

# The RZ6 Multi I/O Processor

System 3

**Overview.** The RZ6 Multi I/O Processor is a high sample rate processor with flexible input/output capabilities. Up to four 400 MHz Sharc digital signal processors are networked in an optimized multiprocessor architecture that features efficient onboard communication and memory access. Two channels each of sigma-delta D/A and A/D converters provide a dynamic range of up to 115 dB and sampling rates up to ~200 kHz.

The single device form factor incorporates two channels of onboard programmable and manual attenuation and can drive headphones and standard, magnetic, or electrostatic speakers. It includes an onboard monitor speaker, two channels of amplification for analog inputs, and 24 channels of digital I/O. XLR, audio jack, and BNC connections are supported. Optionally, the RZ6 can be equipped with a fiber optic input, allowing it to support a four channel Medusa preamplifier.

The RZ6-A base version starts with a single DSP and makes an excellent all-in-one psychoacoustics system or can be added to any system for audio stimulus generation.

The RZ6-A-P1 comes equipped with three DSPs for more processing power and includes the optional fiber optic input port, allowing it to serve as a BioAmp base station for ABR and OAE studies.

Both configurations can be upgraded with additional DSPs [up to a maximum of four] for complex filtering and high frequency applications.



**Software Control.** Software control is implemented with circuit files developed using TDT's RP Visual Design Studio [RPvdsEx]. Circuits are loaded to the processor through TDT run-time applications, such as OpenEx or custom applications via ActiveX controls.

**Power and Communication.** The optical Gigabit PC interface ensures fast and reliable data transfer from the RZ6 to the PC and is integrated into the device. The RZ6's power supply is also integrated into the device and is shipped from the factory configured for the desired voltage setting [110 V or 220 V].

**RZ6 Multi I/O Processor Part Numbers:**

RZ6-A, Multi I/O Processor with one DSP

RZ6-A-P1, Multi I/O Processor with three DSPs and fiber optic port

RZ6-DSP, Additional standard DSP

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## Technical Specifications for the RZ6 Multi I/O Processor

The RZ6 is rack mountable in a standard 19" rack and is 3 U [5 1/4"] tall.

DSPs:	400 MHz DSPs, 2.4 GFLOPS peak per DSP Up to Four
Memory:	64 MB SDRAM per DSP
Digital-to-Analog Converter:	2 channels, 24-bit sigma-delta
Sample Rate:	Up to 195312.50 Hz
Frequency Response:	DC-0.44*Fs [Fs=sample rate]
Voltage Out:	+/- 10.0 V
Signal-to-Noise [typical]:	115 dB [20 Hz - 80 kHz at 5 Vrms]
Analog-to-Digital Converter:	2 channels, 24-bit sigma-delta
Sample Rate:	Up to 195312.50 Hz
Frequency Response:	DC-0.44*Fs [Fs=sample rate]
Voltage In:	+/- 10.0 V
Signal-to-Noise [typical]:	115 dB [20 Hz - 80 kHz at 5 Vrms]
Fiber Optic Ports:	Optional Input [Available on RZ6-A-P1 only] Supports 4-channel Medusa preamplifier or HTI3 Head Tracker Interface
Digital Input/Output:	8 programmable bits: 3.3 V, 25 mA max load 2 programmable bytes [16 bits]: 5.0 V, 35 mA max load
ADC W/ Microphone Amplifier:	Single setting for both channels [AC coupled when enabled]
High Pass Corner Frequency:	3.6 Hz [Active only if the Amplifier is enabled]
Gain Settings:	20 to 65 dB
Gain Step Size:	5 dB
Programmable Attenuation:	2 channels
Switching Time:	1 sample
Settling Time:	3 µsec
Transient Voltage:	~370 mV
Hardware Attenuation Settings :	0, 20, 40, 60 dB
Manual Attenuation:	Single setting for both channels
Attenuation Settings:	0 to 27 dB
Attenuation Step Size:	3 dB
Amplification [Speaker Driver]:	2 channels
Spectral Variation:	< 0.1 dB from 50 Hz to 80 kHz
Signal Noise:	115 dB [20 Hz to 80 kHz]
THD:	< 0.02% at 1 Watt from 50 Hz to 80 kHz
Noise Floor:	20 µV rms
Input Impedance:	10 kOhm
Output Impedance:	1.0 Ohm 0.5 Ohm ganged