





## 32 Channel CPCI Board

## User Manual

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| <b>Sections</b>                               | <b>Page</b> |
|---|-------------|
| 1.0 Introduction                              | 1           |
| 2.0 Unpacking and Inspection                  | 1           |
| 3.0 Hardware Configuration                    | 1           |
| 4.0 Board Installation                        | 5           |
| 5.0 I/O Connections and the Front Panel       | 5           |
| 5.1 Front Panel Layout                        | 5           |
| 5.2 Input and Output Connector Configurations | 7           |
| 6.0 Troubleshooting and Technical Support     | 8           |
| 7.0 Warranty Information                      | 8           |
| 8.0 Repair                                    | 9           |
| <br><b>APPENDICES</b>                         |             |
| A. CPCI32FF Specifications                    | 10          |
| <br><b>Figures</b>                            |             |
| 1. CPCI32FF Top View                          | 3           |
| 2. Jumper Configuration                       | 4           |
| 3. Block Diagram of a Typical Channel         | 4           |
| 4. Front Panel                                | 6           |

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## User Manual

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### 1.0 - Introduction

Each CPCI32FF provides 32-channels of fixed gain and fixed frequency filtering on a 6U, CompactPCI (CPCI) compatible board. Each CPCI32FF has optional single or differential inputs (DC coupled); and single or differential outputs (DC coupled). Frequency Devices provides a one (1) year product warranty from date of shipment for each card. See **Appendix A** for product performance specifications.

### 2.0 - Unpacking and Inspection

Carefully inspect the exterior of the package for evidence of damage. After noting areas of possible shipping damage, open and unpack the shipping container, being careful to preserve the container and packing materials in case they are needed later.

#### CAUTION

**CPCI32FF's ARE SENSITIVE TO STATIC ELECTRICITY.  
USE PROPER GROUNDING TECHNIQUES WHEN HANDING THE BOARD.**

Carefully remove the CPCI32FF from its anti-static bag and visually inspect the card for evidence of damage. If the board appears to be damaged in any way, notify the shipping carrier.

