

Sunrise Instruments Calibration Report

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

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Calibration Report

Calibration No.	SRI-V-251108-Y	Cal Date	2025/11/8
Model No.	M4312M1C2	Serial No.	33709
Technician	Chen Feng Sheng	Temp(C)/Hum.(%).	25/69
Customer	深圳市优必选科技股份有限公司	Excitation(V)	16.0000
Description	6 AXIS FORCE SENSOR	Cable Length	30mm
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	0.38	0.20			
FY	300	0.0000	0.41	0.37			
FZ	-300	0.0000	0.41	0.40			
MX	30	0.0000	0.34	0.37		DECOUPLE	
MY	30	0.0000	0.44	0.20			
MZ	30	0.0000	0.35	0.30			

Wire Color Codes

FUNCTION

+EXC	
+SIG	CONNECTOR
-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_500N-1	121	2026/5/20

Calibrated by

Chen Feng Sheng

Approved by

Zhou

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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	0.13	0.23	0.03	0.20	0.18
FY	300	0.10	0.00	0.14	0.02	0.04	0.10
FZ	-300	0.13	0.16	0.00	0.05	0.03	0.02
MX	30	0.03	0.09	0.36	0.00	0.04	0.05
MY	30	0.08	0.09	0.47	0.03	0.00	0.01
MZ	30	0.28	0.29	0.10	0.08	0.07	0.00

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

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

Decoupled Matrix

9.33	660.65	-21.56	38.40	-1.93	-702.26	-285.87	1090.76	-541.99
-9.62	-507.58	-33.60	846.28	2.61	-343.07	-869.90	229.98	727.01
-1797.10	0.88	-1798.68	-1.89	-1799.95	-0.12	0.00	0.00	0.00
27.40	-4.77	-0.01	9.32	-28.36	-4.48	0.00	0.00	0.00
-17.10	-9.34	32.00	0.08	-16.09	9.28	0.00	0.00	0.00
0.25	16.44	0.03	16.40	0.34	15.70	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