HPT FMR

High Performance Translators Frequency Agile, 20 or 40 W

- Includes low pass/harmonic filter
- Up to 90 dB typical S/N ratio on transmitter section
- Fully protected, 20W or 40W, front-panel frequency agile 88-108 MHz FM output
- Receiver and transmitter section separated to allow local insertion
- Excellent RF immunity, designed to withstand the most hostile RF environments
- Sync port for booster synchronization
- Presettable RF foldback
- Meets or exceeds all FCC and CCIR requirements
- Option FSK: FSK pre-programmed automatic IDer
- Option HR: Higher Rejection of very strong adjacent channels on receivers
- Option 75: 75 kHz audio cutoff instead of standard 99 kHz, (will not pass 92 kHz SCA's)
- FM front end filter width available: 1 MHz tunable or 20 MHz broadband, specify w/ order

Inputs:
Composite (Transmitter section);
RF 87.5-108 MHz (Receiver section);
(Others in the 108-1000 MHz range available on request)

Input connectors:
Transmitter section: 3 BNC unbal for MPX and SCA's
Receiver section: "N" type female, 50 ohm for RF

Receiver section:
Carrier detector: BNC connector
Sensitivity, mono (demodulated, de-emphasized):
5 µV for S/N > 50 dB
15 µV for S/N > 60 dB (typ 9 µV)
50 µV for S/N > 65 dB
150 µV for S/N > 70 dB
1.5 mV for S/N > 80 dB (typ 88 dB)
Composite (left or right channel, demodulated, decoded, de-emphasized):
5 µV for S/N > 30 dB
15 µV for S/N > 40 dB
50 µV for S/N > 55 dB
150 µV for S/N > 60 dB (typ 85 µV)
1.5 mV for S/N > 75 dB (typ 80 dB)
Selectivity (static), with IF on "narrow":
5 dB IF bandwidth ±100 kHz
20 dB IF bandwidth ±200 kHz
50 dB IF bandwidth ± 300 kHz
Over 80 dB IF bandwidth ±400 kHz

Selectivity (static), with IF on "medium":
3 dB IF bandwidth ±100 kHz
12 dB IF bandwidth ±200 kHz
30 dB IF bandwidth ±300 kHz
60 dB IF bandwidth ±500 kHz
Over 80 dB IF bandwidth ± 600 kHz
Selectivity (dynamic) with IF on "narrow" and 75 kHz audio cutoff (admissible proximity/ratios of adjacent signals for unaffected performance):

At:	Unwanted signal must be:
0 kHz	<-43 dB below desired signal
±100 kHz	<-22 dB below desired signal
±200 kHz	<+12 dB above desired signal
±300 kHz	<+35 dB above desired signal
±400 kHz	<+36 dB above desired signal

With IF on "narrow" and 97 kHz audio cutoff:

At:	Unwanted signal must be:
0 kHz	<-43 dB below desired signal
±100 kHz	<-30 dB below desired signal
±200 kHz	<+9 dB above desired signal
±300 kHz	<+32 dB above desired signal
±400 kHz	<+34 dB above desired signal

With IF on "medium" and 75 kHz audio cutoff:

At:	Unwanted signal must be:
0 kHz	<-46 dB below desired signal
±100 kHz	<-30 dB below desired signal
±200 kHz	<-3 dB below desired signal
±300 kHz	<+16 dB above desired signal
±400 kHz	<+23 dB above desired signal

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Receivers normally shipped with 97 kHz audio cutoff; 75 kHz on request, not field selectable, specify with order

Option HR:
Allows withstanding of unusually strong RF fields within ±1 MHz (ex. without HR, 200 µV / -61 dBm of desired signal with 70 mV / -10 dBm of interfering signal MAX; ex. with HR, 60 µV / -71 dBm of desired signal with 224 mV / 0 dBm of interfering signal MAX. Beyond ±1 MHz, HR offers no advantages).

