



141 Traction Street, Greenville, SC 29611

1.833.833.1994

info@createchrehder.com

ETW

ETW MEASUREMENT PROGRAM

Instruction Manual

Jan 1, 2014

**AUTOMATED DATA ACQUISITION AND RECORDING
FOR THE REHDER DEVELOPMENT THICKNESS GAUGE**

VERSION 1.1

(Revised September 2, 2013)

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SECTION 1 SOFTWARE LICENSE AGREEMENT

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SECTION 2 INTRODUCTION

OVERVIEW

The ETW software provides a means of automatically capturing the data from a Rehder ET-series instrument and recording the data to a text file. The content of the Output Data File is in a format for importing into spreadsheet or database programs.

In addition to recording the instrument's reading, a user configured data entry capability is provided. The user defines the number of fields and the type of data.

PACKING LIST

The following items should be in the shipping carton:

1. Manual with distribution CDROM
2. Communication cable (8-wire RJ45 for data)
3. 25-pin male connector (INSTR)
4. 9-pin female connector (COMP)

If any of these items are missing or defective, refer to User Support below for contact information.

EQUIPMENT REQUIREMENTS

The instrument must be equipped with the serial data output option. The 25-pin connector at the rear of the instrument identifies that the option is installed.

The ETW software is designed to operate on any IBM PC or compatible clone equipped with a serial port and disk drive. The program is designed to run under Windows 98 or later. The program has been tested on Windows NT 4.0, 2000, XP, and Vista with no problems.

FILES INCLUDED ON DISK

The files included on the disk are:

README.TXT	Text file that includes revisions and changes to the manual and program.
SETUP.EXE	The automated installation program.

After installation the following files will be on your hard disk.

ETW.EXE	The ETW program.
ETW.HLP	The ETW program help file.
ETW.INI	The ETW setup data file.

ETCONFIG.EXE	A program to configure the Output Data File name and user fields for the ETW program.
ETCONFIG.HLP	The ETCONFIG program help file.
MINIMUM.CFG	A Configuration File with no user fields. This is the default configuration after installation.
EXAMPLE.CFG	A Configuration File with user fields defined. This is provided to illustrate the use of user entry fields.

GETTING STARTED

The following sequence is suggested. These steps will minimize the time expended and will ensure that the features of the program are used to optimize the system both from a manager's and an operator's point of view.

1. Review the README.ETW file on the distribution diskette for additions and corrections to this manual.
2. Quickly read the entire contents of this manual. Thorough understanding of all topics is not important, just become familiar with its layout and contents.
3. Perform the hardware and software installation described in Appendix A.
4. Verify proper operation with the ET instrument. If necessary, change the setup as described in Section 3 Program Setup.
5. Use ETCONFIG.EXE to create the Configuration File(s) to capture all the data necessary and to facilitate data entry speed and accuracy. See Section 4, Configuring User Fields.
6. Export the data from the Output Data File to a spreadsheet, database, or other target program. Establish standard procedures to transfer data and purge the Output Data File(s). See Section 6, Output Data File.
7. Train operators on proper operation and data entry. See Section 5, Operating Instructions.
8. Establish on-going quality checks to insure that measurements and data entry are accurate and complete.

USER SUPPORT

The program was developed to be user friendly by providing extensive error messages and help windows. However, if after reviewing the documentation and help windows, you are unable to resolve a problem, please email a detailed description of the situation t.houck@rehder-dev.com. Please provide the instrument serial number and an email address or a fax number for the response.

