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**GEA  
GRAPHICAL  
EVENT ANALYZER**

**USER MANUAL**

**MICRO-AIDE  
Rail Signal Products**

*EVENT RECORDERS    ALARM REPORTERS    DATA LOGGERS  
CLOCK SYNCHRONIZERS    CURRENT SENSORS    VOLTAGE MONITORS  
BATTERY MONITORS    LIGHT OUT DETECTORS    CUSTOM ENGINEERING*

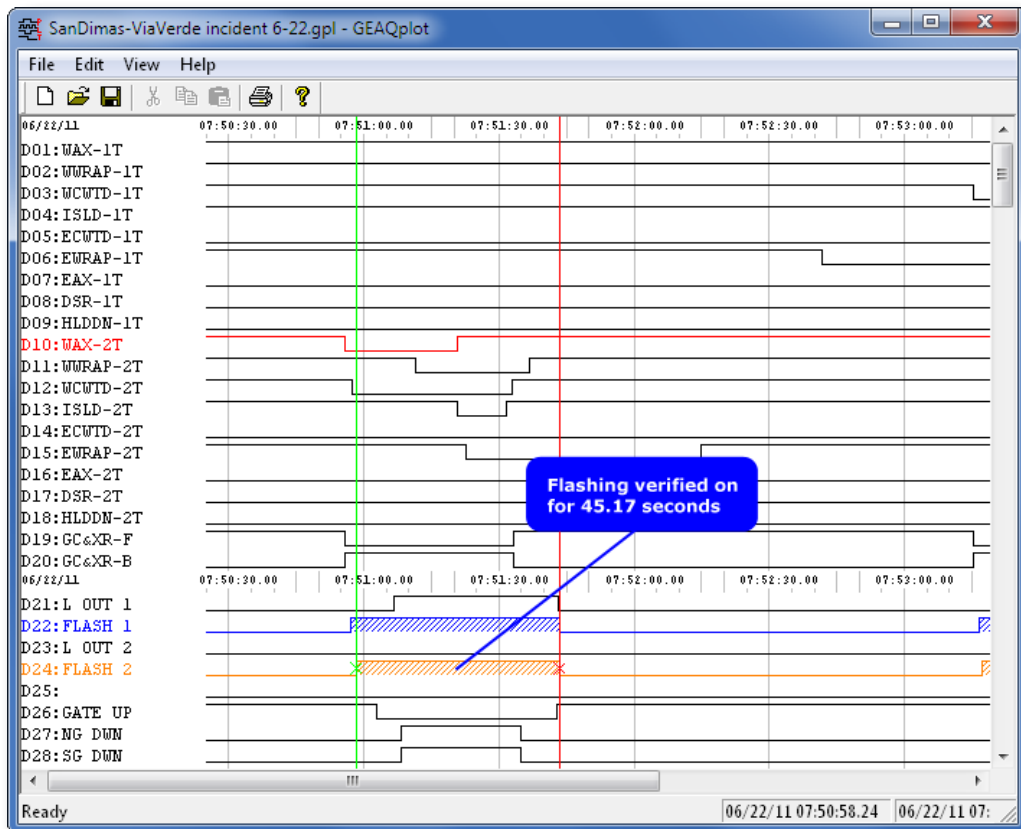


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RAIL SIGNAL PRODUCTS



## GEA GRAPHICAL EVENT ANALYZER USER MANUAL

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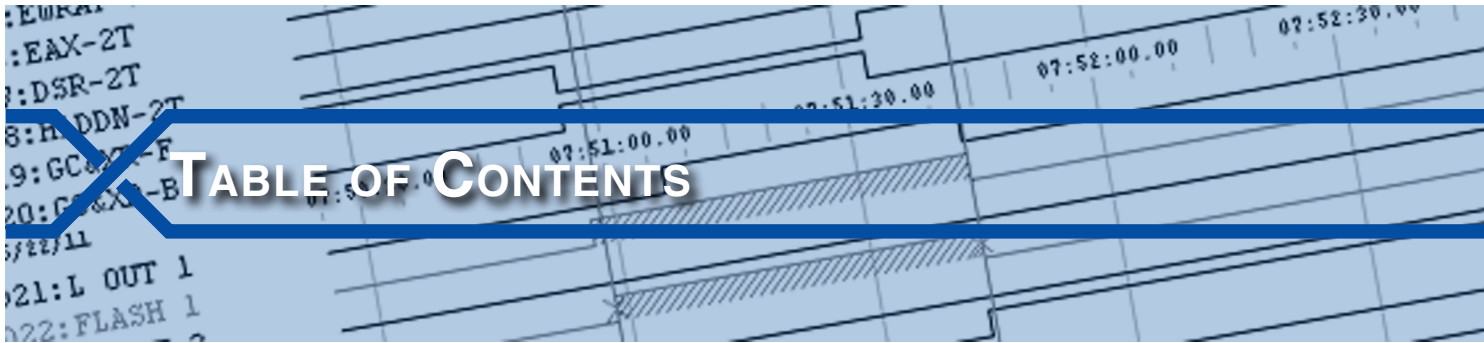
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# CHAPTER 1 – GENERAL DESCRIPTION

## INTRODUCTION

Since 1988 MICRO-AIDE has provided the rail signal industry with a broad range of Event Recorders and Data Loggers that vary significantly in capacity, size and features. The CWR family of recorders and VDL family of Data Loggers represents an extensive line of products that include a variety of useful and easy-to-use features favored by many technicians and maintainers.

With GEA (Graphical Event Analyzer) MICRO-AIDE has now made the gathering, saving, viewing, analysis and plotting of CWR and VDL Event Record data even easier. GEA is a Windows®-based application that is fully compatible with all CWR Event Recorders and Data Loggers. Working in a Windows environment the user can take advantage of its intuitive Graphical User Interface.

GEA can be quickly and easily installed. GEA software is provided as a downloadable file from the MICRO-AIDE website. It is self-extracting and includes an uninstall utility. Once installed, a host of polling, scheduling, database preparation, printing and plotting features are made available to the user. GEA can access Event Recorders and Data Loggers by using either the Ethernet® port, internal modem or serial communication ports of the PC.

All MICRO-AIDE rail signal products, including GEA, are designed to be easy to use and maintain. Each design is based upon the premise that value and reliability start with attention to detail and a concern for usability rather than needless complexity. Our goal in creating GEA was to provide the rail signal industry with a valuable software tool that best complements our recording devices, while also filling the needs of technicians and maintainers.

1

## REQUIREMENTS

GEA can be installed and run on a broad range of PC hardware types and Windows operating systems. Its requirements are generic. A complete list of requirements can be found in the section entitled "[GEA Requirements](#)" on page 43.

## KEY FEATURES

Listed in the following are just a few of the many features supported by GEA.

- Fully compatible with MICRO-AIDE CWR-22xT, -22XL, -24A, -24E, -40, -40A, -40E, -56, -72, -72A, -72E, -264, -264A, -264E, -264XL, -272, -272A, -272E, -264AX and -264XC Event Recorders.
- Also compatible with all MICRO-AIDE Vital-Processor Data Loggers (VDL).
- A single, self-extracting file is used to install GEA.
- Compatible with Windows 95®, 98®, 98SE®, NT®, 2000®, XP®, Vista®, Windows 7®, Windows 8® and Windows 10® operating systems.
- An uninstall utility is included with GEA.
- As many as 256 Event Recorders and Data Loggers can be configured for use with GEA.
- Setup Databases can be modified within GEA while offline with the recording device.

