GPS-721U-MRTU
GPS-721U-MRTU-UTA

GPS Receiver Module with RS-232, RS-485,
supports NEMA, DCON and Modbus/RTU protocols

Features

- 56-channel GPS Receiver
- RS-485 Interface supports either the DCON or the Modbus RTU Protocol
- RS-232 supports the NMEA 0183 v3.0 Format, as well as either the DCON or Modbus RTU Protocol
- 1-channel Digital Output, 1-channel PPS Output (1 pulse/s), RS-485, and RS-232 Interfaces
- PPS: 100 ms pulse/s output for precise timekeeping and time measurement
- Fully compatible with SBAS (WAAS, EGNOS, MSAS)

Introduction

The GPS-721U-MRTU, GPS-721U-MRTU-UTA module provides high sensitivity and low power consumption with an ultra small form factor. The GPS module is powered by a u-blox solution and provides superior sensitivity and performance, even in an urban environment, or an environment that features dense foliage.

Applications

- Automotive navigation
- Marine navigation
- Personal positioning and navigation
- Precise timekeeping and time measurement
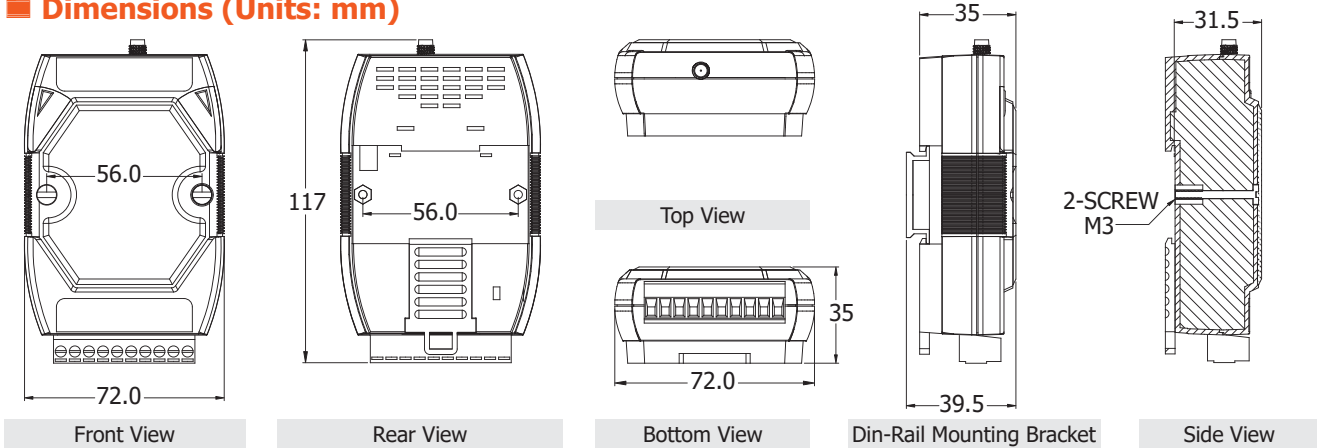- Satellite time correction

Specifications

Model	GPS-721U-MRTU	GPS-721U-MRTU-UTA
LED Indicators		
Status	1 x Power/Communication 3 x GPS	
GPS/GNSS		
Acquisition Time	Cold Start (Open Sky) = 29 s (typical)	
Chip	u-Blox solution	
Frequency	L1 1575.42 MHz, C/A code	
Max. Altitude	<50,000 m	
Max. Velocity	<500 m/s	
Position Accuracy	Autonomous: 2.5 m SBAS: 2.0 m	
Protocol	NMEA 0183 (9600 bps, N81 Fixed)	
Sensitivity	Tracking: Up to -161 dBm Cold start: Up to -148 dBm	
Support Channels	56	
1 PPS	Pulse per second output (Default 100 ms pulse/sec)	
Digital Output		
Channels	1 (Sink)	
Type	Non-isolated Open Collector	
Load Voltage	+5 VDC~ +30 VDC	
Load Current	100 mA	
COM Ports		
Ports	1x RS-232, 1x RS-485	
Baud Rate	1200 ~ 115200 bps	
Data Format	N81, N82, E81, O81	
Protocol	RS-232: DCON, Modbus RTU or NMEA 0183 (9600 bps, N81 fixed) RS-485: DCON or Modbus RTU	
Power		
Input Range	+10 VDC ~ +30 VDC (Non-regulated)	
Consumption	2.5 W	
Mechanical		
Casing	Plastic	
Dimensions (mm)	72 x 117 x 35 (W x L x D)	
Weight	200 g	

