DT5WIN

Windows Software for Supervision of Datataker 5 Data Loggers

Datataker 5V, Datataker 5TK
Datatakers 5PT, Datataker 5PTP
Datataker 5RHT, Datataker 5W
Datataker 5E

Document No. UM-0045-A0

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Software Versions

This manual applies to Datataker 5 Windows software versions 4.30 and later.

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This software supplied for use with the Datataker 5 data loggers is supplied under licence for use on one or more computers within your immediate department only of your organization.

The software licence agreement is attached to the package in which the software is supplied, and should be read and accepted before opening the package.

Voltage Warning

The communications link cable between the Datataker 5 data loggers and the host computer is electrically connected to both the logger and its sensor input. Therefore the logger, sensor and cables must be kept isolated from hazardous voltage for protection of users. Voltages greater than 5 Volts at the logger input may damage the logger, the link cable, and possibly the computer.

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1. Introduction

There are several models of the Datataker 5 single and dual channel data loggers, each supporting a particular signal type or sensor.

All data loggers progressively read and record data from appropriate sensors or signal sources at regular intervals of time into non-volatile internal memory. Data from the input channel(s) can be logged at regular intervals of time, and the memory can store 4048, 8144 or 16336 readings depending on the model and configuration of the particular logger.

The analog versions of the Datataker 5 data loggers have user selectable Low Resolution (8 bit) or High Resolution (10 bit) analog to digital conversion, and for some models can be set to record data in one of several different user selectable ranges.

The digital versions of the Datataker 5 data logger simply count the number of pulses received between each reading interval. The count range can be set to 0 - 254 counts (8 bit) or 0 - 65000 counts (16 bit).

Logging Interval

The data logging interval can be set in increments of 1 second between 1 second to 65535 seconds (18.2 hours).

Combined with the memory storage capacity, this range of logging intervals provides a total logging period of between thirty minutes and more than thirty years, limited by the battery life.

Normally logging commences 1 minute after the Datataker 5 is set up for a new logging run. However logging can also be set to begin at a future time.

The Datataker 5 has a microprocessor and hardware clock calendar which controls the logging times, which also date and time stamps the data.

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Memory Management

The three memory versions of the Datataker 5 data loggers have a memory capacity of 4K bytes, 8K bytes and 16K bytes. Most loggers are supplied with 16K bytes of memory, however the software described later in this manual can also be used with any of the earlier 4K byte and 8K byte versions of the loggers.

The capacity of the internal memory of the analog versions of the Datataker 5 data loggers depends on the memory size of the particular logger and the selected resolution, as follows

- Low Resolution (8 bit), 4K bytes = 4048 readings
- Low Resolution (8 bit), 8K bytes = 8144 readings
- Low Resolution (8 bit), 16K bytes = 16336 readings
- High Resolution (10 bit), 4K bytes = 2024 readings
- High Resolution (10 bit), 8K bytes = 4072 readings
- High Resolution (10 bit), 16K bytes = 8168 readings

The capacity of the internal memory of the digital versions of the Datataker 5 data loggers depends on the memory size of the particular logger, and the count range selected, as follows

- 0 - 254 count (8 bit), 4K bytes = 4048 readings
- 0 - 254 count (8 bit), 8K bytes = 8144 readings
- 0 - 254 count (8 bit), 16K bytes = 16336 readings
- 0 - 65000 count (16 bit), 4K bytes = 2024 readings
- 0 - 65000 count (16 bit), 8K bytes = 4072 readings
- 0 - 65000 count (16 bit), 16K bytes = 8168 readings

The data can be logged into memory in either of two modes as follows

- a CAPTURE or stack mode, where logging ceases when the memory is filled
- an OVERWRITE or circular mode in which the memory operates as a circular buffer, and new data progressively overwrites the oldest data when the memory is filled

The mode is selected when the Datataker 5 is set up for a new logging run.

The data logging memory of the Datataker 5 data loggers is non-volatile, and will retain data for more than 100 years without power.

Operation of the Datataker 5

Full details of the and operation of the Datataker 5 data loggers are provided in the accompanying manual *Datataker 5 User's Manual*.

