

GPS MASTER CLOCK INTERFACE



ACCURATE TIME *For 59th Minute and Midnight synchronized clock systems*

**GPS-TR3 Master Clock - Tracks the Atomic Clock
Provides user selected correction for most
analog and digital clocks systems.**

Includes:

**59th Minute, Midnight, and Serial data correction.
Serial BCD correction is optional.**

Easy to install - terminal block wiring

Relay output can be programmed to provide a sync signal at Midnight for re-setting most existing digital clocks and master clocks.

For 59th minute clock systems the relay output can be programmed to provide an 8 second correction signal each hour at XX:57:54, and a 14 second correction signal at 5:57:54 AM and PM.

The serial data output provides the ATS 10-Byte message for synchronizing CC2000, AE series digital clocks, AE Series Time Zone Clocks, and the MC4181LV Master Clock.

The GPS-TR3 includes the GPS-427A Antenna/Receiver and the TR3 Master Clock Interface.

Complete systems are available. Call for details..



**APPLIED
TECHNICAL
SYSTEMS**

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GPS-TR3 MASTER CLOCK INTERFACE

The NAVSTAR Global Positioning System (GPS), developed by the U.S. Department of Defense, is an extremely accurate navigation system. Its 24 satellites are flying about 11,000 miles above the earth, so that any place on the earth will have a minimum of four satellites in view at any given time. Although they are moving very rapidly, their positions and orbits are known with great precision at all times.

The orbiting satellites have extremely accurate (and expensive!) clocks that use the vibrations of an atom as the fundamental unit of time. These atomic clocks are traceable to UTC/USNO to better than 100 nanoseconds, which is many orders of magnitude better than what is required for the typical school or facility clock system.

Part of every GPS receiver is a radio that listens for the signals being broadcast by these satellites. Each spacecraft continuously sends a data stream (NMEA Sentences) that contains its orbit information, equipment status, and the exact time.

There are two parts to the GPS-TR3 system. The GPS-427A Antenna/Receiver receives (UTC) Universal Coordinated Time from the GPS (Global Positioning Satellite) system and provides a series of NMEA sentences for the TR3 Master Clock Interface.

The TR3 Master Clock Interface constantly analyzes the data from selected NMEA sentences for signal quality, and to be sure it has locked on to at least three satellites. It then extracts UTC from these data for use by the controller.

The local time zone is selected using a rotary switch. Seven North American time zones are available including Hawaii. A jumper is provided for selecting automatic DST (according to U.S. DST rules), or NO DST. The selected zone and DST computes the offset from UTC.

During power outages or loss of signal, the TR3 Master Clock Interface will disable its synchronization output. Upon the return of power the system will attempt to lock on again. This usually takes about 60 seconds.

FEATURES

Uses the time tested, GPS-427A Antenna/Receiver, which can be mounted up to 1000 feet away from the TR3 - outdoors, or in a window for a clear view of the Southern sky. See the GPS-427A data sheet for more details.

16 - character, alphanumeric display shows local time and GPS status.

Easy time zone and program setup using rotary selector switches. A jumper selects automatic DST (according to U.S. DST rules), or No DST .

Disables all outputs when not locked on to the GPS signal.

Serial data output provides ATS 10-byte messages for synchronizing and controlling ATS digital clocks, time zone clocks and master clocks.

SPECIFICATIONS

Dual Power: 24VAC 50/60 Hz, 100 mA. max. (120 VAC Power Module is included) and 12 VDC, 100 mA max.

Relay Output: SPDT relay, rated at 15 Amps, 48 VAC or 30 VDC

Serial Output: RS232 - ATS 10-byte messages are standard. Optional BCD data is available.

Wiring: Terminal blocks for power and signal wiring including relay output and GPS-427A Antenna/Receiver.

Enclosure: Painted aluminum with mounting holes. Measures 3.7"W x 7.6"H x 1.6"D.

See the GPS-427A data sheet for for the Antenna / Receiver specifications.