- The Setup Database for each recording device is automatically saved to the PC's hard drive.
- The Setup Database saved by GEA is automatically compared during each polling session to the database used by the recording device. Any differences are reported to a log file.
- GEA can be used to automatically set the real-time clock of any CWR Event Recorder or VDL so that it is in sync with the PC's clock.
- Multiple PC comm ports and modems can be used to access local and remote recording devices.
- Remotely located Event Recorders can be accessed without using a Port Redirector. The Ethernet Port of the recorder can be directly accessed by its IP Address.
- Data from the recording devices can be acquired by means of a user-defined week long schedule or immediately on demand by the user.
- Event record data older than 30 days can be automatically deleted.
- Event Records can be viewed within GEA either as text or as simulated pin plots.
- As many as 256 inputs can be simultaneously plotted on screen or printed.
- Within the Plot Window as many as eight Logical Equations can be defined by the user. Four different inputs can be assigned as variables in any equation.
- To make data analysis easier, equation outputs can be plotted like any other input.
- The Quick Plot feature allows preselected inputs to be plotted with a minimum of mouse clicks.
- The Real-time Plot feature provides a continuously updated, multi-channel view of each input.
- The Live Status Window displays the current state of each recording device input. Simulated, multi-colored LEDs are used to indicate various signal states.
- The database parameters for any input can be viewed within the Live Status Window.
- Event Records that are viewed as text or as plotted channels can also be printed.
- Time measurement cursors can be located anywhere within the Plot Window.
- Plotted channels can be assigned colors to highlight data of special interest to the user.
- A series of diagnostics are performed on each recording device when it is polled.
- A polling log is maintained. A log entry is created each time a recording device is accessed. The log can be viewed as a text file.
- An extensive HTML-based help document can be accessed directly within GEA.
- Windows Paint® can be used to annotate Plot Window images.

## ABOUT THIS MANUAL

This document is intended to provide the user with comprehensive, easy-to-read instructions on how to install, set up and use MICRO-AIDE's GEA software. This document refers to Version 5.06 of the GEA software. The sample data and command details depicted were prepared using Version 5.06. The numerous screen shots were captured from a Windows 7 computer. Wherever possible, step-by-step instructions have been included. In the event the user has questions about any of the described procedures the user should contact MICRO-AIDE for assistance.

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The MICRO-AIDE “Material Return” and “Limited Warranty” policies can be found on the inside back cover of this manual.



Throughout this manual the term recording device is meant to imply any MICRO-AIDE CWR Event Recorder or Vital-Processor Data Logger. Only in those few cases where a distinction exists will the more specific terms Event Recorder and VDL be used.

## SOFTWARE MODIFICATION HISTORY

Features have either been introduced or modified as the result of the following firmware modifications.

- V2.04** Added an option to open and view record and database files as .txt files. Added support for USB-based comm ports.
- V3.00** Added support for the CWR-72E and user-defined Logical Equation feature. Equation results can be plotted.
- V3.01** Corrected content of Details dialog boxes for Analog and Virtual Inputs.
- V3.02** Identifying and searching for comm ports now occurs instantaneously. Version 3.1.0.3 of the Lantronix Port Redirector software is now used.
- V3.03** An error in viewing the Setup Database from a CWR-72E was corrected.
- V3.04** The “File–Exit” command’s “No” option no longer causes GEA to close.
- V3.05** The Xmodem-based polling performance was improved substantially. Duplicate data blocks are ignored. Several timer and delay values were lengthened.
- V3.06** Support for the CWR-264E Version 1.16 firmware was added. The latter added support for SNTP-Unicast time syncing.
- V3.07** Executing the “File–Save” command within GEAQplot now saves all Equation definitions.
- V3.08** Corrected a flaw in plotting of Equation Outputs. Corrected the content of the dialog box associated with Equation Outputs as viewed within the plot window.
- V3.09** The Setup Database for the CWR-264XC was improperly defined. It was missing the Time Zone and Daylight Saving Time settings.
- V3.10** The Setup Database for the CWR-272E was improperly defined. It was missing the Time Zone and Daylight Saving Time settings.
- V3.11** Paint can be used to annotate the Plot Window image.
- V3.12** Text file printout for the CWR-22XL Setup Database was corrected.
- V4.00** Removed Lantronix Port Redirector software as an installation option.
- V4.01** Support for the CWR-264XL was added.
- V4.02** Access via the recording device’s USB Device Port is now properly supported.
- V4.03** Added support for VDL S7-300 with 999 Digital Inputs. Retained support for VDL S7-300 with 256 Digital Inputs. Recorder Type is VDL-S7-999 and VDL-S7-256, respectively.
- V5.00** Third-party Port Redirector software is no longer required. Instead, the IP address of the Event Recorder can be directly targeted. The checksum and memory size parameters have been removed from the Event Recorder Edit command.
- V5.01** The Live Status feature for the VDL-A S7 now supports the display of 999 Digital Inputs.
- V5.02** Corrected failure of real-time plot feature when using serial comm connections.

- 5.03** Corrected problem with Setup Database for CWR-272XL and CWR-272A.
- 5.04** Corrected problem with plotting Event Records from the CWR-272XL and CWR-272A.
- 5.05** Text version reports can now be created automatically after a scheduled poll or poll of today's data.
- 5.06** If an existing Setup Database does not already exist, the user has the option to automatically create a factory default version. This option applies only to the CWR-24E/A, CWR-72E/A, CWR-264XL/A, VDL-A MLII and VDL-A S7.

## RECORDING DEVICE FIRMWARE

GEA is designed for compatibility with the latest recording device firmware. Conversely, in many cases it will not fully support older firmware versions. For this reason MICRO-AIDE advises all GEA users to upgrade the firmware used by their recording devices whenever a new version of GEA is installed. The latest versions of the GEA software and recording device firmware are always available as downloadable files from the MICRO-AIDE website. There is no charge to the user for downloading files. The user is encouraged to contact MICRO-AIDE directly if a question regarding GEA and recording device compatibility arises.

The current version of the firmware file used by each MICRO-AIDE recording device and GEA can be found at:

[www.micro-aide.com/support/downloads.html](http://www.micro-aide.com/support/downloads.html)

---

The next chapter describes how to install and set up GEA.

# CHAPTER 2 – INSTALLATION AND SETUP

## INTRODUCTION

This chapter describes how to properly install the GEA software as provided and recommended by MICRO-AIDE. A detailed description of how to configure GEA is also provided.



Numerous screen shots and operating system references are included throughout this User Manual. Windows 8 was used exclusively in the preparation of this document.

## INSTALLATION

### COMPATIBILITY AND SECURITY

GEA has successfully been installed and used on a variety of PC operating systems. Except as noted later in this chapter, it is compatible with Windows 95, 98, 98 Second Edition, NT, 2000, XP, Vista, Windows 7, Windows 8 and Windows 10. The procedure for installing GEA is the same, regardless of the operating system being used. However, GEA should be installed to a folder that incorporates the security and access restrictions desired by the user. This is particularly true of systems using Windows XP and later. The procedures for configuring these security features are outside the scope of this User Manual. The user may wish to confer with an IT manager as regards this matter.

2

### INSTALLATION PROCEDURE

Installing GEA involves only a few simple steps. The procedure is similar to that used by many Windows applications. Less than 11 MBytes of disk space is required. The following step-by-step procedure assumes that the GEA self-extracting file has already been saved to disk. If it has not been, the user should copy the file named SetupGEA506.exe to an appropriate folder.