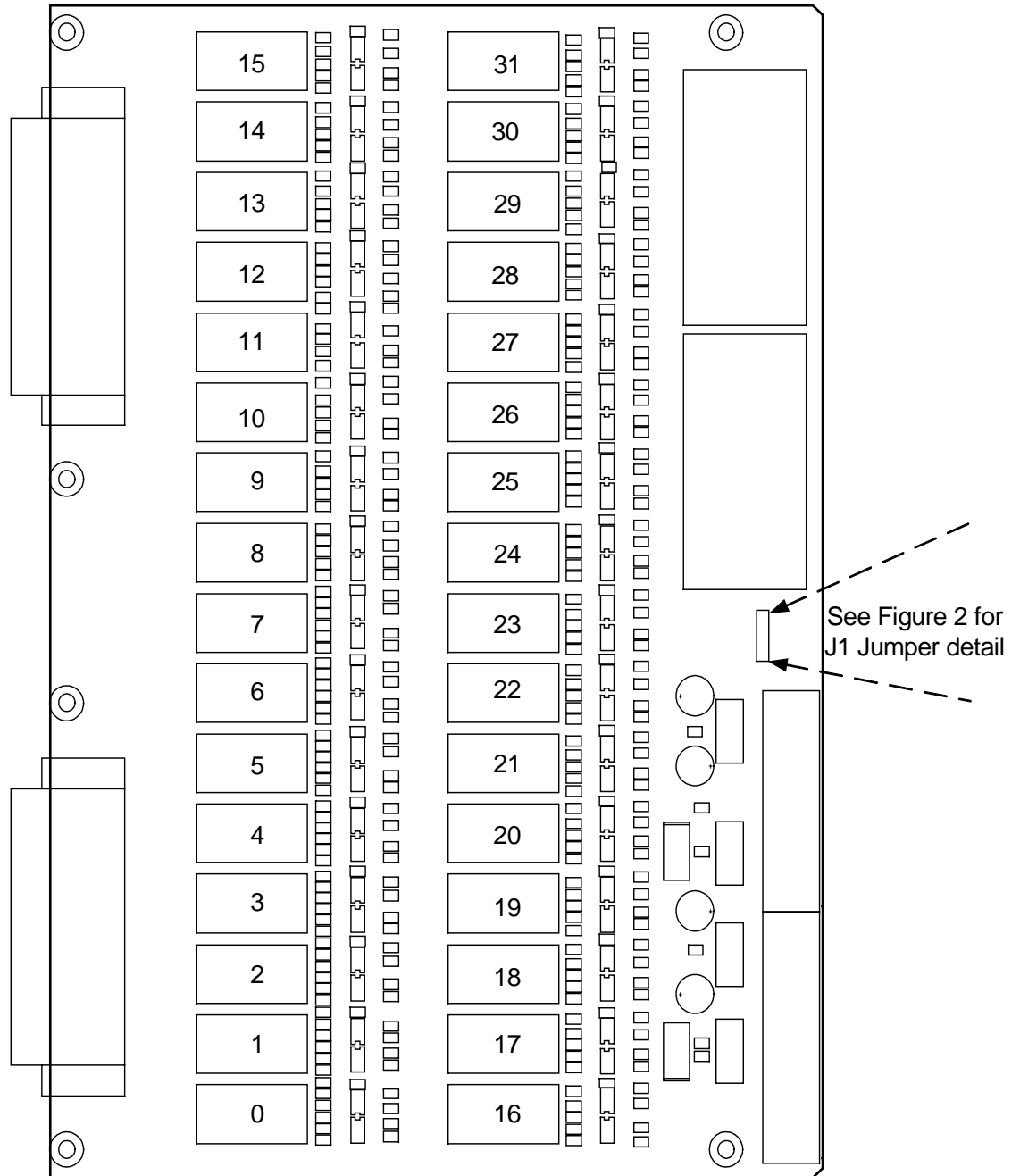
### 3.0 - Hardware Configuration

Once the CPCI32FF has been removed from its anti-static bag and inspected for damage, you are ready to configure the board.

#### CAUTION

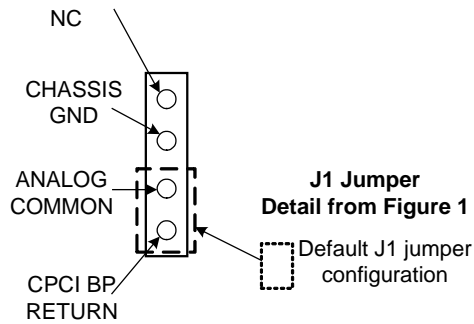
**CPCI32FF's ARE SENSITIVE TO STATIC ELECTRICITY.  
USE PROPER GROUNDING TECHNIQUES WHEN HANDING THE BOARD.**

Lay the CPCI32FF on a static protected flat surface as shown in **Figure 1**.



**Figure 1**  
**CPC132FF Top View**

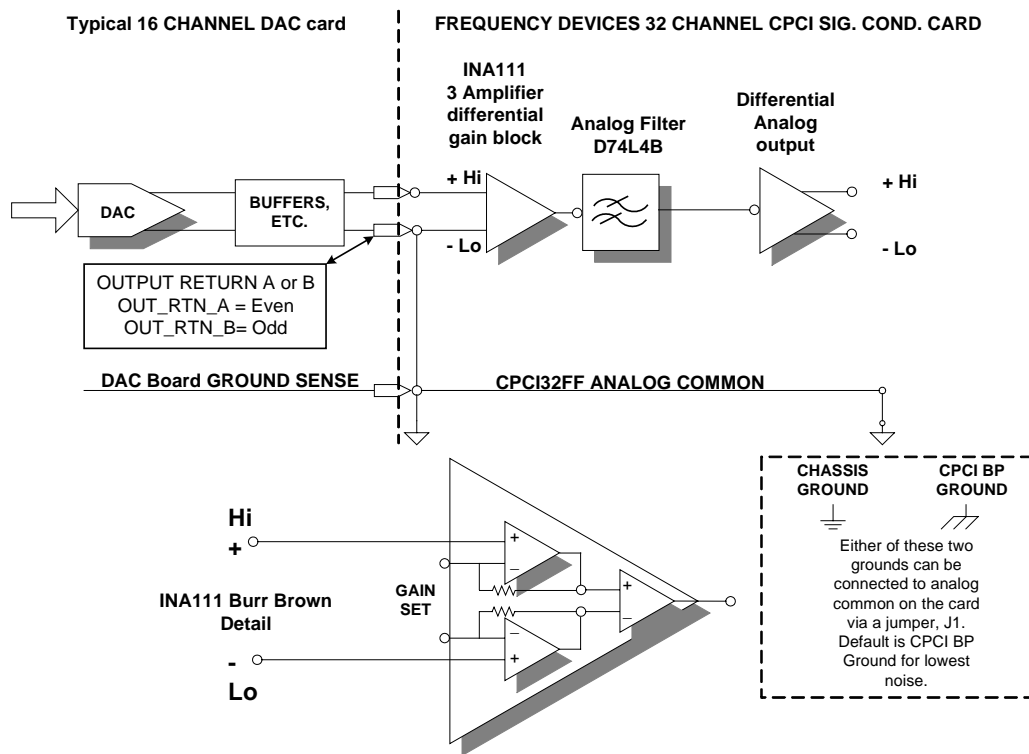
The only user configuration on the CPC132FF is **Jumper J1 (Figure 2)**, to select the ground reference to the analog circuitry. Jumper J1 allows the analog common of the channel path to float, be referenced to the front panel chassis ground, or be connected to the CPCI back plane power supply return. The best noise performance is obtained by jumpering the Analog Common with the CPCI back plane return.



