

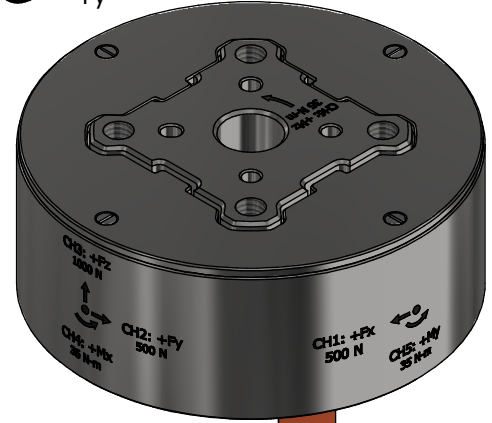
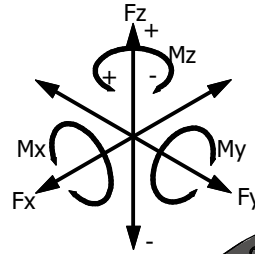
# FUTEK MODEL QMA149

## CUSTOM 6 DEGREE OF FREEDOM SENSOR WITH SPI OUTPUT

ITEM NUMBER: QSH02132

INCH [mm] R.O.= Rated Output

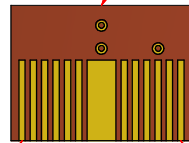
Specifications	ADC1	ADC2	ADC3	ADC4	ADC5	ADC6
Force/Torque	Fx	Fy	Fz	Mx	My	Mz
Full Scale Load	500 N	500 N	1000 N	35 N-m	35 N-m	35 N-m
Safe Overload	2000 N	2000 N	4000 N	140 N-m	140 N-m	140 N-m



### SPECIFICATIONS:

CAPACITY	SEE CHART
SAFE OVERLOAD	SEE CHART
NONLINEARITY	±0.25% of R.O.
HYSTERESIS	±0.25% of R.O.
NONREPEATABILITY	±0.01% of R.O.
COMPENSATED TEMP.	68 to 131 °F (20 to 55 °C)
OPERATING TEMP	24.8 to 185 °F (-4 to 85 °C)
WEIGHT (approx)	0.82 lb [372 g]
MATERIAL	17-4 PH S.S.
CABLE: 15 PIN 0.5mm PITCH FLAT FLEX CABLE, 5.25" [133]	
POWER CONSUMPTION	300mW
Vin	5VDC ±10%
SAMPLING	2.5 - 750 SPS

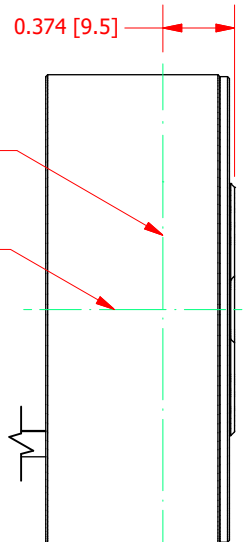
15 POS 0.5mm FLAT FLEX CABLE  
(CONDUCTOR SIDE SHOWN)



Pin 1

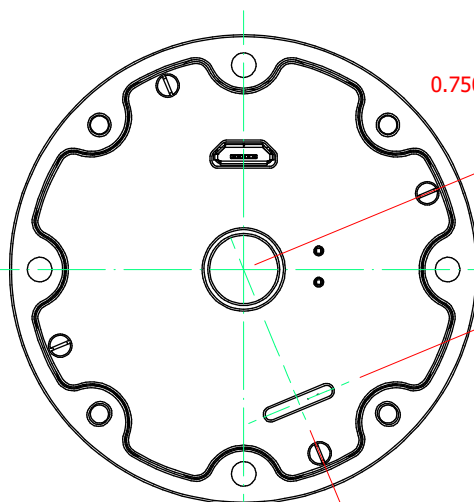
Pin 15

15 POS 0.5mm FLAT FLEX CABLE  
(NON-CONDUCTOR SIDE SHOWN)



XY PLANE

Z-AXIS



0.750 [19.1] FCC OUT

5.25 ± 0.50 [133 ± 13] FFC OUT

### PINOUT

PIN #	PIN FUNCTION
1	TRIGGER
2	SPI.DRDY
3	SPI.CS
4	SPI.SCLK
5	SPI.MOSI
6	SPI.MISO
7	GND
8	GND
9	GND
10	VIN
11	NC
12	NC
13	NC
14	NC
15	NC

CUSTOMER APPROVAL- COMPANY:

CUSTOMER APPROVAL- NAME / DATE:

REVISIONS: (Refer to dwg # revision sheet)

A 9/23/2020

## OUTLINE DRAWING

STANDARD NOTES: (Unless Otherwise Specified)

ALL DIMENSIONS ARE IN INCHES

DRAWING INTERPRETATION DIMS. PER ASME-Y14.5

REMOVE BURRS AND BREAK SHARP EDGES .005 - .015

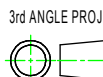
THREADS PER HANDBOOK H-28

DIMENSIONS ARE SHOWN AFTER PLATING

ANGLE:  
± 1/2°

CHAMFER:  
± 5°

TOLERANCE:  
.X ± 0.1"  
.XX ± 0.01"  
.XXX ± 0.005"



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**FUTEK**  
ADVANCED SENSOR TECHNOLOGY, INC.