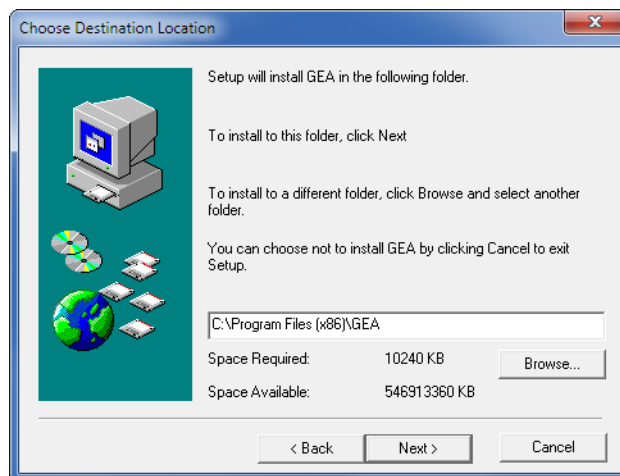
The GEA self-extracting file includes all of the GEA-specific files. Their installation is mandatory. The Installation Procedure is described in the following section.



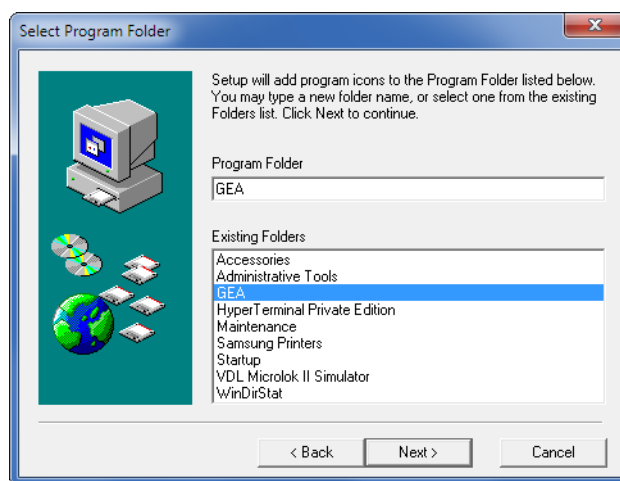
If the Installation Procedure is being used to install an updated version of GEA, the previous version must be uninstalled first. Refer to the section entitled ["Uninstalling GEA" on page 6](#) for additional details.

### INSTALLING GEA

1. Double-click on the file named SetupGEA506.exe.
2. The full screen Setup GEA 5.06 window will appear. The window will also contain the Welcome dialog box.
3. If the user wishes to proceed, click the button labeled "Next >".
4. The Choose Destination Location dialog box shown in the following will appear. The user must select the folder where the GEA application files will be installed. By default, the Program Files folder is selected. The user can select an alternative folder, however. Click the "Browse..." button to do so.



5. Click the "Next >" button after the installation folder has been selected.
6. A Select Program Folder dialog box similar to the one shown in the following will appear.



7. Accept the default GEA folder by clicking the "Next >" button.
8. A dialog box listing target directories (i.e., folders) and the program group will appear.
9. Click the "Next >" button and the installation program will proceed to extract and save the expanded files to the folders previously specified. To complete the installation procedure, click the "OK" button in the final dialog box entitled "Setup2GO".

## UNINSTALL PROCEDURE

The user may on occasion have need to uninstall GEA. Uninstalling GEA is described in the following section.

### UNINSTALLING GEA

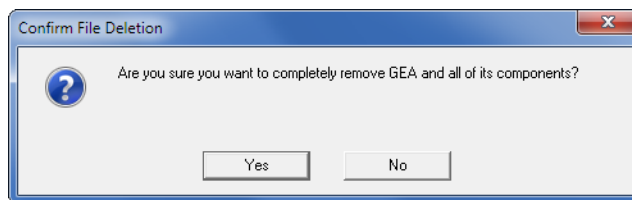
Follow the steps listed in the following section to uninstall GEA.



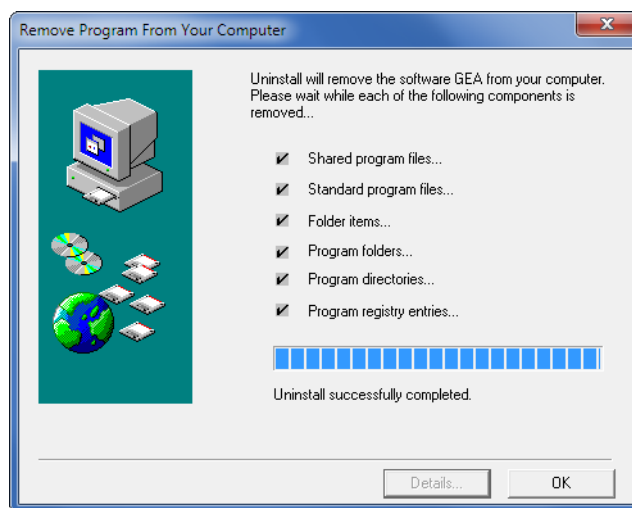
The following uninstall procedure must always be performed prior to installing an updated version of GEA.

1. Click the Windows "Start" button at the lower left corner of the desktop.
2. Click the "All Programs" button and click the program group folder labeled "GEA".

3. Expand the GEA listing by highlighting it with the mouse.
4. Click the Uninstall GEA entry. The following cautionary dialog box will appear.



5. Click the "Yes" button to proceed.
6. Finally, the following dialog box will confirm that all of the GEA files have been uninstalled. Click the "OK" button to return to the desktop.



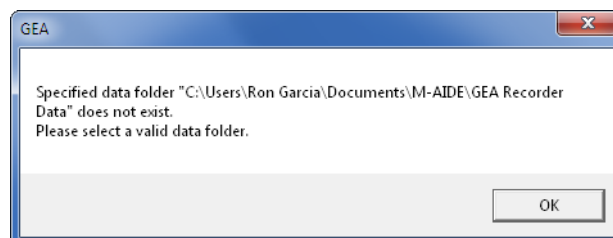
2



After GEA is uninstalled the Data Folder and its contents are neither deleted nor altered in any way. The uninstall procedure removes the GEA executable files only. Any polled, plotted or Setup Database files previously created by GEA will remain in place without modification.

## BEFORE LAUNCHING GEA

At the completion of the Installation Procedure the desktop icon labeled "MICRO-AIDE GEA" can be used to launch the application. However, before GEA can be used it must be properly configured. A key element of the configuration is the creation of the Data Folder. The Data Folder is the main folder used by GEA to save Event Record, Setup Database and Plot Files. In actuality, each recording device configured within GEA creates its own sub-folder within the Data Folder. Without the Data Folder GEA has no idea where the user wishes to save the data that will eventually be acquired and processed. Accordingly, upon the initial launch of GEA the following dialog box will be displayed.



This dialog box serves as a warning to the user that the Data Folder should be created before proceeding further. It can be created like any new Windows folder using standard Windows techniques. It can

be located anywhere on the hard disk. However, its location should be consistent with the user-defined access and security restrictions created by the user or workgroup. Unless there is a compelling reason to do otherwise, MICRO-AIDE strongly recommends that the Data Folder be named "GEA Recorder Data".