**Figure 2**  
**J1 Jumper Configuration**

After the J1 jumper has been configured, the CPC132FF is ready for installation in a CPCI system.

**Figure 3** identifies a typical channel for single ended input and differential output configuration.



**Figure 3**  
**Block Diagram of a Typical Channel**

#### 4.0 - Board Installation

##### **CAUTION**

**CPCI32FF's ARE SENSITIVE TO STATIC ELECTRICITY. USE PROPER GROUNDING TECHNIQUES WHEN HANDLING THE BOARD.**

Frequency Devices' Model CPCI32FF mechanically conforms to the single width 6U CPCI form factor.

The CPCI32FF may be installed in any available CPCI slot except Slot 0. The board does not use CPCI interrupts or bus mastering capabilities.

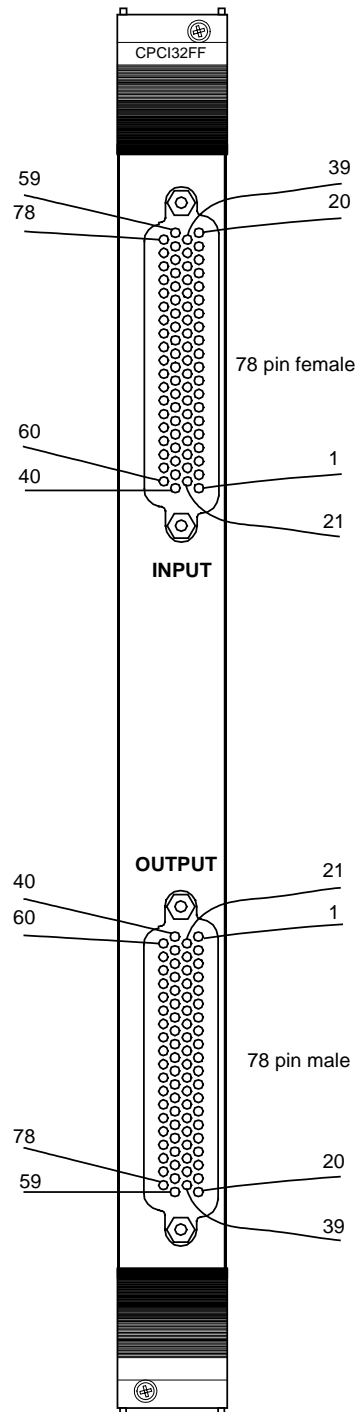
A major consideration when selecting a slot location for the CPCI32FF will be the EMI and I/O signal cabling. To minimize interference from other boards in the system, it is good practice to keep one or more empty slots between analog signal conditioning boards and high-speed digital boards. When cabling the system, it is desirable to keep the analog signal cable as short as possible and physically located away from high speed digital cables and high voltage switching lines.

#### 5.0 - I/O Connections and the Front Panel

The following information is provided to assist the user when installing a CPCI32FF into a CPCI system.

##### **5.1 - Front Panel Layout**

The following sections provide detailed information about connectors, pin-out, and cabling. There are no front panel indicators or controls on the CPCI32FF. **Figure 4** shows the layout of the front panel.



