

## **INTRAPLEX® PT/PR-353**

Linear 48, 44.1, 32 KSPS Modules

## **Program Audio Transport**

Intraplex PT/PR-353 audio modules provide digital transport of up to 22.5 kHz CD quality stereo program audio. These modules are the ideal solution for applications requiring today's higher sampling rates to produce the best audio fidelity possible. They plug into Intraplex network access products, which combine the program audio with other audio, voice, and data traffic for transmission over T1, E1 and Ethernet access products.



#### • 48, 44.1, or 32 ksps sample rate

Faster sample rates support digital audio broadcasting and high-quality audio transport applications with up to 22.5 kHz audio bandwidth. Operating at the same sample rates used in modern digital studios eliminates the unwanted artifacts generated from up and down sample rate conversions.

#### • Linear uncompressed audio

Uncompressed audio ensures the best fidelity possible, free from the effects of encoding and decoding algorithms. Modulation compression schemes are avoided resulting in greater transmission robustness.

• Both AES/EBU and analog inputs and outputs on each module

Simultaneous digital and analog outputs feed both the digital and analog systems. Having the analog I/O is especially handy for monitoring and testing. • Sample rate adaptation on AES/EBU input Incoming AES/EBU audio sample rate is preserved throughout the system, eliminating sample rate converters. If desired, an internal rate converter can be switched on to rate convert the AES/EBU input, eliminating the need to employ an external sample rate converter.

#### • External AES/EBU timing input

The digital output accepts an external AES/EBU reference or RS-422 clock signal to synchronize the output stream to facility timing, a require-ment for IBOC digital audio broadcasting.

• Data channel built-in

Onboard data channel provides for PAD (program associated data). There's no need to consume additional channels or equipment for the PAD transport.

#### Reed Solomon error correction

Reed Solomon forward error correction provides superior audio performance even in the event bit errors occur in the network.