■ Specifications

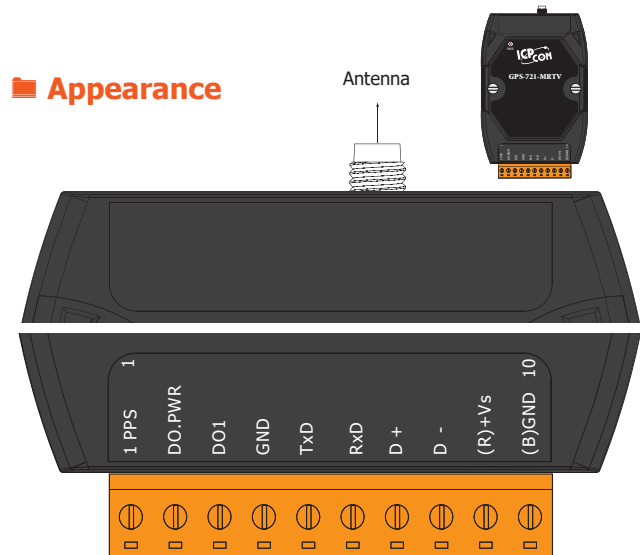| Environment	
Operating Temperature	-25 ~ +75°C
Storage Temperature	-40 ~ +80°C
Humidity	5 ~ 95% RH, Non-condensing

■ Dimensions (Units: mm)

Front View

Rear View

Top View

Bottom View

Din-Rail Mounting Bracket

Side View

■ Wiring

Output Type	ON State (LED ON)		OFF State (LED OFF)	
	Relay ON		Relay OFF	
Drive Relay		DO.PWR DO1/1PPS GND		DO.PWR DO1/1PPS GND
	Resistance Load	DO.PWR DO1/1PPS GND		DO.PWR DO1/1PPS GND

■ Internal I/O Structure
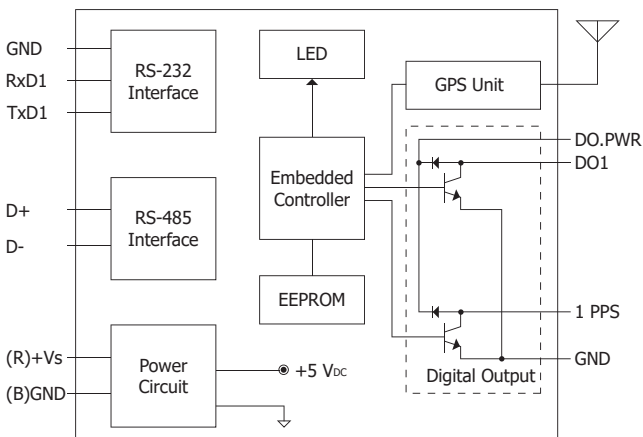

■ Appearance

Antenna

■ Ordering Information

GPS-721-MRTU CR	GPS Receiver Module with RS-232, RS-485, supports NEMA, DCON and Modbus/RTU protocols (RoHS) Includes a 5 m GPS antenna (ANT-115-03)
GPS-721-MRTU-UTA CR	GPS Receiver Module with RS-232, RS-485, supports NEMA, DCON and Modbus/RTU protocols (-40 ~ +75°C)(RoHS) Includes a 5 m GPS antenna (ANT-115-03)

■ Accessories

ANT-115-03 CR	4PI81K0000001	5 m Active External GPS Antenna (SMA Plug) (RoHS)

