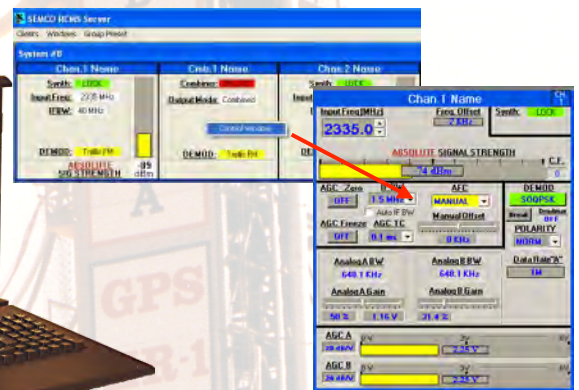




# PTR110 SERIES PORTABLE TELEMETRY RECEIVER



❖ RCMS Network Software

❖ Integrated 17.3" Display with Foldup Keyboard, and Mouse

**DESCRIPTION** - SEMCO's PTR100 Series Portable Telemetry Receiver product line is designed for telemetry data reception and antenna tracking applications requiring complete turnkey portability. All PTR110 configurations are IRIG 106-15 Tier II phase noise compliant and offer state-of the art demodulation capabilities in RF tuning bands from 70 MHz to 5250 MHz.

Additional optional performance features include 70 MHz file playback, Pre-d Record and Playback, Adaptive Equalization, Data Quality Metric (DQM), CCSDS Spread Spectrum (Constellation program crew vehicle) Forward SS-UQPSK link and the Return DG1 Modes 1, 2 & 3 links. A popular configuration includes an embedded OEM Decommulator feature that provides PTR110 ability to function as a complete portable turnkey Telemetry Data Processor

### STANDARD CONFIGURATION

- Single or Dual Channel Receiver
- Embedded PC and Ethernet Control
- 1415-1585, 1650-1850 or 2185-2485 MHz Tuning
- PCM/FM and NTSC Video Demodulation
- Embedded Bit Sync with De-randomizer
- Eye Pattern and Constellation Displays
- 4 User-Configurable Analog/Digital Outputs per CH
- AM and scalable AGC Antenna Tracking Outputs
- RCMS Network Software (Ethernet Remote Control)

### OPTIONS

- 70 MHz, 200-1150 MHz or 4400-5250 MHz Tuning
- Multi-Channel Spectral Sweep
- GUI Selectable 70 MHz Playback

### OPTIONS (continued)

- IRIG Time Code A/B Generator
- Pre-d Record and Playback (75 kHz to 15 MHz)
- OEM Decommulator Hardware & Software
- 1415-1585, 1650-1850 and 2185-2485 MHz Tuning
- PM, BPSK & A/U/S/O/QPSK Demodulation
- IRIG 106-15 Trellis FM, SOQPSK-TG & Multi-h CPM
- PM/PSK (SGLS) and FM/FM S/C Demodulation
- Coherent AM Demodulation
- Adaptive Equalization
- Data Quality Metric (DQM) for BSS
- CCSDS Spread Spectrum
- Viterbi Decoder (k=7 rate 1/2)
- TM over I/P
- Selective Turbo Coding

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*Technology and Innovation for a Safer World*

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# PTR110 SERIES SPECIFICATIONS

**RF**  
**Frequency (MHz)** 1415-1585, 1650-1850, 2185- 2485  
**LO Tuning Resolution** 100 kHz  
**Internal Stability**  $\leq \pm 1.0$  ppm (10 MHz reference )  
**AFC Resolution** 1 kHz  
**Dynamic Range** -10 dBm to Threshold  
**Noise Figure**  $\leq 8$  dB (maximum)  
**Phase Noise** IRIG 106-15 Tier II Phase Mask Compliant

**Maximum Safe Input** +10 dBm  
**VSWR**  $< 2:1$   
**ACI** 40 dB (min.)/1 dB BER Degradation with presence of interfering signal at 2 times IFBW

