ANNA-F9 High Precision GNSS PCIe Mini Card

Features

- Built-in u-blox F9 GNSS module which provides centimeter-level accuracy
- Multi-band RTK with fast convergence and reliable performance
- Concurrent reception of GPS, GLONASS, Galileo and BeiDou
- Optionally support Dead Reckoning Features: UDR, ADR, CAN-to-ADR
- Sensors Intergrated: 3D Gyroscope, 3D Accelerometer, 3D Magnetometer

Introduction

ANTZER TECH's ANNA-F9 High Precision GNSS Mini-PCIe card integrates u-blox F9 receiver platform providing multi-band GNSS and RTK positioning. ANNA-F9 series offer support for RTCM formatted corrections and centimeter-level positioning from local base stations or from virtual reference stations (VRS) in a Network RTK setup. Moreover, the GNSS module is available to upgrade for future SSR-type correction service which is suitable for mass market penetration. ANNA-F9 series has optional configuration including 3D inertial measurement unit (IMU) which support Dead Reckoning technology: UDR (Untethered Dead Reckoning), ADR (Automotive Dead Reckoning) or Antzer Tech patented CAN-to-ADR solution. ANNA-F9 mini-PCIe card provides optimal positioning accuracy which is the ideal solution for agricultural machinery, heavy trucks and modern autonomous vehicles.

Specifications

Interface	Form Factor	Full-sized PCI Express Mini Card
	Host Interface	USB 2.0 via PCI Express Mini Card Socket
GNSS	GNSS Module	u-blox ZED-F9P, ZED-F9R
	Receiver Type	184-channel u-blox F9 engine GPS: L1C/A L2C / Glonass: L1OF L2OF / Galileo: E1B/C E5b Beidou: B1I B2I / QZSS L1C/A L1S / SBAS [1] L1C/A
	Position Accuracy (RTK) [2]	0.01m + 1 ppm CEP
	Convergence time (RTK) [2]	<10 sec
	GNSS Antenna	External, IPEX connector onboard (support active antenna)
	Dead Reckoning	Only supported on ANNA-F9xRx: UDR, ADR, CAN-to-ADR
	Input Connector	Wheel-tick and direction inputs for ANNA-F9xRx
CAN/Sensor	Sensor [3]	3D Gyroscope, 3D Accelerometer, 3D Magnetometer
	CAN [4]	Support ISO15765-4 on-board diagnostic or J1939 protocol to get speed from vehicle CAN Bus for CAN-to-ADR application.
Environment	Operating Temp	-40°C ~ 85°C (without Li-Coin Battery) -20°C ~ 60°C (with Li-Coin Battery)
	Vibration Test	Pass 7.69G@ 20~2000Hz, compliant with MIL-STD-810G category 24
	ESD Protection	8kV Contact, 15kV air
	Certification	CE, FCC Class B
Dimension	L x W x H	50.9 x 30 x 6.45mm

Pin Assignment

Pin	Function	Pin	Function
1	NC	2	+V3.3
3	NC	4	GND
5	NC	6	NC
7	NC	8	NC
9	GND	10	NC
11	NC	12	NC
13	NC	14	NC
15	GND	16	NC
Mechanical Key			
17	NC	18	GND
19	NC	20	NC
21	GND	22	NC
23	NC	24	+V3.3
25	NC	26	GND
27	GND	28	NC
29	GND	30	NC
31	NC	32	NC
33	NC	34	GND
35	GND	36	USB_DM
37	GND	38	USB_DP
39	+V3.3	40	GND
41	+V3.3	42	NC
43	GND	44	NC
45	NC	46	NC
47	NC	48	NC
49	NC	50	GND
51	NC	52	+V3.3

Functional Switch

Pin	Function
SW #1	Reserved (Default: OFF)
SW #2	Back-up Battery ON/OFF (Default: ON)
SW #3	CAN bus Tx ON/OFF (Default: ON)
SW #4	CAN bus Terminal Resistor (Default: OFF)

[1] SBAS is only supported on ANNA-F9xPx
[2] Depends on atmosphere conditions, baseline length, GNSS antenna, multipath conditions, satellite visibility, and geometry
[3] Sensors on ANNA-F9xPx communicate with Host PC through SMBus on mPCIe Socket, whereas the USB interface is designed for ANNA-F9xRx
[4] Only supported on ANNA-F9xRx for CAN-to-ADR application

Ordering Information

Model Name	Description
ANNA-F90P0	ZED-F9P, Full-Sized Mini-PCIe Card, Gyroscope, Accelerometer, Magnetometer
ANNA-F90R0	ZED-F9R, Full-Sized Mini-PCIe Card, Gyroscope, Accelerometer, Magnetometer with UDR/ADR/ CAN-to-ADR function