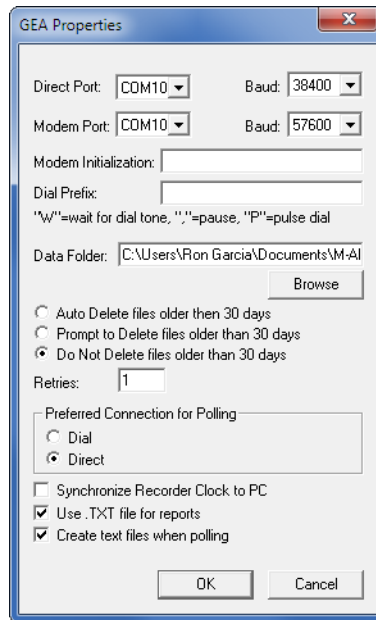
After creating the Data Folder click the "OK" button from the previous dialog box or relaunch GEA. The GEA Properties dialog box will be displayed. This starts the configuration procedure which is described in the next section.



The GEA Properties dialog boxes will not be displayed if an upgraded version of GEA is being installed. In this case the previous Data Folder and configuration settings will be retained and used by the new version.

## CONFIGURING GEA

There are a few parameters that must be assigned within GEA. Generally, the default settings selected by GEA are usable without alteration. Nevertheless, the user should have a firm understanding of these parameters so that changes can be properly made should the need to do so ever arise. Except as previously noted, the GEA Properties dialog box will appear after the initial launch of GEA.



2



The GEA Properties dialog box can be accessed within GEA at any time by simply clicking on the "Edit-Properties..." command.

Each of the parameters is described in the following paragraphs.

## DIRECT AND MODEM PORTS

A pair of drop-down list boxes are used to assign the PC's direct connect and internal modem comm ports that GEA will use to access one or more recording devices. In the example shown previously Com1 and Com2 are used by the "Direct Port" and "Modem Port", respectively. Review the PC hardware documentation to verify a change in settings.



The "Direct Port" setting assigned in the GEA Properties dialog box represents the default port used by GEA for communicating via an RS-232 connection. The user can assign any comm port available in the PC to any particular recording device. Refer to the section entitled "Direct Port" on page 12.



## BAUD RATES

These are the serial Baud rates used by GEA for the "Direct Port" and "Modem Port". In the case of the modem the Baud rate is the DTE speed of the modem, not its line or signalling speed which is typically 33,600bps.

## MODEM INITIALIZATION

This edit box is used to provide the modem with special initialization instructions. Changes to the initialization string should be performed with caution. It is possible to enter commands that will make GEA unable to communicate with any recording device. Consult the modem documentation before proceeding.

## DIAL PREFIX

Depending upon the telephone network being used, the PC modem may need to dial one or more line access codes. These parameters should be entered into the "Dial Prefix" edit box.

## DATA FOLDER

The Data Folder must be created by the user prior to its selection. After the folder is created click the "Browse" button to navigate to and select the location of the folder.

## DELETING FILES AUTOMATICALLY

Over time GEA can accumulate many megabytes of data. After 30 days it is likely the hard drive will contain data files that are no longer of interest to the user. If this is the case, the user may wish to enable the Auto Delete feature. This feature is controlled by one of three settings. Each is described in the following sections.



GEA Versions 1.70 and later utilize a different date format when creating Event Record files. The new format is YYMMDD. GEA Versions 1.69 and earlier follow the MMDDYY format. An old file labeled "031204" contains data from March 12, 2004. However, newer versions of GEA will interpret the same file as containing data from December 4, 2003. The old file is misinterpreted to be much older. Depending upon the settings of the Auto Delete feature, saved files may be erroneously deleted from memory. Before allowing GEA to delete any files it is best to either rename or archive all files saved by GEA Versions 1.69 and earlier.

2



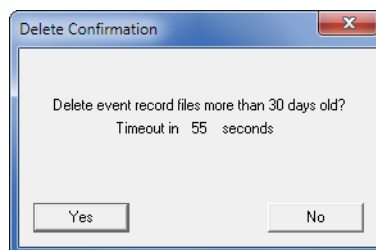
The data file naming specification, used to save Event Records, can be found in the section entitled "[File Naming Convention](#)" on page 20.

## AUTO DELETE FILES OLDER THAN 30 DAYS

If enabled, Event Record files older than 30 days will be automatically deleted. The user will not be warned by the appearance of the Delete Confirmation dialog box (see next section).

## PROMPT TO DELETE

If Event Record files older than 30 days are found, the following dialog box will be displayed either on the hour (e.g., 9:00 AM) or immediately after GEA is launched.



If the user selects "Yes", the old files will be deleted. Selecting "No" or letting the timer elapse leaves the files intact. The timer counts down from 60seconds.

## Do NOT DELETE

No Event Record files are deleted with this setting. The Delete Confirmation dialog box never appears.



GEA data files should be subjected to normal backup and archiving procedures. In this way, the risk of losing valuable data will be minimized and the disk drive will not be cluttered with files that are of no interest to the user.

## RETRIES

The PC modem may occasionally fail to connect with a remote recording device. The "Retries" setting allows the user to select how many times the modem will attempt to reconnect after the initial failure. The parameter must be in the range from 1 to 10.

## PREFERRED CONNECTION

GEA can access recording devices by means of the computer's internal modem or comm port(s). Each recording device can be assigned a unique comm port provided the computer is equipped with multiple ports. The "Preferred Connection for Polling" setting allows the user to preselect, as a default, either the modem or assigned comm port(s). This setting is used by several of the data access and scheduling commands.

## SYNCHRONIZE RECORDER CLOCK

Check the box if GEA is required to synchronize the recording device clock with that of the PC. If enabled, this feature will synchronize the clocks whenever GEA performs a scheduled poll of Event Record data or accesses the recording device Setup Database.



If multiple PCs are running GEA, it is important that only one PC is enabled for clock synchronization. Otherwise, the recording device clocks will constantly vary with the difference between PC clocks.



Do not enable the synchronization feature if any of the Event Recorders are equipped with the GPS Receiver option or are enabled for synchronization by a timer server. Synchronization from multiple, and perhaps conflicting, sources should be avoided.



The clock synchronization feature can be used to set the recording device clocks automatically when changes in Daylight Saving Time occur.

## TEXT FILES

Checking this box enables GEA to create text documents as .txt files. If disabled, GEA will create files with .wri file extensions. Check the box if the operating system is Windows XP or later.

## CREATE TEXT FILES AFTER POLLING

Immediately after a scheduled or daily poll has been completed, a text version of the Event Record data will be created. Check this box to enable this feature.

This completes the chapter on how to install and setup GEA. The next chapter describes how to assign recording devices for use with GEA.

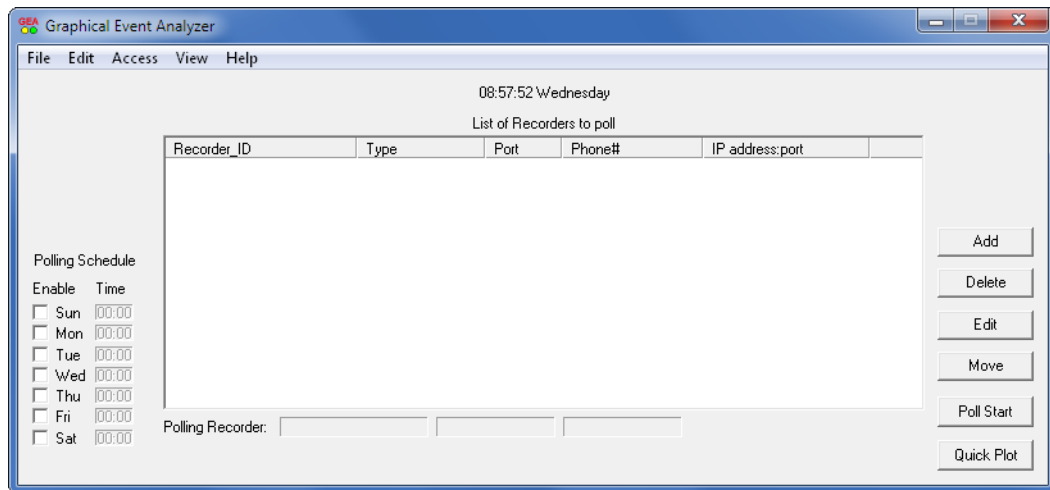
# CHAPTER 3 – ASSIGN RECORDING DEVICES

## INTRODUCTION

This chapter describes how to assign recording devices for use with GEA. For the sake of simplicity and clarity the CWR-72A Event Recorder is used in the examples cited in this chapter.