The *Datataker 5 User's Manual* also provides a full description of the use of the MS-DOS version of the Datataker 5 host software package.

Programming the Datataker 5

The Datataker 5 data loggers are programmed, and the logged data is downloaded, using any IBM or compatible computer which is running either the MS-DOS (DT5.EXE) or the Windows (DT5WIN.EXE) version of the Datataker 5 host software package.

The MS-DOS (DT5.EXE) version of the Datataker 5 host software package is described in detail in the accompanying manual *Datataker 5 User's Manual*.

This manual describes the use of the Windows (DT5WIN.EXE) version of the Datataker 5 host software package

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2. Installing and Configuring DT5WIN

Computer Configuration

We recomend the following minimum configuration of IBM PC or compatible computer for running DT5WIN

- 80386DX/33 Mhz or better computer, desktop or notebook configuration
- 4 Megabytes of RAM
- 1 Megabyte of available hard disk space
- SVGA monitor preferred, however VGA monitor is suitable
- Windows 3.1 or Windows for Workgroups 3.11

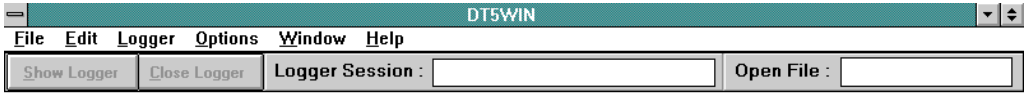
If your computer is a recent model low power consumption notebook computer, you may experience communications problems with your Datataker 5. If this occurs then contact your Datataker supplier.

Installation

DT5WIN is installed onto your computer by the following procedure

1. Start Windows
2. Place the DT5WIN distribution disk into drive A: or B:
3. Pull down the File menu option of the Program Manager, and select the Run... command. This opens the Run dialog box.
4. Enter A:\SETUP.EXE or B:\SETUP.EXE depending on which drive has the DT5WIN distribution disk, and press Enter.
5. The setup program offers C:\DT5WIN as the default directory for installing the software. You can accept this or enter an alternative directory name.
6. After the setup program has completed the installation, run DT5WIN by double clicking on the DT5WIN icon in Program Manager.

The DT5WIN main screen will then open, and display the main menu bar and the introductory banner.

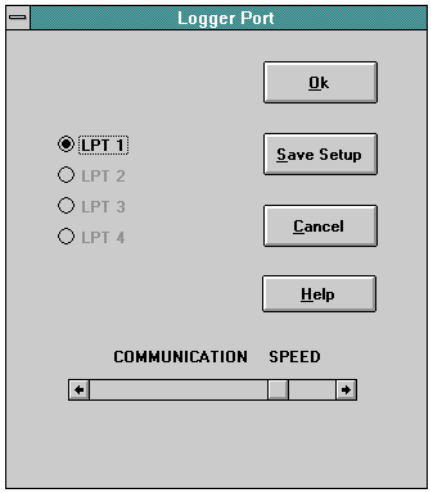


Click on the OK button to continue.

Setting the Options

Before DT5WIN can communicate with Datataker 5 data loggers, the Options must first be set to define the communications parameters.

Pull down the Options menu, and select Port Number. This will open the Logger Port dialog box.



Select the printer or parallel port of your computer which will be used by DT5WIN to communicate with the Datataker 5 loggers. The default setting is LPT1, which will suit most computers.

The Communications Speed setting allows the rate of communications between the computer and the data logger to be adjusted. Some computers, particularly notebook computers, may have communications problems at the maximum speed setting. Reducing the Communications Speed by dragging the thumbnail to the left should correct the problem.

Press the Save Setup button to permanently save the port number and communications speed settings for future DT5WIN sessions. If the Save Setup button is not pressed, then the settings apply to the current session only

Press the OK button to exit the dialog, or press Cancel to abort the settings.

