Septentrio
satellite navigation

PolaRx2e Field Data Logger

Septentrio's PolaRx2e Field Data Logger provides the high performance and flexibility of the PolaRx2e product line in a rugged metal enclosure together with a durable controller to easily access all functionalities. Featuring an intuitive user interface, internal memory for data-logging, event markers and more, PolaRx2eFDL is the ideal solution for all kinds of field data collection activities.

Rugged and flexible solution for data collection

The PolaRx2e Field Data Logger (FDL) offers an easy solution for all data collection activities, even in harsh field environments.

The PolaRx2e FDL includes a GNSS receiver from the PolaRx2e platform, a handheld controller device, a mounting kit and all required cables. Using Bluetooth, a cableless connection between the controller and the receiver is realized for ease of use. Both receiver and handheld controller device are built in a waterproof rugged enclosure, allowing usage in tough and remote environments.

The PolaRx2eFDL is equipped with extensive and flexible logging capabilities: internal logging in the receiver on a built-in memory card as well as logging on the field controller device. The compact interface format SBF (Septentrio Binary Format) allows extended logging sessions of days or weeks without interruption. Logging can be activated via the field controller or by a simple push button on the receiver.

The Event marker functionality, xPPS output, 10 MHz in- and output reference signals, further complete the solution to cater for any needs of your measurement and data collection application.

The FDL is available in multiple models, including L1 and L1/L2 variants, an RTK version for centimeter-level accuracy and variants for heading and attitude applications.

Exceptional Performance

PolaRx2e receivers feature high tracking sensitivity and stability of phase tracking, allowing users to track more satellites for a longer period of time, even under adverse conditions. Low noise measurements, and especially very low-noise Doppler measurements are key to exceptionally precise velocities and contribute to the high accuracy of the position of all PolaRx2e receivers. This exceptional accuracy is further enhanced by the use of Septentrio's A Posteriori Multipath Estimator (APME), which is unique in its ability to tackle short-delay multipath, the most prevalent and damaging form of multipath in practical circumstances.

Intuitive to set up, easy to use

Setting up, verifying the output, logging data or using any other capability of your PolaRx2e receiver in the field is done via the handheld controller equipped with the Septentrio RxMobile software. These controllers, which can be used with one or multiple receivers, are available on different high-performance Intel Xscale based platforms: the extremely rugged and waterproof Recon or M3 controller. Both variants feature a large and crisp colour display/touch screen, an extension slot for Compact Flash or SD data card and many other features, including standard PDA software and the possibility to run other applications. In the M3 controller, a built-in GSM/GPRS modem and special software can be used to retrieve differential corrections from a base station or reference network, thus realizing a compact and user-friendly complete RTK rover solution without the need for additional radios or other communication devices.

PolaRx2e FDL 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
- Dual frequency L1/L2 code/carrier tracking
- 6 SBAS channels (EGNOS,WAAS, other)
- Raw data output (code, carrier, GPS/SBAS navigation data)
- Up to 10 Hz raw measurement, position and attitude output rate (user selectable)
- A Posteriori Multipath Estimator (APME)
- x PPS output (x = 1, 2, 5, 10)
- 10 MHz reference input / output
- 2 Event markers
- Logging inside the receiver(built-in Compact Flash Memory Card, 256 MB or 2GB) or on controller
- IP6x waterproof enclosure for both receiver and controller
- Four bi-directional serial ports (RS232), baudrate up to 115 kbps on receiver
- Bluetooth cable-less connection between receiver and controller
- Xscal Intel PXA-255 CPU @ 400 MHz on controller
- Controller plots include Main View, PVT View, Carrier Noise Plot, Sky Plot, Planimetric Plot
- Controller provides full access for all configurations possible in the receiver
- Command console and configuration scripts possible
- Differential corrections via built-in GSM/GPRS modem in Controller

Included Accessories

- Mounting kit
- Open-end power cable
- Power cable with car-lighter adapter
- Null-modem serial cable
- GPI (General Purpose Input) cable
- GPO (General Purpose Output) cable
- Bluetooth adapter