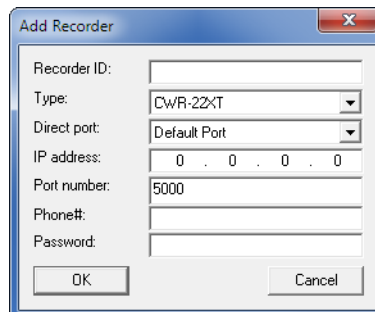
## ASSIGNING A RECORDING DEVICE

Launch GEA by double-clicking its desktop icon. Assuming a proper Data Folder has been previously assigned, the GEA Window shown in the following will be displayed.



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Commands are selected and various controls and activities are invoked from this window. In the center of the window is a blank area. It is labeled as the "List of Recorders to poll". To add a recording device to the list simply click the "Add" button. The following dialog box will be displayed.



To add a recording device several parameters must be either entered into or selected from this dialog box. Each parameter is described in the sections that follow.

## RECORDER ID

The edit field labeled "Recorder ID" serves as a name for the recording device contained in the list. Each ID must be unique and must not be longer than 20 alphanumeric characters.

Several of MICRO-AIDE's recording devices include a USB Host Port. This feature allows Event Record data to be written as .txt files and saved directly to a USB flash drive. These files are saved in a folder that is named after the first 20 characters of the recording device's Unit Name. Using this convention, a Unit Name of "SanDimas-ViaVerde\_MP27.51" would yield a folder name of "SanDimas-ViaVerde\_MP". The contents of the USB folder are fully compatible with GEA. They can be copied directly to the Data Folder. The contents of the USB folder can be viewed, analyzed and plotted using GEA, provided the following conditions are satisfied.

- The assigned "Recorder ID" within GEA must match the first 20 characters of the recording device's Unit Name.
- The assigned "Type" (see next section) within GEA must match that of the source data files.



The "Recorder ID" is used to create a folder for the recording device within the Data Folder. Data files for this recording device will be saved in the new folder. It is imperative that the Recorder ID not contain characters that violate rules established by Microsoft for Windows-compliant folder names. In general, the characters / \ ? % \* : | " < > . should not be used. Additionally, the first and last characters cannot be a space or control character.

## TYPE

The selection from the drop-down list box labeled "Type" is vitally important. GEA can access various MICRO-AIDE recording devices, all of which have distinct access requirements. For the purposes of this discussion it is assumed that a CWR-72A will be selected.



A recording device type listed as CWR-72E/A applies to both a CWR-72E and CWR-72A Event Recorder. Similarly, the CWR-264XL/A applies to the CWR-264XL and CWR-264A

## DIRECT PORT

The PC may be equipped with more than one comm port. In this case the user may wish to assign the additional port(s) to the list of recording devices. The drop-down list box will show every comm port that Windows has enabled. To assign a particular port to the recording device simply select it from the list. The default port is the port selected in the "GEA Properties" dialog box.

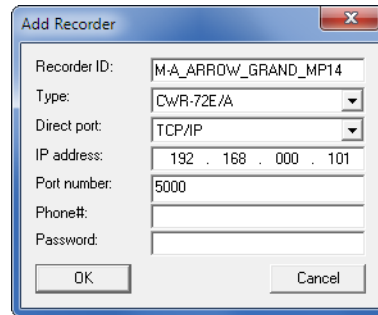
## IP ADDRESS AND PORT NUMBER

GEA versions 5.00 and later no longer require third-party provided Port Redirector software to access LAN-based recorders equipped with an Ethernet Port. Instead, the IP address of the recording device can be assigned directly from within the GEA window.

The procedure for assigning a recording device that is accessible via its Ethernet Port is listed in the following steps.

1. Click the drop-down list box labeled "Direct port:". Select the setting labeled "TCP/IP".
2. In the edit box labeled "IP address" enter the IP address assigned to the recorder's Ethernet Port. GEA uses the IPv4 standard for assigning an IP address.
3. In the edit box labeled "Port:" enter the port number assigned to the recorder's Ethernet Port. Typically, a setting of 5000 is appropriate as this port is assigned at the factory. However, this setting may have changed to better suit a particular application.

In the following example an IP address of 192.168.0.101 and port 5000 have been assigned.



## PHONE#

The edit box labeled "Phone#" contains the full list of dialing instructions for the recording device, assuming that it will be accessed via the PC's modem. This field can be left blank if the recording device will be accessed directly via a comm port. The dialed number must contain the area code if one is required. Any line access codes or pauses in dialing parameters are entered via the "GEA Properties" dialog box. Refer to the section entitled "Dial Prefix" on page 9 for additional details.

## PASSWORD

Recording devices can only be accessed by first honoring their assigned password. Each recording device utilizes two passwords. The Administrative Password allows for unrestricted access to the recording device. The Restricted Password limits access to data viewing and retrieval. It is important that GEA be provided the Administrative Password so that the recording device's Setup Database can be prepared and fully supported within GEA.

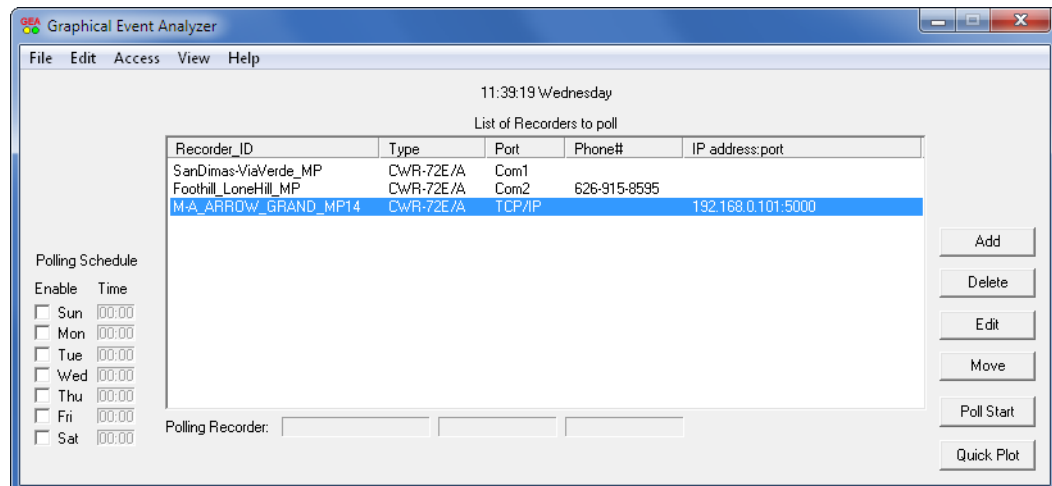


Recording device passwords are case-sensitive. For security purposes the assigned "Password" will appear as a sequence of asterisk characters.