# Intraplex<sup>®</sup> PT/PR-353

### Specifications

Specifications and designs are subject to change without notice

System Compatibility       Compatible with Intraplex T1, E1 and Ethernet access products         PT/PR-353 Series Modules          • PT-353: Digital or analog input, auto-detect         • PR-353: Digital and analog output, simultaneous          No. of Audio Channels          1 or 2 per module, user selectable          Sample Rate and         Audio Bandwidth           • 48 ksps for 22.5 kHz operation          Audio Bandwidth           • 44 ksps for 20.5 kHz operation          Coding          16-bit linear coding          Data Rate and Time Slot         Usage (2 channel)           • 22.5 kHz: 25 TS (1.600 Mbps)*          Visage (2 channel)           • 20 kHz: 23 TS (1.472 Mbps)          Processing Delay         (digital audio through one         pair of modules)           • Less than 6.0 ms at 32 and 44.1 ksps          Error Correction          Reed Solomon error correction, user selectable, results in no audible degradation at 10 <sup>3</sup> bit error rate.          Data Channel          · RS-232 data transport 9.6 kbps          AES/EBU A&B channel status bits are transported         Line Error Tolerance          Error tolerance is part of the Enhanced apt-X coding, resulting in no audible degradation at 10 <sup>5</sup> random bit error rate.          Input/Output Connectors         (MA-508 and MA-509)           · Audio Inputs: XLR female on left, right, and digital	General	
PTPR-353 Digital or analog input, auto-detect       • PT-353 Digital and analog output, simultaneous         No. of Audio Channels       1 or 2 per module, ser selectable         Sample Rate and       • 48 ksps for 20.5 kHz operation         Audio Bandwidth       • 22,5 kHz operation         Coding       1 bbit linear coding         Data Rate and Time Stot       • 22,5 kHz 25 TS (1.600 Mbps)*         Usage (2 channel)       • 22,5 kHz 25 TS (1.600 Mbps)*         Processing Delay (digital audio through one pair of modules)       • Eless than 5.0 ms at 32 and 44.1 ksps         Creat Channel       • 52.52 duat ransport 96 kkps         Processing Delay (digital audio through one pair of modules)       • Less than 5.0 ms at 48 ksps         Error Correction       Reed Solomon error correction, user selectable, results in no audible degradation at 10° random bit error rate.         Data Channel       • R5-232 duat ransport 96 kkps         Line Error Tolerance       Error tolerance is pair of the Enhanced aptX Coding, resulting in no audible degradation at 10° random bit error rate.         Input/Output Connectors       • Addio Inputs: XLR female on left, right, and digital         • External Clock, Data/Aiarm, Rj+1       Note: MA-503, 504, 505, 510, and 511 may be used for analog audio or digital audio only applications.         Digital Audio Operation       Accepted Audio Sampling Rates       Accepts any AES/EBU Lock rate, which is preserved through the		Compatible with Intranley T1 E1 and Ethernet access products
PI/PE-33: Series Modules         • PR-35: Digital and analog output, simultaneous           No. of Audio Channels         1 of 2 per module, user selectable           Sample Rate and Audio Bandwidth         • 34 ksps for 22 kHz operation           Coding         16-bit linear coding           Data Rate and Time Slot (ligital audio through one)         • 22.5 kHz: 25 TS (1.600 Mbps)*           Usage (2 channel)         • 22.5 kHz: 25 TS (1.600 Mbps)*           Processing Delay (digital audio through one)         • 15 kHz: 17 TS (1.088 Mbps)           Processing Delay (digital audio through one)         • 16 kst: 17 TS (1.088 Mbps)           Processing Delay (digital audio through one)         • 18 kst: 17 TS (1.088 Mbps)           Processing Delay (digital audio through one)         • 18 kst: 17 TS (1.088 Mbps)           Processing Delay (digital audio through one)         • Rect Solomon error correction, user selectable, results in no audible degradation at 10 <sup>a</sup> bit error rate.           Processing Delay (digital audio through one)         • R5-232 data transport 9.6 kbps           Ine Error Tolerance         • Audio linguits: XLR female on left, right, and digital           Input/Output Connectors         • Audio Depata/Alarm, Pi-11 Note: MA-503, 504, 505, 510, and 511 may be used for analog audio or digital audio only applications.           Digital Audio Operation         Accepted Audio           Accepted Audio         Accepts any AES/EBU trate between 32 and 4		
