

**MODEL 6075B  
TIME CODE DISPLAY**

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## **ITS MODEL 6075B TIME CODE DISPLAY**

### **1.0 GENERAL**

The ITS Model 6075B Time Code Display is a two function unit that decodes the NASA 36 or IRIG B Serial Time Code and also performs a counter function. The unit displays the time or alternatively the counter state as selected. Features include:

1. *Decodes NASA 36 or IRIG B Serial Time Code, selectable.*
2. *Nine digit time display, 2.3" high LED characters.*
3. *Internal crystal controlled clock maintains timing in the event of a loss of serial time code input.*
5. *Serial RS-232 control input.*
6. *Non-volatile memory retains set-up in the event of power failure.*
7. *Offset feature allows different time zones to be displayed from common time code input.*

The 6075B is housed in an aluminum enclosure, 21.25 inches wide, 4 inches high and 1.87 inches deep and is powered by 12VDC. A 100 to 240 VAC, 50/60Hz power converter is included.

## **2.0 CHARACTERISTICS**

### **2.1 TIME DISPLAY MODE**

When set to Time Display mode, the 6075B displays the applied time code, or in the absence of an applied signal, the internal clock. Display is nine digits, DDD:HH:MM:SS. The time display may be offset to display a time zone other than that of the applied time code (see Par 2.3). If there is a loss of serial time code input, the displayed colons flash at a 1Hz rate to alert the operator that the 6075B is operating on the internal clock.

### **2.2 COUNTER DISPLAY MODE**

When set to counter display mode the 6075B will display the state of an internal count. The counter is always functional regardless of the display mode selected and is controlled as follows:

The 6075B will increment or decrement a preset time display as commanded by the operator via ASCII commands received via the serial port. To activate the counter, a preset value must be set and once received the value is immediately displayed. When a ASCII '-' is received the 6075B will assume that the preset value is negative. A minus sign will appear in the most significant digit space and the display will begin decrementing. If a ASCII '+' is received it is assumed that the preset value is positive. No sign will be displayed and the counter will begin incrementing. Since the minus sign occupies the MSC space, the maximum number of days is limited to 99 when a negative value is set.

If a negative count command is issued, the display will begin to decrement at a one count per second rate. The count is synchronized with the applied Serial Time Code. When the displayed count reaches zero the minus sign will turn off and the display will begin to increment at the one-second rate. It will continue to increment until a new preset value is input, until the days display reaches 999 or if a HOLD command is received via the serial port. If a HOLD command is received, the displayed value will stop counting. It will continue counting from the value displayed when stopped upon receipt of a RESUME command.

## 2.2 COUNTER DISPLAY MODE (continued)

Note that the maximum negative value that can be entered is 99 days. This limitation is due to the fact that the most significant digit is used to display the minus sign.

The counter, or if selected, the IRIG time display, will continue to operate in the event of a loss of the applied serial time code, operating on the internal clock. The unit will re-synchronize to the serial time code when re-applied.

## 2.3 SERIAL I/O OPERATION

The 6075B Serial interface provides the means of fully controlling the unit over a single 9600 baud asynchronous RS232C line. The following functions are implemented:

<b><u>Function</u></b>	<b><u>ASCII Message</u></b>	<b><u>Notes</u></b>
Load Counter Time (count hold)	CNTLB,DDDHHMMSS<CR>	1
Start counter (increment)	+	
Start counter (decrement)	-	
Hold counter	CNTL H	
Resume From Hold	CNTL R	
Select Time Display	CNTL E	
Select Counter Display	CNTL F	
Load clock time (immediate)	CNTL A,DDDHHMMSS<CR>	2, 4
Load year	CNTL Y,#,N,#	3, 4
Load offset	CNTL O, HH +/-	5
Set Display Intensity	CNTL I,V	6

## 2.3 SERIAL I/O OPERATION (continued)

NOTE 1: Where DDDHHMMSS = days, hours, minutes and seconds.

