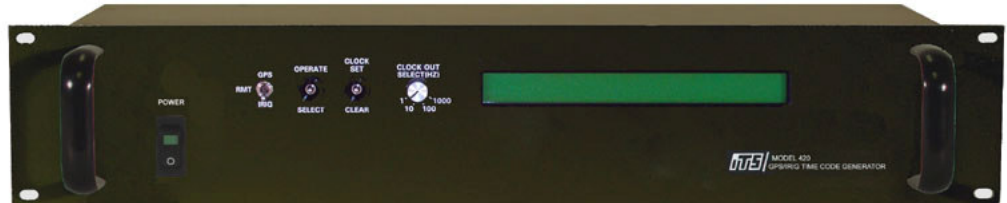


## FEATURES

- Twelve channel GPS receiver with Dynamics Mode.
- IRIG B time code generator.
- Front Panel Time/Status Display.
- Twenty IRIG B002 serial demodulated outputs.
- Can be synchronized to GPS or IRIG B
- Parallel Status/Control Port and RS-232 Data Port.
- Active GPS antenna included.



## DESCRIPTION

The Model 420-D is a GPS synchronized IRIG B time code generator designed to provide a precise IRIG B002 serial time code output as well as a 1PPS time pulse. The unit automatically acquires all in-view satellites upon power up and locks an internal IRIG B time code generator to the GPS time reference. If the GPS lock is lost the 420-D will automatically switch to an internal clock and continue generating the output IRIG B signal. No discernible change in the IRIG B output will occur due to this transition.

In the event that a GPS signal is not available the 420-D can be locked to an external IRIG B serial time code signal. The selection of GPS or IRIG as the synchronization source is via a front panel switch or it may be done remotely via a TTL signal or contact closure.

The 420-D may also be used as a stand-alone unit to generate an IRIG B signal. The time-of-year may be set by the user via front panel switches. A backlit LCD readout displays the days, hours, minutes and seconds as well as unit status. In the event of a power failure the 420-D will no longer output a serial time code however the time will continue to advance by automatically switching to a battery backed-up internal clock. The IRIG output will resume, without resetting, upon reapplication of power.

The unit has twenty fully buffered IRIG B002 outputs, plus status and synchronized clock signal outputs.

# Model 420-D

## GPS Synchronized IRIG B Time Code Generator

### SPECIFICATIONS

#### Timing Accuracy

When Locked to GPS:  $1 \times 10^{-9}$  @ 1 second  
 $1 \times 10^{-10}$  @ 100 second  
 $3 \times 10^{-12}$  @ 1 day  
(Dynamic mode set to 'Fixed')

When powered (no GPS lock)  $<2.5 \times 10^{-6}$  without discipline  
 $<0.3 \times 10^{-6}$ ;  $<30$  ms per day  
(after 24 hours of GPS locked disciplining)

On Battery backup  $1 \times 10^{-4}$ . (0 to +55°C)

#### Clock backup life (un-powered)

1 year minimum.

#### GPS Performance

Channels: 12 Parallel channels, tracks all satellites in view.  
Time-to-first-fix:  $<15$  seconds typical (warm start),  $<90$  seconds typical (cold start).

UTC Time Mark: Synchronized with Global Reference Standard.

Reacquisition: 2 seconds typical.

Dynamics Mode: Five settings: Fixed, Walking, Land Vehicle, Marine, Airborne. Timing accuracy varies from  $<25$ nsec (Fixed) to  $<100$ nsec (Airborne)

#### IRIG B Output

Standard IRIG B002 serial demodulated time code IAW IRIG Standard 200-98. Each outputs is capable of driving a 50 ohm load and each output can drive up to five devices each. All outputs are short circuit protected. The 420-D is compatible with the ITS Model 490-D20 IRIG Distribution Amplifier.

#### Status and Clock Outputs

TTL: Standard TTL levels  
OC(open Collector): Mosfet, Max Voltage: 100V  
Max current: 1.3A, On resistance at 1.3A: 0.3 Ohm,  
Max Drain-Source leakage: 500 nA.

#### RS-232 Port

EIA RS-232C, 8 bit, no parity, 1 stop bit. Baud Rate selectable from 300 to 38400.

#### Power

100 to 240 VAC. 50/60 Hz

#### Temperature (Operating) (Storage)

0°C to +55°C  
-10°C to +70°C

#### Humidity

95% non condensing

#### Package

Size 19" wide x 9" deep (including connectors) x 3.5" high.  
Weight 4.5 lbs.

