



DLPMat

**Matlab library for interfacing with Texas Instruments
Lightcrafter. Version 1.0**

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OVERVIEW

DLPMat provides a Matlab class with methods for interacting with the Texas Instruments LightCrafter DLP. It has been tested with a device using the DM365 Controller. As of the current version, most (but not all) write commands are implemented, but no read commands are implemented.

Please consult the DM365 Command Interface Guide for general information about controlling the LightCrafter and a full list of commands.

Communications are via a TCP/IP interface. Each message from the host packet contains a header, a payload and a checksum. The method *buildPacket* assembles a packet from a command code (a two digit hex string) and a supplied payload. This method should not normally be called externally, but is used by *sendCommand*. The command codes are listed in the DM365 Command Interface Guide. Most commands are implemented directly by methods in the class (see below), and so *sendCommand* should not normally be required.

GENERAL METHODS

The following methods are used for general interaction with the LightCrafter:

open (obj) – Opens a TCP/IP connection to the LightCrafter.

close (obj) – Closes a TCP/IP connection to the LightCrafter.

sendCommand (obj, command, payload) – Sends a command to the Lightcrafter, can be used if required command is not implemented as a method. *Command* is a string containing the two digit hex code for the command (e.g. '0103'). *Payload* is the payload accompanying the command (see Command Interface Guide for details of payload formatting).

bytes (input, nBytes) – Used to convert a number to an array of bytes of length *nBytes* in correct format for building payloads. (e.g. bytes(1000,2) returns [232,3]).

COMMAND METHODS

The following commands are implemented as methods. Consult the DM365 Command Interface Guide from Texas Instruments for more details on each function (the function hex code is included here for reference).

0x01 0x01 setModeStatic(obj)

 setModeTestPattern(obj)

 setModeHDMI(obj)

0x01 0x03 setTestPattern(obj, pattern)

0x01 0x04 setBrightness(obj,r,g,b)

DLPMat

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| 0x01 0x05 | transferBitmap(obj, bitmap) |
| 0x01 0x06 | setSolidColour(obj, r, g, b) |
| 0x01 0x07 | setDisplay(obj,longFlip, shortFlip, rotate) |
| 0x02 0x00 | videoInputSettings(obj, resX, resY, firstPixel, firstLine, width, height) |
| 0x02 0x01 | videoModeSettings(obj, frameRate, bitDepth, colour) |
| 0x04 0x00 | setPatternSettings(obj, bitDepth, nPatterns, invert, trigger, trigDelay, trigPeriod, exposure, LED) |
| 0x04 0x01 | transferPattern(obj, patternNum, pattern) |
| 0x04 0x02 | startStopSequence(obj) |
| 0x04 0x03 | advanceSequence(obj) |
| 0x04 0x04 | trigOutputSetting(obj, enable, source, polarity, delay, width) |
| 0x04 0x05 | displayPattern(obj, patternNum) |
| 0x04 0x80 | setPatternSettingsExt(obj, bitDepth, nPatterns, invert, trigger, trigDelay, trigPeriod, exposure, LED, playMode) |
| 0x04 0x81 | transferPatternExt(obj, patternNum, pattern) |

ERRORS

The class listens for error code returned by the LightCrafter, and prints the error code to the console. Consult the Command Interface Guide for interpretation of error codes.