

PolaRx2eTR

PolaRx2eTR® is a high-performance integrated dual-frequency GNSS Timing/Reference receiver. As part of the PolaRx2e family of high-end satellite navigation receivers, it uses the same advanced GNSS chipset and original tracking and positioning algorithms, resulting in the same low noise performance and high tracking stability. Based on a LINUX processor core and featuring Ethernet connectivity and an intuitive GUI for ease of operation and remote control, PolaRx2eTR offers a user-friendly and cost-effective solution for Permanent GPS Monitoring Station or Timing Reference Station applications.



Geodetic-grade Performance

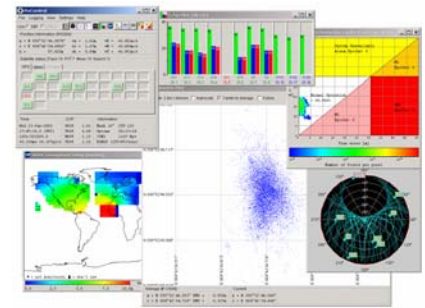
PolaRx2eTR features enhanced codeless tracking of L1 and L2 signals on 16 dual frequency channels, yielding best-in-class, low noise data quality even under Anti-Spoofing. Original algorithms for superior tracking sensitivity result in code phase tracking down to 19 dB-Hz and carrier phase tracking down to 26 dB-Hz, significantly reducing cycle slips and enabling tracking at very low elevations. Our patent pending A Posteriori Multipath Estimator (APME) is unique in its ability to tackle short-delay multipath, exactly the most prevalent and damaging form in practical circumstances. Of vital importance for continuously operating reference stations, is the excellent stability of the PolaRx2eTR software.

Timing Receiver

PolaRx2eTR accepts an external 10 MHz frequency reference and a 1PPS input to precisely synchronize the GNSS measurements with an external frequency and time standard, making the PolaRx2eTR perfectly suited for frequency and time transfer applications.

Hardware platform

PolaRx2eTR combines a top-quality dual frequency GPS measurement core with an embedded Linux PC, resulting in an open architecture receiver, easy to integrate in your network and ready to accept certain user applications. An optional extension board for PC-cards (formerly PCMCIA) can be used for Compact Flash Disk memory expansion*.The result is a single-device low power solution not requiring any additional hardware for continuous unattended remote operation for data collection and posting.



Networking and Remote Operation

Communication with PolaRx2eTR is easy with TCP/IP access over Ethernet and data transfer of logged files via FTP. Full remote control of the receiver is possible through this Ethernet adapter, including real-time receiver monitoring and data downloading, data logging, firmware upgrade and option management. With PolaRx2eTR comes a very intuitive and powerful Graphical User Interface that gives remote access to measurements from and control over your PolaRx2TR receiver.



POLARX2ETR TECHNICAL SPECIFICATIONS

FEATURES

- 48 hardware channels for "all in view" GPS+SBAS parallel tracking
 - All channels configurable to track satellites in single or dual frequency
 - Includes up to 6 SBAS channels (EGNOS, WAAS, other)
 - Adaptive Semi-codeless Cross Correlation tracking technology
 - A Posteriori Multipath Estimator technique (APME)
 - Measurement types :
GPS : C/A-, P1-, P2-code + C/No; L1-, L2-carrier phase & Doppler
SBAS : C/A-code + C/No; C/A-carrier phase & Doppler
 - Raw data output (code, carrier, SBAS navigation data)
 - Up to 10 Hz raw measurement and position output rate (user selectable)
 - x PPS output (x = 1, 2, 5, 10)
 - 1PPS input
 - 10 MHz reference input / output
 - NMEA v2.30 output
 - Highly compact and detailed Septentrio Binary Format (SBF) output
 - 3 LEDs/pins for power, logging, tracking status and position fix identification
 - Two bi-directional serial ports (RS232), baudrate up to 115 kbps
 - Compact single-board Eurocard solution
 - OEM board or mounted in sturdy enclosure
 - Industry standard backplane connector
 - Includes intuitive GUI (RxControl)
 - Remote set-up, monitoring, upgrade, data logging
 - Automatic Rinex and CGGTTS¹⁰ conversion and ftp to a remote datacenter
 - Detailed operating and installation manual
- ## OPTIONS
- Differential GPS base station
 - RTK (main antenna)
 - RTCM v2.2, 2.3 or 3.0 input/output
 - Reference Station Network compatible (FKP)
 - CMR 2.0
 - 2 Event markers
 - On Board Logging (non removable Compact Flash Memory Card)
 - Programmable LEDs