Output from receiver section:
1 BNC connector, unbalanced

Pre-emphasis on Transmitter section:
Factory set for flat or any within 40 µsec to 80 µsec (75 for FCC, 50 for CCIR operation)

Input to transmitter:
2 BNC connectors, unbalanced, flat for composite input, 75 or 50 µsec pre-emphasis for mono carrier enable: BNC connector

All audio levels:
Set on 3.5 Vp-p (1.237 Vrms / 4.1 dBm), adjustable, -5 to +6 dB range, calibrated in 1 dB steps on HPT SGN, continuously on others

Synchronization port:
2.5 kHz TTL level (5V square wave)

Asynchronous AM S/N ratio:
70 dB below reference carrier with 100% AM modulation, 75 µsec de-emphasis (no FM modulation present)

Synchronous AM S/N ratio:
70 dB below reference carrier with 100% modulation (FM modulation ±75 kHz)

Distortion on transmitter section:
Stereo demod., decoded and de-emphasized or mono demod., de-emphasized: <0.02%

Distortion, receiver section:
Stereo demod., decoded and de-emphasized:
30 Hz to 7.5 kHz: <0.05% (typ 0.025%) on "wide", <0.08% (typ 0.04%) on "medium", <0.15% (typ 0.06%) on "narrow"; at 1 kHz <0.02% (typ 0.01%) on "wide", <0.03% (typ 0.015%) on "medium", <0.05% (typ 0.025%) on "narrow"
Mono demodulated and de-emphasized:
30 Hz to 7.5 kHz: <0.1% (typ 0.06%) at 1 kHz <0.04% (typ 0.02%)

Distortion, IMD:
Intermodulation at demodulated output, 2 tone w/ 1 kHz difference frequency: 5-15 kHz, D2 <0.05%, D3 <0.1% 15-53 kHz, d2 <0.12%, d3 <0.3%

Stereo separation, receiver section:
30 Hz to 15 kHz, >60 dB (typ 65) on "wide", >50 dB (typ 55) on "medium", >45 dB,(typ 50) on "narrow"

Stereo separation, transmitter section:
>60 dB (typ 70)

Crosstalk:
50 dB or better, stereo subchannel to main channel or main channel to stereo subchannel

Signal to noise ratio:
Transmitter section:
88 dB (typ 90) with 75 kHz deviation & 400 Hz frequency modulation (mono) 85 dB (typ 88) with 75 kHz deviation, demodulated, de-emphasized left or right (stereo)
Receiver section):
80 dB (typ 85) w/ 75 kHz deviation & 400 Hz frequency modulation (mono) 75 dB (typ 80) with 75 kHz deviation, demodulated, de-emphasized left or right (stereo)

Composite amplitude response, models with 97 kHz audio cutoff:
±0.1 dB or less, 30 Hz - 53 kHz ±1 dB or less, 53 kHz - 75 kHz ±2 dB or less, 75 kHz - 100 kHz

Composite amplitude response, models with 75 kHz audio cutoff:
±0.1 dB or less, 30 Hz - 53 kHz
±2 dB or less, 53 kHz - 75 kHz

Data/subcarrier port (HPT STL only):
±5 dB or less, 100-200 kHz

Composite amplitude response, models with option "DIGITAL" on receiver (900 MHz STL receivers only):
±3 dB or less, 30 Hz - 400 kHz

Composite phase response:
±0.1 degree from linear phase, 0 Hz - 53 kHz

Transmitter output power:
ALC controlled within 0.5 dB on entire FM band, 0° to 40° C (32° to 104° F) and presettable SWR foldback. ALC loop and SWR foldback functions can operate off internal or external directional coupler (for example from final amp.) for whole chain control. 1 to 20 W continuously variable (20 W models) max power level can be set in 1 W steps. 2 to 40 W continuously variable (40 W models) max power level can be set in 2 W steps.

Output frequency range: 87.5-108 MHz

Output connector: "N" type female, 50 ohm

Modulation type: Direct FM at the carrier frequency

Modulation capability of transmitter section:
One stereo MPX program and subcarrier channels (up to 100 kHz baseband)

Frequency stability:
Better than 0.5 ppm (±500 Hz on FM transmitter section) 0° to 40° C (32° to 104° F)

Frequency programmability:
Front panel digi-switches, with internal adjustment

Spurious emissions:
100 dBc or more below carrier level

Harmonic emissions:
70 dBc or more below carrier level

Front panel display:
Fwd/Rev PWR (all HPT's), peak and semi-peak mod. (HPT EXO & SGN), RF in field and peak dev. (HPT FMR & STL), internal voltages (all HPT's), carrier detection (HPT FMR & STL), overmodulation (HPT SGN)

AC input power: 120 or 240 VAC, 50/60 Hz, 150 VA (20 W mod.), 180 VA (40 W mod.)

Front panel size:
483 mm (19") W x 132 mm (5¼") H (3 rack spaces)

Overall depth: 483 mm (19")

Weight: 20 W, 20 kg (45 lbs); 40 W, 21 kg (47 lbs)