

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-251130-A	Cal Date	2025/11/30
Model No.	M3813A	Serial No.	31794
Technician	Luo Shun Rong	Temp(C)/Hum.(%).	23.0 / 55.0
Customer		Excitation(V)	5.0000
Description	6 AXIS FORCE SENSOR	Cable Length	4m
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	-40	0.0000	0.06	-0.14			
FY	40	0.0000	-0.18	0.15			
FZ	-40	0.0000	0.17	0.27			
MX	-1.5	0.0000	0.27	0.36		DECOUPLE	
MY	-1.5	0.0000	-0.37	0.39			
MZ	1.5	0.0000	-0.23	-0.18			

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	M3001	121	2026/8/6

Calibrated by

Approved by

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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	-40	0.00	-0.15	-0.54	-0.12	-0.67	-0.81
FY	40	-0.24	0.00	-0.66	-1.11	-0.03	-0.61
FZ	-40	-0.63	-0.04	0.00	0.20	-1.15	0.02
MX	-1.5	0.29	0.01	0.11	0.00	-1.05	-0.35
MY	-1.5	-0.04	0.24	0.27	0.53	0.00	0.26
MZ	1.5	-0.08	-0.07	-0.87	0.82	-0.82	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

[DECOUPLED] =

-1.05978	-31.35466	-0.53436	32.45657	-0.47212	-0.10541
-0.52891	-18.04922	0.34302	-18.72594	0.06544	36.29541
-57.86885	-0.12186	-58.08733	-0.96656	-57.56110	0.32078
-0.89704	0.01090	0.91672	0.02401	-0.00390	-0.01142
-0.54940	-0.00612	-0.54836	-0.00303	1.01122	0.00180
0.01868	0.63411	-0.00990	0.62015	0.00413	0.64103

The six axis loads can be decoupled as follows:

Step 1: Obtain the raw data of Channels 1 through 6 into Volt

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

where rawchn1, rawchn2, rawchn3, rawchn4, rawchn5 and rawchn6 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} * 1000 / (EXC * GAIN)

where chn1, chn2, chn3, chn4, chn5 and chn6 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