GE-U26, High Performance, GNSS PCI Express Half-Mini Card w/ I-PEX MHF RF Connector

RoHS Compliant



Overview

GE-U26 is equipped with the **u-blox M10** high-sensitivity engine, RF connector, and optional backup battery. The Mini PCI Express standard design allows it to be easily applied in devices with PC architecture. The half-length design allows it to be used in dimension demanding environment. In addition to standard USB interface, it also supports optional UART/TTL interface.

GE-U26 is able to concurrently track signals from all civil navigation systems, aka, GPS, GLONASS, GALILEO, BEIDOU, QZSS, and SBAS satellites. Thanks to this capability, big number of satellites are visible, positioning becomes easy and accurate even in the typical GPS difficult environments.

The backup battery allows faster position fix and it is optional in case extended temperature range is required.

Applications

- Industrial PC
- Mobile DVR
- Automatic vehicle location
- School Bus / Transit / Police / Fleet

Features

- PCI Express Mini Card standard compliant
- Powered by u-blox M10 chip
- Concurrent tracking of multi-satellite navigation systems
  - GPS/GALILEO/GLONASS/BEIDOU/QZSS
  - SBAS (WAAS, EGNOS, MSAS, GAGAN)
- Augmentation support:
  - SBAS (WAAS, EGNOS, MSAS, GAGAN),
  - QZSS (L1S SLAS, Sub-meter Level Augmentation Service)
- Built-in RF connector, reduce RF tuning efforts
- The tiny I-PEX MHF RF connector allows flexibly placing GNSS antenna at a suitable location.
- External active antenna **short circuit protection**
- Optional backup battery for faster position fix.
- Higher update rate option (default 1Hz), up to
  - 5 Hz for GPS+GAL+GLO+BDS B1C
  - 8 Hz for GPS+GAL+BDS B1C
  - 5 Hz for GPS+GAL+BDS B1I
  - 7 Hz for GPS+GAL+GLO
  - 10 Hz for GPS+GAL
  - 18 Hz for GPS only
- Support USB or UART/TTL interface.
- Sensitivity
  - Acquisition: -148dBm (GPS + others)
  - Tracking: -167dBm (GPS + others)
- Anti-jamming- RF interference and jamming detection and reporting
- Anti-spoofing- Spoofing detection and reporting
- Low power: 16mA (TTL) at continuous tracking
- Excellent EMI protection
- Industrial operating temperature range: -40 ~ 85℃

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Technical Specifications

Receiver Performance Data+

Receiver Type	u-blox M10 engine GPS, SBAS: L1 C/A: 1575.42MHz, QZSS: L1 C/A/S: 1575.42MHz Galileo: E1 B/C: 1575.42MHz, GLONASS: L1OF:1598.0625~1605.375MHz BeiDou: B1I: 1561.098 MHz B1C: 1575.42 MHz SBAS:WAAS, EGNOS, MSAS, GAGAN
Horizontal Position Accuracy	1.5m (GPS+QZSS+SBAS) (CEP, 50% 24hr static, -130dBm, >6 SVs for each GNSS system)
Velocity Accuracy	0.05 m/s (speed) <0.3° (heading) (50%@30m/s)
Time Pulse Signal Accuracy	30ns (RMS) <60ns (99%)
Time To First Fix (TTFF) Hot start Cold start	Autonomous, (50% -130dBm) 1 s 28 s: GPS+GAL 23s: GPS+GAL+GLO 27s: GPS+GAL+BDS B1I (default) 28s: GPS+GAL+BDS B1C 23s: GPS+GAL+GLO+BDS B1C
Sensitivity, (Autonomous)	GPS+GAL or +more -148dBm (acquisition) -167dBm (tracking)
Max. Navigation Update Rate	5 Hz for GPS+GAL+GLO+BDS B1C 8 Hz for GPS+GAL+BDS B1C 5 Hz for GPS+GAL+BDS B1I 7 Hz for GPS+GAL+GLO 10 Hz for GPS+GAL 18 Hz for GPS only Default 1Hz
Max. Altitude	6,000m for automotive 80,000 m for airborne
Max. Velocity	500 m/s
Protocol Support	UART: N,8,1; bauds 4800, 9600, 19200, 38400 (default), 57600, 115200, 230400, 460800, 921600 bps; NMEA versions 2.1, 2.3, 4.0, 4.10, and 4.11 (default) UBX (u-blox proprietary) GGA, GLL, GSA, GSV, RMC, VTG, TXT
Augmentation Support	SBAS(WAAS, EGNOS, MSAS, GAGAN) QZSS(L1S SLAS)
Dynamics	< 4g

+ Note. According to IC Spec

Electrical Data

Power Supply	3.3 ± 0.3 V
Backup power	3.3 V
Power Consumption	56 mA / average tracking (USB 29 SVs) 16 mA / average tracking (TTL 29 SVs)
TTL I/O	V_{IH}: ≥ 2.25V, V_{IL}: ≤ 0.63V V_{OH}: ≥ 2.9V, V_{OL}: ≤ 0.4V

Environmental Data

Operating temperature	-40 ~ 85℃ w/o battery -20~60℃ w/ battery
Storage temperature	-40 ~ 85℃ w/o battery -40~60℃ w/ battery

Mechanical Data – 30 x 26.8 x 2.8 (mm)

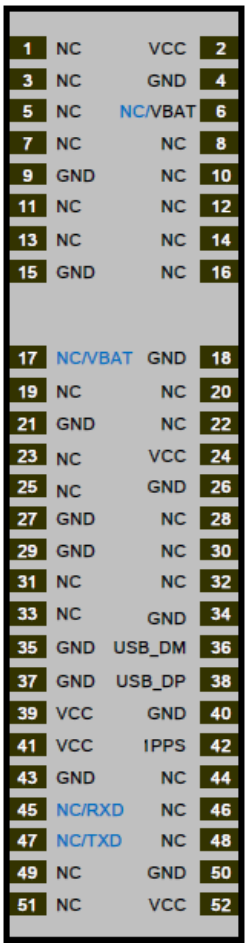
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52-Pin definition

Name	PINs	Function	I/O
VCC	2,24,39,41,52	3.3V power supply, Min 3.0V, Max 3.6V	Input
GND	4,9,15,18,21,26,27,29,34,35,37,40,43,50	Ground	Input
USB_DM	36	USB data signal minus	I/O
USB_DP	38	USB data signal plus	I/O
1PPS/LED	42	1PPS/GPS fix indication	Output
NC/VBAT[!]	6 or 17	NC or 1.65~3.6V backup power if backup battery is absent.	-/Input
NC/RXD[!]	45	NC or UART RX if additional TTL interface is needed.	-/Input
NC/TXD[!]	47	NC or UART TX if additional TTL interface is needed.	-/Output
NC	Remaining pins	No connection	-

[!] Proprietary; reserved pins of PCIe Mini Rev. 1.2 are used



Application

- Mount GE-U26 on main board, connect I-PEX to GNSS active antenna.
- USB driver: Prolific PL2303G

Ordering Information

GE-U26X; X=A/B/C/S/T/U, default GE-U26B

Feature \ Model	A	B	S	T
Backup battery	-	Y	-	Y
USB / UART TTL	USB	USB	TTL	TTL

*This document is subject to change without notice.

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