PERFORMANCE

Measurement precision^{1,2,3}	
C/A pseudoranges ⁴	0.15 m (GPS) ⁵ 0.30 m (GPS) ⁶ 0.35 m (SBAS) 0.1 m
P1/P2 pseudoranges ⁴	0.2 mm
L1 carrier phase	0.4 mm
L2 carrier phase	2.5 mHz (0.5 mm/sec)
L1/L2 doppler	

Tracking performance (C/N₀ threshold)^{8,9}	
Code phase tracking	19 dB-Hz
Carrier phase tracking	26 dB-Hz
Acquisition	33 dB-Hz

Maximum Update rate	10 Hz
Latency	< 50 msec

Time accuracy^{1,7}	
1PPS	20 nsec

- 1 1 Hz measurement rate
- 2 1σ level
- 3 C/N₀ = 45 dB-Hz
- 4 non-smoothed
- 5 Multipath mitigation disabled
- 6 Multipath mitigation enabled
- 7 Performance depends on environmental conditions
- 8 95%
- 9 Max speed 515 m/sec, max altitude 18 000 m
- 10 For Time and Frequency Transfer

PHYSICAL AND ENVIRONMENTAL

Size	178 x 100 x 13 mm (OEM board) 230 x 140 x 37 mm (In housing)
Weight	120 gr (OEM board) 720 gr (In housing)
Input voltage	5 VDC ± 5% (OEM board) 9-30 VDC (In housing)
Antenna LNA Power Output	
Output voltage	+ 5VDC
Maximum current	200 mA
Power consumption	5 W typical, 7W max
Operating temperature	-30 to +70 °C
Storage temperature	-40 to +85 °C
Humidity	5% to 95% (non condensing)
Connectors	
Antenna	SMA female
10 MHz in/out	SMA female
OEM board	
Backplane	DIN 41612 type B, 64 pins male
Extension	(consult Septentrio)
Housing	
Power	LEMO 0B series, 3 pins
Com 1 & 2	9-pin male sub-D
General purpose	ERNI SMC type B right angle male

POLARX2E FAMILY: OTHER PRODUCTS

PolaRx2e and PolaRx2e_OEM - PolaRx2e is a versatile dual-frequency GNSS receiver platform for high-end applications. Based on code and carrier tracking of the L1 and L2 signals, it provides the user with satellite range measurements and position, velocity and time.

PolaRx2e_SBAS - The single-frequency variant tracks up to 6 SBAS augmentation satellites (such as EGNOS and WAAS) in addition to GPS satellites, offering vital integrity information for application in safety-critical environments.

PolaRx2eH - A unique single-board dual-frequency dual-antenna receiver - suitable to being connected to 2 dual-frequency antennas, brings heading and machine control applications within economic and practical reach.

PolaRx2e@ - A unique single-board dual-frequency receiver that can be connected to up to 3 antennas, for various heading/attitude and other multi-antenna applications.

PolaRx2C - The PolaRx2C can track up to 4 satellites in L2C mode. For these satellites, the CA, P1, P2 and L2C measurements are available simultaneously.

RxControl - RxControl is an intuitive user interface to configure and control all types of PolaRx receivers and monitor, log and post data remotely.

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