APPLICATIONS NOTE

OPTOCOMP
SERIAL COMMUNICATIONS

OPTOCOMP COMPUTER INTERFACE

The Optocomp® I and Optocomp II luminometers both include built-in RS-232 Serial Communications Ports, for transferring data to or from an external personal computer. Bi-directional communication is accomplished using an ASCII code serial communications link.

The bi-directional feature allows the Optocomps to transmit data to the personal computer, or the Optocomps can be controlled by the computer. The Optocomps' software is designed so that action that can be initiated using the keyboard can also be accessed using the RS-232 port.

A data communications program is required on the personal computer to perform the communications function on the computer. MGM Instruments, Inc. does not provide the personal computer communications software, however, a communications program is provided with the operating system on most personal computers. For example, Microsoft Windows includes the HyperTerminal program, which is easily set-up to communicate with the Optocomps.

Data Output Format

The data output by the Optocomps over their RS-232 serial ports can be set-up to be comma delimited, making it very simple and easy to import the transmitted data into popular spreadsheet programs, such as Microsoft Excel.

When programming each protocol (please refer to the Operator's manual for your Optocomp luminometer), at the "SELECT RS-232 OUTPUT FORMAT" display, enter '2' for "DELIMITED TEXT". This programs the protocol to transmit comma delimited text over the instrument's serial port.

RS-232 Connection

A standard Null Modem cable is used to connect the Optocomp to the personal computer. The cable connects the 25 pin male connector on the Optocomp rear panel to one of the serial ports on the external personal computer. The connection on the personal computer will determine the type of connector that is needed on the personal computer end of the Null Modem cable.

A schematic diagram at the end of this document details the actual connections required in the Null Modem cable.

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Communications Parameters

Data communications parameters used for communication with the Optocomp are:

- Data rate: 9600 baud (bits per second)
- Data bits: 8
- Stop bits: 1
- Parity: None
- Flow Control: XON/XOFF

To set up the communications parameters in the Windows HyperTerminal program:

1. Click on “File”, then “Properties”
2. This accesses the Properties dialog box.
3. Make sure that the appropriate serial port (usually Com 1 or Com 2) is selected in the “Connect Using” drop down box.
4. Click on “Configure”
5. Enter the parameters detailed above.

Using the Windows HyperTerminal Program

HyperTerminal is an application included with Windows 95, and later versions of Windows, that is easy to learn and can be used to capture data from the Optocomp.

This section provides instructions on setting up the HyperTerminal program to communicate with the Optocomp, and then to capture data from a protocol run on the Optocomp.

Procedure:

1. Determine the computer’s serial port to be used, and install a Null Modem cable, connecting the RS-232 Serial Port on the rear panel of the Optocomp to the Com port (usually Com 1 or Com 2) on the Personal Computer.
2. Click on the Windows “Start” button, and then click on “Programs”.
3. From the list of programs installed on your computer, click on “Accessories”, then click on “Communications”.
4. In the list of Accessory programs, click on “HyperTerminal”. This should open the HyperTerminal folder on your desktop.

5. Double click on the HyperTerminal icon, to start the HyperTerminal program. The program will display a "New Connection" dialog box, prompting you to enter a name and choose an icon for the connection. Enter "Optocomp" for the name, and choose an icon, then click on "OK".
6. HyperTerminal will then display the "Connect To" dialog box. In the "Connect Using" Drop Down Box, select the appropriate Com port (usually "Direct to Com 1", or "Direct to Com 2"), depending on which port is free on your computer. If your connection does not work, it is possible that some internal device, such as a modem, is using the Com port you selected. Usually, if you select a port that is already in use, the computer will warn you. After selecting the appropriate Com port click on "OK".
7. HyperTerminal will display the "Com Properties" dialog box. Set the Port Settings to the settings detailed in **Communications Parameters**, above, then click on "OK"
8. The "Com Properties" dialog box will close. Click on "File", then "Save". This will save the settings entered under the "Optocomp" file name entered for the connection under step 5, above.
9. In the future, when starting up HyperTerminal to communicate with the Optocomp, an icon named "Optocomp" will be present in the HyperTerminal folder. Double click on this to start HyperTerminal; HyperTerminal will start completely configured for communication with the Optocomp.

Capturing Data From the Optocomp

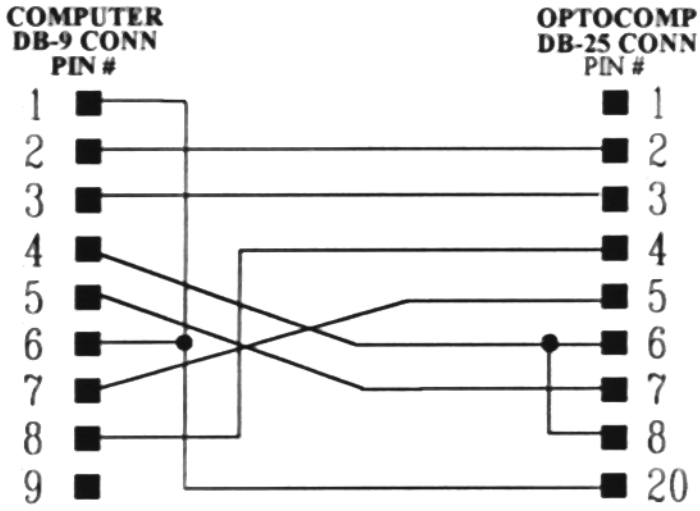
1. To capture data from the Optocomp, start HyperTerminal, as described above, but double click on the "Optocomp" icon, as described in step 8, above. HyperTerminal will start up, configured for communication with the Optocomp.
2. Click on "Transfer" in the HyperTerminal menu, then click on "Capture Text…"

3. HyperTerminal will display the “Capture Text” dialog box. Enter the file name you wish to save the Optocomp data under, also choosing the path (folder) desired.
4. Start the protocol on the Optocomp. The data printed by the Optocomp printer should also appear in the HyperTerminal screen.
5. When the protocol is finished, click on “Transfer” in the HyperTerminal menu, click on “Capture Text”, then click on “Stop”.

   The captured data is saved by HyperTerminal as a text file, using the file name entered in step 3, above. The file extension will be .txt, and the file will be saved in the folder selected in step 3.

Null Modem Cable Connections

9 PIN TO 25 PIN NULL MODEM CABLE



25 PIN TO 25 PIN NULL MODEM CABLE