449.6 lbs)
Measuring range Mx calibrated in Nm from 0 …		Mx = 0 … ±50 Nm (0 … ±442.51 lbs in)
Measuring range My calibrated in Nm from 0 …		My = 0 … ±50 Nm (0 … ±442.51 lbs in)
Measuring range Mz calibrated in Nm from 0 …		Mz = 0 … ±50 Nm (0 … ±442.51 lbs in)
Accuracy		
Relative non-linearity *		< ±0.1 % F.S.
Relative hysteresis		0.2 % F.S.
Relative combined error *		< ±0.15 % F.S.
Crosstalk		< 5 % from Fz to other axes (other crosstalk significantly less)
Temperature effect on zero		≤ ±0.02 % F.S./K
Temperature effect on characteristic value		≤ ±0.02 % F.S./K
Electrical values		
Characteristic value (nominal) Fx:	[mV/V]	1.2
Characteristic value (nominal) Fy:	[mV/V]	1.2
Characteristic value (nominal) Fz:	[mV/V]	0.4
Characteristic value (nominal) Mx:	[mV/V]	1
Characteristic value (nominal) My:	[mV/V]	1
Characteristic value (nominal) Mz:	[mV/V]	0.9
Measurement direction		Positive output signal for compressive load / torque in the direction of the marked X, Y or Z axis
Bridge resistance		350 Ω / 700 Ω nominal (deviations are possible)
Excitation voltage		5 V DC (max. 10 V DC)
Ambient conditions		
Rated temperature range		+15 °C … +70 °C
Operating temperature range		-10 °C … +80 °C
Mechanical values		
Full-scale deflection		Fx and Fy < 0.04 mm / Fz < 0.015 mm
Max. operational force (Dynamic load limit 250)		$Lmax = 100 * \frac{\sqrt{Fx^2+Fy^2}}{Fx\ nom.} + 50 * \frac{\lvert Fz\rvert}{Fz\ nom.} + 70 * \frac{\sqrt{Mx^2+My^2}}{Mx\ nom.} + 100 * \frac{\lvert Mz\rvert}{Mz\ nom.} \leq 250$ Please note: The sensor's coordinate origin is in the geometric center of the sensor. When calculating the maximum operational force, the additional bending moments due to leverage effects must be taken into account for the acting lateral forces. Example: Force-controlled grinding process with simultaneous dynamic loads of up to: Fx = 500 N / Fy = 500 N / Fz = 1.5 kN / Mx = 20 N / My = 20 N / Mz = 40 N $\mathbf{Lmax = 100 * \frac{\sqrt{500N^2 + 500N^2}}{1000N} + 50 * \frac{1500N}{2000N} + 70 * \frac{\sqrt{20Nm^2 + 20Nm^2}}{50Nm} + 100 * \frac{40Nm}{50Nm}} = 227.80$
Dynamic stress		Recommended: 50 %
Material		High-strength aluminum
Degree of protection (EN 60529)		IP40
Miscellaneous		
Resonant frequency		> 1800 Hz
Weight	[g]	800

* Specifications in the range 20 % - 100 %

4292-008670EN-5999-091531

Geometry	
	See dimensional drawing
Installation	
Intended mounting screws	4 x M6
Mounting screw tightening torques	10 Nm
Mounting screws	Strength 8.8 or higher
Weight	800 g

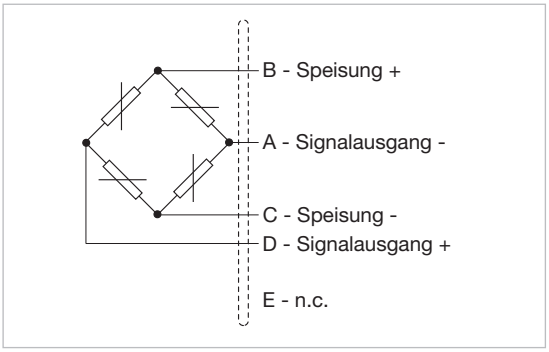
Dimensional drawing



Electrical connection

Output signal

buster load cells are based on a strain-gage Wheatstone bridge. With this measuring principle, the output voltage (mV/V) is highly dependent on the sensor supply voltage. Suitable instrumentation amplifiers, indicator and display devices, and process instruments can be found on our website.