Sample Rate and Audio Bandwidth       • 48 ksps for 22.5 kHz operation • 44.1 ksps for 20 kHz operation • 22 ksps for 12 kHz operation • 22 ksps for 12 kHz operation • 22.5 kHz; 25 TS (1.472 Mbps) • 15 kHz; 12 TS (1.600 Mbps)* • 20 kHz; 23 TS (1.472 Mbps) • 15 kHz; 17 TS (1.080 Mbps) • 15 kHz; 17 TS (1.080 Mbps) • 15 kHz; 17 TS (1.088 Mbps) • Less than 6.0 ms at 22 and 4.41 ksps (digital audio through one pair of modules)         Processing Delay (digital audio through one pair of modules)       • Less than 6.0 ms at 22 and 4.41 ksps • Less than 5.0 ms at 48 ksps         Error Correction       Reed Solomon error correction, use selectable, results in no audible degradation at 10 <sup>+</sup> bit error rate. • AES/2BU A&B channel status bits are transported • AES/2BU A&B channel status bits are transported • Audio Inputs: XLR female on left, right, and digital • Audio Outputs: XLR meale on left, right, and digital • Audio Outputs: XLR meale on left, right, and digital • Audio Outputs: XLR female on left, right, and digital • Audio Outputs: XLR meale on left, right, and digital • Audio Outputs: XLR meale on left, right, and digital • Audio Outputs: XLR meale on left, right, and digital • Audio Outputs: XLR meale on left, right, and digital • Audio Outputs: XLR meale on left, right, and digital • Audio Outputs: XLR meale on left, right, and digital • Audio Outputs: XLR meale on left, right, and digital • Audio Peration • Audio Fore is delivered to the output (no sample rate conversion or DC offset removal) Accepted Audio Accepted Audio Accepts any AES/EBU rate between 32 and 48 ksps Rate Conversion (PT) (user selectable) • Rate Adaptation • Input/(PT) locks to incoming AES/EBU input rate to 48, 44.1, or 32 ksps (madio Find Lucad Level • 44 k ksps: 1Hz-22 kHz • Audio Find Lucad Level • 44 ksps: 1Hz-22 kHz • 32 ksps: 1Hz-25 kHz • 44 ksps: 1Hz-20 kHz • 52 ksps: 1Hz-25 kHz • 44 ksps: 1Hz-20 kHz • 52 ksps: 1Hz-15 kHz •	PT/PR-353 Series Modules	
Sample Rate and Audio Bandwidth• 44.1 ksps for 20 kHz operation • 32 ksps for 15 kHz operationCoding16-bit linear codingData Rate and Time Slot Usage (2 channel)• 22.5 kHz; 25 TS (1.600 Mbps)* • 15 kHz 17TS (1.088 Mbps)Processing Delay (digital audio through one pair of modules)• Less than 6.0 ms at 32 and 44.1 ksps • Less than 5.0 ms at 48 kspsProcessing Delay (digital audio through one pair of modules)• Less than 5.0 ms at 48 kspsError CorrectionReed Solomon error correction, user selectable, results in no audible degradation at 10 <sup>-5</sup> bit error rate.Data Channel• Re-5232 data transport 3.6 kbps • AES/EBU A&B channel status bits are transportedLine Error ToleranceError tolerance is part of the chhanced aptX coding, resulting in no audible degradation at 10 <sup>-4</sup> random bit error rateInput/Output Connectors (MA-500 and MA-509)• Audio loque: XLR female on left, right, and digital • External Clock, Data/Alarm, RJ-11 Nack MA-503, 504, 505, 510, and 511 may be used for analog audio or digital audio only applications.Digital Audio Operation Accepted Audio Sampling RatesAccepts any AES/EBU rate between 32 and 48 kspsRate Convertion (PT) (user selectable)Rate converts any AES/EBU input rate to 48, 44.1, or 32 kspsInput/Output ImpedanceBalanced, 110 Ω ±20%Audio Full cual AL• 44 ksps: 1Hz-20 kHzCostalk (audio Full cual AL• 44 ksps: 1Hz-20 kHzCostalk (user selectable)• 48 ksps: 1Hz-20 kHzCostalkGreater than -80 dBCostalkGreater than -80 dBCostalkGreater than -80 dB<	No. of Audio Channels	1 or 2 per module, user selectable
