NFBF-10A
Notch Filter & Band-Pass Filter (1200-2600 Hz)

NFBF-10B
Notch Filter & Band-Pass Filter (700-3000 Hz)

NFBF-10C
Notch Filter & Band-Pass Filter (80-200 Hz)

Manual Revision: 2016-04-21

Covers Hardware Revisions:
NFBF-10: Rev D & Higher
### SPECIFICATIONS

- **Operating Voltage**: 17-18 VDC
- **Operating Current**: 17 mA
- **Operating Temperature**: -30 - +60 °C
- **Input Level**: 20 mV – 1 V RMS
- **Input Impedance**: 600 Ohms
- **Frequency Range**:
  - NFBF-10A: 1200-2600 Hz
  - NFBF-10B: 700-3000 Hz
  - NFBF-10C: 80-200 Hz
- **Band Width**: 0.5%
- **Device Gain or Loss**: Adjustable
- **Notch Filter Depth**: -30 dB or better
- **Audio Output Impedance**: 600 Ohms
- **Dimensions**: 3.6” L X 2.25” W X 1.52” H

### GENERAL INFORMATION

**Notch Filter**: As a notch filter, the NFBF-10 will remove the undesirable tone from the incoming audio while passing the rest of the audio. The NFBF-10A is often used to remove 2175 Hz keying tone from tone remote systems going into a voice recorder. The NFBF-10C is used to remove CTCSS tones from audio.

**Band-Pass Filter**: As a band-pass filter, the NFBF-10 will block all audio except for the desired frequency.

**Low-pass Filter**: As a low pass filter, the NFBF-10 will block all audio above the desired frequency.

**High-Pass Filter**: As a high pass filter, the NFBF-10 will block all audio below the desired frequency.

**Mixer**: As a mixer, the NFBF-10 will mix the unbalanced inputs from mixer 1 (J1:1 white) and mixer 2 (J1:6 blue) with the unbalanced input (J1:5 yellow).

**AGC**: The AGC circuit can be used to boost the signal to better notch or pass frequency of low-level signals.

**Line Driver**: The line driver can be used to boost the 600 ohm line level to make up for any losses in the filter or line. It can also be used with the AGC circuit to boost low-level signals.

**Options available upon request**: Lighting protection for phone lines. DC blocking capacitors to be used with the bypassed DC / Ring voltage so that DC control voltage or ring voltage can pass through.
HARDWARE INSTALLATION

Be certain to follow standard anti-static procedures when handling any of Midian’s products.

Note: This product should be located at the destination point for the audio and not at the source of the audio on a dry line.

**J1: Input Connector**;

- **J1:1 White** - Unbalanced mixer input 1.
- **J1:2 Black** – Ground.
- **J1:3 Red** - Balanced 600 ohm input.
- **J1:4 Green** - Balanced 600 ohm input.
- **J1:5 Yellow** - Unbalanced input.
- **J1:6 Blue** - Unbalanced mixer input 2.

**J2: Output Connector**;

- **J2:1 White**- Bypassed DC/ring voltage
- **J2:2 Black**- Ground
- **J2:3 Red**- Balanced 600 ohm output.
- **J2:4 Green**- Balanced 600 ohm output.
- **J2:5 Yellow** Unbalanced, Mixer, Notch, BP, LP, HP, AGC, Adjustable gain outputs.
- **J2:6 Blue**- Balanced 600 ohm output.

**PL1: Power Input**: Plug the supplied wall power adaptor into this connector. The wall power adaptor is 18 VDC output and 110-220 VAC 50/60 Hz input.

**TP-1 Earth Ground**: Provided for RF bypass and lightning protection.

HARDWARE ALIGNMENT

Start the alignment by configuring the NFBF-10 as a Band-Pass with R14 in the full clockwise position and adjusting the peak at the desired frequency using R13. This will get the center frequency close for the notch filter.

**Band-Pass, Low-Pass and High-Pass**: Send the unit a 700 mV p-p signal measured at P3. Monitor J2:5 or TP5 with an Oscilloscope or Sinadder and tune R-13 (15 turn potentiometer) for maximum amplitude. Use an Oscilloscope or Frequency Counter to read the tone frequency on the output.

**Notch Filter**: Send the unit a 700 mV p-p signal measured at P3. Monitor J2:5 or TP5 with a Sinadder and tune R-14 for -27 to -42 dB (at least -30 dB is recommended). It is recommended to tweak R-13 and R-14 several times to achieve the deepest notch possible.
<table>
<thead>
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<th>Jumper position</th>
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<th>Default position</th>
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<tr>
<td>JP-3 &amp; JP-4</td>
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<td>JP-5 &amp; JP-6</td>
<td>open</td>
<td>Notch, BP, HP or LP selection</td>
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**THEORY OF OPERATION**

The NFBF-10 employs a High Q state variable filter. It also uses a 15 turn potentiometer that adjusts the frequency based on the version ordered. The notch filter function is accomplished by summing the band-pass audio with the incoming audio, resulting in phase cancellation at the adjusted frequency.

**TECHNICAL NOTES**

**MIDIAN CONTACT INFORMATION**

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