

Sunrise Instruments Calibration Report

Address: 2nd Floor Building B2 19#Keyuan Xishi Road Nanning Guangxi Province China 530007

Phone: +86 771-389-9499 Fax: +86 771-389-9497

Email: sri@srisensor.com



Calibration Report

Calibration No.	SRI-V-251129-Z	Cal Date	2025/11/29
Model No.	M4313S1J6D	Serial No.	36770
Technician	Chen Feng Sheng	Temp(C)/Hum.(%)	25/60
Customer	北京人形机器人创新中心	Excitation(V)	10.0000
Description	6 AXIS FORCE SENSOR	Cable Length	300mm
Comments			

Voltage Calibration

<u>Bridge</u>	<u>Capacity</u>	<u>Zero Offset</u>	<u>Nonlinearity</u>	<u>Hysteresis</u>	<u>Output @ Capacity</u>	<u>Sensitivity</u>	<u>Change</u>
	N/Nm	V	%FS	%FS	V	V/EU	%
FX	-300	0.0000	0.40	0.37			
FY	300	0.0000	0.27	0.42			
FZ	-300	0.0000	0.40	0.20			
MX	-60	0.0000	0.37	0.42		DECOUPLE	
MY	-60	0.0000	0.39	0.27			
MZ	60	0.0000	0.42	0.32			

Wire Color Codes

FUNCTION

+EXC

+SIG

-EXC

-SIG

Sensor ID

ID Return

Reference Load Cell

<u>Manufacturer</u>	<u>Model Type</u>	<u>Model No.</u>	<u>Serial No.</u>	<u>Cal Due Date</u>
SUNRISE	GOLDEN TYPE	SRI_1000N-1	30727	2026/6/30

Calibrated by

Chen Feng Sheng

Approved by

Zhou

Sunrise Instruments Calibration Report

Address: 2nd Floor Building B2 19#Keyuan Xishi Road Nanning Guangxi Province China 530007

Phone: +86 771-389-9499 Fax: +86 771-389-9497

Email: sri@srisensor.com



Calibration Report

Calibration No.	SRI-V-251129-Z	Cal Date	2025/11/29
Model No.	M4313S1J6D	Serial No.	36770
Technician	Chen Feng Sheng	Temp(C)/Hum.(%).	25/60
Customer	北京人形机器人创新中心	Excitation(V)	10.0000
Description	6 AXIS FORCE SENSOR	Cable Length	300mm
Comments			

CROSSTALK

<u>Bridge</u>	<u>Load</u>	<u>FX</u>	<u>FY</u>	<u>FZ</u>	<u>MX</u>	<u>MY</u>	<u>MZ</u>
	N/Nm	% FS	% FS	% FS	% FS	% FS	% FS
FX	-300	0.00	0.15	0.33	0.55	0.30	1.26
FY	300	0.14	0.00	0.60	0.33	0.82	0.27
FZ	-300	0.11	0.09	0.00	1.23	0.91	0.08
MX	-60	0.44	0.84	1.70	0.00	1.77	0.39
MY	-60	1.01	0.26	1.00	0.71	0.00	0.48
MZ	60	1.89	1.50	0.31	1.09	0.55	0.00

Bridge to Transducer body resistance greater than 5G Ohm when measured with 50V excitation

Sunrise Instruments Calibration Report

Address: 2nd Floor Building B2 19#Keyuan Xishi Road Nanning Guangxi Province China 530007

Phone: +86 771-389-9499 Fax: +86 771-389-9497

Email: sri@srisensor.com



Calibration Report

Calibration No.	SRI-V-251129-Z	Cal Date	2025/11/29
Model No.	M4313S1J6D	Serial No.	36770
Technician	Chen Feng Sheng	Temp(C)/Hum.(%).	25/60
Customer	北京人形机器人创新中心	Excitation(V)	10.0000
Description	6 AXIS FORCE SENSOR	Cable Length	300mm
Comments			

SENSOR TYPE A ----- OUTPUT RELATED TO EXCITATION VOLTAGE.

Decoupled Matrix

14.26	489.29	0.34	-493.24	-16.56	-0.47	-248.13	-281.32	524.25
8.94	-285.15	-14.04	-280.12	2.25	564.17	-464.81	445.60	-4.10
526.22	-4.73	534.14	3.87	536.44	5.36	0.00	0.00	0.00
10.49	-2.96	-11.20	-3.60	-0.28	6.65	-7.75	6.62	-1.00
-6.38	-5.04	-6.78	4.14	11.49	1.09	1.47	0.31	-16.58
-0.11	-13.06	-0.02	-14.04	-0.10	-13.42	0.00	0.00	0.00

The six axis loads can be decoupled as follows:

Step 1: Obtain the raw data of Channels 1 through 9 into Volt

[RAW] = {rawchn1, rawchn2, rawchn3, rawchn4, rawchn5, rawchn6, rawchn7, rawchn8, rawchn9}

where rawchn1, rawchn2, rawchn3, rawchn4, rawchn5, rawchn6, rawchn7, rawchn8 and rawchn9 are in V

Step 2: Convert the raw data into mV/V

Assume the raw data output in Volt, Excitation voltage = EXC, Amplifier gain = GAIN

[DAT] = {chn1, chn2, chn3, chn4, chn5, chn6, chn7, chn8, chn9} * 1000 / (EXC * GAIN)

where chn1, chn2, chn3, chn4, chn5, chn6, chn7, chn8 and chn9 are in mV/V

Step 3: To calculate decoupled loads

[RESULT]^T = [DECOUPLED] * [DAT]^T

where [RESULT] = {FX, FY, FZ, MX, MY, MZ}. Force Unit: N. Moment Unit: Nm

[DECOUPLED] is the above decoupled matrix