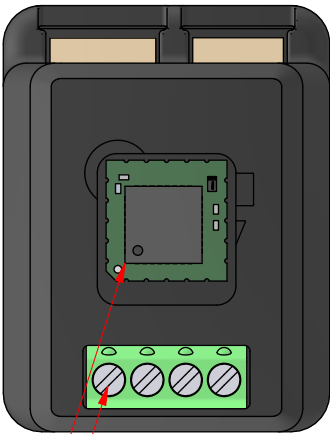
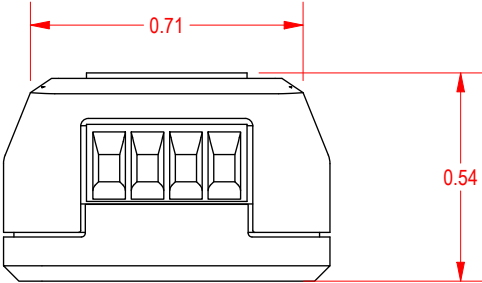
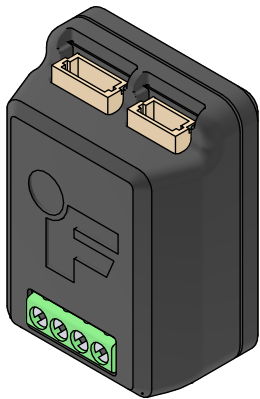
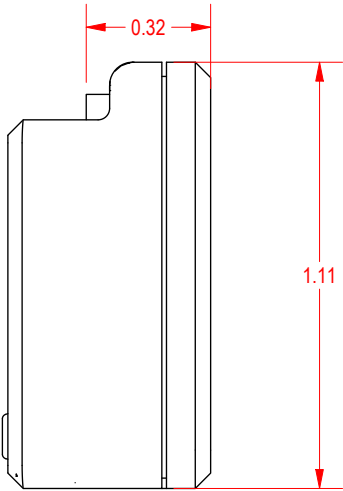
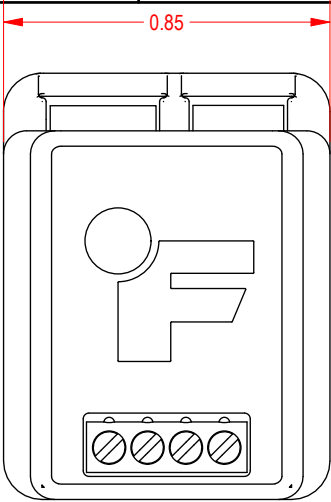


FUTEK MODEL QIA128

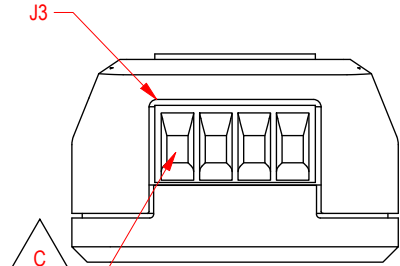
ITEM NUMBER: QSH02350

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

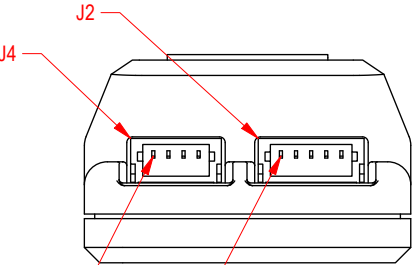
INCH [mm] R.O.= Rated Output



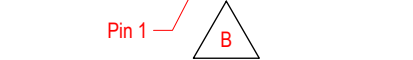
Embedded QIA128 Electronics



Pin 1



Pin 1



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:

|   |           |
|---|-----------|
| B | 8/26/2024 |
| C | 2/3/2025  |

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

SURFACE:  
63  
OR BETTER

ANGLES:  
± 0.5°  
CHAMFER:  
± 5°



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|                    |                    |                    |
|--------------------|--------------------|--------------------|
| MODEL: QIA128      | DWG No: FO1652     | REV: C             |
| 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

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

A

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

CUSTOMER APPROVAL - NAME / DATE:

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TOLERANCES:

ANGLES:

SURFACE:

OR BETTER

ANGLES:

CHAMFER:

3rd ANGLE PROJ:

www.futek.com

MODEL: QIA128

DWG No: FO1652

REV: C

DRWN BY: P THAKUR

CREATED: 2/22/2024

APPROVALS: SEE PLM

CHECKED BY:

CAGE: 1X8M6

SHEET: 2 OF 2

TEMPLATE: DF1072

GENERATED: 08/29/24 08:17

PLM VER: 4