10 THOMAS, IRVINE, CA 92618 USA

Phone: (949) 465-0900

Fax: (949) 465-0905

MODEL: **QMA149**

DRAWN BY: G. ZINZUN

APPROVED BY: J. PARK

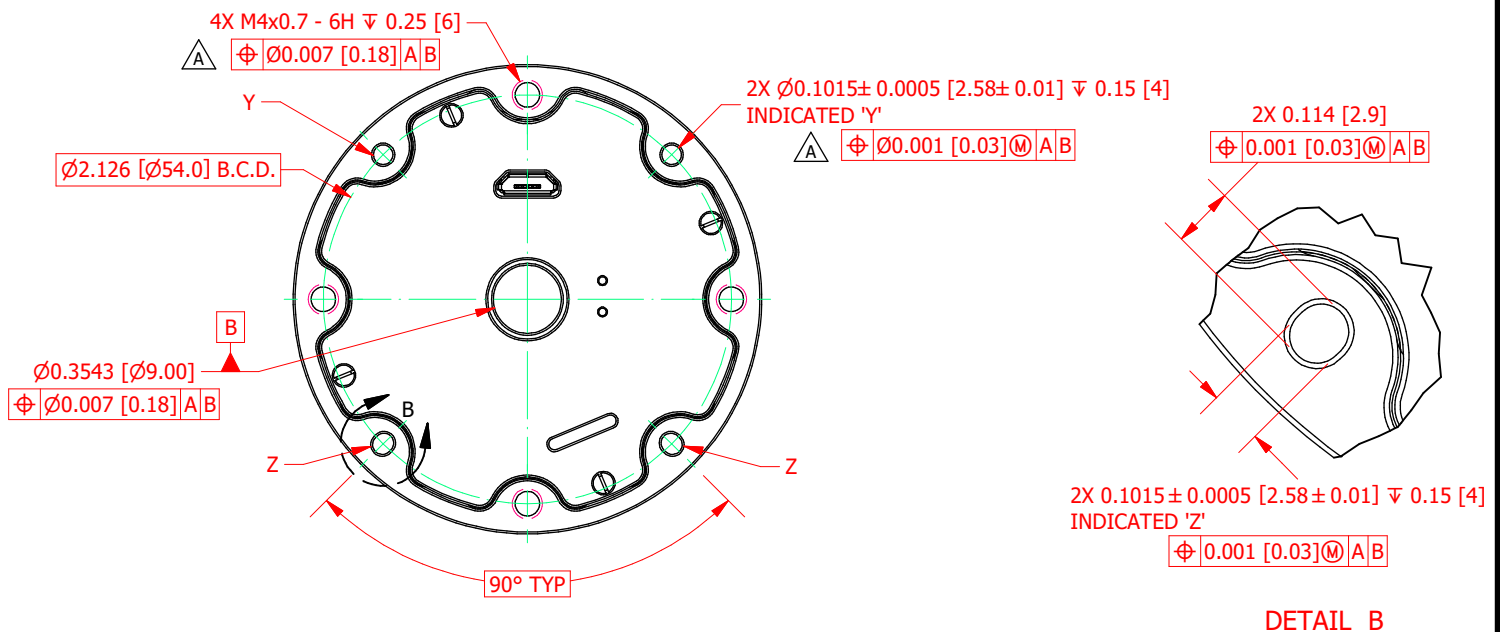
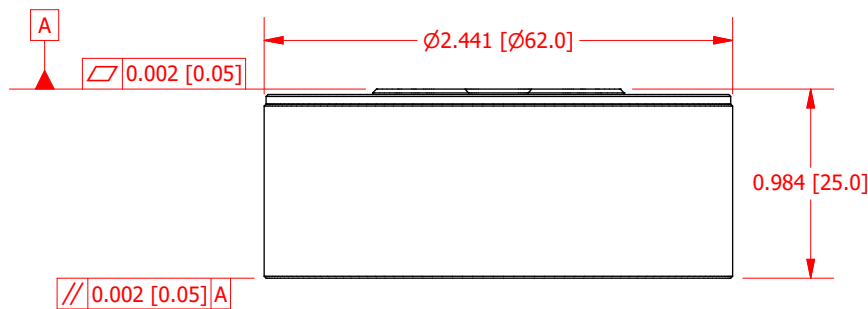
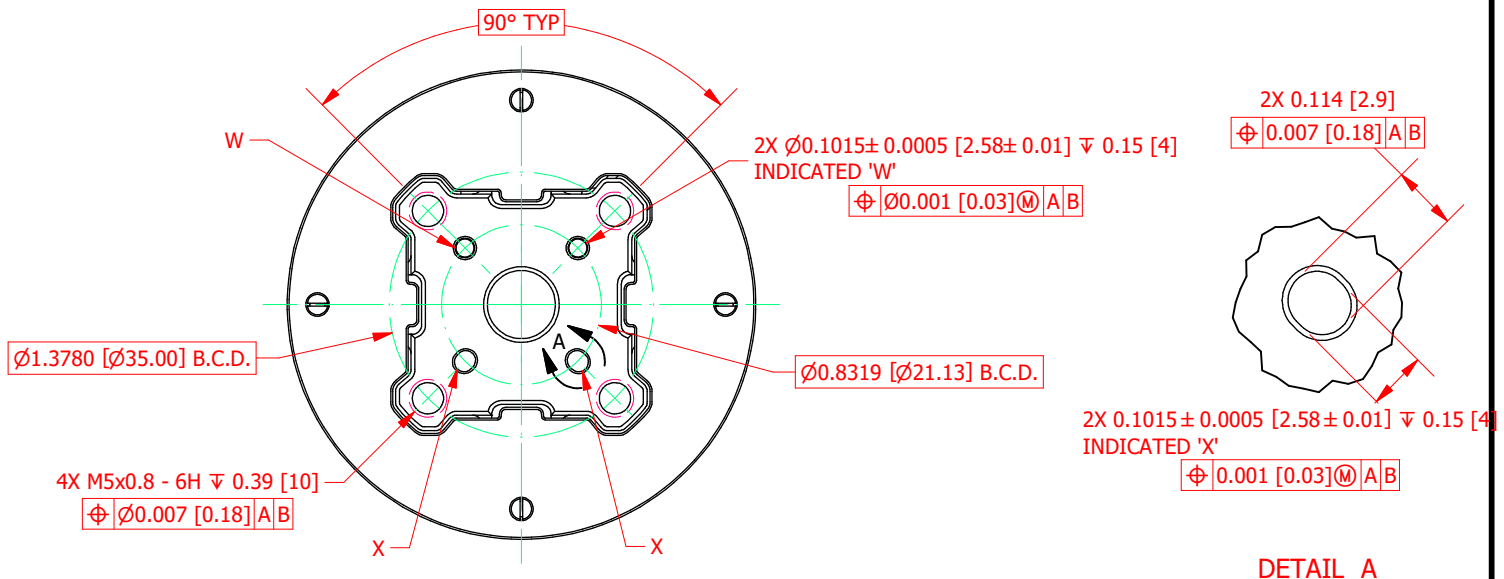
CHECKED BY: F. ALLAHAKBARI