1 Pulse Per Second (PPS - Pulse Duration is 100 ms)
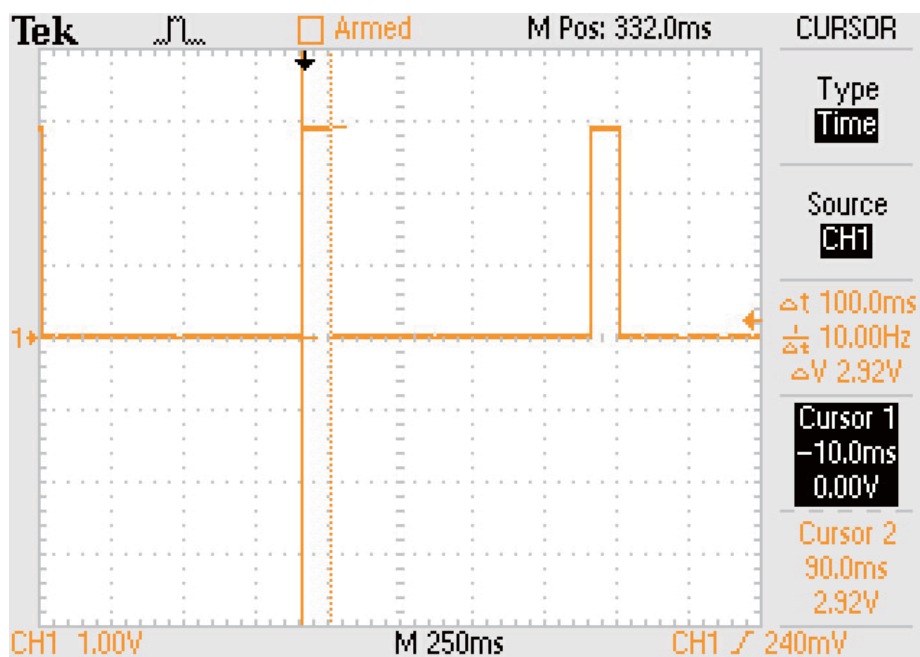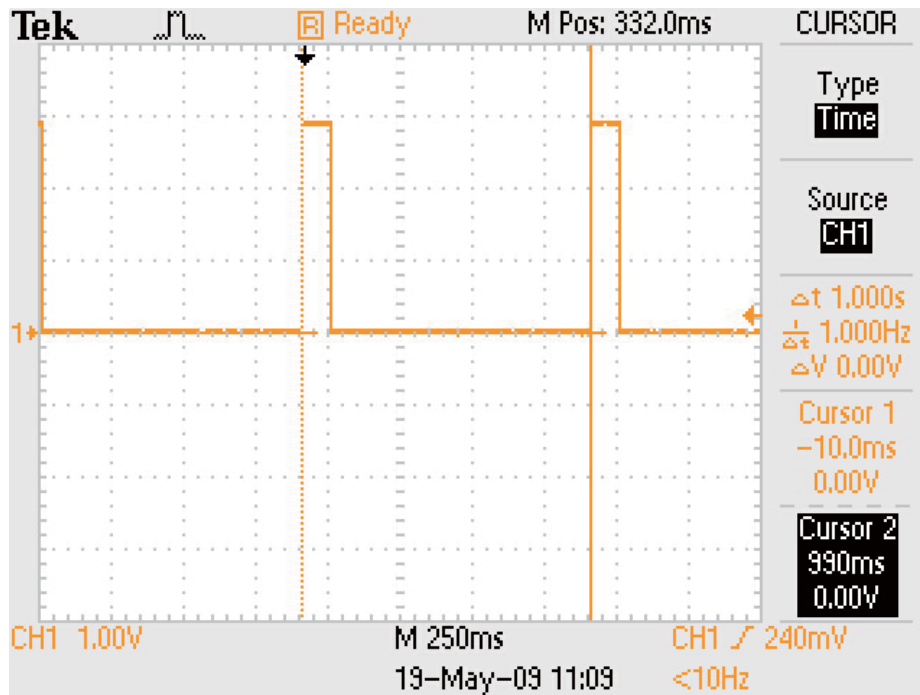
The Global Positioning System (GPS) can also be used as a time reference for radio clocks, but requires an accurate 1PPS output to be reliably used for time signals

A pulse per second (PPS) is an electrical signal that very precisely indicates the start of a second. PPS signals are output by various types of precision clock, including some models of GPS receivers. Depending on the source, properly operating PPS signals have an accuracy ranging from a few nanoseconds to a few milliseconds.

PPS signals are used for precise timekeeping and time measurement. One increasingly common use is in computer timekeeping, including the NTP protocol. Since GPS is considered a stratum-0 source, a common use for the PPS signal is to connect it to a PC using a low-latency, low-jitter wire connection and allow a program to synchronize with it: this makes the PC a stratum-1 time source. Note that because the PPS signal does not specify the time, but merely the start of a second, one must combine the PPS function with another time source that provides the full date and time in order to ascertain the time accurately and precisely.