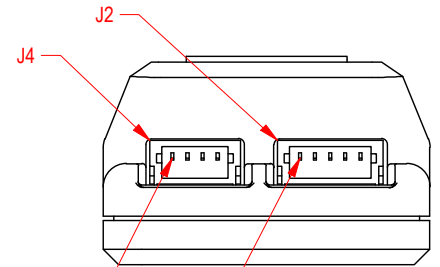
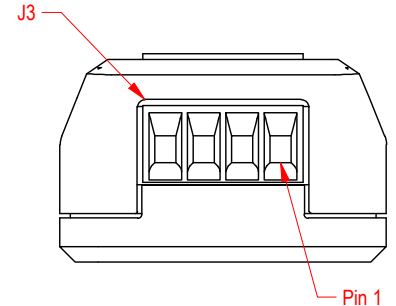
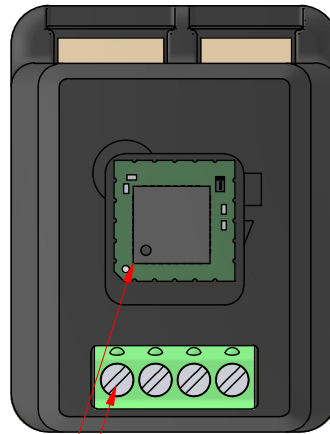
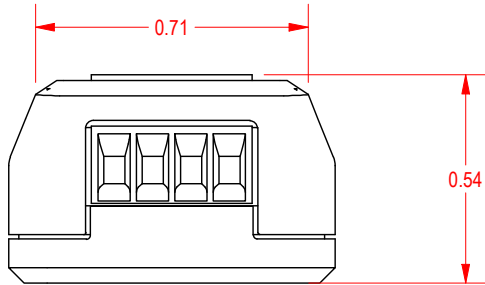
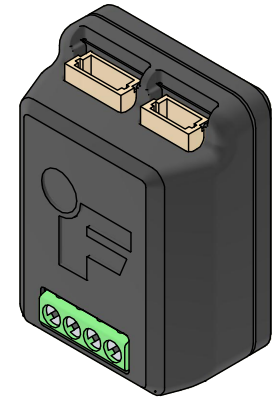
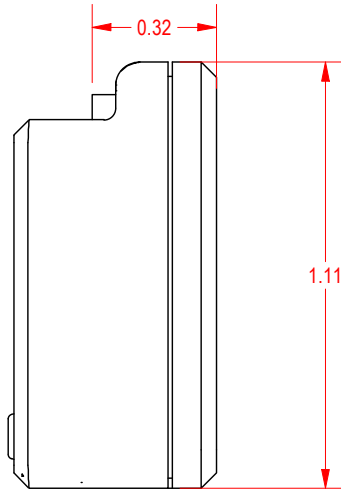
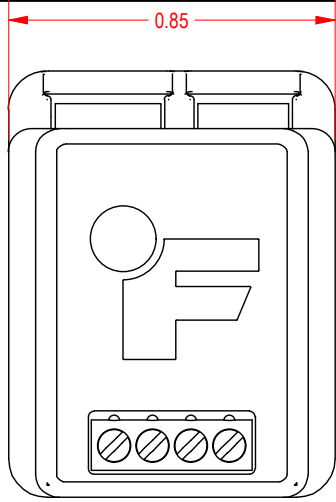


# FUTEK MODEL QIA128

ITEM NUMBER: QSH02350

## Ultra-Low-Power Miniturized Full Bridge mV/V Input to Digital Output

INCH [mm] | R.O.= Rated Output



Embedded QIA128 Electronics

Pin 1

Pin 1

CONNECTOR	MATING CABLE ITEM NUMBER
J4	FSH04801
J2	FSH04802



SENSOR CONNECTOR J3		
PIN	FUNCTION	COLOR
1	+Excitation	RED
2	-Excitation	BLACK
3	+Signal	GREEN
4	-Signal	WHITE

UART CONNECTOR J4	
PIN	FUNCTION
1	Tx
2	Rx
3	GND
4	Vin

SPI CONNECTOR J2	
PIN	FUNCTION
1	DRDY
2	MOSI
3	MISO
4	CK
5	CS

CUSTOMER APPROVAL - COMPANY:

CUSTOMER APPROVAL - NAME / DATE:

REVISION HISTORY:

A	4/1/2024
B	8/26/2024

## OUTLINE DRAWING

UNLESS OTHERWISE SPECIFIED:

- ALL DIMS ARE IN INCHES [mm]
- DIMS IN [ ] ARE FOR REFERENCE ONLY
- R.O. = RATED OUTPUT
- INTERPRET DIMS PER ASME Y14.5-2018
- THREADS TO BE MADE PER ASME B1.1-2003 AND B1.13M-2005
- TAPERED THREADS PER ASME B1.20.1-2013

