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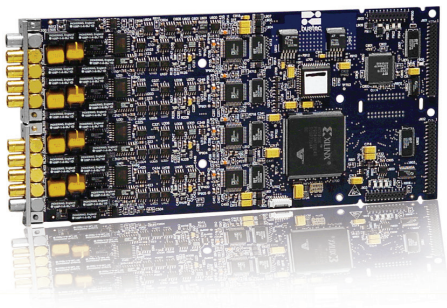
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bustec
WHEN ACCURACY MATTERS

# ProDAQ Data Acquisition Function Cards

## ProDAQ 3430 4-Channel, Sigma-Delta ADC Function Card



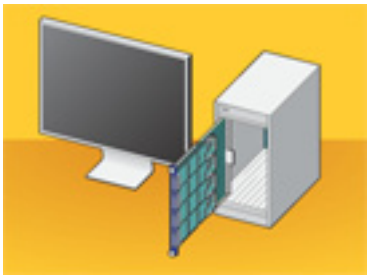
## OVERVIEW

The ProDAQ 3430 is a 4-channel, sigma-delta ADC function card. Every channel contains front-end conditioning circuitry followed by a sigma-delta ADC. The bit stream from every ADC is then directed to finite impulse response (FIR) decimation filters. Users can activate up to 10 stages of the FIR filters. The filtered data from the selected stages is then stored in the FIFO. The data from the FIFO easily can be moved on-the-fly to the motherboard or to the host.

Users can configure the ProDAQ 3430 to work independently or synchronize with other ProDAQ 3430 function cards. The multi-board synchronization requires that the same sampling clock and sync signals are distributed to all ProDAQ 3430 function cards.

The ProDAQ 3430 function card consumes two adjacent function card slots within a motherboard. Up to four ProDAQ 3430s can be fitted onto a motherboard offering up to 16 channels per VXI slot. The vacant slots on a motherboard can be populated with other function cards from the ProDAQ range.

All **ProDAQ function cards** can be used in both ProDAQ VXIbus motherboards and LXI function card carriers, providing users with the highest channel density and functionality available today.



**VXI** carrier fits up to 4 **ProDAQ 3430** function cards. The function cards are fitted to the motherboard module (ProDAQ 3180) which is plugged into the appropriate slot of the VXI carrier.



**LXI** carrier fits up to 4 **ProDAQ 3430** function cards. The function cards are plugged directly into the LXI carrier. A connection is made with the host PC or network by gigabit Ethernet using standard network cables.

## Features & Benefits

- **4 simultaneous** analog inputs
- **16-bit resolution**
- Up to **1 MS/s/ch**
- **Differential or single-ended** input
- 8-times **oversampling**
- **FIR** decimation
- **16 kS or 32 kS FIFO**
- **Synchronization** of multiple ProDAQ 3430 function cards
- **Programmable gain**
- **Offset correction**

For more information, visit **www.bustec.com**.

Learn more about the **ProDAQ 3430** on our website by scanning the code below.

# SPECIFICATIONS

## SAMPLING

| | |
|---|---|
| Resolution | 16-bit |
| ADC Type | Sigma-delta (individual ADC per channel) |
| Effective Sample Rates (with internal generator) | 625 kHz (model number 3430-Ax)<br>1 MHz (model number 3430-Bx) |
| Oversampling | 8-times |
| Sampling Clock | Internal (onboard generator) or external through front-panel connector or VXI backplane |
| FIR stages | 10 |
| Output Rates | Model number 3430-Ax:<br>625.00, 312.50, 156.25, 78.13, 39.06, 19.53, 9.77, 4.88, 2.44, 1.22 and 0.61 kHz<br>Model number 3430-Bx:<br>1000.00, 500.00, 250.00, 125.00, 62.50, 31.25, 15.63, 7.81, 3.91, 1.95 and 0.98 kHz |
| FIFO | 16 or 32 kSample |

