Key Features

- Plug & Play
- Only 30 grams
- Integrated DAQ electronics
- Dust and water resistant
- Available with USB and UART
- Extremely small size with integrated electronics
- Ideal for robotic gripping and in-hand manipulation
- Compatible with ROS®, LabVIEW®, MATLAB®, Python®, and more

Configurations

Ordering number	Description
BFT-MN1S-USB-UB	MiniONE 6-axis FT sensor with side USB interface and 2m cable
BFT-MN1S-UART-W4	MiniONE 6-axis FT sensor with side UART interface and 2m cable with wire ends

Technical Specifications

Please refer to the table for all sensor specifications. For additional information, feel free to consult our team of engineers at info@botasys.com.

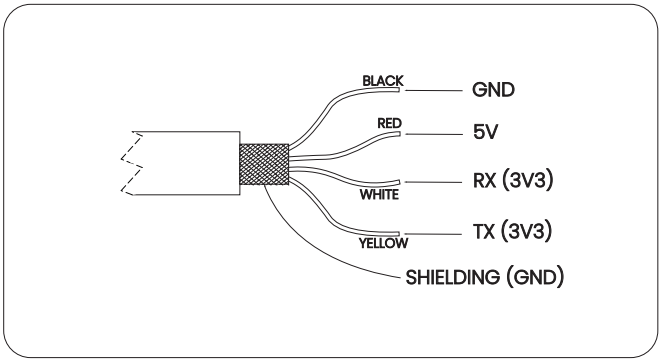
	F_x	F_y	F_z	M_x	M_y	M_z
Range	50 N	50 N	50 N	1 Nm	1 Nm	1 Nm
Overload limit*	100 N	100 N	100 N	2 Nm	2 Nm	2 Nm
NFR**	150 mN	150 mN	100 mN	1.8 mNm	1.8 mNm	0.9 mNm
Size (D x H)	30 mm x 23.2 mm					
Ingress protection	Dust and water resistant					
Operating temperature	0°C – 55°C					
Serial						
Communication	USB - UART					
Maximum sampling rate	300 Hz					
IMU	-					
Acceleration	-					
Gyroscope	-					
Power supply	5 V, 1.0 W					
Weight	30 grams					

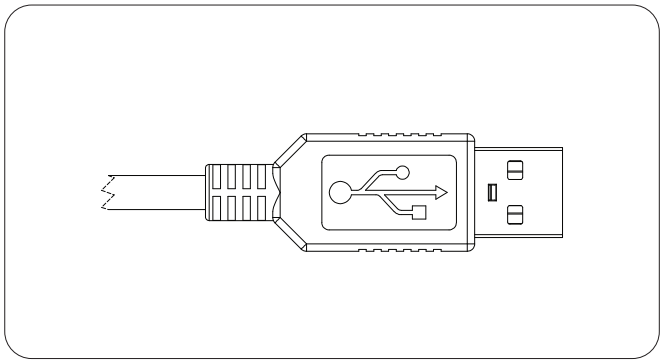
* Overload limit values are simulated using FEA methods. Real-life results may deviate from simulation results.
* * NFR (noise-free resolution) refers to (6σ) peak-to-peak noise distribution of sensor signal at 100 Hz.

Connector Pinout

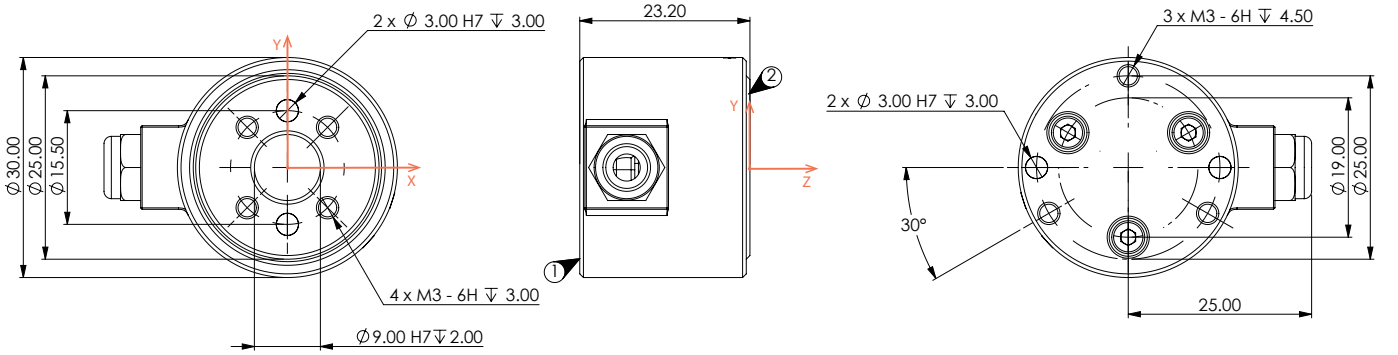
4 Wires	BFT-MN1S-UART-W4

USB	BFT-MN1S-USB-UB





Mechanical Dimensions



MiniONE Side by Bota Systems AG

1. Robot mounting side
2. Tool mounting side

BFT-MN1S-USB-UB
BFT-MN1S-UART-W4

Crosstalk

Crosstalk in multi-axis force-torque sensors refers to the measurements in other axes when the sensor is excided only in a single axis. Crosstalk is reported as the percentile deviation from reference with respect to the full scale of that axis. Bota Systems provides a crosstalk certificate for your sensor tested according to ISO 21612:2021 standard upon request. An exemplary crosstalk table is provided below as a reference.

Affected axis	F_x	F_y	F_z	M_x	M_y	M_z
F_x (%)	-	0.00	0.05	0.02	1.17	0.18
F_y (%)	0.01	-	0.07	1.40	0.12	2.08
F_z (%)	0.08	0.03	-	1.66	0.32	0.01
M_x (%)	0.03	0.67	0.09	-	0.03	0.13
M_y (%)	0.13	0.36	0.22	0.85	-	0.07
M_z (%)	0.23	0.06	0.03	0.67	0.68	-

Signal Noise

Signal noise is any unwanted modification that may arise during capture, storage, transmission, processing, or conversion of a communication signal. The upper limits for the standard deviation of noise distribution are reported in the following tables.

Sampling rate		F_x	F_y	F_z	M_x	M_y	M_z
100 Hz	BFT-MN1S-UART-W4	20 mN	25 mN	12 mN	0.3 mNm	0.3 mNm	0.2 mNm
	BFT-MN1S-USB-UB	20 mN	25 mN	12 mN	0.3 mNm	0.3 mNm	0.2 mNm

For more information, please refer to the user manual.