3. The DT5WIN Workspace

The DT5WIN workspace consists of 4 main Windows as follows

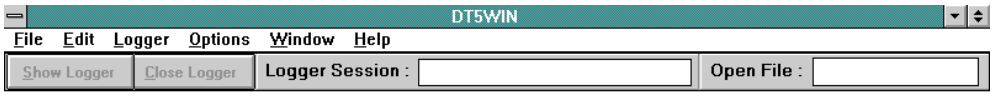
- The Summary Window
- The Table Window
- The Graph Window
- The Logger Window

The Summary Window, the Table Window and the Graph Window are all used to display and present the data after it has been downloaded from the Datataker 5 data logger.

The Logger Window is used to program data loggers to collect data, to download data from the data logger memory, and to monitor the data logger as it reads new data.

Note: Data cannot be downloaded from the data logger directly into graphs or tables. The data must first be down loaded from the logger into a disc file, then the filed data is graphed and tabulated.

The Main Menu Bar
The Main Menu Bar provides access to the functionality of DT5WIN.



The functions of the Main Menu Bar options are briefly listed below, and are discussed in more detail elsewhere where appropriate.

File Menu

Open
- open a data file, and places the data into the Summary Window
- the name of the currently open data file is shown in the Status Bar immediately below the Main Menu Bar

Save Text File
- save the contents of the Table Window as a text file
- only accessible if the Table Window has focus

Close
- close the currently open data file
- also closes all Windows currently open with this data

Print Graph
- print the contents of the Graph Window
- only accessible if the Graph Window has focus

Print Table
- print the contents of the Table Window
- only accessible if the Table Window has focus

Print Setup
- display the standard Windows Print Setup dialog box for selecting the system printer, the paper size and orientation, etc.

Edit Menu

Copy Graph
- copy the graph in the Graph Window to the clipboard, for pasting into other Windows applications

Copy Table Selection
- copy a selected area of data from the Table Window to the clipboard, for pasting into other Windows applications

Select All
- select all of the Table Window

Table Format
- change format of the Table Window

Table Fonts
- change the font used in the Table Window

Logger Menu

Read Logger Configuration
- display the configuration of a connected data logger

Read Logger Data
- download data from the memory of a connected data logger to disc file

New Logger Run
- program data logger for a new data collection session

Monitor Logger
- display new data as it is recorded into the data logger memory

Options

Port Number
- define the printer (parallel) port and speed used for communicating with the data logger

Window

Cascade
- cascades open windows

Lists open windows for selection

Help

DT5WIN includes on-line help. Help is accessed via the Help item on the Main Menu Bar, or by pressing F1. Many of the dialog boxes throughout DT5WIN also provide access to context sensitive help via Help buttons.

The Status Bar

The DT5WIN Status Bar is located immediately below the Main Menu Bar. The Status Bar displays various information such as

- the currently open data file for processing
- the current logger function being performed

The Status Bar also has two buttons: Show Logger and Close Logger. These buttons are used to manage the windows for the Logger functions when being used.

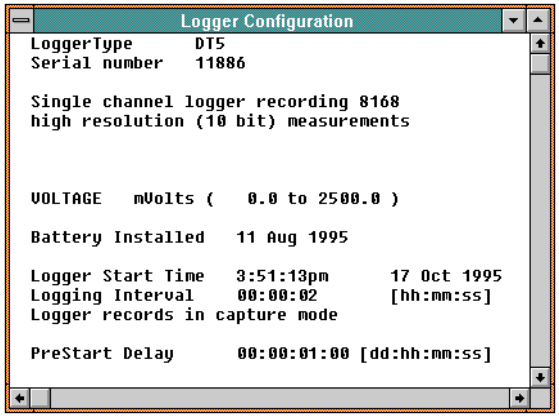
4. Interfacing with the Datataker 5

The Logger item on the Main Menu Bar provides access to the Logger Communications Window.

The Logger Communications Window is used to communicate with a Datataker 5 data logger connected to the computer to

- display the current configuration of the logger
- program the data logger to collect data
- download data from the data logger memory
- display new data as it is recorded into the data logger's memory

Read Logger Configuration
This function reads and displays the configuration or status of the data logger which is currently connected to the computer similar, to the following



Read Logger Data
This function downloads data from the memory of a connected Datataker 5 data logger to a disc file.