3

## DELETING AND EDITING RECORDING DEVICES

Shown in the following is a typical GEA Window that includes three CWR-72A recorders. GEA will access the three recorders using a serial comm port, modem and an IP address.



The user may have occasion to either remove a recording device from the polling list or modify its parameters. The "Delete" and "Edit" buttons on the far right side of the GEA Window are used for this purpose. To use either of these options, first select the recording device by clicking its entry in the list. The selected recording device will be highlighted in blue. Then click the appropriate button. If the "Edit"

button is chosen the "Edit Recorder" dialog box will appear. It is identical in appearance and function to the "Add Recorder" dialog box previously described.

## GETTING HELP

The command bar lists the various commands implemented by GEA. Among them is the "Help" command. Clicking on "Help–Help" opens an HTML-based document in the user's default web browser (e.g., Internet Explorer® or Mozilla Firefox®). The Help document includes many hyperlinks to topics of interest to the user. Its pages can be browsed in the same manner as any website. The browser's find or search features can also be used to jump to a particular section of the document. After viewing the Help document remember to close the browser.

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This completes the chapter on how to assign a recording device for use with GEA. The next chapter describes how to prepare a recording device Setup Database by accessing it within GEA.

# CHAPTER 4 – PREPARING A SETUP DATABASE

## INTRODUCTION

A recording device can be configured in a variety of useful ways that allow it to best suit the intended application. The Unit Name, Input Names, Input Identifiers and Event Names can be used to add clarity to the Event Record data. Additionally, the Detection Times, Speed Monitor and Flash Measurement parameters directly control the recording device's operation. Collectively these parameters are referred to as the Setup Database.

The Setup Database can always be established while online with the recording device. In this case the user interacts directly with the user interface of the device. GEA provides an alternative to this method. Instead, the user can create the entire Setup database within GEA while offline. After the Setup Database is created it is saved to disk and can then be uploaded to the recording device.

This chapter describes how a typical Setup Database can be created, saved, uploaded and downloaded. A CWR-72A Event Recorder is used in the examples that follow.

## DOWNLOADING THE SETUP DATABASE

GEA prepares the Setup Database by allowing the user to edit the existing database resident in the recording device. It follows that to edit the database a copy of the existing database must be acquired from the device. To acquire a copy of the database perform the steps listed in the following.



If GEA will be used to access a recording device via an Ethernet-based connection, the recording device must be set to communicate with a TCP/IP Mode setting of "Raw TCP/IP". The "Telnet" setting will result in a failure to access the recording device.

1. Using the mouse, select the recording device by clicking its entry in the GEA Window.
2. Select the "Access-Download Setup Data" command from the command bar.
3. Click either "Dial" or "Direct" as the method of connecting to the recording device. GEA will then establish a connection with the recording device. Provided the password is verified, GEA will then proceed to automatically acquire the entire database using the Xmodem protocol. The progress of the data exchange is reported in the Status Bar along the bottom edge of the GEA Window. Failures in the connection or password are reported. A successful conclusion to the exchange is also reported. After completing the exchange the connection is automatically terminated by GEA.



As an alternative to the previous procedure, a factory default Setup Database can be created if one does not already exist. This can be done entirely offline of the recorder. The database can then be edited as required. This feature is supported by GEA V5.06 and later versions. Refer to the section entitled "Editing the Database File" on page 16 for additional details.

## VIEWING THE SETUP DATABASE

Provided GEA has a copy of the Setup Database it can be viewed at any time. To view the database perform the following steps.

1. Using the mouse, select the recording device by clicking its entry in the GEA Window.
2. Select the "View-Recorder Setup Data" command from the command bar. Windows will then display the database as a text file using Notepad®.
3. Notepad can then be used to print the file if a hardcopy printout is required.
4. Close Notepad to close the open file. The user is then returned to the GEA Window.

## EDITING THE SETUP DATABASE

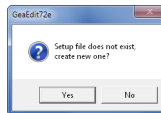
### EDITING THE DATABASE FILE

Once a copy of the Setup Database is saved, GEA can be used to edit the file even while offline with the recording device. Perform the following steps to edit the database.



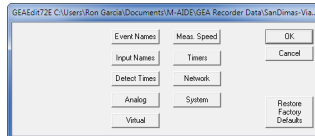
The Setup Database cannot be edited directly within Notepad or any other word processing application. It can only be edited within the GEA Window.

1. Using the mouse, select the recording device by clicking its entry in the GEA Window.
2. Select the "Edit-Edit Recorder Setup Data" command from the command bar. If an existing Setup Database file does not presently exist a dialog box similar to the following will be displayed. Click the button labeled "Yes" to automatically create and save a factory default database file. If a database file does exist, this step will be bypassed and instead the user will be directed to the next step.



The automatic creation of a Setup Database file is available only for the CWR-24E/A, CWR-72E/A, CWR-264XL/A, VDL-A MII and VDL-A S7 recording devices.

3. A dialog box similar to the following will be displayed.



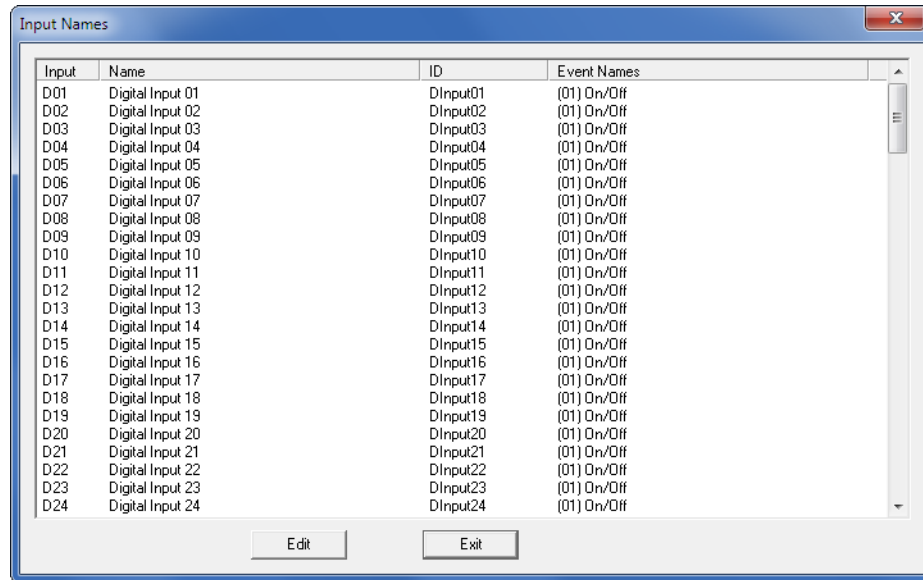
Regardless of the recording device type the various database parameters are grouped into the categories listed in the middle of the dialog box. The System category includes parameters such as Baud rates, Unit Name, dial out numbers, etc.



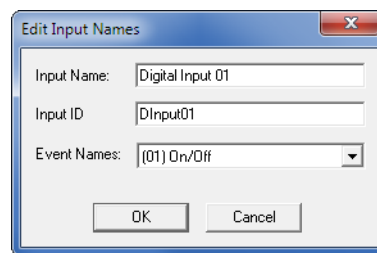
Each recording device type has a distinctive set of Setup Data parameters. As an example, some recording devices will include the Timer Input feature.

4. To begin editing, first select a category. An example of the dialog box used by the Input Names category is shown in the following. The factory default parameters are listed.