1 1 Hz measurement rate
2 Performance depends on environmental conditions
3 1σ level
4 Fixed ambiguities
5 Baseline < 20 km
6 C/N0 = 45 dB-Hz
7 non-smoothed
8 Multipath mitigation disabled
9 Multipath mitigation enabled
10 No information available (no almanacs, no approximate position)
11 Almanacs and approximate position known, no ephemeris known
12 95%
13 Max speed 515 m/sec, max altitude 18 000 m
14 smoothed
15 some models only
16 PolaRx2eH only Heading and Pitch
17 Attitude accuracy increases linearly with antenna separation

Performance

Position/velocity accuracy[1,2]

	Horizontal[3]	Vertical[3]
Standalone	1.1 m	1.9 m
SBAS	0.7 m	1.2 m
DGPS	0.6 m	1.1 m
RTK[4,5]	1 cm + 1ppm	2 cm + 2ppm
	Average time to fix	7 sec
	Availability	> 99,8 %
Velocity	1.5 mm/sec	2.8 mm/sec

Attitude Accuracy[1,2,15,16,17] per m antenna separation

Heading	0.3°
Pitch/Roll	0.6°

Maximum Update rate	10 Hz
Latency	< 50 msec

Time accuracy[1,2]

1PPS	10nsec

Measurement precision[1,3,6]

C/A pseudoranges	0.05 m (GPS)[14] 0.15 m (GPS)[7,8] 0.30 m (GPS)[7,9] 0.35 m (SBAS)[7]
P1/P2 pseudoranges[7]	0.1 m
L1 carrier phase	0.2 mm
L2 carrier phase	1 mm
L1/L2 doppler	2.5 mHz (0.5 mm/sec)

Time to first fix

Cold start[10]		< 90 sec
Warm start[11]	After power-on	< 55 sec
	After reset	< 20 sec
Re-acquisition		< 2 sec

Physical and Environmental

Size	Receiver	285x140x37 mm
	Recon	165x95x45 mm
	M3	79x160x24 mm
Weight (Receiver + Controller)		+/- 1500 g
Input voltage (Receiver)		9-30 VDC
Antenna LNA Power Output		
Output voltage		+ 5VDC
Maximum current		200 mA
Power consumption (Receiver)		5 W typ,.7W max
Operating temperature	Receiver	-30 to +70 °C
	Recon	-30 to +60 °C
	M3	-20 to +50 °C
Storage temperature	Receiver	-40 to +85 °C
	Recon	-40 to +70 °C
	M3	-20 to +50 °C
Water/Dust	Receiver	IP65
	Recon	IP67
	M3	IP64

Available Models

PolaRx2eSBAS_FDL– Single-frequency GPS/SBAS Field Data Logger; field Controller on Recon included.

PolaRx2e_FDL – Dual-frequency GPS/SBAS Field Data Logger; field Controller on Recon included.

PolaRx2e_FDL_RTK – Dual-frequency GPS/SBAS RTK Field Data Logger; field Controller on Recon (outside EU) or M3 (incl. GPRS and DataLink for network RTK rover applications) included.

PolaRx2e@/H_FDL– Dual-frequency multi-antenna GPS/SBAS Field Data Logger; field Controller on Recon included.

PolaRx2e@/H_FDL_ATT – Dual-frequency Attitude GPS/SBAS Field Data Logger; field controller on Recon (outside EU) or M3 (incl. GPRS and DataLink for network RTK rover applications) included.

Other Septentrio Products

PolaRx2e and PolaRx2e_OEM – Dual-frequency GNSS receiver platform for high-end applications.

PolaRx2eH and PolaRx2e@ - A unique single-board dual-frequency multi-antenna receiver that can be connected to 2 respectively 3 antennas, for various machine control, 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.

PolaNt – A lightweight precise positioning and survey single or dual-frequency antenna for use with PolaRx family.

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

AsteRx1 – Compact single-frequency GNSS receiver platform, offering top-quality GPS code and carrier phase data and single frequency positioning (including DGPS and L1-RTK) at up to 50 Hz, with seamless upgrade possibility to Galileo.

GeNeRx1 – A combined scientific GPS/Galileo receiver, which can be flexibly configured to simultaneously track Galileo as well as GPS satellites in multi-frequency mode. All Galileo frequencies and modulations are supported.

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