The function first displays a Save Logger Data As dialog box, which prompts for the filename and location of the file for storing the data.

The data files are arranged as follows

- the data from a single channel Datataker 5 is stored in a single file which has the default extension of .MDT.
- the data from a dual channel Datataker 5 is stored in two files which has the default extension of .MDT and .MD2.

The function then prompts for an Application Title of up to 40 characters. This title is saved in the top of the data file, and can be used to later identify the data. This field can be left blank if desired.

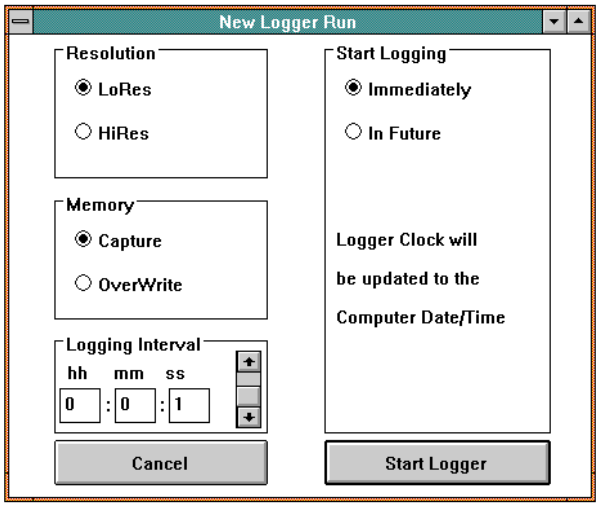
The function then downloads the data from the logger and saves it into the data file(s). A progressive scale is displayed while the data is being downloaded.

Data can be downloaded at any time, and does not interrupt the logger, and new data is still recorded at the logging intervals during the download.

New Logger Run
This function programs the data logger for a new data logging session.

Various options are firstly specified in the New Logger Run dialog box to define the data logging functions required as follows

Resolution - LoRes selects 8 bit resolution (1 part in 255 or 0.4%) of the analog to digital convertor in the logger, and allows for a greater number of data points to be collected. HiRes selects 10 bit resolution (1 part in 1024 or 0.1%) of the analog to digital convertor in the logger, and reduces the number of data points by half that of low resolution.



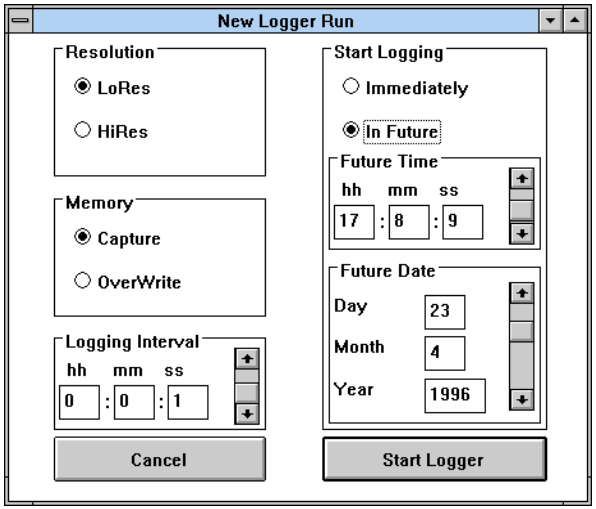
Immediate Start

Memory - in the Capture mode the data logger will stop recording data when the memory is full. In Overwrite mode the logger will continue recording data when the memory is full, and will overwrite the oldest data with the newest data.

Logging Interval - set the logging interval in hh:mm:ss format. The interval can be set either by typing the values directly into the hh, mm and ss fields, of by selecting the respective fields and using the spin control to set the value. The maximum interval is 17:59:59.

Start Logging - data logging can be set to start Immediately after programming (the first reading is taken after a 1 minute pause), or set to start In Future. Starting in the future allows the logger to wait for a preset period before beginning to record data.