<ul> <li>22.5 kHz: 25 TS (1.600 Mbps)*</li> <li>22.5 kHz: 25 TS (1.600 Mbps)*</li> <li>20 kHz: 23 TS (1.472 Mbps)</li> <li>20 kHz: 23 TS (1.472 Mbps)</li> <li>20 kHz: 23 TS (1.472 Mbps)</li> <li>Processing Delay (digital audio through one)</li> <li>Less than 6.0 ms at 32 and 44.1 ksps</li> <li>Less than 5.0 ms at 48 ksps</li> <li>Line Error Tolerance</li> <li>Error tolerance is part of the Enhanced apt-X coding, resulting in no audible degradation at 10<sup>-3</sup> bit error rate.</li> <li>Audio Inputs: XLR female on left, right, and digital</li> <li>Audio Operation</li> <li>Audio Operation</li> <li>Audio Operation</li> <li>Accepted Audio</li> <li>Accepted Audio</li> <li>Accepts any AES/EBU Ads the source is delivered to the output (no sample rate conversion or DC offset removal)</li> <li>Accepted Audio</li> <li>Accepted Audio</li> <li>Accepts any AES/EBU rate between 32 and 48 ksps</li> <li>Rate Conversion (PT)</li> <li>Rate converts any AES/EBU rate between 32 and 48 ksps</li> <li>Rate Conversion (PT)</li> <li>Accepted Audio</li> <li></li></ul>		44.1 ksps for 20 kHz operation
Data Ret and Times of the source is a set of the source is delivered to the output (no sample rate conversion or DC offset removal)         Processing Delay (digital audio through one pair of modules) <ul> <li>Less than 5.0 ms at 32 and 44.1 ksps</li> <li>Less than 5.0 ms at 32 and 44.1 ksps</li> <li>Less than 5.0 ms at 32 and 44.1 ksps</li> <li>Less than 5.0 ms at 32 and 44.1 ksps</li> <li>Less than 5.0 ms at 32 and 44.1 ksps</li> <li>Less than 5.0 ms at 48 ksps</li> <li>Error Correction</li> <li>Reed Solomon error correction, user selectable, results in no audible degradation at 10<sup>-5</sup> bit error rate.</li> <li>A as Channel</li> <li>R S-232 data transport 9.6 kbps</li> <li>A ES/EBU A&amp;B channel status bits are transported</li> <li>Line Error Tolerance</li> <li>Error tolerance is pair of the Enhanced aptX coding, resulting in no audible degradation at 10<sup>-5</sup> random bit error rate.</li> <li>A dudio Outputs: XLR female on left, right, and digital</li> <li>External Clock, Data/Alarm, RJ-11</li> <li>Note: MA-503, 504, 505, 510, and 511 may be used for analog audio or digital audio only applications.</li> <li>Digital Audio Operation</li> <li>Acceptea Audio</li> <li>Acceptea Valio</li> <li>Rate converts any AES/EBU input rate to 48, 44.1, or 32 ksps</li> <li>Rate Adaptation</li> <li>Input (PI) locks to incoming AES/EBU clock rate, which is preserved through the system to the output (PR)</li> <li>External Sync (PR)</li> <li>Accepte setternal AES/EBU reference signal or RS-422 clock to synchronize output to facility timing</li> <li>Input/Output Impedance<td>Coding</td><td>16-bit linear coding</td></li></ul>	Coding	16-bit linear coding
(tigital audio through one pair of modules)       • Less than 5.0 ms at 32 and 44. rsps         Error Correction       Reed Solomon error correction, user selectable, results in no audible degradation at 10 <sup>-5</sup> bit error rate.         Data Channel       • R5-232 data transport 9.6 kbps         Line Error Tolerance       Error tolerance is part of the Enhanced apt-X coding, resulting in no audible degradation at 10 <sup>-5</sup> random bit error rate         Input/Output Connectors (MA-508 and MA-509)       • Audio louputs: XLR female on left, right, and digital         Note: MA-503, 504, 505, 510, and 511 may be used for analog audio or digital audio only applications.         Digital Audio Operation         Audio Performance         Crequency response, distortion, crosstalk, and dynamic range of the source are unaffected because a bit-identical copy of the source is delivered to the output (no sample rate conversion or DC offset removal)         Accepts any AES/EBU rate between 32 and 48 ksps         Rate convertion (PT) (user selectable)       Rate converts any AES/EBU input rate to 48, 44.1, or 32 ksps         Rate Adaptation       Input (PT) locks to incoming AES/EBU clock rate, which is preserved through the system to the output (PR)         External Sync (PR)       Accepts external AES/EBU reference signal or RS-422 clock to synchronize output to facility timing         Input/Output Impedance       Balanced, 110 Ω ±20%         Analog Audio Operation       · 48 ksps: 1 Hz-22 kHz         Audio Freequency		• 20 kHz: 23 TS (1.472 Mbps)