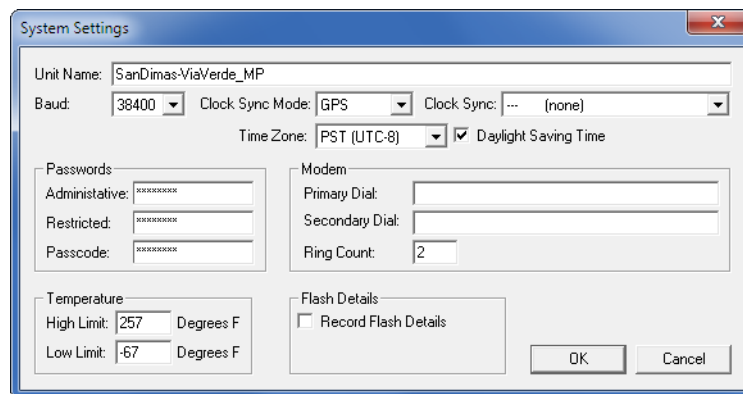




- To edit the Input Name, Input Identifier or Event Name Pair for a particular input, select the input and then click the “Edit” button. A dialog box similar to the following will be displayed.



- The various names can be edited using standard Windows techniques for edit boxes and drop-down list boxes. Click the “OK” button when the input has been fully edited. Additional inputs can then be edited as required.
- Select other categories as required. Dialog boxes suited to the selected parameters will be displayed. The Network category only applies to recording devices equipped with an Ethernet Port. The Ethernet Port settings can be changed within GEA just like other database parameters.
- Shown in the following is the dialog box created for the system parameters category.



- If at any time the user believes the database is seriously in error it can be restored to its factory settings by clicking the “Restore Factory Defaults” button. After confirming the request, the database will be immediately updated to reflect the default settings.

10. Complete the editing process by clicking the "OK" button in the top level dialog box.

## UPLOADING THE SETUP DATABASE

The Setup Database file saved by GEA will now contain all of the new user-defined settings. However, the recording device still retains its database. To update the database used by the recording device perform the following steps.



---

If GEA will be used to access the recording device via an Ethernet-based connection the recording device must be set to communicate with a TCP/IP Mode setting of "Raw TCP/IP".

---

1. Using the mouse, select the recording device by clicking its entry in the GEA Window.
2. Select the "Access-Upload Setup Data" command from the command bar.
3. Click either "Dial" or "Direct" as the method of connecting to the recording device. GEA will then establish a connection with the recording device. Provided the password is verified GEA will then proceed to automatically send the entire database using the Xmodem protocol. The progress of the data exchange is reported in the Status Bar along the bottom edge of the GEA Window. Failures in the connection or password are reported. A successful exchange is also reported.
4. After completing the exchange the connection is automatically terminated by GEA.

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This completes the chapter on how to prepare and edit a Setup Database. The next chapter describes how to prepare a polling schedule for acquiring Event Records from a recording device.

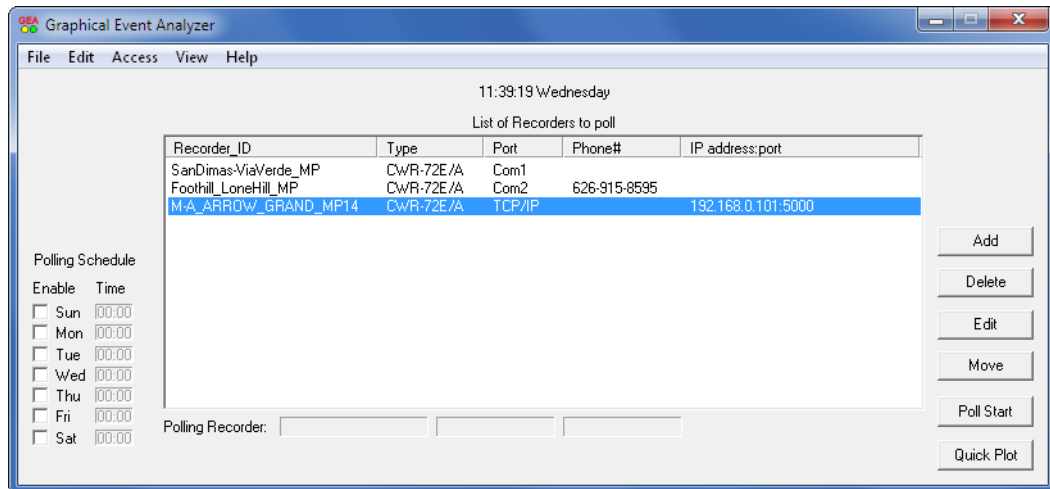
# CHAPTER 5 – PREPARING A POLLING SCHEDULE

## INTRODUCTION

Before the Event Record data can be viewed or plotted it must be acquired by GEA and saved to the disk of the PC. The user can always acquire the data on demand by selecting various GEA commands (refer to [Chapter 6](#) and [Chapter 7](#)). However, if the user feels the need to regularly poll the recording devices to acquire new data, the GEA scheduling feature should be used. This chapter describes how the scheduling feature is used to automatically poll the list of recording devices.

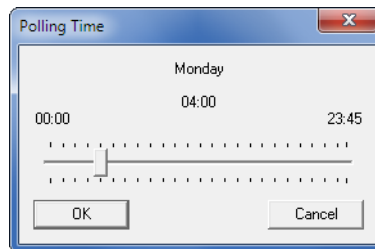
## CREATING A POLLING SCHEDULE

Shown in the following is a typical GEA Window listing three CWR-72A Event Recorders. In a typical application many recording devices will be listed. It is important to note that GEA will attempt to poll each of the devices listed. To create a polling schedule perform the following steps.



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1. In the lower left corner of the GEA Window are listed the days of the week. To the right of each day is listed a time field in hh:mm format. To perform a poll of new Event Record data for a particular day of the week click its "Enable" box to the left of the day. The box will be checked and the "Time" field will be enabled. Click inside the "Time" field. The following dialog box will be displayed.



2. The position of the slider represents the currently assigned polling time (e.g., 4:00 AM). To change the polling time simply move the slider control either left or right. The time can be assigned any value ranging from 00:00 to 23:45 in multiples of 15 minutes.
3. Click the "OK" button after the correct time has been selected.
4. Assign additional polling days and times by repeating the previous steps. The new polling schedule will take effect immediately.

## FILE NAMING CONVENTION

The following format is used to name each Event Record data file: YYMMDD-HHMMSS.bin. The date and time specify when the data file was created. The year, month, day, hour, minute and second are each specified as a two-digit number. The file is given an extension of ".bin" to indicate that it is a binary type file. This convention is also used when creating data files from the current day's data. Refer to the section entitled "Polling Today's Data" on page 23. Additionally, GEA can be enabled to create a text version of the Event Record data from a scheduled or daily poll. Refer to the section entitled "Create Text Files After Polling" on page 10. If enabled this feature will create a file named YYMMDD-HHMMSS.txt.

## SCHEDULING CONSIDERATIONS

When preparing the polling schedule it is important to understand how the schedule affects the interaction between GEA and each recording device. The following points highlight these considerations.