NOTE 2: This function is not active when a time code is present. It is used only when the 6075B is acting as a stand alone time reference.

NOTE 3: The "Load year" command is used to reference the 6075B to leap year. N = 0 to 3 and represents the number of years between the current year and the last leap year. ie. 0 = leap year, 1 = one year past leap year, etc. The value has been factory set and should not be changed in normal operation. The only situation where the user might require access to the year setting is in conjunction with the "Load Clock Time" function when the set time is not in the current year.

WARNING: Incorrect year setting will cause an error at leap year roll over.

NOTE 4: Any alteration of the time display using "Load Clock Time" or "Load Year" will render any previously entered counter function preset time invalid.

NOTE 5: This function is used to offset the displayed time from the applied time code or manual time set. If the offset is followed by '-' the value is subtracted from the time, if it is '+' it is added.

NOTE 6: The "Set Display Intensity" command disables the intensity pot on the rear panel and enables serial control of the display intensity. V=0 to 9 and represents ten different levels of intensity, where: 0 is the dimmest and 9 is the brightest. To disable serial control and enable the rear panel control, enter a "-" for the V value in the command string.

### 2.3 SERIAL I/O OPERATION (continued)

If an invalid message or character is received, the 6075B returns an ASCII "BELL" character. Valid message returns ASCII "\*". Invalid messages include:

1. Invalid time value ie., more than 365 days (366 in leap year) in clock Time load or more than 999 days in counter time load or more than 24 hours, 59 min, 59 seconds, etc.
2. Attempt to initiate a down count with a preset value of more than 99 days.
3. Too long or too short a message where a carriage return (<CR>) is used as a terminator.
4. Any unused characters.
5. Attempt to set clock time with time code applied.

### 3.0 MECHANICAL CONFIGURATION (Figure 1)

The 6075B is housed in an aluminum sheet metal enclosure, 21.25 inches wide, 4 inches high and 1.87 inches deep, not including mounting bracket. All circuitry is on a single printed circuit assembly. Included are wall mounting brackets which when attached allow for a +/- 90 degree vertical tilt.

All connectors and controls are on the rear panel.