## INPUT CHARACTERISTICS

| | |
|---|---|
| Number of Channels | 4, Simultaneous Sampling |
| Input Type | Differential or Single-ended |
| Coupling | DC or AC |
| Input Signal Ranges | 3430-xA: ±10.00V, ±5.00V, ±2.00V, ±1.00V, ±0.50V, ±0.20V, ±0.10V<br>3430-xB: ±10.00V, ±5.00V, ±2.00V, ±1.00V, ±0.10V, ±0.05V, ±0.02V, ±0.01V |
| Offset Range | ±5 V, 10-bit resolution (single-ended input only) |
| Analog Bandwidth | 280 kHz (model number 3430-Ax)<br>450 kHz (model number 3430-Bx) |
| Analog Input Filter | Type 6-pole Bessel<br>-3 dB @ 312.5 kHz (model number 3430-Ax)<br>-3 dB @ 500.0 kHz (model number 3430-Bx) |
| Input Impedance | 50Ω or 1 MΩ for both DC and AC coupling |
| AC Coupling | 4.7 µF/ 50 V in series with input signal |
| Max. Input Voltage | ±10 V DC @ 50 Ω termination<br>±35 V DC @ 1 MΩ termination |
| DC Accuracy | < 3% FSR @ gain = 1..10 (uncalibrated)<br>typical 3% FSR @ gain = 1000<br>< 0.01% FSR (calibrated) |
| Amplitude Accuracy | ±0.35% of reading (at 1kHz) |
| Flatness (rel. to 1kHz at half scale) | 50 Hz...10 kHz: <0.05%<br>10 kHz...50 kHz: < 1% |
| Cross Channel | 50 Hz...1kHz: <0.05° |
| Phase Match | 1kHz...20 kHz: <0.5°<br>20 kHz...100 kHz: <1° |
| Frequency Accuracy | better than $1x10^{-6}$ |
| Total Harmonic Distortion (THD) | -90 dBc typical, < -78 dBc |
| Spurious-free Dynamic Range (SFDR) | <-84 dBc |
| Noise Floor | <2 LSB |
| Crosstalk | <-84 dBc @ 10 kHz |

## FRONT PANEL I/O

| | |
|---|---|
| External Clock | frequency range: max. 5 MHz (model number 3430-Ax)<br>frequency range: max. 8 MHz (model number 3430-Bx)<br>duty cycle: 45% to 55%<br>threshold: -2 V to +3.5 V |
| Sync Input/ Trigger Input | threshold: -2 V to +3.5 V, programmable<br>termination: 50Ω to GND, none (external clock)<br>min. pulse: 400 ns (sync) 100 ns (trigger)<br>active level: high (sync) programmable (trigger) |
| Connectors (LEMO type) | Analog Inputs: ELP.00.250.DTN (gold plated)<br>Digital I/Os: ELP.00.250.NTN (nickel plated) |

## Ordering Information

- **3430-AA** 4 ch. sigma-delta ADC 625 kS, gain 1-100
- **3430-AB** 4 ch. sigma-delta ADC 625 kS, gain 1-1000
- **3430-BA** 4 ch. sigma-delta ADC 1 MS, gain 1-100
- **3430-BB** 4 ch. sigma-delta ADC 1 MS, gain 1-1000

### Accessories

- **8020-CA** Cable, Lemo-Lemo, 2M, Booted
- **8020-BS** Lemo socket to 50 Ohm BNC (8020-CA to BNC lead)
- **8020-BP** Lemo plug to 50 Ohm BNC (8020-CA to scope input)

### Related Products

- **6100-xx** LXI function card carrier
- **3180-AA** Ultra-performance motherboard module

## Contact Bustec

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# SPECIFICATIONS (CONT.)

## PHYSICAL CHARACTERISTICS

| | |
|---|---|
| Dimensions | 235 x 106 mm |
| Weight | < 195 g |

## POWER REQUIREMENTS

Current Consumption

| Voltage (V) | Current (mA) |
|---|---|
| +15 | 70 |
| -15 | 60 |
| +12 | 8 |
| -12 | 1 |
| +5 | 720 |
| -5.2 | 35 |
| -2 | 9 |

(note: ±15V are derived from ±24V by a regulator on the motherboard)

| | |
|---|---|
| Power Consumption | < 6 W |

## ENVIRONMENTAL

| | |
|---|---|
| Temperature | 0°C to +50°C (operational)<br>-40°C to +70°C (storage only) |
| Humidity | 10% - 90% (non-condensing) |

## SOFTWARE SUPPORT

Driver support for Microsoft Windows, VxWorks, and Linux
(Contact Bustec Ltd. for more information)

## WARRANTY PERIOD

12 months (extended periods available at additional cost)

## Ordering Information

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