The start delay period can be as short as 1 minute, or long as 6 months. This feature is also useful for synchronizing several loggers to begin recording data at the same time.



Future Start

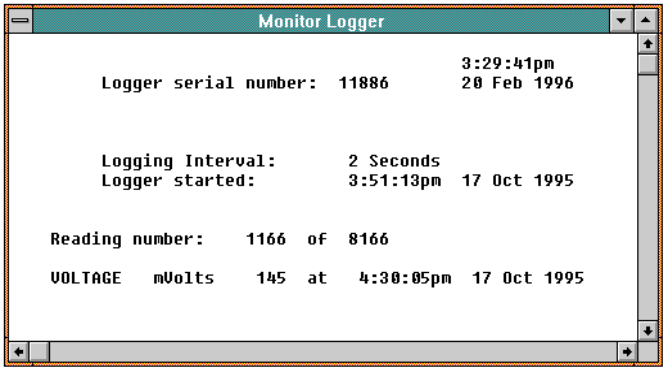
Start Logger - When the Start Logger button is pressed the computer then programs the logger, which can take up to 1 minute.

A progressive scale is displayed while the logger is being programmed. Do not disconnect the logger from the communications cable while the scale is displayed.

Cancel - Pressing the Cancel button aborts programming of the logger.

Monitor Logger

This feature progressively displays the most recent data recorded by the logger. The data is displayed in a Monitor Logger window similar to the following:



The display is only updated when the logger writes new data to the internal memory of the logger. A logging interval of 2 to 5 seconds is recommended for checking sensors and calibration of the logger.

In the case of dual channel loggers, the progressive data for both channels is displayed.

Managing Logger Windows

The various Logger windows function as independent windows, and only one Logger window can be open at any time. Depending on where you click the mouse on the main screen, the currently open Logger window may go out of view. The window can be returned to view either by selecting it under the Window option of the Main Menu Bar, or by clicking on the Show Logger button on the Status Bar.

The Close Logger button on the Status Bar will close the currently open Logger window.

5. Processing the Data

Data cannot be downloaded from the data logger directly into graphs or tables. The data must first be down loaded from the logger into a disc file, then the filed data is graphed and tabulated.

Opening a Data File

To open the data file to be processed, pull down the File item on the Main Menu Bar and select the Open function. An Open Logger File dialog box is displayed. Navigate to the directory which contains the file to be opened, and select the required file.

The data file is then opened, and a summarized view of the data is presented in the Summary Window.

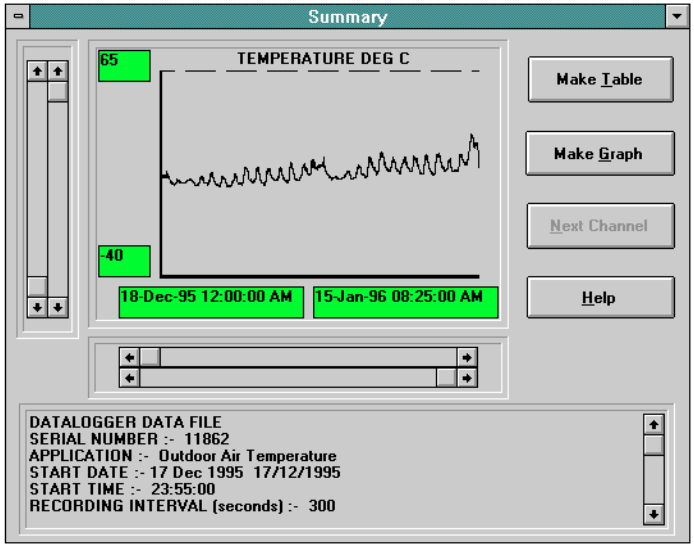
The Summary Window

When a data file is opened, the Summary Window provides a graphical display of all the information in the file, including a text summary of the file header information.

The Summary Window is the basis from which tabular and graphical displays of all of the data, or of subsets of the data, are created. Subsets of the data are selected using the slide controls located along the horizontal and vertical axes of the Summary Window graph.