**Image Rejection**  $\geq 60$  dB ( $> 65$  dB, typical)  
**Spurious Rejection**  $\geq 60$  dBc  
**IF Rejection** 70 dB minimum, 80 dB typical  
**IF SAW Filters** 8 from 0.3 to 40 MHz  
**IF FIR Filters** 15 user-selectable per data rate entered + Auto-Set based on data rate; 4 kHz to 37.3 MHz

**Pre-d (70 MHz) Outputs** Linear,  $-10 \pm 2$  dBm, 2 Outputs per Channel

**AGC TC** 0.1, 1, 10, 100 and 1000 ms  
**AGC Outputs/Channel** 2 Scalable ( $\pm 10, 20$  or 50 dB/V) or User-selectable, hi/lo impedance

**AGC Modes** Manual, Freeze, and Zero  
**AGC Dynamic Range** Up to 100 dB from a 6 dB C/N threshold to -10 dBm  
**AGC Voltage Display** AGC voltages on Touchscreen, local GUI, and Network GUI

**AM Outputs/Channel** Normal and Inverted; 2 Vp-p into 50/75  $\Omega$  (50% AM)

**AM Low Pass Filters** User-selectable 30 Hz–30 kHz (Bessel Filters)

**AM Frequency Response** User-selectable 0 – 30 kHz  
**AFC**  $\pm 250$  kHz  
**AFC TC** 1, 5, 20 and 100 (Hz)

## DEMODULATOR

**Demodulator Modes**  
**PCM/FM** 10 kbps to 23 Mbps  
**PM/PSK** 2 kbps to 20 Mbps  
**S/O/QPSK** 30 kbps to 40 Mbps

**Trellis FM** 20 kbps to 23 Mbps  
**SOQPSK-TG** 50 kbps to 40 Mbps  
**Multi-h CPM** 100 kbps to 37 Mbps  
**GMSK** 10 kbps to 40 Mbps

**FM/FM** 5 kHz to 12 MHz  
**FM Sub-Carrier** 100 bps to 256 kbps

**Differential Decoding** Per IRIG and the CCSDS Standards

**Sub-carrier Demods** 2 per Demodulator  
**Sub-carrier Modulation Index** Up to 1.8  
**Loop Bandwidth** User-selectable 0.1 - 3%  
**Spread Spectrum** SS-UQPSK, SQPN  
**Acquisition/Tracking**  $\pm 1$  kHz to  $\pm 500$  kHz;  
**Adaptive Equalization** AE option mitigates harsh multi-path environments using CMA and Decision Equalization

**Data Quality Metrics** For Best Source Selection in PCM/FM and SOQPSK-TG formats  
**IRIG Time Code TM over I/P** IRIG A/B Time Code Stamping  
**Displays** In accordance with IRIG 218-07  
**Simultaneous Eye-Pattern and Constellation Displays** without interference with demodulator function

## BASEBAND VIDEO

**Number of Outputs** Four outputs per Channel  
User-selectable Analog or TTL clock & Data  
**Output /Coupling** Analog 0 to  $\geq 4$ Vpp, 75 $\Omega$ , AC/DC  
**FIR Filtering** 15 user-selectable per data rate entered + Auto-Set based on data rate; 2 kHz to 18.7 MHz + Bypass

## PCM DECOMMUTATOR OPTION

**Formats** Up to 40 Mbps IRIG 106 Type I and Type II; concatenation and asynchronous data capability  
**Decom Modes** IRIG A/B/G time code read and generation; programmable PCM simulation; raw and Decommuted time tag data output and recording  
Programmable Normal or Inverted

## OPERATING ENVIRONMENT

RCMS Network Software; Win7/10; Integrated 17.3" Display, Keyboard, and Mouse

## POWER

**Power Input** 100-264 VAC, 47-63 Hz; Auto-ranging  
**Consumption**  $< 200$  W

## PHYSICAL AND ENVIRONMENTAL

**Dimensions** 16.4" x 13.77" x 7.32"  
**Weight** approx. 20 lbs. (9 Kg)  
**Temperature** 0 to 50 $^{\circ}$ C (operating)  
 $-20$  to 70 $^{\circ}$ C (storage)

**Humidity** Up to 95%, non-condensing  
**Altitude** Up to 30,000 feet  
**EMI** Designed to meet MIL-STD-461

*Specifications subject to change without notice*