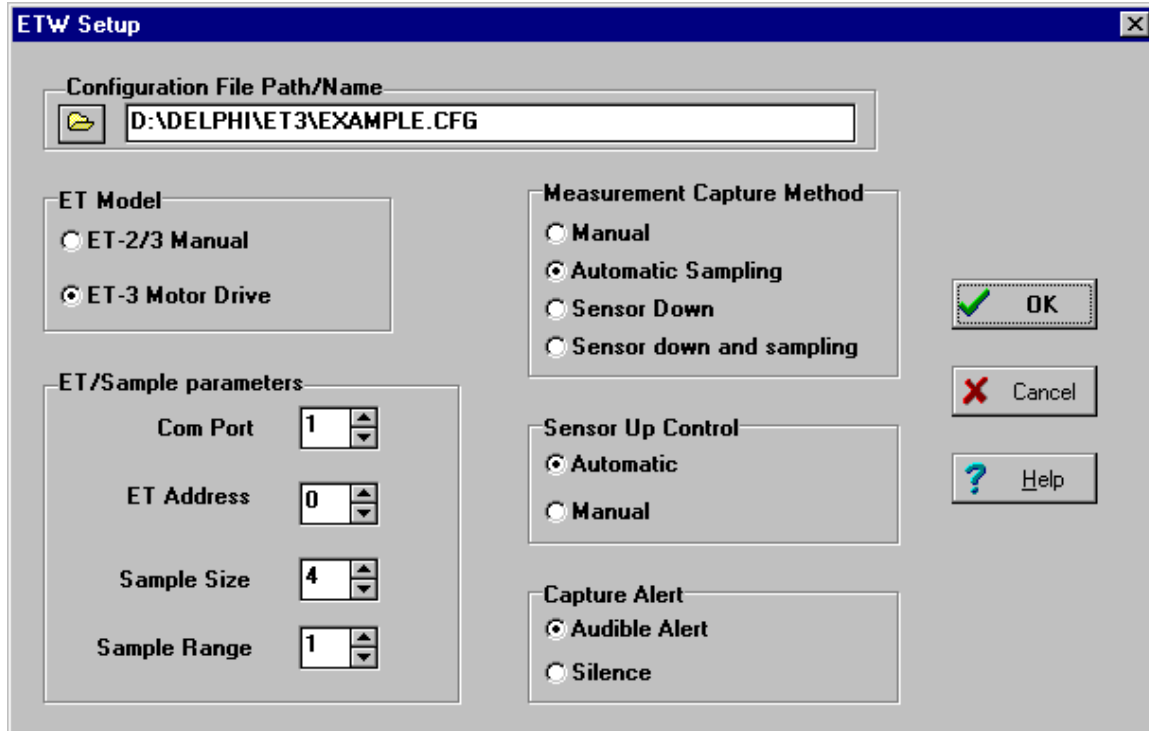
USER FEEDBACK

User feedback on the program and documentation will be greatly appreciated. Not only are documentation/program errors and omissions of interest, but also improvements and "wish list" items will assist in defining future releases of the program.

SECTION 3 PROGRAM SETUP

OVERVIEW

During the installation of the ETW program, several questions related to the setup of the program were requested. The responses to these questions were used to configure the setup file for the program. Additional changes may be required to optimize the behavior of the program for your application. To modify the setup parameters, select the Setup menu item in the ETW program. The Setup window will be similar to the following and each panel is described below.



Note that some fields will not be enabled if the instrument does not have the motorized sensor feature. Always consult the Help menu item for specific details. The following provides a brief overview of the Setup window.

ET Model

Select the model connected to the computer. If the wrong model is selected, numerous error message windows will appear.

Configuration File Path/Name

This panel selects the Configuration File used by the ETW program. Remember that the Configuration File defines the data Output Data File name and user entry fields, if any.

ET/Sample parameters

The communications port and sampling parameters are selected in this panel. The sampling parameters determine the behavior of the automatic capture of the thickness value.

Measurement Capture Method

The options are manual or automatic capture of the thickness reading. Manual mode requires the operator to initiate the “capture” of the thickness reading, clicking on a button or typing a key. The other modes provide various automatic methods of capture, alleviating the operator from determining when a valid reading has been reached, minimizing mouse and keyboard actions, and eliminating the influence the operator may have on the value. Capture methods related to the sensor position are available only with the motorized sensor feature.

NOTE: Before relying on any automatic capture mode, make sure that the process is accurate and reliable for your situation.

Sensor Up Control

These options are available only with the motorized sensor option. The Automatic mode provides the fastest operation and minimizes operator actions.

Capture Alert

An audible signal, which sounds when the thickness reading is captured, can be selected in this panel. Enabling the sound feature will alert the operator that a thickness reading has been captured.

The Rehder Development Co. Model ET-3 Instrument equipped with the motorized sensor can provide the most accurate and rapid measurements when an automatic capture mode is selected, the Sensor Up Control is automatic, and the Capture Alert is audible. When equipped with a foot switch, the operator need only place the lens on the anvil then press the foot switch. When the reading is captured, the computer will let him or her know, and the sensor will automatically retract. The operator does not have to type any keys or touch the mouse, assuming no user field entry is required.

