

# Crow River Trading Co. Product Specification

**Part Number: MST-24DC**

**Part Description: 24 Volt DC Board-Mounted Light Tower Controller**

## **Hardware Description:**

The MST-24DC is a computer controlled light control device utilizing a preprogrammed PIC controller.

It is contained on a printed circuit board, .062 FR4 material, 1.9" by 2.6" with four .125 mounting holes.

Controls up to six individual lamps, in an on, off and blink mode.

Current sinking type output, 9 to 24VDC. Current limit is 1 Amp per channel.

Only 3 connections to the serial port are required, Tx, Rx and Ground. Uses an RS-232 communications protocol.

Half duplex 9600 Baud, 8, N, 1 Optically Isolated, Serial RS-232

9600 Baud

8 Data bits

No Parity

1 Stop bit

The communications portion of the board is optically isolated from the light control portion.

Programmable blink frequency and duty cycle, from 0 – 60 seconds, 0 – 100%.

The default on and off times are 0.5 seconds.

Echoes all received characters.

Open bulb detection and reporting.

## **Firmware Description:**

The firmware protocol version is **400408D**.

## **Software Description:**

All commands are comprised of UPPER CASE ASCII characters terminated by a carriage return character <0D> (except the report function which does not require a carriage return).

Each received character is echoed immediately.

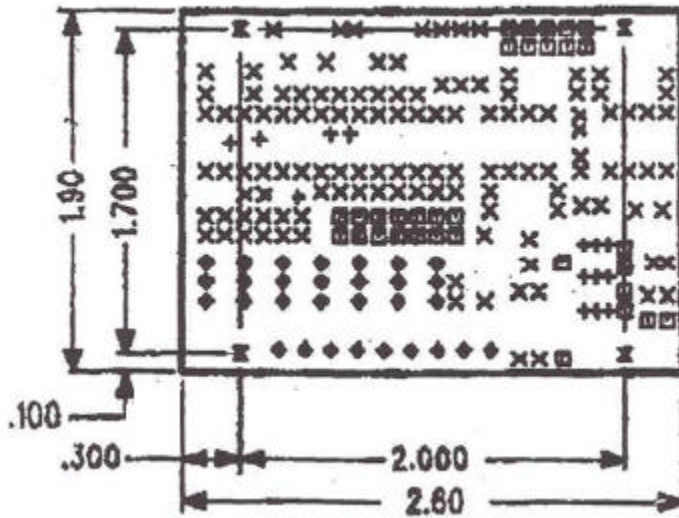
Invalid characters are echoed as the ASCII ? character.

A minimum delay of 1ms is required between characters. A good way to accomplish this is to wait for the echo before sending the next character.

**Serial Communications Specifications:**

Command Name	Command String	Comment
Light On	+n	; n corresponds to the light number ; 0, 1, 2, 3, etc. ; Example: +1           turns on light 2
Light Off	-n	; n corresponds to the light number ; 0, 1, 2, 3, etc. ; Example: -2           turns off light 3
Blink Light	Bn	; n corresponds to the light number ; 0, 1, 2, 3, etc. ; Example: B3           blinks light 4
Program	Pnm	; n is a 4 digit hex number representing the ; 'ON' time in milliseconds. ; m is a 4 digit hex number representing the ; 'OFF' time in milliseconds. ; Example: P01F403E8 ; programs a 500ms 'ON' time and a ; 1,000ms 'OFF' time. ; Conversion;   decimal       Hex ;                   500         01F4 ;                   1,000       03E8
Report	R	; Reports bulb status, Good/Bad. ; The return value is in hex code, ; and reads right to left to six light bulbs. ; 1 = Good, 0 = Bad (open) ; Example; R2F (00101111) means bulb ; 5 is open, bulbs 0 through 4 and 6 are ; good.
Reset	X	; Turns off any lights that are on and resets ; the board to “power up” conditions.

**Board Dimensions:**



**Connector pinout:**

JP3 (Screw Terminal)

- 1 Bulb 0
- 2 Bulb 1
- 3 Bulb 2
- 4 Bulb 3
- 5 Bulb 4
- 6 Bulb 5
- 7 Bulb Common (+24VDC)
- 8 +24VDC Power In
- 9 Ground

JP1 (10 Position Header)

- 3 Tx
- 5 Rx
- 9 RS-232 Signal Ground