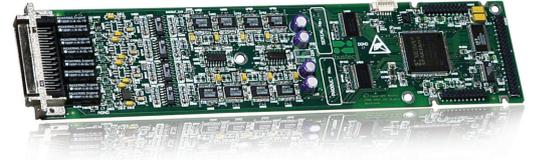


ProDAQ Data Acquisition Function Cards

ProDAQ 3951 2-Channel Filter/Synchronization Function Card



OVERVIEW

The ProDAQ 3951 filter/synchronization function card is a high-density card that fits into ProDAQ VXIbus motherboards and LXI function card carriers. The ProDAQ 3951 function card is a 2-channel analog filter card. It provides a set of 8-order analog filters for applications that need higher filter capabilities than those already implemented on the ProDAQ analog-to-digital converter (ADC) and digital-to-analog converter (DAC) function cards.

Each of the two analog channels contains a number of 8-order, low-pass filter stages, providing 23 different filter settings in the range of 100 Hz to 150 kHz. Fifteen of these settings are fixed, covering a range of 10-150 kHz in 10 kHz steps, while the other eight are version dependent and customizable to cover ranges between 100 Hz and 10 kHz. The sixteenth setting leaves the filter fully powered, but sets the gain to zero, providing an attenuation typical of 100 dB (MUTE).

The built-in gain stage allows for gains of 2, 1, 0.1, and 0.01, and is suited to improve the resolution of a DAC signal filtered through this card.

The synchronization circuitry allows users to generate sample clocks with a high resolution and precision for older ProDAQ function cards. The clock is synchronized to the common clock used to synchronize function cards for example, the ProDAQ 3424 8-channel, 24-bit, sigma-delta ADC function card and the ProDAQ 3808 8-channel, 100 MHz counter/timer/frequency meter function card.

Features & Benefits

- ▶ **2 channels with 8-pole, low-pass filter**
- ▶ **23 filter settings plus mute** per channel
- ▶ **±10 V signal input range**
- ▶ **±20 V, ±10 V, ±0.1 V, and ±0.01 V output range**
- ▶ **PLL/DDS synchronization unit**
- ▶ **23 different filter settings** in the range **100 Hz to 150 kHz**
- ▶ Built-in **gain stage improves resolution** of DAC signal
- ▶ **Synchronization circuitry**
- ▶ Ideal for **shaker-table applications**, together with the **ProDAQ 3550**

For more information, visit www.bustec.com.

Learn more about the **ProDAQ 3951** on our website by scanning the code below.



SPECIFICATIONS

INPUT/ OUTPUT CHARACTERISTICS

Number of Channels	2
Input Range	±10 V
Input Type	Single-ended
Gain Settings	2, 1, 0.1, 0.01
Output Ranges	±20 V, ±10 V, ±1 V and ±0.1 V
Output Resistance	< 150 mΩ
Output Current	± 10 mA max.

FILTER RANGE

0.1 - 9 kHz

10 - 150 kHz

Filter Type	8-pole low-pass Butterworth	8-pole low-pass Elliptic
Cut-off Frequencies	8 different settings in the range 0.1 - 9 kHz. Versions available: -AA: 500 Hz, 750 Hz, 1kHz, 2kHz, 3kHz, 5kHz, 7kHz and 9kHz Other filter settings available on request.	16 settings in steps of 10 kHz
Offset Error	< ±500 μV	< ±500 μV
DC Gain Error	0.3 % @ Gain 2 0.3 % @ Gain 1 0.11 % @ Gain 0.1 0.013 % @ Gain 0.01	1.4 % @ Gain 2 0.85 % @ Gain 1 0.11 % @ Gain 0.1 0.013 % @ Gain 0.01
Effective Resolution	18.1 bits (10 Hz to 24.5 kHz bandwidth)	17.3 bits (10 Hz to 24.5 kHz bandwidth)
Stopband Attenuation	> 48 dB (Gain 1, 2 f_c) > 85 dB (Gain 1, 5 f_c)	> 62 dB (Gain 1, 2 f_c) > 80 dB (Gain 1, 5 f_c)
Signal, Noise And Distortion (SINAD)	> 74 dB @ 0.8 f_c , Gain 1, 18.4 V_{pp}	> 60 dB @ 0.8 f_c , Gain 1, 18.4 V_{pp}
Total Harmonic Distortion (THD)	< 0.02 % @ 0.8 f_c , Gain 1, 18.4 V_{pp}	< 0.1 % @ 0.8 f_c , Gain 1, 18.4 V_{pp}
Signal-to-Noise Ratio	> 87 dB @ 0.8 f_c , Gain 1, 18.4 V_{pp}	> 74 dB @ 0.8 f_c , Gain 1, 18.4 V_{pp}

FRONT PANEL I/O

Synchronization	Sync input from motherboard; output to front-panel connector	
Connectors (LEMO type)	Analog I/O:	ELP.00.250.DTN (gold plated)
	Clock Output:	ELP.00.250.NTN (nickel plated)
FP Clock Output Level	ECL/TTL, software selectable	
FP Clock Output Range	12.5MHz to 25MHz with programmable division ratio of up to 4096	

PHYSICAL CHARACTERISTICS

Dimensions	235 mm x 106 mm
Weight	160 g

POWER REQUIREMENTS

Current Consumption	Voltage (V)	Current (mA)
	TBD	TBD
Power Consumption	6.6 W (without output load)	

ENVIRONMENTAL

Temperature	0°C to +50°C (operational) -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

- ▶ **3951-AA** 2-ch filter/synchronization function card

Related Products

- ▶ **6100-xx** LXI function card carrier
- ▶ **3180-AA** Ultra-performance motherboard module
- ▶ **3550-XX** 2-ch, fast DAC arbitrary waveform generator

Contact Bustec

▶ Europe

Bustec Ltd.
Bustec House
Shannon, Co. Clare
Ireland

T +353 61 707 100

F +353 61 707 106

E sales@bustec.com

▶ North America

Bustec, Inc.
1507 East Valley Parkway
Suite 3-412
Escondido, CA 92027
U.S.A.

T 909. 797.0484

F 760. 751.1284

E sales@bustec.com