



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

GPS Receiver Module with 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.

### I/O Specifications

Digital Output	
Channels	1 (Sink)
Type	Non-isolated Open Collector
Current	100 mA
Load Voltage	+5 Vdc ~ +30 Vdc

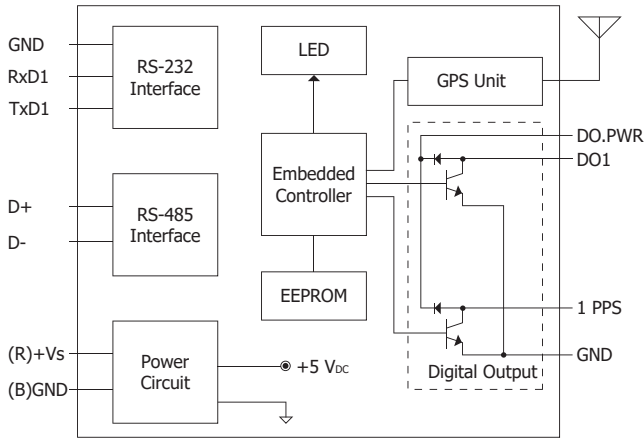
### Applications

- Satellite Time Correction
- Personal Positioning and Navigation
- Automotive Navigation
- Marine Navigation

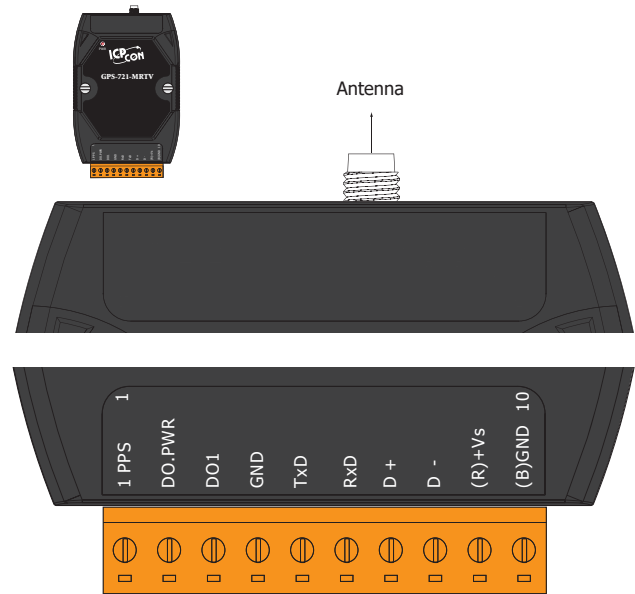
### System Specifications

Model	GPS-721U-MRTU	GPS-721U-MRTU-UTA
<b>GPS Receiver</b>		
Chip	u-blox Solution	
Frequency	L1 1575.42 MHz, C/A Code	
Channels	56	
Position Accuracy	Autonomous	2.5 m
	SBAS	2.0 m
Max. Altitude	< 50000 m	
Max. Velocity	< 500 m/s	
Acquisition Time	Cold Start (Open Sky) = 29 s (Typical)	
Sensitivity	Tracking	Up to -161 dBm
	Cold start	Up to -148 dBm
Protocol Support	NMEA 0183 version 2.3 (compatible to 3.0)	
<b>GPS Output</b>		
PPS	1 pulse per second output (Default 100 ms pulse/sec)	
RS-232 Interface	GPS Data Output	
<b>LED Indicators</b>		
Power/Communication	1	
GPS	3	
<b>Power</b>		
Protection	Power Reverse Polarity Protection	
Frame Ground for ESD Protection	Yes	
Required Supply Voltage	+10 VDC ~ +30 VDC (Non-regulated)	
Power Consumption	0.8 W	
<b>Mechanical</b>		
Dimensions (L x W x H)	117 mm x 72 mm x 35 mm	
<b>Environment</b>		
Operating Temperature	-25 to +75°C	-40 ~ +75°C
Storage Temperature	-40 to +85°C	
Humidity	5 to 95% RH, Non-condensing	

