YEAE 9417 GNSS Module

The YEA 9417 is a concurrent GNSS receiver module for NI C series platforms. It can receive multiple GNSS systems signal (e.g GPS/QZSS, GLONASS, BeiDou). Due to dual-frequency RF front-end architecture, two of the three signals (GPS L1C/A, GLONASS L1OF, and BeiDou B1) can be received and processed simultaneously.

The YEA 9417 GNSS module provides precise timing and well-directed geographic location information to the NI C Series host. Through extracting Pulse Per Second PPS signal with a synchronized message interface, the YEA 9417 GNSS module allows synchronization of NI C Series systems. The YEA 9417 GNSS receiver module provides a special Time Mode to support stationary antenna setups, which are typically used in Finite Time Slot applications.

Technical Specifications

Supported constellation	GPS	GLONASS	BeiDou	Galileo	QZSS
Signal type	L1C/A	L1OF	B1	E1B/C	GPS L1C/A[2]
RF signal frequency	1575.42 MHz	1602 MHz + k*562.5 kHz [1]	1561.098 MHz	1575.42 MHz	1575.42 MHz
Recommended signal strength at SMA	-130 dBm				
Max RF power at input	15 dBm				
Input impedance	50 Ω, nominal				
Time pulse accuracy	Clear sky ≤ 20 ns Indoor ≤ 500 ns				
Time pulse frequency	1 Hz				
Number of channels	72 channels				

1 - k is the satellite's frequency channel number (k = –7, –6, ..., 5, 6)

2 - Signals from high-elevation satellites over the Pacific region between Japan and Australia

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Environmental Conditions

Operating temperature	from -40 ° C to 85 ° C
Storage temperature	from -40 ° C to 85 ° C
Ingress protection	IP40

GNSS Antenna Connector Specifications

GNSS Antenna Connector Specifications	SMA female
Storage temperature	+3.3 V DC ± 5 %
Ingress protection	60 mA

Required Hardware

- CompactRIO™ system from National Instruments™
- GNSS active antenna mandatory for operation (3.3 V DC)

Required Software

- LabVIEW
- NI CompactRIO Device Drivers
- LabVIEW Real-Time Module
- LabVIEW FPGA Module
- NI TimeSync: FPGA Timekeeper API

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Software

Module comes with the following Software components:

List of Properties	Data Type	Type
Module ID	U16	Read only
Serial Number	U32	Read only
Vendor ID	U16	Read only
Firmware Version	U16	Read only
Latitude (deg)	I32	Read only
Longitude (deg)	I32	Read only
Altitude (mm)	I32	Read only
Survey In Status	Enum	Read only
Survey In Duration (s)	U32	Read only
Antenna Status	Enum	Read only
Visible Satellites	U32	Read only
Visible Satellites (GPS)	U32	Read only
Visible Satellites (SBAS)	U32	Read only
Visible Satellites (BeiDou)	U32	Read only
Visible Satellites (QZSS)	U32	Read only
FixType	Enum	Read only
Week	U32	Read only
Time of Week (s)	U32	Read only
GNSS Offset (ns)	U32	Read only
GNSS Uncertainty (ns)	I8	Read only
Leap Seconds	I8	Read only
Leap Seconds Valid	Bool	Read only
GNSS Time Valid	Bool	Read only
Timepulse Locked	Bool	Read only
Leap Second Now	Bool	Read only
Leap Second Soon	Bool	Read only
Leap Second Positive	Bool	Read only
Antenna Cable Delay (ns)	I16	write
Timepulse offset (ns)	I32	write
Primary time reference	Enum	write
Secondary time reference	Enum	write
SBAS enabled	Bool	write
Time mode	Enum	write