The ET-3 instrument with motorized sensor is highly recommended.

SECTION 4 CONFIGURING USER FIELDS

OVERVIEW

The ETCONFIG.EXE program creates/edits Configuration Files. The Configuration File is a text file that provides the ETW program with the Output Data File name and the parameters for user fields, if any. The user fields provide the means of customizing data entry and recording. The EXAMPLE.CFG Configuration File illustrates some entry possibilities and is shown below.

The screenshot displays the 'ET Measurement Program' window. The title bar reads 'ET Measurement Program' and the menu bar includes 'Setup', 'Help', and 'About'. The interface is divided into two main sections. On the left, under the heading 'Data Fields', there are several input fields: 'Lot Number' (text box), 'Measurement Location' (dropdown menu with 'Edge' selected), 'Base Curve' (text box), 'Diameter' (text box), 'Power' (text box), 'Operator' (text box), and 'Instrument S/N' (text box with '147' and a dropdown arrow). On the right, under the heading 'File: C:\ETW\OUTPUT.DAT', there are status indicators for 'Status' (with 'Connected' and 'Sensor Up' buttons), 'Sequence Number' (text box with '1'), 'Thickness reading' (text box with '+OVR' in red and 'microns'), and 'Recorded Value' (text box with 'microns'). Below these fields is a large 'Measure' button with a blue square icon. At the bottom center is an 'Exit' button with a red square icon.

Remember that the Configuration File used by the ETW program is selected in the Setup window as described in Section 3 Program Setup.

SECURITY

Because the Configuration File(s) defines the contents of the Output Data File, only the system administrator should create and modify Configuration Files. Once a Configuration File has been tested and verified for accuracy, it is suggested that its attribute be set to read-only.

CREATING CONFIGURATION FILES

Use ETCONFIG.EXE program to create or edit Configuration Files. This program is well documented with the Help menu item. When using the program for the first time, click the Help menu item, then use the browse buttons << and >> to sequence through the topics.

File names

The Configuration File can be given any valid DOS (8.3) name. Several different Configuration Files may be desired. For example, a file may be created for each operator, which will define a user field that provides the operator's name or ID. The extension .CFG is recommended so all Configuration Files can be easily identified.

Configuration file examples

File MINIMUM.CFG is included as a minimal Configuration File. There are no user fields defined in this file and it is the default file used for installation. See Section 5 Operating Instructions for the display using MINIMUM.CFG.

File EXAMPLE.CFG is included with the software distribution. To use this file, while running the ETW program select the Setup menu item, then use the file browse button to define the Configuration File as EXAMPLE.CFG.

CONFIGURATION FILE ERRORS

Numerous checks are made when the Configuration File data is used to create the measurement window. A pop up message will indicate that an error has been detected. Any field with an error will contain a description of the error with a red background. Measurements are disabled if there are any errors in the field parameters. Use ETCONFIG.EXE program to correct the Configuration File. If any unrecoverable errors occur with a Configuration File created or edited with ETCONFIG.EXE, please send a description of the problem to the support services detailed in the About menu item window.

CONFIGURATION FILE FORMAT

The Configuration Files use the Windows .INI format. The contents of Configuration Files should not be a concern since the ETCONFIG.EXE program automatically creates and edits them. Details on the contents of the Configuration Files are detailed in the ETCONFIG help screens.

SECTION 5 OPERATING INSTRUCTIONS

OVERVIEW

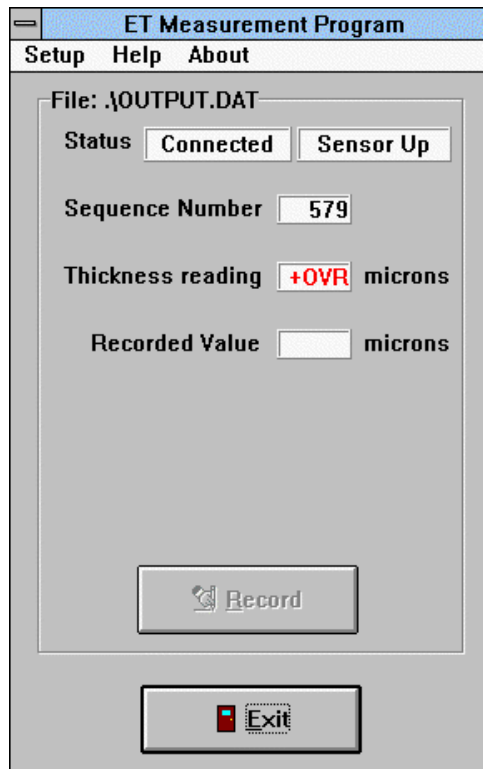
The measurement process with the instrument remains the same. Rather than hand recording information, the computer is used to automatically record the thickness value and to provide a means of entering other information (optional). When the measurement and data entry process is complete, all data will be automatically or manually recorded to the Output Data File depending on how the program is setup,.