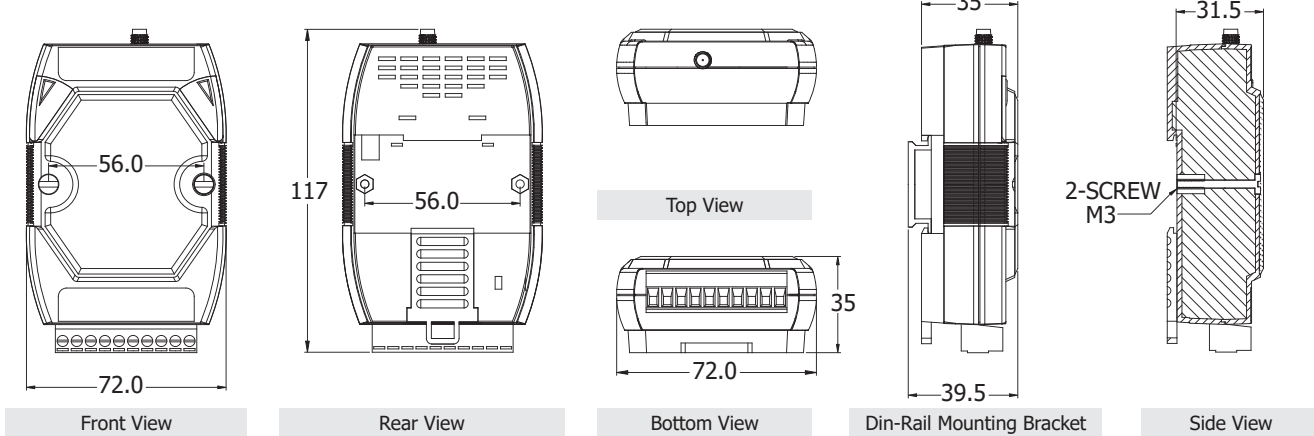
## Internal I/O Structure



## Appearance



## Dimensions (Units: mm)



## Wiring

Output Type	ON State LED ON Readback as 1	OFF State LED OFF Readback as 0
Drive Relay	Relay ON 	Relay OFF 
	Resistance Load 	Resistance Load 

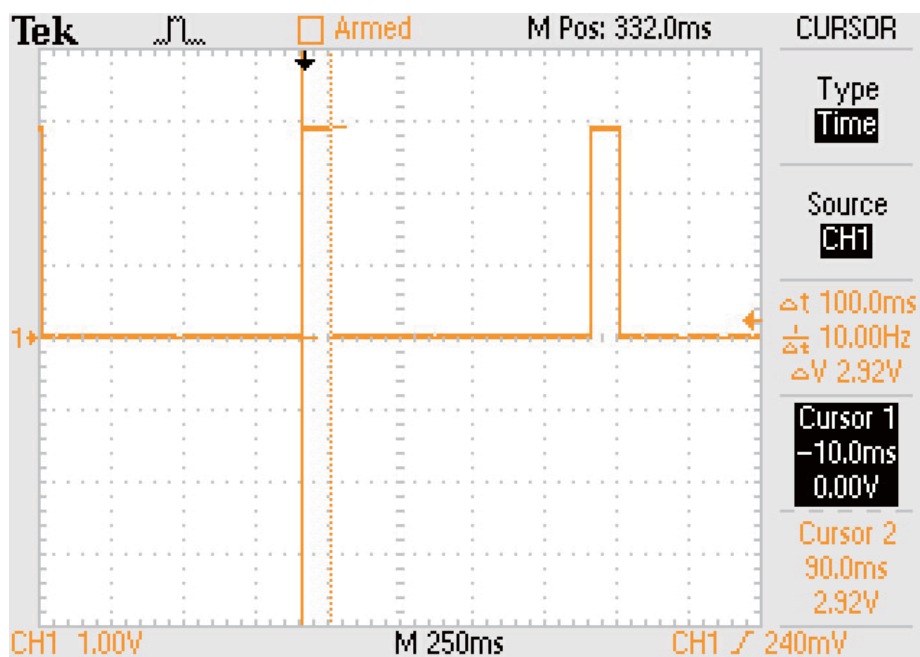
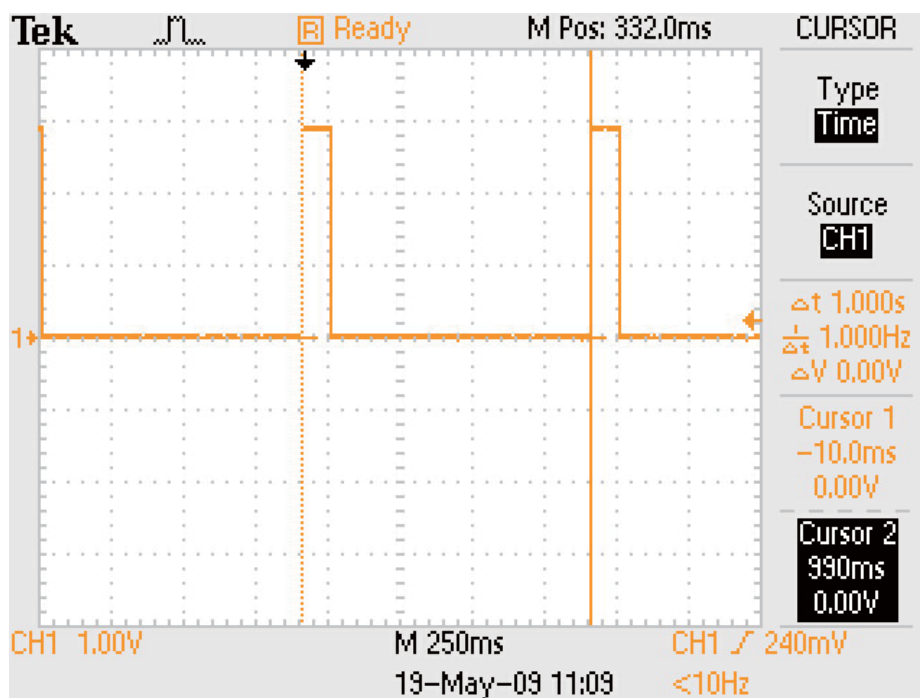
## Ordering Information

<b>GPS-721-MRTU CR</b>	GPS Receiver Module with RS-485, supports NEMA, DCON and Modbus/RTU protocols (RoHS) Includes a 5 m GPS antenna (ANT-115-03)
<b>GPS-721-MRTU-UTA CR</b>	GPS Receiver Module with 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	4PI81K000001	5 m Active External GPS Antenna (SMA Plug) (RoHS)
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## 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.