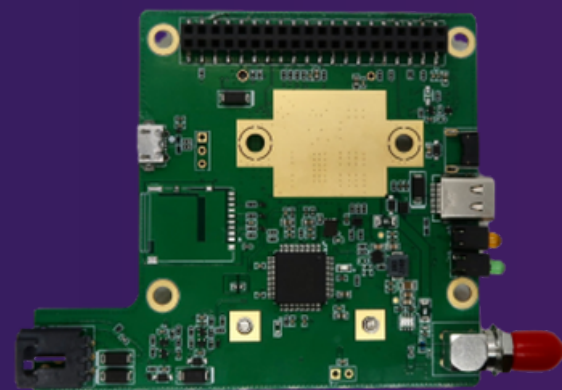# HYFIX
SPATIAL INTELLIGENCE

ECM200

Ready-to-Use USB RTK Rover Kit

The USB RTK Rover Kit provides a simple open-source reference design to easily add a low-cost, low-power centimeter accurate GNSS module into almost any hardware design. The kit includes all the parts needed to get started including a good-quality housing, dual-band GNSS antennae, and 30-day trial to the GEODNET GNSS corrections network. The on-board LC29H is a full four-constellation (+QZSS), 135 channel receiver with on-board firmware that supports RTK and Dead-Reckoning (DR).
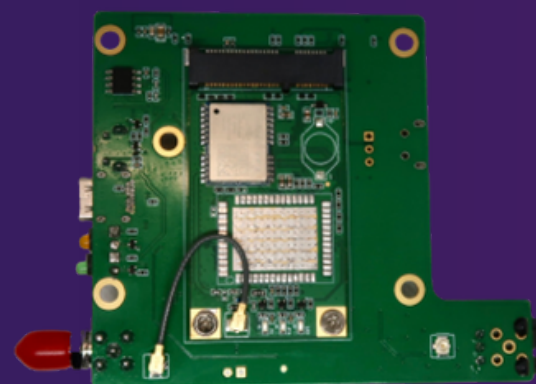
DEVICE SUMMARY:
- USB Power and Serial Interface
- 30-Day GEODNET Trial Account for RTK Corrections
- MiniPCIe with Dual-Band L1/L5 RTK Receiver (LC29H)
- Low-Cost MiniPCIe for Easy Embedding to New Designs
- Open-Source Board Designs
- QGNSS Software, RTKLib, and HYFIX Open-Source Tools

Development Board with PPS & Event Interface Raspberry Pi4B Shield (Pi4B not included)

	HYFIX USB Rover	u-bloxF9P Kit	u-bloxF9R Kit	u-bloxC099 Board
Cost	$195	$259	$299	$300
Correction Service Trial	30 Days (GEODNET)	30 Days(HXGN)	30 Days(HXGN)	30 Days(HXGN)
Open-Source Boards, Software	Yes	No	No	No
GNSS Receiver	LC29H	F9P	F9R	F9P
Full-Constellation	Yes	Yes	Yes	Yes
Dual-Band	L1/L5	L1/L2	L1/L2	L1/L2
IMU/Dead Reckoning	Yes	No	Yes	No
CPU Shield	Raspberry Pi4B	N/A	N/A	Arduino Mega
Antennae	Mag Mount 5m Cable	Mag Mount 3m Cable	Mag Mount 3m Cable	Mag Mount 3m Cable

LC29H Receiver on Modular & Removable MiniPCIe

https://hyfix.ai

GNSS Features

Supported Bands	GPS/QZSS: L1 C/A, L5
	GLONASS: L1
	Galileo: E1, E5a
	BDS: B1I, B2a
	L5 (1176.45 MHz)
Default GNSS Constellation	GPS + GLONASS + Galileo + BDS + QZSS
Number of concurrent GNSS	4 + QZSS
SBAS	WAAS*, EGNOS*, MSAS* and GAGAN*
Function(s)	RTK + DR (integrated IMU)
Horizontal Position Accuracy	Autonomous : 1m RTK : <0.1m + 1ppm
DR Position Error (with speed)	<2 % of distance traveled without GNSS
DR Position Error (without speed)	<4 % of distance traveled without GNSS
Velocity Accuracy	0.03 m/s
Accuracy of 1PPS signal	20 ns
Convergence time	RTK : < 10s
TTFF (with AGNSS)	Full Cold Start: 5 s
TTFF (without AGNSS)	Full Cold Start: 26 s Warm Start: 16 s Hot Start: 1 s
Sensitivity	Acquisition: –145 dBm Tracking: –165 dBm Reacquisition: –157 dBm
Dynamic Performance	Maximum Altitude: 10000 m Maximum Velocity: 500 m/s Maximum Acceleration: 4g
Nav. Update Rate	1 Hz/ 10 Hz
Raw Data Update Rate	GNSS: 1Hz IMU: 100 Hz (max)

Physical & Electrical

Dimension	4.0" x 3.4" x 1.2"
Weight	454g
Power	<0.5W, USB-C