



SERIAL INTERFACE SPECIFICATION

Photofluor® II



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Overview

The Photofluor® II provides consistent light in wavelengths used for fluorescence microscopy. Lamp output is sensed continuously and ballast power is fixed to maximize lamp output.

There are multiple user-selectable “menu screens”, which provide a visual interface for the user to access the sub-menus for programming and status messages.

The unit will provide audible alarms and visual indications for operating conditions requiring operator attention. In the event of unmitigated malfunction, the unit will shut down to prevent possible injury to personnel or property damage.

The ‘8’ and ‘9’ commands are supported in firmware revisions 2.04.00 and later.

Serial Interface

The Photofluor® II RS232 serial port is configured as a DCE with 19,200 bps, 8 bits per character, No parity, and 1 stop bit. (19.2, 8, N, 1).

Serial Commands

Serial commands used by Illumination Control application to get current state, and change the unit’s parameters.

All messages from the unit to the PC use the following format: STX, message data, 0x81, 0x82. The STX character is the standard 0x02. If a 0x81 character needs to be sent before the end of message, a 0x81 is byte stuffed. Each command response uses the following format: STX, 0x80, message data, 0x81, 0x82. The 0x80 after the STX signifies that it is a command response, not an unsolicited message update the console screen.

Commands are either ASCII based or binary. Binary commands are not meant to be read using a serial terminal program, but only using the Illumination Control application. Since binary data may change with each version of the code, the structure of this data is not listed in the specification.

Get Ballast Temperature: ‘b’, ASCII command

Unit sends “BT = temp”.

Example: Ballast temperature = 25 C, user sends ‘b’ character. Unit responds with:

0x02, 0x80, 0x42, 0x54, 0x20, 0x3d, 0x20, 0x32, 0x35, 0x81, 0x82

Get Lamp Temperature: ‘l’, ASCII command

Unit sends “LT = temp”.

Example: Lamp temperature = 23 C, user sends ‘l’ character. Unit responds with:

0x02, 0x80, 0x4c, 0x54, 0x20, 0x3d, 0x20, 0x32, 0x33, 0x81, 0x82

Download System Data: ‘d’, Binary command





Send new system data to the unit. The unit reads a binary character stream from the serial port and updates the system and external data after the correct amount of binary data is received. The data is not stored to EEPROM/FLASH until all the data is received.

Reset External Data: 'r', No response

Unit updates the external data to factory defaults.

Jump to Boot Mode: 'Z', No response

Unit jumps to the boot loader so that a new version of the application can be downloaded.

Right Char: '>', No response

Same as if the right arrow front panel key was pressed.

Left Char: '<', No response

Same as if the left arrow front panel key was pressed.

Up Char: '^', No response

Same as if the up arrow front panel key was pressed.

Down Char: 'v', No response

Same as if the down arrow front panel key was pressed.

Enter Char: 0x0d, No response

Same as if the enter front panel key was pressed.

Diagnostic Mode Char: 'm', No response

Same as if the up and down arrow keys are held for 3 seconds, to enter diagnostic mode.

Reset Unit: 'x', No response

Unit is reset. Same as if the enter key is held for 3 seconds with the lamp off.

Get Unit State: 's', ASCII command

Unit sends "S = Shutter, F = FilterPos". Shutter = '1' if open, '0' if closed. FilterPos = '0' to '4' for NDF positions 1 to 5. FilterPos = '5' for 0% transmission position.

Example: Shutter is open, and filter position is NDF pos 3. Unit responds with:

0x02, 0x80, 0x53, 0x20, 0x3d, 0x20, 0x31, 0x2c, 0x20, 0x46, 0x20, 0x2d, 0x20, 0x32, 0x81, 0x82

Get System/External Data: 'g', Binary command

Retrieve system data, external data, error logs, and lamp histories from the unit. The unit sends a binary character stream to the serial port. The binary data stream is byte stuffed to insure an end of message isn't prematurely received.





Jump to blocked NDF Filter Pos: '0', No response

Unit moves to a filter position that blocks the light.

Jump to NDF Filter Pos 1: '1', No response

Unit moves to NDF filter position 1.

Jump to NDF Filter Pos 2: '2', No response

Unit moves to NDF filter position 2.

Jump to NDF Filter Pos 3: '3', No response

Unit moves to NDF filter position 3.

Jump to NDF Filter Pos 4: '4', No response

Unit moves to NDF filter position 4.

Jump to NDF Filter Pos 5: '5', No response

Unit moves to NDF filter position 5.

Turn Lamp Off: 'o', No response

Lamp is turned off. Same as if the enter key is held for 3 seconds with the lamp on.

Close shutter: '-', No response

Unit closes the shutter if open. If closed, this command has no effect.

Open shutter: '+', No response

Unit opens the shutter if closed. If open, this command has no effect.

Turn On Unsolicited Messages: '8', No response

Unit continuously streams characters sent to the LCD screen to the serial port. This is the default configuration. This command is supported on firmware rev 2.04.00 and later.

Turn Off Unsolicited Messages: '9', No response

The serial port only sends responses to commands from the serial port such as the status command, 's'. This command is supported on firmware rev 2.04.00 and later.

Serial Messages, Unsolicited

The Photofluor II sends serial messages whenever the console screen is updated. The console screen has four rows and 20 characters per row. Line numbers go from 0 to 3, and character positions go from 0 to 19. The update screen message is the following format: STX, curPos, message data, 0x81, 0x82. curPos is (line << 5) | position. Line numbers go from 0 to 3, and character positions go from 0 to 19. If curPos = 0x2a, the text will be displayed on the second line at the eleventh character. (This is because all of the numbers are zero based, not





one based.) The message data is the ASCII string to be printed on the screen. These messages can be disabled using the '9' command.



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