

# UNIVERSAL TIME BASE, A20

by Trafictec

The **Universal Time Base (UTB) GPS receiver** was developed by Trafictec to serve the ATC/2070 communities by providing accurate time for the controller applications requiring an accurate time of day clock. The UTB was designed with a minimal interface to ease integration into existing software applications. The UTB utilizes time signals broadcast from a constellation of GPS satellites whose time signals are referenced to the National Institute of Standards and Technology (NIST). The UTB uses a small active antenna that gets mounted on top of the cabinet and connects to a BNC connector on the front panel of the module. The UTB module has the same footprint as the ATC/2070-7x series communication modules and meets isolation and power specifications.

The UTB A20 version offers 3, dip switch selectable, modes of operation. In the **normal mode**, the A20 sends digital time data in response to "Q" commands sent to it by the controller. See table 1 below for available "Q" command replys. In the **QC broadcast mode**, digital time data is sent to the controller every minute. See table 2 below for QC data format. In the **GPS mode**, the raw time data from the GPS receiver is sent directly to the controller without any reformatting. In all three modes, the controller uses the time data sent by the A20 to reset its internal clock.

The UTB has a signal status LED on the front panel to indicate the reliability of the time data. The time data stream is accurate to 10 millisecond when the signal LED is flashing green, 100 milliseconds when the signal LED is flashing yellow and the UTB will not send out a time data stream when the signal LED is flashing red.

The upper channel (SP1/3) is dedicated for the UTB GPS receiver. The GPS receiver sends it's TTL level signals through an opto coupler for isolation both signal and ground where it is then converted to an EIA-485 signal which drives the Rx line of the communications channel.

The lower channel (SP2/4) converts its EIA-485 signal lines (Rx, Tx, RTS, CTS, DCD) to and from the motherboard to TTL levels. The signal lines are then isolated both signal and ground by passing through an optical coupler. The isolated signals then drive/receive an external EIA-232 device via the front panel mounted DB9S connector. For your convenience, JP1 provides isolated +5V 100mA max to pin 9 of the DB9S connector.



### QC Broadcast Data String

<b>YY</b>	Last two digits of the year 00-99
<b>MM</b>	Month 01-12
<b>DD</b>	Day of the month 01-31
<b>HH</b>	Hours 00-23
<b>mm</b>	Minutes 00-59
<b>SS</b>	Seconds (always 00)
<b>T</b>	Tenths of a second (always 0)
<b>H</b>	Hundreds of a second (always 0)
<b>t</b>	Thousandths of a second (always 0)
<b>L</b>	Y if locked on to a GPS satellite N if not locked on
<b>W</b>	Day of the week 1-7 (1=Sunday)
	Carriage return/line feed

Table 1

### Available "Q" Commands

Command	Returns	Format
<b>QD</b>	Date and day of year	YY/MM/DD/day of year
<b>QT</b>	Time	mHH:MM:SS:Thtd
<b>QC</b>	Date, time, status and day of week	YYMMDDHHmmSSTHtLW
<b>QM</b>	Data stored in ROM	B:D:M:N:O
<b>QV</b>	Version of firmware	Firmware version number

Table 2



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