Using the slide controls to select a subset of the data for graphing or tabulating has several purposes

- allows selection only of areas of interest in the data for display
- allows zooming into the data to reveal greater detail
- allows the axes of graphs to be scaled appropriate to the data
- allows out of range data to be eliminated from graphs and tables

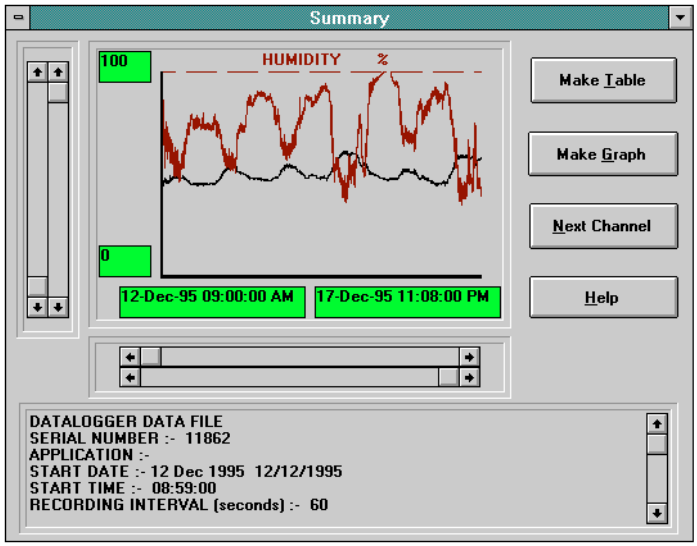


Single Channel Logger

The slide controls located along the horizontal axis allow a subset of the recorded data to be selected with respect to time. The time and date of the first and last data points that are selected are shown in the two boxes under the horizontal axis. As the thumbnails of the horizontal slide controls are moved, vertical lines are drawn on the graph to indicate the time span of the data that is selected. The left and right cursor keys can also be used to move the selected slide control one data point at a time.

The slide controls located along the vertical axis allow a subset of the recorded data to be selected with respect to magnitude or range. The values displayed in the two boxes beside the vertical axis are the minimum and maximum values of the data selected. As the thumbnails of the vertical slide controls are moved, horizontal lines are drawn on the graph to indicate the range of the data that is selected. The up and down cursor keys can also be used to move the selected slide control one data point at a time.

In the case of data from dual channel data loggers, the vertical scaling of each channel data set can be changed independently. The Next Channel button is used to switch between the data sets.



Dual Channel Logger

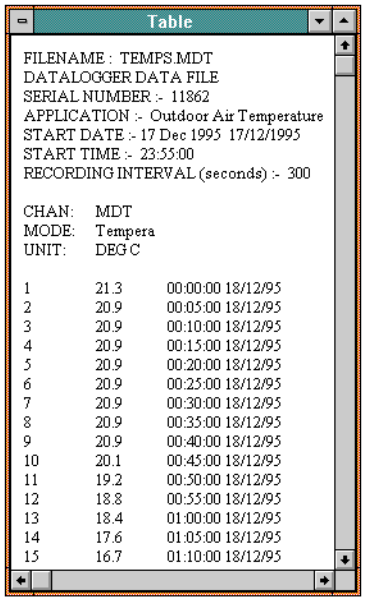
The Make Table button is used to open the Table Window which contains a time and date stamped listing of all of the data, or of the selected data.

The Make Graph button is used to open the Graph Window which contains a detailed graph of all of the data, or of the selected data.

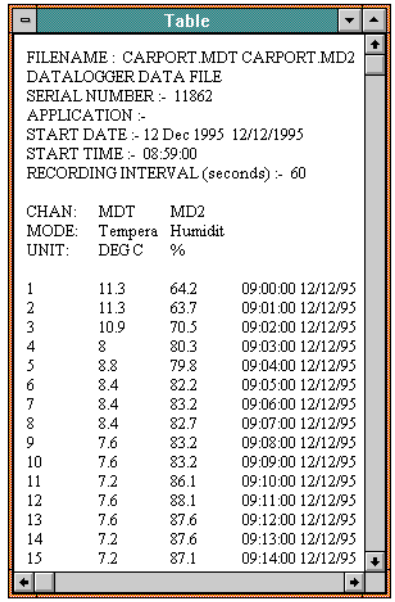
The Table Window

The Table Window displays a time and date stamped listing of the data range selected in the Summary Window graph.