Data Channel       • RS-232 data transport 9.6 kbps         Line Error Tolerance       Error tolerance is part of the Enhanced apt X coding, resulting in no audible degradation at 10-5 random bit error rate.         Input/Output Connectors       • Audio Outputs: XLR female on left, right, and digital         • Audio Outputs: XLR male on left, right, and digital       • Audio Outputs: XLR male on left, right, and digital         • Audio Operation       • Audio Outputs: XLR male on left, right, and dynamic range of the source are unaffected because a bit-identical copy of the source is delivered to the output (no sample rate conversion or DC offset removal)         Accepted Audio Sampling Rates       Accepts any AES/EBU rate between 32 and 48 ksps         Rate Conversion (PT) (user selectable)       Rate converts any AES/EBU input rate to 48, 44.1, or 32 ksps         Rate Adaptation       Input (PT) locks to incoming AES/EBU clock rate, which is preserved through the system to the output (PR)         External Sync (PR)       Accepts external AES/EBU reference signal or RS-422 clock to synchronize output to facility timing         Input/Output Impedance       Balanced, 110 Ω ±20%         Analog Audio Operation       • 48 ksps: 1 Hz-22 kHz         Audio Fereureny       • 48 ksps: 1 Hz-20.5 kHz         • 40 to Bu Lovel       • 9 to +24 dBu         Crosstalk       Greater than -80 dB         Total Distortion       (THD+N) Less than 0.003% at 1 kHz -1 dBFS input         O	(digital audio through one	
Data Channel       • AES/EBU A&B channel status bits are transported         Line Error Tolerance       Error tolerance is part of the Enhanced apt-X coding, resulting in no audible degradation at 10-3 random bit error rate.         Input/Output Connectors       • Audio Inputs: XLR female on left, right, and digital         Input/Output Connectors       • Audio Outputs: XLR male on left, right, and digital         • Audio Operation       • External Clock, Data/Alarm, RJ-11         Note: MA-503, 504, 505, 510, and 511 may be used for analog audio or digital audio only applications.         Digital Audio Operation       Accepter Audio         Audio Performance       Frequency response, distortion, crosstalk, and dynamic range of the source are unaffected because a bit-identical copy of the source is delivered to the output (no sample rate conversion or DC offset removal)         Accepted Audio       Accepts any AES/EBU rate between 32 and 48 ksps         Rate Conversion (PT)       Rate converts any AES/EBU input rate to 48, 44.1, or 32 ksps         Rate Adaptation       Input (PT) locks to incoming AES/EBU clock rate, which is preserved through the system to the output (PR)         External Sync (PR)       Accepts external AES/EBU reference signal or RS-422 clock to synchronize output to facility timing         Input/Output Impedance       Balanced, 110 Ω ±20%         Analog Audio Operation       • 44 ksps: 1 Hz-20.5 kHz         Audio Frequency       • 48 ksps: 1 Hz-20.5 kHz	Error Correction	Reed Solomon error correction, user selectable, results in no audible degradation at 10 <sup>-3</sup> bit error rate.
