PX1 – GLONASS & GPS PCI Express® Mini Card

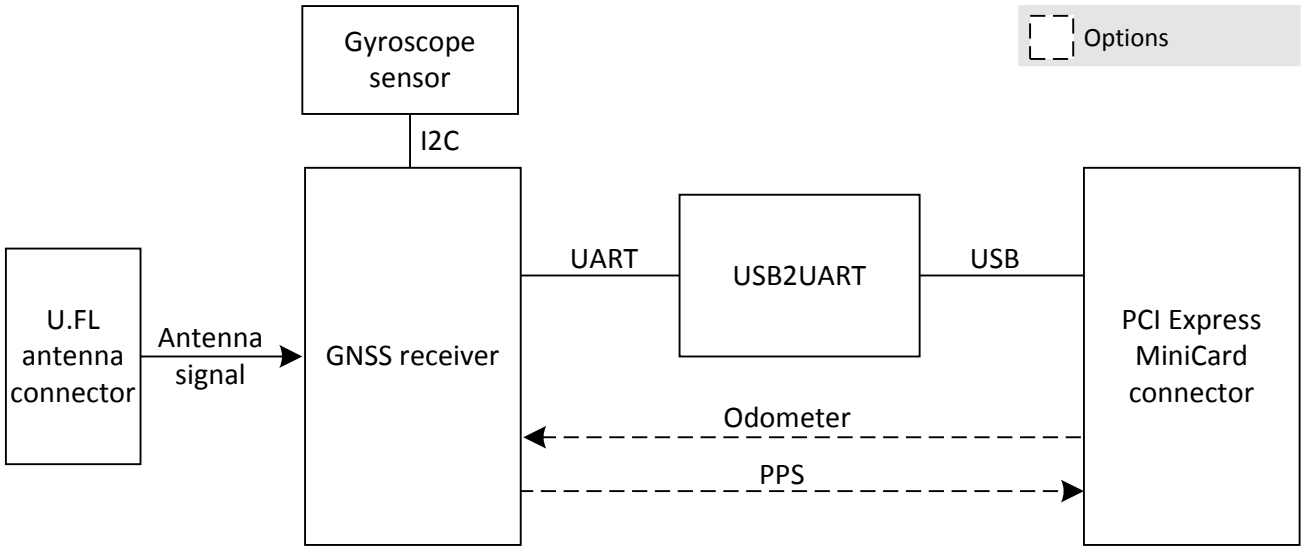
- **Multi GNSS support**
- **Active Dead Reckoning (DR)**
- **Satellite Based Augmentation System (SBAS)**
- **-161 dBm tracking sensitivity**
- **Active/passive antenna connection via U.FL**
- **Compatible with NMEA 0183**
- **-40..+85°C with qualified components**
- **Prepared for conformal coating**

The PX1 is a PCI Express® Mini Card providing a GNSS receiver with GLONASS and GPS functionality. It supports active or passive antennas, which can be connected to an U.FL connector. The received antenna signals are sent to the host via USB.

GLONASS is the Russian alternative to GPS and has comparable coverage and precision. The PX1 is prepared to support the European Union's global navigation satellite system Galileo and the Chinese navigation satellite system Compass.

The GNSS module provides a gyroscope sensor for dead reckoning functions, which enable accurate positioning. Various Satellite-Based Augmentation Systems (SBAS) are also supported. The PX1 provides communication information compliant to the NMEA 0183 protocol.

Diagram



Technical Data

GNSS Interface	■ 32-channel GNSS (Global Navigation Satellite System) receiver ■ GPS Band/Code: L1 frequency, C/A code, SPS ■ GLONASS Band/Code: L1 frequency, C/A code, SP ■ Integrated TCXO, RTC ■ Assisted GPS support ■ Dead Reckoning support (gyroscope) ■ Differential GPS support □ Satellite Based Augmentation System (WAAS, Egnos, MSAS) □ RTCM104 ■ Accuracy (unaided): □ Position: 3 m horizontal, 5 m vertical □ Velocity: 0.05 m/s □ Time: 1 µs ■ Time To First Fix (TTFF): □ Cold start: 35 s typ. □ Hot start: 2 s typ. ■ Sensitivity: □ Acquisition (cold): -147 dBm □ Re-Acquisition: -157 dBm □ Tracking: -161 dBm ■ Acceleration: 5 g max. ■ Velocity: 515 m/s max. ■ Altitude: 18 000 m max. ■ Protocol: NMEA 0183 rev. 3.01 ■ One U.FL antenna connector □ For the use of an external active or passive antenna
Host Interface	■ PCI Express® Mini Card connector □ USB 2.0
Electrical Specifications	■ Supply voltage/power consumption: □ +3.3 V, max. 191 mA □ Impedance: 50 Ohm
Mechanical Specifications	■ Dimensions: 30 mm x 58 mm x 5 mm (PCI Express® Full-Mini Card) ■ Weight: 4 g
Environmental Specifications	■ Temperature range (operation): □ -40..+85°C (qualified) □ Airflow: min. 1 m/s ■ Temperature range (storage): -40..+85°C ■ Relative humidity (operation): max. 95% non-condensing ■ Relative humidity (storage): max. 95% non-condensing ■ Altitude: -300 m to +3000 m ■ Shock: 15 g, 11 ms ■ Bump: 10 g, 16 ms ■ Vibration (sinusoidal): 1 g, 10..150 Hz ■ Conformal coating on request
MTBF	■ tbd h @ 40°C according to IEC/TR 62380 (RDF 2000)
Safety	■ PCB manufactured with a flammability rating of 94V-0 by UL recognized manufacturers
EMC Conformity	■ EN 50121-3-2 (table 4) (EMC in rolling stock) ■ EN 55011 (radio disturbance) ■ EN 61000-4-2/EN 50121-3-2 (table 9) (ESD) ■ EN 61000-4-3/EN 50121-3-2 (table 9) (electromagnetic field immunity) ■ EN 61000-4-4/EN 50121-3-2 (table 8) (burst) ■ EN 61000-4-6/EN 50121-3-2 (table 7) (immunity to conducted disturbances)

Technical Data

Software Support	■ For information on first installation please contact MEN.