Connector pin assignment				
Measurement channel		**Assignment**		**Pin**
Fx		Us+	Excitation (+)	A
		Us-	Excitation (-)	B
		Um+	Measurement signal (+)	C
		Um-	Measurement signal (-)	D
Fy		Us+	Excitation (+)	E
		Us-	Excitation (-)	F
		Um+	Measurement signal (+)	G
		Um-	Measurement signal (-)	H
Fz		Us+	Excitation (+)	J
		Us-	Excitation (-)	K
		Um+	Measurement signal (+)	L
		Um-	Measurement signal (-)	M
Mx		Us+	Excitation (+)	N
		Us-	Excitation (-)	P
		Um+	Measurement signal (+)	R
		Um-	Measurement signal (-)	S
My		Us+	Excitation (+)	T
		Us-	Excitation (-)	U
		Um+	Measurement signal (+)	V
		Um-	Measurement signal (-)	W
Mz		Us+	Excitation (+)	X
		Us-	Excitation (-)	Y
		Um+	Measurement signal (+)	Z
		Um-	Measurement signal (-)	a
		N.C.		b
		N.C.		c

Electrical connection		
9900-V724		Souriau 26-pin connector, series 851 cable installation

Accessories

Connector, cables and devices

Order code		
Connector		
9900-V724		Connector socket 26 pin (included with device)
Cables		
99209-000A-0090030		Connecting cable, open cable end, length 3 m, suitable for drag chains
99209-724A-0090030		Connecting cable to USB interface 9206-V3xxxx, 3x force, length 3 m, suitable for drag chains
99209-724B-0090030		Connecting cable to USB interface 9206-V3xxxx, 3x torque, length 3 m, suitable for drag chains
99209-724F-0090030		Connecting cable to USB interface 9206-V3xxxx, 3x force / 3x torque, length 3 m, suitable for drag chains
Devices		
9250-VXXXXXX		Universal instrumentation amplifier
9251-VXXXX		Fieldbus controller for the 9250 instrumentation amplifier series
9236-V...		In-line instrumentation amplifier for strain gage sensors
9206-V...		USB sensor interface for strain gage sensors

Volume discount – When purchasing identical versions in a single order we offer the following discounts:

Discount scale		
5 units		3 %
8 units		5 %
10 units		8 %
More than 10 units		POA

4245-008670EN-5699-051527

Order Code

Measuring range	Code								Measuring range
	Fz				Mz				
Fz = 0 ... ±2 kN Fy = 0 ... ±1 kN Fx = 0 ... ±1 kN Mz = 0 ... ±50 Nm My = 0 ... ±50 Nm Mx = 0 ... ±50 Nm	6	0	0	2	5	0	5	0	Fz = 0 ... ±449.6 lbs Fy = 0 ... ±224.8 lbs Fx = 0 ... ±224.8 lbs Mz = 0 ... ±442.5 lbs in My = 0 ... ±442.5 lbs in Mx = 0 ... ±442.5 lbs in

8	**5**	**6**	**5**	**-**									**-**			**0**	**0**

■ Force: ~~Fz~~ / ~~Fy~~ / ~~Fx~~	0
■ Force: ~~Fz~~ / ~~Fy~~ / **Fx**	1
■ Force: ~~Fz~~ / **Fy** / ~~Fx~~	2
■ Force: ~~Fz~~ / **Fy** / **Fx**	3
■ Force: **Fz** / ~~Fy~~ / ~~Fx~~	4
■ Force: **Fz** / ~~Fy~~ / **Fx**	5
■ Force: **Fz** / **Fy** / ~~Fx~~	6
■ Force: **Fz** / **Fy** / **Fx**	7

■ Torque: ~~Mz~~ / ~~My~~ / ~~Mx~~	0
■ Torque: ~~Mz~~ / ~~My~~ / **Mx**	1
■ Torque: ~~Mz~~ / **My** / ~~Mx~~	2
■ Torque: ~~Mz~~ / **My** / **Mx**	3
■ Torque: **Mz** / ~~My~~ / ~~Mx~~	4
■ Torque: **Mz** / ~~My~~ / **Mx**	5
■ Torque: **Mz** / **My** / ~~Mx~~	6
■ Torque: **Mz** / **My** / **Mx**	7

Example order

Ordering example			
1x		Sensor with application 3x force / 3x torque	Type 8565-6002-5050-7700
1x		Connecting cable, open cable end, length 3 m, suitable for drag chains	Type 99209-724F-0090030
6x		Single-channel in-line instrumentation amplifier for strain gage sensors	Type 9236-V000
6x		Calibrate a measuring chain	92ABG

General information

■ **Brochure**
Our brochure **"Load cells – for production automation, R&D and quality assurance"** is available for download on our website or can be requested. It contains numerous applications, detailed product descriptions and overviews.

■ **Product videos**
You can find our **installation videos** at: **www.youtube.com/bursterVideo**

■ **CAD data**
Download via **www.burster.de** or directly from **www.traceparts.de**