GETTING STARTED

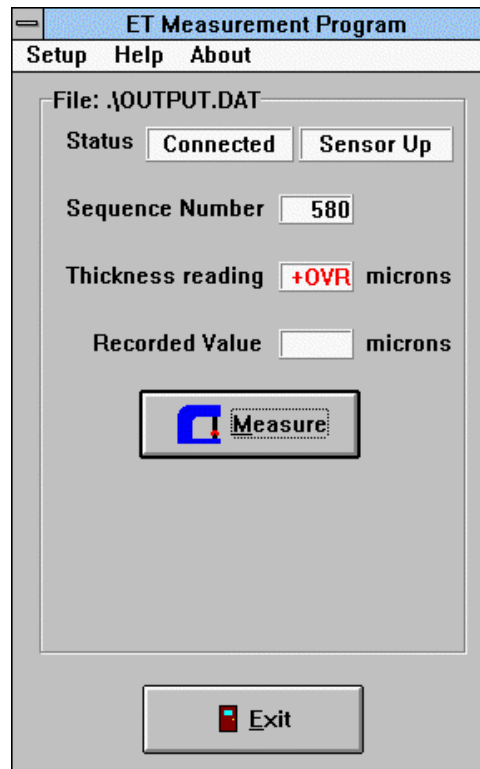
Before running the program, perform the proper power up sequence and tests on the instrument and check to make sure the communications cable is properly connected. It is best to start the ETW program after the instrument has been turned on.

MEASUREMENT WINDOW

The Measurement Window layout depends on the type of ET instrument in use, the options that are selected in the Setup menu, and the Configuration File. Here are the two windows with no user defined entry fields (MINIMUM.CFG).



Non-Motorized Sensor



Motorized Sensor

If the program detects an error, a window will pop up. When this occurs, follow the instructions. The program constantly checks the communications with the instrument; therefore error windows

may pop up on the screen without typing any keys. Most pop up windows have a context sensitive help button to facilitate a quick solution to the problem.

Output Data File

The Output Data File will contain the measurement values and its name follows the File: caption on the measurement panel. This file name is defined in the Configuration File currently selected.

Status

There are two panels that display status information. The one on the left is the communications status. The normal reading is "Connected" which indicates that the communications with the instrument is okay. If there is a problem with the communications a pop up window will describe the problem and the status reading will reflect the problem.

The panel on the right displays the position of the sensor. For motorized units, the direction of the sensor movement is also reported.

Sequence Number

Each reading recorded to the Output Data File will have a unique Sequence Number; think of it as a serial number that increments by one for each reading. This number is defined by the program and can not be edited. If the ETW program is started with an existing Output Data File, the sequence number will increment from the last reading recorded.

Thickness Reading

The thickness value is read from the instrument. The value may not always be exactly the same as the instrument's display. However, they should match within +/- 2 counts, which is well within the instrument's stated accuracy.

Although a zero or negative thickness value should never occur as a normal measurement, these values can be written to the Output Data File. To safeguard against accidental recording of questionable values, a zero or negative reading will cause a pop up window that requires confirmation before writing the data to the Output Data File. This feature can be used to record the zero stability over time and/or temperature to the Output Data File.

When the sensor is up, a "+OVR" value will be displayed – positive over-range reading. The "+OVR" reading can not be written to the Output Data File.

Recorded Value

When a new measurement is started the panel will blank until the thickness value is "captured". The last recorded value will remain until the next measurement is started.

Exit Button

The exit button terminates the program.