<ul> <li>Audio Inputs: XLR female on left, right, and digital</li> <li>Audio Outputs: XLR male on left, right, and digital</li> <li>External Clock, Data/Alarm, RJ-11</li> <li>Note: MA-503, 504, 505, 510, and 511 may be used for analog audio or digital audio only applications.</li> </ul> <b>Digital Audio Operation</b> Audio Performance Characteristics Frequency response, distortion, crosstalk, and dynamic range of the source are unaffected because a bit-identical copy of the source is delivered to the output (no sample rate conversion or DC offset removal) Accepted Audio Sampling Rates Rate conversion (PT) (user selectable) Rate converts any AES/EBU rate between 32 and 48 ksps Rate Adaptation Input (PT) locks to incoming AES/EBU clock rate, which is preserved through the system to the output (PR) External Sync (PR) Accepts external AES/EBU reference signal or RS-422 clock to synchronize output to facility timing Input/Output Impedance Balanced, 110 Q ±20% Analog Audio Operation (HJ 1) ksps: 1 Hz-22 kHz • 48 ksps: 1 Hz-22 kHz • 48 ksps: 1 Hz-22 kHz • 48 ksps: 1 Hz-20.5 kHz • 49 to +24 dBu Crosstalk Greater than -80 dB Total Distortion (THD+N) Less than 0.003% at 1 kHz -1 dBFS input Dynamic Range Greater than 91 dB Audio Pre-emphasis Audio Pre-emphasis and de-emphasis per ITU-T J.17 Input Impedance Balanced, 600 Q nominal or greater than 10K Q	Data Channel	
Input/Output Connectors (MA-508 and MA-509)• Audio Outputs: XLR male on left, right, and digital • External Clock, Data/Alarm, RJ-11 Note: MA-503, 504, 505, 510, and 511 may be used for analog audio or digital audio only applications.Digital Audio OperationAudio Performance CharacteristicsFrequency response, distortion, crosstalk, and dynamic range of the source are unaffected because a bit-identical copy of the source is delivered to the output (no sample rate conversion or DC offset removal)Accepted Audio Sampling RatesAccepts any AES/EBU rate between 32 and 48 kspsRate conversion (PT) (user selectable)Rate converts any AES/EBU input rate to 48, 44.1, or 32 kspsRate AdaptationInput (PT) locks to incoming AES/EBU clock rate, which is preserved through the system to the output (PR)External Sync (PR)Accepts external AES/EBU reference signal or RS-422 clock to synchronize output to facility timingInput/Output ImpedanceBalanced, 110 Ω ±20%Audio Frequency Response (±0.5 dB, emphasis off)• 48 ksps: 1 Hz-20.5 kHz• 4.1 ksps: 1 Hz-20.5 kHz• 32 ksps: 1 Hz-15 kHzAudio Frequency Crosstalk• 48 ksps: 1 Hz-20.5 kHz• 0 tal Distortion(THD+N) Less than 0.003% at 1 kHz -1 dBFS inputDynamic Range Greater than 91 dBGreater than 91 dBAudio Pre-emphasis (user selectable)Pre-emphasis and de-emphasis per ITU-T J.17Input ImpedanceBalanced, 600 Ω nominal or greater than 10K Ω	Line Error Tolerance	Error tolerance is part of the Enhanced apt-X coding, resulting in no audible degradation at 10 <sup>-5</sup> random bit error rate.
Audio Performance CharacteristicsFrequency response, distortion, crosstalk, and dynamic range of the source are unaffected because a bit-identical copy of the source is delivered to the output (no sample rate conversion or DC offset removal)Accepted Audio Sampling RatesAccepts any AES/EBU rate between 32 and 48 kspsRate Conversion (PT) (user selectable)Rate converts any AES/EBU input rate to 48, 44.1, or 32 kspsRate AdaptationInput (PT) locks to incoming AES/EBU clock rate, which is preserved through the system to the output (PR)External Sync (PR)Accepts external AES/EBU reference signal or RS-422 clock to synchronize output to facility timingInput/Output ImpedanceBalanced, 110 Ω ±20%Analog Audio Operation· 48 ksps: 1 Hz-22 kHzAudio Frequency (e0.5 dB, emphasis off)· 48 ksps: 1 Hz-20.5 kHzAudio Frequency (constalk· 48 ksps: 1 Hz-15 kHzAudio Freuency (user selectable)· 9 to ±24 dBuCrosstalkGreater than -80 dBTotal Distortion(THD+N) Less than 0.003% at 1 kHz -1 dBFS inputDynamic RangeGreater than 91 dBAudio Pre-emphasis (user selectable)Pre-emphasis and de-emphasis per ITU-T J.17Input ImpedanceBalanced, 600 Ω nominal or greater than 10K Ω		<ul> <li>Audio Outputs: XLR male on left, right, and digital</li> <li>External Clock, Data/Alarm, RJ-11</li> </ul>
