

## PolRx2TR

*PolRx2 TR® is a high-performance integrated dual-frequency GNSS Timing/Reference receiver. As part of the PolRx2 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, PolRx2 TR offers a user-friendly and cost-effective solution for Permanent GPS Monitoring Station or Timing Reference Station applications.*



### Geodetic-grade Performance

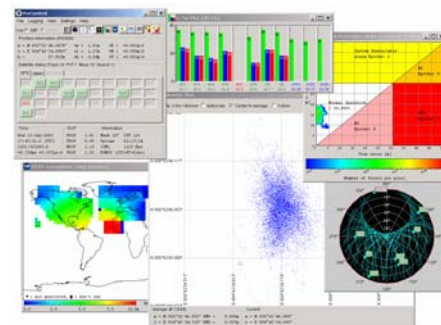
PolRx2TR features enhanced codeless tracking of L1 and L2 signals on 16 dual frequency channels, yielding best-in-class, low noise data quality even under Anti-Spoofing. Original algorithms for superior tracking sensitivity result in code phase tracking down to 19 dB-Hz and carrier phase tracking down 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 PolRx2TR software.

### Timing Receiver

PolRx2TR 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 PolRx2TR perfectly suited for frequency and time transfer applications.

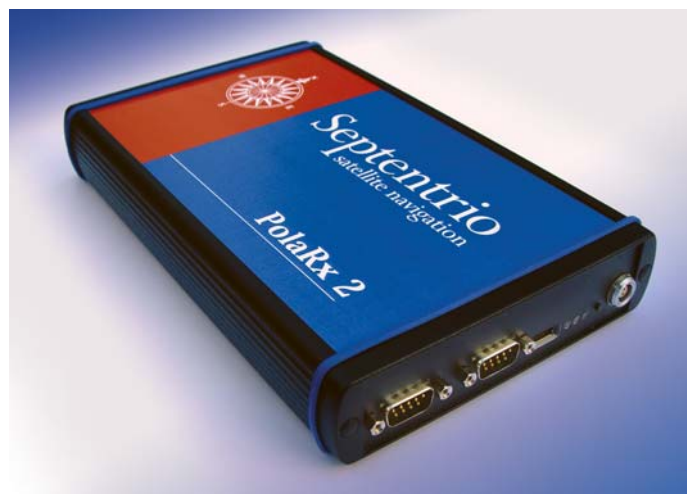
### Hardware platform

PolRx2TR 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 CompactFlash 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 PolRx2TR 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 PolRx2TR comes a very intuitive and powerful Graphical User Interface that gives remote access to measurements from and control over your PolRx2TR receiver.



# POLARx2TR 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)
- 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 conversion and ftp to a remote datacenter
- Detailed operating and installation manual

## OPTIONS

- 1PPS input
- TCP/IP over Ethernet (up to 7 IP addresses)
- RTCM v2.2 or 2.3 messages output for Differential GPS and RTK (Msg 1,3,16, 18/19,20/21,22)
- 2 Event markers
- PC-card slot for extension board, allowing Ethernet
  - Data logging on removable CompactFlash Memory (256MB or more)

## PERFORMANCE

Measurement precision <sup>1,2,3</sup>	
C/A pseudoranges <sup>4</sup>	0.15 m (GPS) <sup>5</sup> 0.30 m (GPS) <sup>6</sup> 0.35 m (SBAS)
P1/P2 pseudoranges <sup>4</sup>	0.1 m
L1 carrier phase	0.2 mm
L2 carrier phase	0.4 mm
L1/L2 doppler	2.5 mHz (0.5 mm/sec)
Tracking performance (C/N <sub>0</sub> threshold) <sup>8,9</sup>	
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 <sup>1,7</sup>	
1PPS	20 nsec

- 1 1 Hz measurement rate
- 2 1σ level
- 3 C/N<sub>0</sub> = 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

## 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 (consult Septentrio)
Extension Housing	
Power	LEMO 0B series, 3 pins 9-pin male sub-D
Com 1 & 2	9-pin male sub-D
General purpose	ERNI SMC type B right angle male

## POLARx2 FAMILY : OTHER PRODUCTS

**Polarx2 and Polarx2OEM** - Polarx2 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.

**Polarx2SBAS** - Polarx2SBAS is a single-frequency receiver that tracks up to 6 SBAS augmentation satellites (such as EGNOS and WAAS) in addition to GPS satellites, increasing the accuracy of the position and offering your application vital integrity information increasing the confidence in the position solution for application in safety-critical environments.

**Polarx2@** - Polarx2@ is a unique single-board dual frequency receiver that can be connected to up to 3 antennas, bringing heading/attitude and other multi-antenna applications within economic and practical reach.

**RxControl** - RxControl is an intuitive user interface to configure and control all types of Polarx2 receivers and monitor, log and post data remotely.



Grube 39a  
82377 Penzberg  
Germany

Tel.: +49 (8856) 80 30 980  
Fax: +49 (8856) 80 30 988  
Email: info@ppmgmbh.com  
Web: www.ppmgmbh.com

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