JRE USB 3-1

USB 3.0 'SuperSpeed' Filtered Interface

Patented phasing design rejects wireless RF without touching your high-speed data — USB 1.1, 2.0 and 3.x SuperSpeed on standard Type-A connectors.

Machined aluminum housing; fully passive signal path

AT A GLANCE

- **Not a low-pass filter** — a patented signal-phasing topology (two US patents) discriminates balanced data from common-mode RF instead of attenuating both
- Handles **USB 1.1, 2.0 and 3.x SuperSpeed** over standard Type-A connectors
- **No inherent data-speed limit** — achievable rate is set by total cable attenuation, not by the filter
- **Proper enumeration over a direct copper path** — test hiccups are exchanged end-to-end, with none of the silent hang-ups a fiber or media-converter link can hide
- **~80 dB** conducted attenuation, 50 MHz to over 6 GHz; insertion loss under 1.5 dB on data lines
- **Fully passive** — no active silicon, no firmware, nothing that could be subverted in a data-side attack
- Rugged machined-aluminum housing · 100% made in USA

DESCRIPTION

The JRE USB 3-1 works on an entirely different principle from older USB filters. Earlier designs low-pass filtered the data lines to knock down interfering RF, but as USB rates climbed into the SuperSpeed range the data itself moved up into the same band as the interference — and a low-pass filter can no longer tell them apart. Our patented design instead exploits the fact that USB data travels as a balanced differential signal while interfering RF appears as common mode, rejecting the RF while passing the data clean, with no low-pass filtering anywhere on the data conductors.

That distinction matters most exactly where a low-pass filter fails: when the signaling rate itself falls inside the wireless bands, or when the interfering source sits inside a low-pass filter's own pass band — key fobs and RFID devices being the classic cases. The filter has no speed limit of its own; electrically it looks like roughly 1 to 1.5 metres of USB cable, and it is the total attenuation of filter plus cables that sets the achievable rate. With the included jumper you will reliably pass 5 Gbps and often 10 Gbps. For longer runs, use an active cable or powered hub outside the chamber.

The fully passive design is deliberate. We could put active equalizer or regenerator chips inside the filter; we choose not to, because a fully copper, passive path is what sensitive-data and secure testing demands. Reliable shielding starts at the mounting: the USB 3-1 secures with a ring of 4-40 screws, drawing the flange flat and tight around its entire perimeter — unlike single-nut designs, which never seat reliably flat and work loose over time. Every specification here is measured with the filter installed in an enclosure.

RF PERFORMANCE

Conducted attenuation	**~80 dB**
Frequency range	**50 MHz – 6 GHz+**
Insertion loss, data lines	**< 1.5 dB**
Isolation, in test system	**80 dB**

DC POWER LINES

DC resistance per leg	**0.1 Ω max**
1 MHz	**−20 dB**
10 MHz – 6 GHz	**−80 dB**

ELECTRICAL & CONNECTOR

Data line balanced impedance	**90 Ω typ.**
Power capability	**USB std or 50 VDC @ 1 A**
USB inside	**USB 3.0 Type A female**
USB outside	**USB 3.0 Type A female**
Cable	**Type A M-M jumper incl.**

DIMENSIONS & MOUNTING

Outside	**2" H × 3.2" W × 0.8" D**
	50 × 80 × 20 mm
Mounting screws	**4-40, included**
Clearance hole	**0.1285" (#30 / 3.3 mm)**

Drilling template included. The filter presents roughly 1–1.5 m of equivalent cable — budget for it in your overall cable length.

FEATURES & BENEFITS

- Patented design discerns between data and RF signals
- Extremely wideband operation, from low VHF through microwave
- Low loss — appears to the devices as just a longer USB cable
- Multiple points of attachment secure without rotation or loosening

COMPATIBILITY

Works with any JRE RF shielded test enclosure or screen room. JRE's enclosure line provides superior RF isolation from 10 MHz to over 6 GHz, covering the full range of commercial, private and government communications systems. Need two channels? See the JRE USB 3-2. Cable length and speed guidance is in the USB-3 and USB-C Special Considerations white paper at jretest.com.

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