User Entry Fields

If user fields have been defined in the Configuration File, then they will appear to the left side of the measurement window. These fields are edited in the same manner as any Windows field. All entries must be valid as defined by the Configuration File before the data can be recorded to the Output Data File.

Measurement Buttons

There are numerous configurations for the measurement buttons. Their use and visibility depends on the type of ET instrument and the mode of operation defined in the Setup Menu. Only active buttons will be visible, and their use is self-explanatory. Consult the Help Menu for detailed explanation of the buttons.

MEASUREMENT PROCESS

There are numerous configuration possibilities so only a brief summary is given here. Refer to Section 3, Program Setup, to define a specific setup. Also use the Help menu item for details on the meaning of the various buttons.

If user fields are defined, they must have entries where required before the data will be recorded to the Output Data File. Invalid or missing data will cause a pop up message box to appear.

Non-motorized Sensor Instrument

The sensor must be manually lowered, the reading “captured”, then the sensor manually raised. The recording of the thickness value may be automatically captured if the feature has been enabled. If not, the Record button will become visible which will require “pressing”, that is, a mouse click or keyboard entry.

Motorized Sensor Instrument

The ET-3 motorized sensor instrument provides a highly automated and repeatable method for taking thickness measurements. With the optional foot switch, readings can be recorded without any mouse or keystroke operations, freeing the operator to concentrate on placing the lens accurately and quickly. Of course if there are user entry fields that require entry, they will have to be entered.

Clicking the Probe Down button, pushing the front panel push button, or depressing the foot switch starts the measurement. Depending on the setup, needed buttons will appear as the measurement process proceeds. There are numerous configuration options for the motorized sensor instrument, so refer to the Help menu item for particulars.

The motorized sensor option is highly recommended.

SECTION 6 OUTPUT DATA FILE

OVERVIEW

The drive, directory, and name of the Output Data File is defined in the Configuration File. When the ETW program is started it attempts to open the file. If successful, the existing file will have the new data appended to the end of the file; previous data, if any, will not be over-written. If the file is not found, it will be created. If the file can not be created the program will terminate with an error message.

Output Data File Format

The Output Data File is an ASCII text file with comma-and-quote-delimited fields. Each measurement is recorded as a single line and each data field for the measurement is separated with commas. Text data is surrounded by double quotes. Numeric fields (thickness) are not enclosed with quotes.

Data Fields

The fields in the Output Data File are defined as follows.

FIELD	DATA	TYPE	DESCRIPTION
1	Date	text	MM/DD/YYYY format. See note below.
2	Time	text	HH:MM:SS 24-hour format. See note below.
3	Sequence	numeric	NNNN. A unique "serial number" that is incremented by one with each measurement.
4	Thickness	numeric	NNNN. The thickness read from the instrument.
5 - 20	User defined	text	Optional - user defined based on contents of Configuration File.

NOTE: The system date and time is the source of data for fields 1 and 2. See Appendix A, Hardware and Software Installation for a discussion on the accuracy of the system clock.

NOTE FOR INTERNATIONAL USERS: The date and time formats are typical for the USA. International users may need to reorder the data and change the delimiter characters. Most spreadsheet and database programs have the means of importing this data in the USA format while displaying the data in a user defined format.

Here is an example of an Output Data File record with no user fields:

```
"01/13/1997","16:25:51",1,127
```

This record represents a reading taken on January 13, 1997, at 4:25:51pm, which was the first reading after starting the program (Sequence Number is 1), with a thickness value of 127 microns.

User fields, if defined, will follow on the same line in the format defined above. Note that only the data entered in the user field is outputted, not the field titles.

Exporting Data

The Output Data File format was selected because it is the most compatible with spreadsheet and database import functions. Consider the following when defining fields and exporting procedures.

1. Some import functions limit the length of a line of data, typically to 255 characters.
2. The ETW program always appends data to an existing Output Data File. Procedures must be established to insure that duplicate data is not transferred to other programs. An automated method using scripts, macros, etc., should be used. After the data has been successfully transferred, the Output Data File should be archived (copied), and the "working" copy deleted.
3. The ETW program always appends data to an existing output data file. Procedures must be established to insure that duplicate data is not transferred to other programs (spreadsheets). An automated method using scripts, macros, etc. should be used. After the data has been successfully transferred, the output data file should be archived and the "working" copy erased.