Characteristicscopy of the source is delivered to the output (no sample rate conversion or DC offset removal)Accepted Audio Sampling RatesAccepts any AES/EBU rate between 32 and 48 kspsRate Conversion (PT) (user selectable)Rate converts any AES/EBU input rate to 48, 44.1, or 32 kspsRate AdaptationInput (PT) locks to incoming AES/EBU clock rate, which is preserved through the system to the output (PR)External Sync (PR)Accepts external AES/EBU reference signal or RS-422 clock to synchronize output to facility timingInput/Output ImpedanceBalanced, 110 Ω ±20%Analog Audio Operation44.1 ksps: 1 Hz-22 kHzAudio Frequency Response• 48 ksps: 1 Hz-20.5 kHz• 44.1 ksps: 1 Hz-20.5 kHz• 32 ksps: 1 Hz-15 kHzAudio Full Load Level+9 to +24 dBuCrosstalkGreater than -80 dBTotal Distortion(THD+N) Less than 0.003% at 1 kHz -1 dBFS inputDynamic RangeGreater than 91 dBAudio Pre-emphasis (user selectable)Pre-emphasis per ITU-T J.17Input ImpedanceBalanced, 600 Ω nominal or greater than 10K Ω	<b>Digital Audio Operation</b>	
Sampling RatesAccepts any AES/EBU rate between 32 and 48 kspsRate Conversion (PT) (user selectable)Rate converts any AES/EBU input rate to 48, 44.1, or 32 kspsRate AdaptationInput (PT) locks to incoming AES/EBU clock rate, which is preserved through the system to the output (PR)External Sync (PR)Accepts external AES/EBU reference signal or RS-422 clock to synchronize output to facility timingInput/Output ImpedanceBalanced, 110 Ω ±20%Analog Audio Operation48 ksps: 1 Hz-22 kHzAudio Frequency (±0.5 dB, emphasis off)• 48 ksps: 1 Hz-20.5 kHz• 44.1 ksps: 1 Hz-20.5 kHz• 44.1 ksps: 1 Hz-20.5 kHz(±0.5 dB, emphasis off)• 32 ksps: 1 Hz-15 kHzAudio Full Load Level+9 to +24 dBuCrosstalkGreater than -80 dBTotal Distortion(THD+N) Less than 0.003% at 1 kHz -1 dBFS inputDynamic RangeGreater than 91 dBAudio Pre-emphasis (user selectable)Pre-emphasis per ITU-T J.17Input ImpedanceBalanced, 600 Ω nominal or greater than 10K Ω		Frequency response, distortion, crosstalk, and dynamic range of the source are unaffected because a bit-identical copy of the source is delivered to the output (no sample rate conversion or DC offset removal)
(user selectable)Rate Converts any AES/EBU input rate to 48, 44.1, or 32 kspsRate AdaptationInput (PT) locks to incoming AES/EBU clock rate, which is preserved through the system to the output (PR)External Sync (PR)Accepts external AES/EBU reference signal or RS-422 clock to synchronize output to facility timingInput/Output ImpedanceBalanced, 110 Ω ±20%Analog Audio OperationAudio Frequency Response• 48 ksps: 1 Hz-22 kHz• 44.1 ksps: 1 Hz-20.5 kHz• 44.1 ksps: 1 Hz-20.5 kHz• 4udio Full Load Level+9 to +24 dBuCrosstalkGreater than -80 dBTotal Distortion(THD+N) Less than 0.003% at 1 kHz -1 dBFS inputDynamic RangeGreater than 91 dBAudio Pre-emphasis (user selectable)Pre-emphasis per ITU-T J.17Input ImpedanceBalanced, 600 Ω nominal or greater than 10K Ω		Accepts any AES/EBU rate between 32 and 48 ksps
External Sync (PR)Accepts external AES/EBU reference signal or RS-422 clock to synchronize output to facility timingInput/Output ImpedanceBalanced, 110 Ω ±20%Analog Audio OperationAudio Frequency Response• 48 ksps: 1 Hz-22 kHz • 44.1 ksps: 1 Hz-20.5 kHz • 32 ksps: 1 Hz-15 kHzAudio Full Load Level+9 to +24 dBuCrosstalkGreater than -80 dBTotal Distortion(THD+N) Less than 0.003% at 1 kHz -1 dBFS inputDynamic RangeGreater than 91 dBAudio Pre-emphasis (user selectable)Pre-emphasis and de-emphasis per ITU-T J.17Input ImpedanceBalanced, 600 Ω nominal or greater than 10K Ω		Rate converts any AES/EBU input rate to 48, 44.1, or 32 ksps
Input/Output Impedance       Balanced, 110 Ω ±20%         Analog Audio Operation         Audio Frequency       • 48 ksps: 1 Hz–22 kHz         Response       • 44.1 ksps: 1 Hz–20.5 kHz         (±0.5 dB, emphasis off)       • 32 ksps: 1 Hz–15 kHz         Audio Full Load Level       +9 to +24 dBu         Crosstalk       Greater than -80 dB         Total Distortion       (THD+N) Less than 0.003% at 1 kHz –1 dBFS input         Dynamic Range       Greater than 91 dB         Audio Pre-emphasis (user selectable)       Pre-emphasis and de-emphasis per ITU-T J.17         Input Impedance       Balanced, 600 Ω nominal or greater than 10K Ω	Rate Adaptation	Input (PT) locks to incoming AES/EBU clock rate, which is preserved through the system to the output (PR)