Configuration & Options

Options

Functionality	■ Odometer input/PPS output ■ Without Dead Reckoning support (gyroscope not assembled)
Mechanical	■ Conformal coating

Please note that some of these options may only be available for large volumes. Please ask our sales staff for more information.

Ordering Information

Standard PX1 Models	**15PX01-00**	GLONASS & GPS PCI Express® MiniCard (full size), 3-axis Gyro sensor, -40..+85°C with qualified components
Related Hardware	**02F212-05**	2 PCI Express® Mini Card slots with USB interface, 4 SIM card sockets, 4 SMA connectors, -40..+85°C with qualified components (carrier only)
	02F223-00	2 PCI Express® MiniCard slots (USB and PCI Express® support), 2 SIM card holders, SIM expansion socket, -40..+85°C screened (carrier only), conformal coating (front panel to be ordered separately)
	02G212-00	2 PCI Express® Mini Card slots (USB and PCIe®), -40..+85°C screened
	06RC01-00	Intel® Atom™ Z510, 1.1GHz, 512MB RAM, 2GB MicroSD card, prepared for SSD, 2 Fast Ethernet, 1 USB, prepared for 2 SA-Adapter kits, prepared for wireless access, 24V DC input (S2), -40..+70(+85)°C screened, EN50155 compliant, IP67
	06RC01-01	3.5" display with touch, Intel® Atom™ Z510, 1.1GHz, 512MB RAM, 2GB MicroSD Card, prepared for SSD, 2 Fast Ethernet, 1 USB, prepared for 2 SA-Adapter kits, prepared for wireless access, 24V DC input (S2), -40..+70(+85)°C screened, EN50155 compliant, IP67, 120-day Windows® XP Embedded eval version installed
	08AE51-00	Graphics & I/O interface board for display and box computers; 2x DisplayPort®, 2x Gb Ethernet, 1x USB, 2x PCI Express® Mini card slot, 2x SIM card slot, 2x SA-Adapter slot, PSU 24 VDC, -40 to +85°C screened
	08SC21-00	Intel® Atom™ Z520PT 1.3GHz, 1GB DRAM, 2x Fast Ethernet, 2x USB, 1x LVDS, 1x MicroSD card slot, 24V PSU (non isolated), prepared for -40 to +85°C screened via conductive cooling
	08SC27-00	Display electronics SBC with Intel® Atom™ E680T, 1.6 GHz, 2GB RAM, 1 Fast Ethernet on M12, 1 USB 2.0 on M12, 1 USB 2.0 Type A, 1 PCIe® MiniCard socket, 1 micro SIM card socket, 1 GPS interface, 2 SA-Adapter slots, EN 50155 compliant PSU, -40..+85°C operation temperature via conduction cooling (screened), conformal coating
	08XC02-00	Carrier board for ESMexpress® modules (Intel®), 4 GB USB Flash Disk, LVDS and DVI on board, 2 Fast Ethernet on M12, 1 SA-Adapter slot, 2 USB 2.0, PCI Express® Mini Card slot, 24V PSU (9..36VDC), -40..+85°C with qualified components
	08XC06-01	Carrier board for ESMini: 1x TTY, 1x RS232, 1x DVI-I, 1x Audio I/O, 4x USB2.0, 2x Fast Ethernet, USB Flash slot, PCI Express® Mini Card socket, SIM card holder, microSD™ card socket, 8x GPIOs, -40°C..+85°C screened
	09BC50I00	Industrial box computer with dual graphics connection, 24 VDC PSU, AMD Dual Core T48N, 1.4 GHz, 2 GB RAM, SD card slot, mSATA slot, 2x DisplayPort®, 2x Gb Ethernet RJ45, 2x USB, 2x SA-Adapter slot (UARTs, fieldbuses), 1x PCI Express® Mini card slot, 1x SIM card slot, -40..+70°C screened
	09BC50M00	Box computer with dual graphics connection, 24 VDC PSU, AMD T48N, 1.4 GHz, 2 GB RAM, SD card slot, mSATA slot, 2x DisplayPort®, 2x Gb Ethernet, 1x USB, 2x SA-Adapter slot (UARTs, fieldbuses), 2x PCI Express® Mini card slot, 2x SIM card slot, -40..+70(+85)°C screened, conformal coating, IP40, EN 50155, ISO 7637-2 (E-mark)
Software: VxWorks®	This product is designed to work under VxWorks®. For details regarding supported/unsupported board functions please refer to the corresponding software data sheets.	
	13Y003-60	VxWorks® driver (MEN) for USB-to-UART bridges on F600, F601, F602, F603, F604 and F606

For operating systems not mentioned here contact MEN sales.

Documentation	**20PX01-00**	PX1 User Manual

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