TOLERANCES:  
XX ± .01  
.XXX ± .005  
XXXX ± .0010

ANGLES:  
± 0.5°  
CHAMFER:  
± 5°

SURFACE:  
63  
OR BETTER

3rd ANGLE PROJ:



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MODEL: QIA128	DWG No: FO1652	REV: B
DRAWN BY: P THAKUR	CREATED: 2/22/2024	APPROVALS: SEE PLM
CHECKED BY:	CAGE: 1X8M6	SHEET: 1 OF 2

# FUTEK MODEL QIA128

ITEM NUMBER: QSH02350

## Ultra-Low-Power Miniturized Full Bridge mV/V Input to Digital Output

INCH [mm] | R.O.= Rated Output



### Noise Free Resolution (See Note 1)

Range (mV/V)	GAIN	4 SPS (Default)	20 SPS	50 SPS	100 SPS	200 SPS	500 SPS	850 SPS	1300 SPS
240-480	1	18.4	17.7	16.7	16.3	15.8	15.2	14.6	14.2
120-240	2	17.1	16.8	15.8	15.3	14.9	14.2	13.9	13.3
60-120	4	16.9	16.7	16.5	16.3	16.0	15.0	14.9	14.1
30-60	8	16.8	16.4	16.3	16.1	15.6	15.1	14.8	13.8
15-30	16	16.7	16.3	16.2	16.0	15.5	15.2	14.7	13.7
7.5-15	32	16.6	16.2	16.1	15.9	14.9	14.7	14.6	13.5
3.7-7.5	64	16.5	16.1	16.0	15.8	15.7	15.2	14.5	13.4
1.8-3.7	128 (Default)	16.1	15.6	15.5	15.1	14.7	14.0	13.8	13.2
0.9-1.8	256	15.1	14.7	14.1	13.5	13.3	13.1	12.6	12.2
0-0.9	512	14.0	13.6	13.5	13.1	12.8	12.1	11.8	11.4

### Features:

#### Specifications:

##### Input:

- Type: Differential
- Excitation: 2.5 VDC
- Bridge Resistance: 350 Ω (Min)
- Input Range: Up to 480 mV/V

##### Digital Output:

- Noise Free Resolution: 11.4 - 18.4 Bits (See Table)
- Sampling Rate: 4 - 1300 SPS
- Non-linearity: 0.01 % of R.O. (See Note 3)

##### Calibration:

- Number of Profiles: 1
- Stored Calibration Points: 23

##### Power:

- 3 VDC to 5 VDC
  - 20-40mV peak-to-peak ripple in passband
  - 20MHz bandwidth (cutoff 40dB @ 20MHz)
- Power Consumption: 45 mW (Max)
- Inrush Current: 180 mA (Max)

##### Environmental:

- Temperature Coefficient: 10 ppm/°C
- Operating Temperature: -13°F to 185°F (-25°C to 85°C)
- RoHS Compliant (2011/65/EU)

- On-board Temperature Measurement
- Selectable Gain Settings
- Onboard ESD Protection
- Ultra Low Power (45 mW)
- Controllable through Commands via UART and SPI with Implemented Error Detection Algorithms
  - Custom Checksum - Refer to UART Communication Guide
  - Cyclic Redundancy Check (CRC8) - Refer to QIA128 SPI Communication Guide

### SPI Communication

Serial Word Length (Bit)	8
SPI Mode	Mode 0 (CPOL = 0, CPHA = 0)
SCLK Frequency	1 MHz - 2 MHz
Operating Mode	Slave
Operating Voltage	1.8 VDC (Compatible with 3.3 VDC)
Max Cable Length	20 cm (See Note 2)



### UART Communication

Data (Bit)	8
Baud Rate (bps)	320,000
Parity	None
Stop (Bit)	1
Flow Control	None
Format	Data, Unit, LF
Operating Voltage	2.5 VDC (Compatible with 3.3 VDC)
Max Cable Length	6 m (See Note 2)



Note 1: Noise Free Resolution is calculated using upper limit of 'Range(mV/V)' or 'maximum dynamic range'

Note 2: Cable length parameters are only valid if the cables are shielded and properly terminated, and may not be valid in the presence of strong magnetic fields.

Note 3: Non-linearity calculated at R.O. of 2 mV/V and gain of 128

CUSTOMER APPROVAL - COMPANY:

## OUTLINE DRAWING

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MODEL: QIA128	DWG No: FO1652	REV: B
DRAWN BY: P THAKUR	CREATED: 2/22/2024	APPROVALS: SEE PLM
CHECKED BY:	CAGE: 1X8M6	SHEET: 2 OF 2

REVISION HISTORY:	
A	4/1/2024
B	8/26/2024