

# CTL46x Series

## GPS Timing Modules



*Ultra-high Sensitivity Assisted GPS Technology*

### Product Overview

The CTL46x Series GPS Timing Modules are designed for where a compact, low cost source of highly accurate time is required, in a very small form factor

The CTL46x Series can be specified with the latest Chip Scale Atomic Clock (CSAC) from Microsemi for extended holdover, or with TCXO oscillators for reduced holdover and lower cost applications.

The CTL46x Series are fitted with a multi-constellation GNSS receiver that can track GPS, GLONASS, GALILEO, BEIDOU and QZSS

The CTL46x Series utilises the very latest GPS technology that allows ultra high sensitivity satellite tracking to levels as low as  $-160\text{dBm}$ , this low strength signal capability can enable GPS timing in very weak signal areas such as under dense foliage, in severe urban canyons and even inside buildings.

The CTL46x Series provides 1pps and 10MHz output signals.

Other features of the CTL46x Series includes the capability to perform a self survey and enter a fixed position mode of operation. This



CTL462 CSAC option

allows GPS timing with only one satellite being tracked as low as  $-160\text{dBm}$  thereby greatly extending the ability of the unit to output GPS steered time and reducing hold-over requirements. In addition, the unit will autonomously scale the self survey window based on initial reported GPS position to allow entry into fixed position mode even in very weak signal areas.

DATASHEET

## Specification

### Physical

Enclosure Size: 48mm x 43mm x 15mm

### Inputs

Antenna: U.FL Co-axial  
 Antenna Power: +5V filtered and current limited  
 Voltage: +5V DC  
 Power: 90mW for CTL460 (TCXO)  
 200mW for CTL462 (CSAC)

### Outputs

1pps: TTL  
 Serial Port: UART  
 Data Output: NMEA0183 (including Time of Day)

### GNSS

Frequency: GPS, GALILEO, GLONASS, BEIDOU, QZSS,  
 Sensitivity: -159dBm acquisition (A-GPS)  
 Sensitivity: -160dBm tracking

### Timing Accuracy

1pps: 15ns RMS (clear view of sky)  
 1pps: <1us (weak signal strength) (**note 1**)

### Holdover Stability

CTL460 with TCXO: 5 x 10E-7  
 CTL462 with CSAC: 3 x 10E-11

### Environmental

Operating Temperature: -30°C to +70°C  
 Storage Temperature: -40°C to +100°C  
 Humidity: 90% non-condensing

### Compliance

6 of 6 RoHS

### Key Features

- Multi constellation GNSS receiver
- GPS disciplined CSAC oscillator
- TCXO option
- 1pps output
- 10MHz output
- +5V DC input voltage
- Ultra high GPS sensitivity
- 15ns RMS timing accuracy
- Achieves ITU/ETSI PRC MTIE mask
- Self survey and single satellite timing capability
- Low power
- Very small form factor

### Part Numbers:

CTL460 includes TCXO  
 CTL462 includes CSAC

### Note 1

With a clear view of the sky, the CTL46x series units will provide 15ns RMS timing accuracy. In areas of very weak GPS signals, the timing accuracy can degrade out to levels of <1us due to signal multipath. Such multipath will also degrade the short term frequency accuracy.