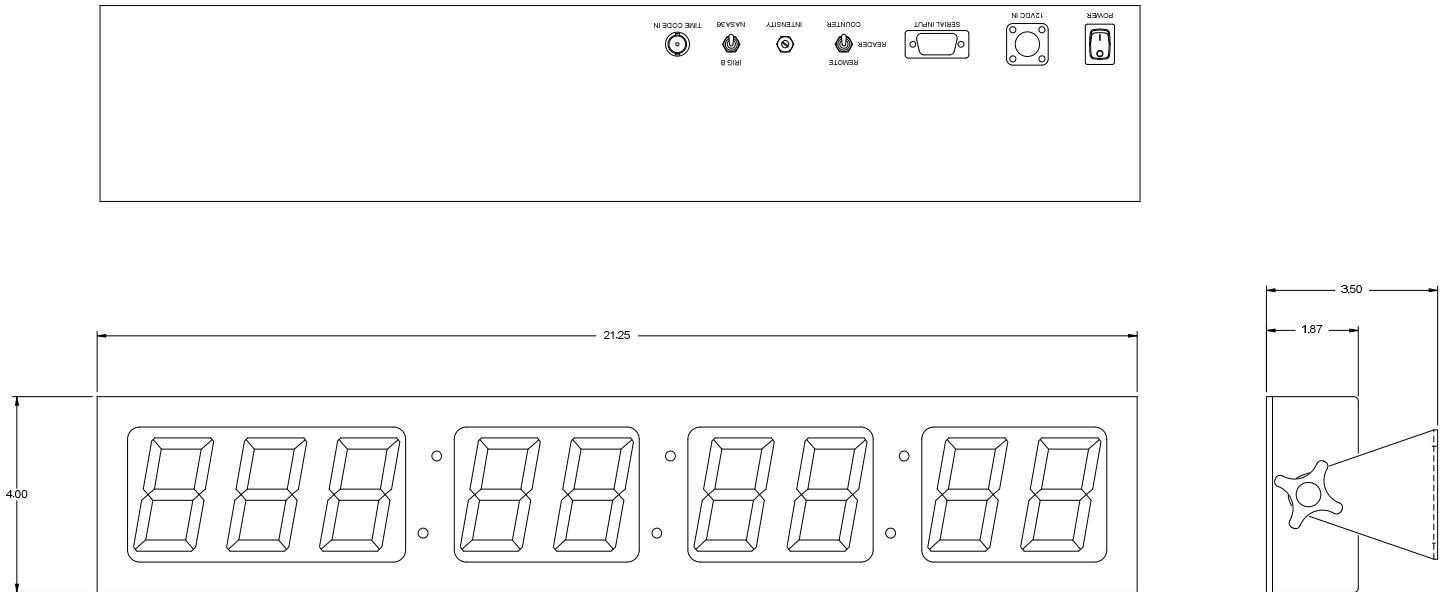


Figure 1  
6075B Enclosure

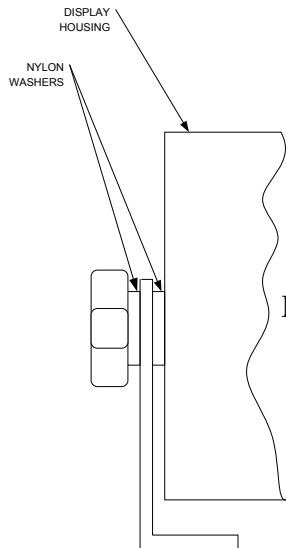


Figure 2  
Mounting Bracket Assembly

## 4.0 CONTROLS, CONNECTORS, AND INDICATORS

- 4.1 Power Two Position Rocker Switch - Turns unit power ON
- 4.2 Intensity Potentiometer - Controls intensity of LED display.
- 4.3 Time Code In BNC Connector - Receives NASA 36 Serial Time Code or IRIG B time code.
- 4.4 Serial Input One DA9P Connector - Receives RS232 serial messages used to set time and message displays and provide count control.

<u>Pin</u>	<u>Function</u>
1	DTR/DSR/DCD
2	TX
3	RX
4	DTR/DSR/DCD
5	GND
6	DTR/DSR/DCD
7	CTS
8	RTS
9	NU

- 4.5 Time Code Select Two Position Toggle Switch - Selects NASA 36 or IRIG B time code input.
- 4.6 Counter/Reader/Remote Three Position Toggle Switch - Selects display of time code reader or counter. When in "REMOTE" position display selection is via RS-232 Control Input. (See Par 2.3).
- 4.7 Power In KPT02A-3P Connector - Receives 12VDC from external power supply.

Connector Pinout	
A	+12VDC
B	12VDC Return
C	No Connection

## 5.0 SPECIFICATIONS

- |     |                     |  |
|-----|---------------------|--|
| 5.1 | Time Code           | NASA 36 serial time code or IRIG B serial time code (switch selectable).   |
| 5.2 | Display             | Segmented LED. Red.<br>Numeric: 7 segment.<br>Character height: 2.3 inches.<br>Segment width 5.5 mm                                |
| 5.3 | Serial Input        | RS232C, 9600 baud, ASCII message format.   |
| 5.4 | Internal Reference  | Temperature compensated crystal oscillator (TCXO) $\pm 2 \times 10^{-6}$ . (Active in absence of time code input)                  |
| 5.5 | Non-volatile Memory | Flash RAM  |
| 5.6 | External Power      | 12 VDC, 100 to 240VAC 50/60Hz power supply included.   |
| 5.7 | Enclosure           | 21.25 inches wide, 4 inches high, 1.87 inches deep (not including mounting brackets). Enclosure is black with textured clear coat. |