Analog Audio OperationAudio Frequency Response (±0.5 dB, emphasis off)• 48 ksps: 1 Hz-22 kHz • 44.1 ksps: 1 Hz-20.5 kHz • 32 ksps: 1 Hz-15 kHzAudio Full Load Level Crosstalk+9 to +24 dBuGreater than -80 dBTotal Distortion(THD+N) Less than 0.003% at 1 kHz -1 dBFS inputDynamic RangeGreater than 91 dBAudio Pre-emphasis (user selectable)Pre-emphasis and de-emphasis per ITU-T J.17Input ImpedanceBalanced, 600 Ω nominal or greater than 10K Ω	External Sync (PR)	Accepts external AES/EBU reference signal or RS-422 clock to synchronize output to facility timing
Audio Frequency Response (±0.5 dB, emphasis off)·48 ksps: 1 Hz-22 kHz ··Audio Full Load Level·9 to +24 dBuAudio Full Load Level+9 to +24 dBuCrosstalkGreater than -80 dBTotal Distortion(THD+N) Less than 0.003% at 1 kHz -1 dBFS inputDynamic RangeGreater than 91 dBAudio Pre-emphasis (user selectable)Pre-emphasis and de-emphasis per ITU-T J.17Input ImpedanceBalanced, 600 Ω nominal or greater than 10K Ω	Input/Output Impedance	Balanced, 110 $\Omega$ ±20%
Response (±0.5 dB, emphasis off)• 44.1 ksps: 1 Hz-20.5 kHz • 32 ksps: 1 Hz-15 kHzAudio Full Load Level+9 to +24 dBuCrosstalkGreater than -80 dBTotal Distortion(THD+N) Less than 0.003% at 1 kHz -1 dBFS inputDynamic RangeGreater than 91 dBAudio Pre-emphasis (user selectable)Pre-emphasis and de-emphasis per ITU-T J.17Input ImpedanceBalanced, 600 Ω nominal or greater than 10K Ω	Analog Audio Operation	
Crosstalk       Greater than -80 dB         Total Distortion       (THD+N) Less than 0.003% at 1 kHz -1 dBFS input         Dynamic Range       Greater than 91 dB         Audio Pre-emphasis (user selectable)       Pre-emphasis and de-emphasis per ITU-T J.17         Input Impedance       Balanced, 600 Ω nominal or greater than 10K Ω	Response	• 44.1 ksps: 1 Hz–20.5 kHz
Total Distortion       (THD+N) Less than 0.003% at 1 kHz –1 dBFS input         Dynamic Range       Greater than 91 dB         Audio Pre-emphasis (user selectable)       Pre-emphasis and de-emphasis per ITU-T J.17         Input Impedance       Balanced, 600 Ω nominal or greater than 10K Ω	Audio Full Load Level	+9 to +24 dBu
Dynamic Range     Greater than 91 dB       Audio Pre-emphasis (user selectable)     Pre-emphasis and de-emphasis per ITU-T J.17       Input Impedance     Balanced, 600 Ω nominal or greater than 10K Ω	Crosstalk	Greater than –80 dB
Audio Pre-emphasis (user selectable)     Pre-emphasis and de-emphasis per ITU-T J.17       Input Impedance     Balanced, 600 Ω nominal or greater than 10K Ω	Total Distortion	(THD+N) Less than 0.003% at 1 kHz –1 dBFS input
(user selectable)     Pre-emphasis and de-emphasis per ITO-T J. 17       Input Impedance     Balanced, 600 Ω nominal or greater than 10K Ω	Dynamic Range	Greater than 91 dB
		Pre-emphasis and de-emphasis per ITU-T J.17
Output Impedance Balanced, less than 52 Ω	Input Impedance	Balanced, 600 $\Omega$ nominal or greater than 10K $\Omega$
	Output Impedance	Balanced, less than 52 Ω

\*E1 operation only

## Intraplex<sup>®</sup> PT/PR-353

### Specifications

Specifications and designs are subject to change without notice

Status and Diagnostics		
LED Indicators	Service On/Off, E1 Operation, Module Failure; (PT only) Input Source; (PR only) External Clock, Activity, Frame, Mute/Error	
VU Meter	Five-segment LED audio level with overload indication	
Test Access	Analog audio input and output, bantam test jacks	
Test Tone Generator	1004 Hz test tone at –12 dBFS, which is equivalent to +8 dBm, input	
Alarm	Card-level failure relay contacts via MA-508 and -509	
Physical and Environmental		
Nominal Power Consumption	Less than 3.4 watts per module	
Temperature	0 °C – 50 °C operating	
Humidity	0% – 90% noncondensing	