**Figure 4**  
**CPC132FF Front Panel**



## 32 Channel CPCI Board

## User Manual

### 5.2. - Input and Output Connector Configurations

The input connector on the board is a female 78 pin high-density D-sub connector. The output connector is a male 78 pin high-density D-sub connector. **Input and output connectors have the same pin out.** Known suppliers for a mating connector are Edac of Canada (633, 634 series), Positronic (ODD series), and AMP. An exact mating connector cannot be recommended because of the large variety of usable connector configuration details such as hoods, cable exit options, etc.

The pins identified **Low** on the input and output connectors, are tied to the analog common when the single ended input or output option is selected.

| CH #            | PIN# | CH #            | PIN# |
|-----------------|------|-----------------|------|
| Channel 0 High  | 69   | Channel 16 High | 61   |
| Channel 0 Low   | 70   | Channel 16 Low  | 62   |
| Channel 1 High  | 50   | Channel 17 High | 42   |
| Channel 1 Low   | 51   | Channel 17 Low  | 43   |
| Channel 2 High  | 31   | Channel 18 High | 23   |
| Channel 2 Low   | 32   | Channel 18 Low  | 24   |
| Channel 3 High  | 11   | Channel 19 High | 3    |
| Channel 3 Low   | 12   | Channel 19 Low  | 4    |
| Channel 4 High  | 71   | Channel 20 High | 63   |
| Channel 4 Low   | 72   | Channel 20 Low  | 64   |
| Channel 5 High  | 52   | Channel 21 High | 44   |
| Channel 5 Low   | 53   | Channel 21 Low  | 45   |
| Channel 6 High  | 33   | Channel 22 High | 25   |
| Channel 6 Low   | 34   | Channel 22 Low  | 26   |
| Channel 7 High  | 13   | Channel 23 High | 5    |
| Channel 7 Low   | 14   | Channel 23 Low  | 6    |
| Channel 8 High  | 73   | Channel 24 High | 65   |
| Channel 8 Low   | 74   | Channel 24 Low  | 66   |
| Channel 9 High  | 54   | Channel 25 High | 46   |
| Channel 9 Low   | 55   | Channel 25 Low  | 47   |
| Channel 10 High | 35   | Channel 26 High | 27   |
| Channel 10 Low  | 36   | Channel 26 Low  | 28   |
| Channel 11 High | 15   | Channel 27 High | 7    |
| Channel 11 Low  | 16   | Channel 27 Low  | 8    |
| Channel 12 High | 75   | Channel 28 High | 67   |
| Channel 12 Low  | 76   | Channel 28 Low  | 68   |
| Channel 13 High | 56   | Channel 29 High | 48   |
| Channel 13 Low  | 57   | Channel 29 Low  | 49   |
| Channel 14 High | 37   | Channel 30 High | 29   |
| Channel 14 Low  | 38   | Channel 30 Low  | 30   |
| Channel 15 High | 17   | Channel 31 High | 9    |
| Channel 15 Low  | 18   | Channel 31 Low  | 10   |

Pins always available for shielding: 1, 2, 19, 20, 21, 22, 39, 40, 41, 58, 59, 60, 77 & 78.



## 32 Channel CPCI Board

## User Manual

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### 6.0 - Troubleshooting and Technical Support

If you have difficulty installing the CPCI32FF, or if the board fails to operate properly, contact Frequency Devices for technical assistance. Technical assistance is available weekdays 8:00 AM to 5:00 PM Eastern time at:

Email: [tech@freqdev.com](mailto:tech@freqdev.com)  
Telephone: 1-978-374-0761 or at 1-800-252-7074 (US only)  
Fax: 1-978-521-1839.

If you would like to contact Frequency Devices in writing, our mailing address is:

Attn: Customer Service  
25 Locust Street  
Haverhill, MA 01830-5617

### 7.0 – Warranty Information

The CPCI32FF is warranted against defects in material and workmanship for a period of one (1) year from the date of shipment. During the warranty period, Frequency Devices, Inc. will, at its option, repair or replace products that prove to be defective.

For warranty service or repair:

- Customer must provide a detailed description of the problem.
- Obtain a Return Authorization (RA) number from the factory.
- Properly package and return the product to Frequency Devices.

#### Limited Warranty

This warranty shall not apply to defects that are the result of improper use, unauthorized modification or repair, or improper installation or maintenance.

No other warranty is expressed or implied. Frequency Devices, Inc. specifically disclaims the implied warranties of merchantability and fitness for a particular purpose.