Year 2000 Compliance

The ETW program is Year 2000 compatible. The date field is represented as four digits, however the date value is read from the computer's operating system (Windows 2000, XP, etc.). Note that the computer BIOS and operating system must be Y2K compliant so that the ETW program is "given" the correct date. The ETW makes no calculation based on the date value.

APPENDIX A HARDWARE AND SOFTWARE INSTALLATION

Before proceeding, review the README.ETW file on the distribution diskette. This file may contain additions and corrections to this manual.

HARDWARE CONSIDERATIONS

Equipment Arrangement

The maximum cable length between the computer and the instrument is 25 feet. However, the placement of the computer (at least the keyboard and monitor) and the instrument should be optimized for operator convenience. Make sure cables will not interfere with normal activities. Also, keep the communications cable from all other cables and electronic equipment. It is suggested that the computer and the instrument be connected to the same grounded power outlet box.

Hardware Installation

The only hardware to install is the serial communications cable that connects the computer to the instrument. A unique cable is supplied with the software that is similar to the type used with telephones. Also three connectors are provided. Locate the 25-pin male connector labeled 'INSTR' and attach it to one end of the cable, then plug it into the socket on the back of the ET instrument. Attach the other end of the cable with the 9-pin connector supplied. Use the screws on the connectors to securely fasten them to the computer and the instrument.

NOTE: A longer cable can be used with the connectors supplied. Make sure that the cable is specified as "RJ45 for data". RJ45 cables for telephone use will not work.

Custom cables are available from the software supplier. If you need to fabricate a custom cable, the connections are given below.

Computer (female)		Instrument (male)			
25-pin	9-pin			25-pin	
2	3	TXD	-----	RXD	3
3	2	RXD	-----	TXD	2
4	7	RTS	-----	CTS	5
5	8	CTS	-----	RTS	4
6	6	DSR	-----	DTR	20
7	5	GND	-----	GND	7
8	1	DCD	-----	DCD	8
20	4	DTR	-----	DSR	6

Note: Above cable connections are different from the ET-2 cables supplied with the DOS version of the ET software. The new wiring supports all ET-2 and ET-3 instruments with and without the motorized sensor feature. The motorized sensor feature will not operate without the new cable. The ETW software distribution includes the new style cable.

Serial Port Selection

The serial port connected to the instrument can not be used for any other purpose. This may not be obvious since many internal cards may use the serial port - modem, fax, mouse, etc. The software allows the use of ports COM1 - COM4, however the one chosen must be installed in your computer and recognized by Windows. Determine which port is available prior to installing the software, so the ETW program can be configured easily, as described in Software Installation, below.

PC Compatibility

The ETW program uses the Windows operating system services for serial communications to minimize the problems of compatibility. The ETW program has been tested successfully on Windows 98, NT, 2000, XP and Vista.

SOFTWARE INSTALLATION

Software installation: The ETW software has an automatic installation program that will copy the required files to the hard disk and configure the system. To begin installation: Insert the ETW disk into the drive on your computer. The installation program will start automatically. If it doesn't, open Windows Explorer, select the CDROM drive and double click the SETUP.EXE file. The SETUP program will guide you through the installation process. After installation be sure to store the distribution disk in a safe place.

Initial Operation: The following steps should be followed the first time the ETW software is used.

1. Make sure the communications cable is connected and the instrument is turned on.
2. Go to the ETW group, or the directory you specified during installation.
3. Run the program by clicking the ETW icon or ETW.EXE in the directory.
4. If the program communicates successfully with the instrument, the normal measurement window will appear as shown in Section 5 Operating Instructions. When errors are detected, message boxes will popup describing the problem. The Help menu item can be used, and there are numerous context sensitive help pages to assist with the problem. You may need to click the Setup menu item and select the proper COM port.
5. If your Rehder Gauge has the motorized anvil feature then click the Setup Menu item, then in the ET Model panel select the ET-3 Motor Drive option. Click the OK button to save the settings. Note: If the ET-3 Motor Drive option is selected, but the instrument does not have that feature, then the communications will report a Power failure, even when the instrument is on.
6. After this initial step is successful then create custom Configuration Files to suit your application. See Section 4, Configuring User Fields.

System Date and Time The system date and time are used as data in the Output Data File. Therefore the system clock must be correct while running the ETW program. See Year 2000 Compliance in Section 6, Output Data File.

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