DWG No.: **FO1527-A**

CREATED DATE: 2/26/2020

APPROVED DATE: 3/2/2020

CAGE: 1X8M6 SHEET: 1 OF 3



CUSTOMER APPROVAL- COMPANY:

CUSTOMER APPROVAL- NAME / DATE:

REVISIONS: (Refer to dwg # revision sheet)

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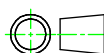
DRAWING INTERPRETATION DIMS. PER ASME-Y14.5

REMOVE BURRS AND BREAK SHARP EDGES .005 - .015

THREADS PER HANDBOOK H-28

DIMENSIONS ARE SHOWN AFTER PLATING

3rd ANGLE PROJ.



ANGLE:  
 $\pm 1/2^\circ$

CHAMFER:  
 $\pm 5^\circ$

TOLERANCE:  
X  $\pm 0.1"$   
XX  $\pm 0.01"$   
XXX  $\pm 0.005"$

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CAGE: 1X8M6 SHEET: 2 OF 3



Command-Set Name	Direction 1	Fx: ADC1	Fy: ADC2	Fz: ADC3	Mx: ADC4	My: ADC5	Mz: ADC6
		Tension (+)			Counter-Clockwise (+)		
	Load Point	Load (N)			Load (N-m)		
GD1CP0	Zero	0		0	0		
GD1CP1	1	99.64		200.16	7.00506		
GD1CP2	2	199.28		400.32	14.01012		
GD1CP3	3	298.92		600.48	21.01518		
GD1CP4	4	398.56		800.64	28.02024		
GD1CP5	5	498.2		1000.8	35.0253		



Command-Set Name	Direction 2	Fx: ADC1	Fy: ADC2	Fz: ADC3	Mx: ADC4	My: ADC5	Mz: ADC6
		Compression (-)			Clockwise (-)		
	Load Point	Load (N)			Load (N-m)		
GD2CP0	Zero	0		0	0		
GD2CP1	1	99.64		200.16	7.00506		
GD2CP2	2	199.28		400.32	14.01012		
GD2CP3	3	298.92		600.48	21.01518		
GD2CP4	4	398.56		800.64	28.02024		
GD2CP5	5	498.2		1000.8	35.0253		

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REVISIONS: (Refer to dwg # revision sheet)

## OUTLINE DRAWING

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DRAWING INTERPRETATION DIMS. PER ASME-Y14.5

REMOVE BURRS AND BREAK SHARP EDGES .005 - .015

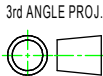
THREADS PER HANDBOOK H-28

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ANGLE:  
± 1/2°

CHAMFER:  
± 5°

TOLERANCE:  
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.XX ± 0.01"  
.XXX ± 0.005"



3rd ANGLE PROJ.

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CAGE: 1X8M6 SHEET: 3 OF 3