The remedies provided herein are the Buyer's sole and exclusive remedies. Frequency Devices, Inc. shall not be liable for any direct, indirect, special, incidental, or consequential damages, whether based on contract, tort, or any other legal history.

#### Certification

Frequency Devices, Inc. certifies that this product met its published specification at the time of shipment from our factory. Frequency Devices, Inc. further certifies that its calibration measurements are traceable to the United States National Bureau of Standards, to the extent allowed by the bureau's calibration facility.



### **8.0 - Repair**

Frequency Devices, Inc. maintains a repair facility at its factory in Haverhill, Massachusetts that is available for both in-warranty and non-warranty repairs. We suggest that you contact Frequency Devices at [sales@freqdev.com](mailto:sales@freqdev.com) for a Return Authorization (RA) number before taking steps to return equipment for repair.

#### **Return Authorization**

All products being returned to Frequency Devices, Inc. must have a Return Authorization (RA) number. You may obtain an RA number by calling Frequency Devices, Inc. at Tel.: 978/374-0761 or emailing [sales@freqdev.com](mailto:sales@freqdev.com) before returning the product.

The RA number should be clearly displayed on the outside of the package being returned and should be placed on all correspondence concerning the instrument.

**Frequency Devices, Inc. may refuse to accept shipment and will not be responsible for shipping charges of product returned without an RA number.**



Specifications

(Typical @ 25°C and rated Power Input)

APPENDIX A

Analog Input

- 1. Impedance 1 GΩ / 47pF
- 2. Input Range ±10V pk. linear
- 3. Maximum Input ±40V
- 4. Common Mode Rejection 75 dB min. @ 60 Hz.

Analog Output (each leg)

- 5. Impedance 1.0 Ω typ., 10 Ω max.
- 6. Linear Operating Range ±10V pk.
- 7. Channel to Channel Crosstalk <-80 dB max. @ 10 kHz
- 8. Maximum Current ±5mA
- 9. Offset Voltage ±5mV max.
- 10. Offset Temp. Coeff. 20μV/°C
- 11. Short Circuit Protection Short to Ground
- 12. Peak Distortion @ 1 kHz, 3.54 Vrms -80 dBc max.

Filter Characteristics

- 13. See D72 or D74 Series specifications
- 14. Fixed Cut-off Frequency fc (-3dB) Available 1 Hz to 100 kHz - Factory set

Gain

- 15. Nominal Gain 1X, 10X, 100X, 1000X – Factory set
- 16. Accuracy ±1%

Power Supply

- 17. From CPCI Backplane +12 V and -12 V, ± 5%, 1.0 A max. each
- 18. Isolation (default) Analog ground isolated from backplane and chassis. Connection to ground / backplane common by jumper, can be changed by customer or factory specified.

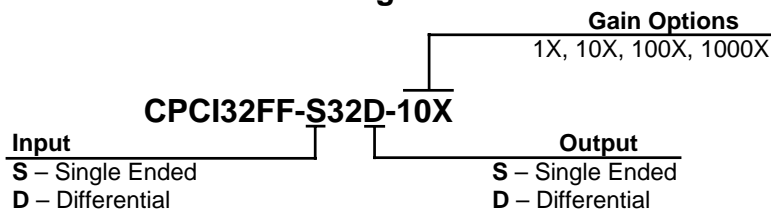
Environmental

- 19. Operating 0°C to +70°C
- 20. Storage -25°C to +85°C
- 21. Humidity 0-95% non-condensing

Mechanical

- 22. Card Size CPCI 6U single slot 9.17 x 6.3 inches, (233 x160 mm)
- 23. No. of Input Channels 32 Single or differential, DC coupled, factory set.
- 24. No. of Output Channels 32 Single or differential, DC coupled, factory set.
- 25. Mating Connectors Input: Female high-density 78-pin D-sub  
Output: Male high-density 78-pin D-sub
- 26. Weight ~2 lbs., (0.91 kg.)

Ordering Information



We hope the information given here will be helpful. The information is based on data and our best knowledge, and we consider the information to be true and accurate. Please read all statements, recommendations or suggestions herein in conjunction with our conditions of sale, which apply, to all goods supplied by us. We assume no responsibility for the use of these statements, recommendations or suggestions, nor do we intend them as a recommendation for any use, which would infringe any patent or copyright.