If a time based subset of the data was selected in the Summary Window, then a listing of this selected data only is displayed.



Single Channel Logger



Dual Channel Logger

The Table Window can be printed using the Print Table option under File in the Main Menu Bar.

A highlighted selection of the Table Window can be copied into the clipboard using the Copy Table Selection option under Edit in the Main Menu Bar, and pasted into documents in other applications.

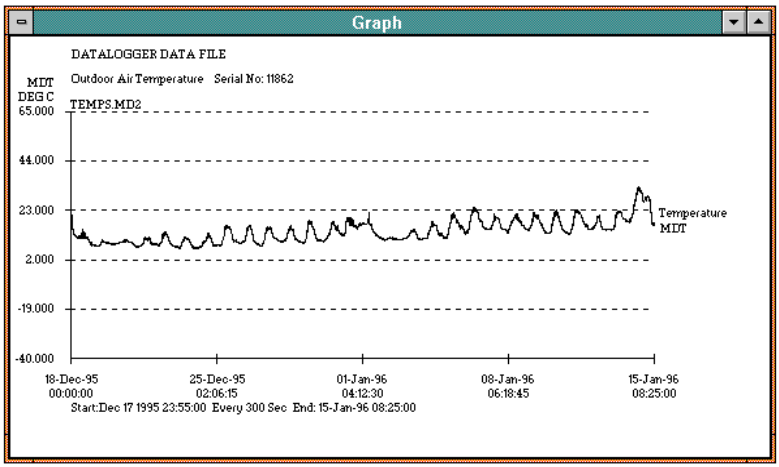
A text listing of the Table Window can be saved to file using the Save Text File option under File in the Main Menu Bar.

The format and font used in creating the Table Window can be changed using the Table Format and Table Font options under Edit in the Main Menu Bar.

The Graph Window

The Graph Window displays a detailed graph of the data range selected in the Summary Window graph.

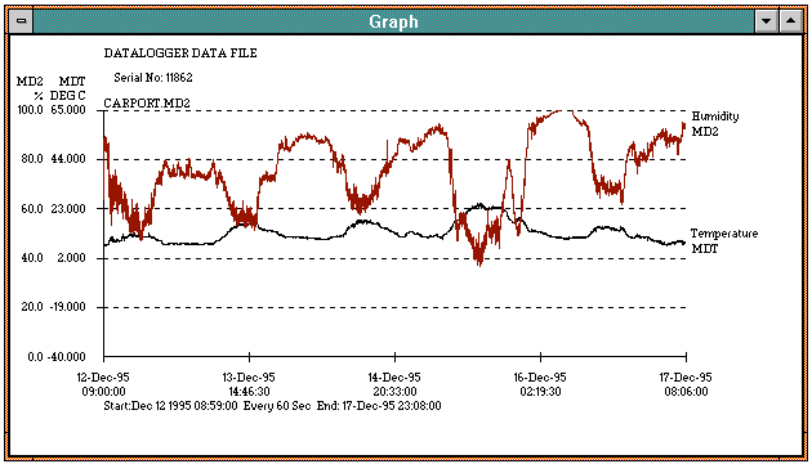
If a subset of the data was selected in the Summary Window, then a graph of this selected data only is displayed.



Single Channel Logger

The Graph Window can be printed using the Print Graph option under File in the Main Menu Bar.

The portrait or landscape orientation of the graph on the printed page, and the size of the page, can be set using the Print Setup option under File in the Main Menu Bar.



Dual Channel Logger

The Graph Window can be copied into the clipboard using the Copy Graph option under Edit in the Main Menu Bar, and pasted into documents in other applications.

Changing the size of the Graph Window changes the size of the graph that is copied to the clipboard. This in turn affects the size of the graph that is pasted into other applications.