- The "Time" field specifies when polling for the recording devices will start.
- A polling attempt will be made for each recording device listed in the GEA Window.
- Recording devices will be polled in the order they are listed in the GEA Window (from top to bottom).
- The "Retries" parameter specified in the "Edit Properties" dialog box controls how many attempts will be made after a connection failure has occurred. Refer to the section entitled "Retries" on page 10.
- The polling schedule will always poll new Event Record data that has not been previously acquired. It will never poll redundant data.
- Data older than seven days is ignored.
- The polling schedule will always poll a complete day's worth of Event Record data (i.e., data from 00:00:00 to 23:59:59).
- A data file is created by GEA for each complete day of data that is polled. As an example, if three days of data are polled then three separate files will be created.
- Each day's data is saved in a folder previously created by GEA. The new folder is contained in the Data Folder. The name of the folder is taken from the name listed in the GEA Window for the recording device (e.g., SanDimas-ViaVerde\_MP). Refer to the section entitled "Recorder ID" on page 12.
- Each time a recording device is polled GEA will acquire a copy of the recording device's Setup Database. It will be saved with a filename of new\_setupdata.bin and compared to the file retained by GEA.

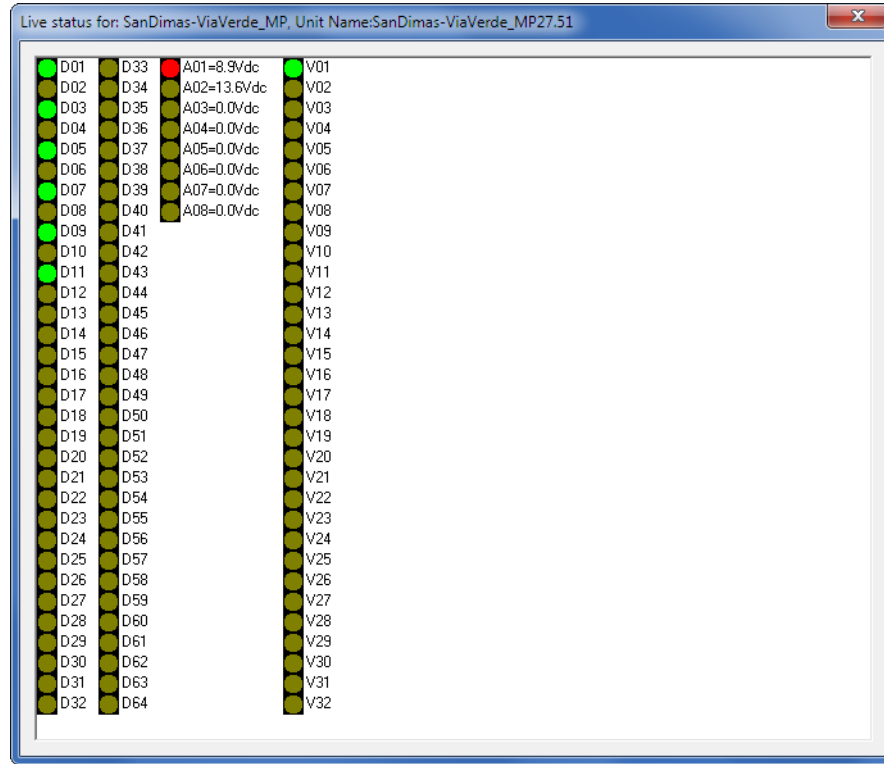


If GEA will be used to access a recording device via an Ethernet-based connection the recording device must be set to communicate with a TCP/IP Mode setting of "Raw TCP/IP". The "Telnet" setting will result in a failure to access the recording device.

This completes the chapter on how to create a polling schedule. The next chapter explains the basic methods of accessing a recording device.



3. Click either "Dial" or "Direct" as the method of connecting to the recording device.
4. After a short delay GEA will connect with the recording device provided the listed password is correct. A Live Status Window similar to the following will be displayed.



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The Unit Name is listed at the top of the Live Status Window. In the sample screen shown previously Digital Inputs 01, 03, 05, 07, 09 and 11 are in an active or On state. Analog Input A01 is reporting a measured voltage of 8.9 Vdc. Its state is also On. Virtual Input V01 is in its active state.

The Live Status Window will be continuously updated. The simulated LED indicators will change colors to signify changes in status. Four distinct colors are used to reflect the current input status. Each are described in the following.

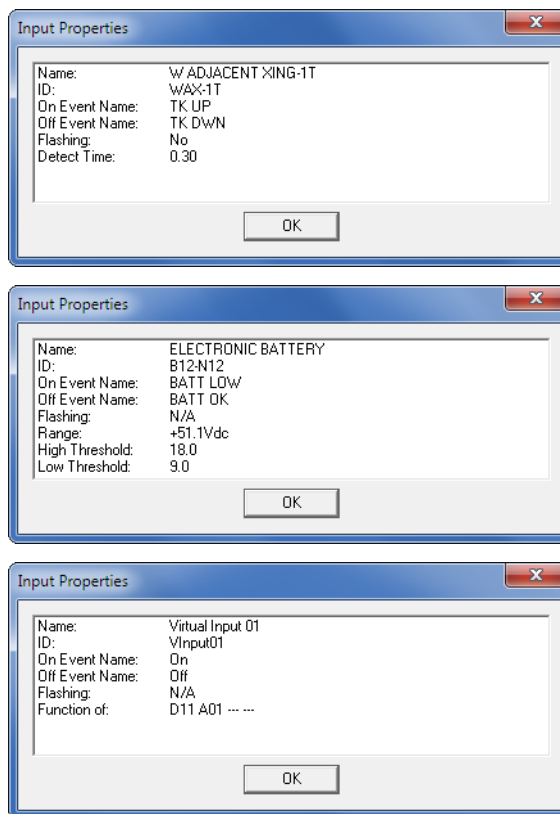
- Bright Green: The Digital or Virtual Input is in its On or active state.
- Yellow: The Digital Input is reporting an active coding state.



The identification of coding states is a unique feature of the CWR-272 family of Event Recorders.

- Red: The measured signal of the Analog Input has either exceeded its assigned Upper Limit Value or fallen below its assigned Lower Limit Value.
- Dark Green: The input is in its Off or inactive state. In the case of an Analog Input the measured signal is less than its assigned Upper Limit Value and greater than its assigned Lower Limit Value.

A single click of the mouse can be used to display important information concerning a particular input. To do so, right-click any input number to the right of the simulated LED. Sample information from a Digital, Analog and Virtual Input are shown in the following.



In each case the Input Name, Input Identifier and Event Names are listed. Additionally, information specific to the type of input is included.

To exit the Live Status Window simply close the window.

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## POLLING TODAY'S DATA

As has been previously described, the polling schedule only polls data for a complete day. As an example, at 8:00 AM Monday, Sunday's data is available but not Monday morning's. The user may on occasion have need to poll and save the data from the current day, however. To poll the current day perform the following steps.

1. Using the mouse, select the recording device by clicking its entry in the GEA Window.
2. Select the "Access-Poll Today's Data" command from the command bar.
3. Click either "Dial" or "Direct" as the method of connecting to the recording device.
4. GEA will immediately connect with the recording device provided the listed password is correct. The progress of the connection and data exchange will be reported in the Status Bar at the bottom of the GEA Window.
5. After a successful poll one or more new data files will be saved in the folder assigned to the selected recording device. The file name(s) will be selected in accordance with the convention described in "File Naming Convention" on page 20.



If GEA will be used to access a recording device via an Ethernet-based connection the recording device must be set to communicate with a TCP/IP Mode setting of "Raw TCP/IP". The "Telnet" setting will result in a failure to access the recording device.

## VIEWING EVENT RECORDS

Data files that have been polled either via a schedule or directly by user intervention have been described. Event Record data files can be viewed as either text or plotted images. Both of these methods are described in the following.

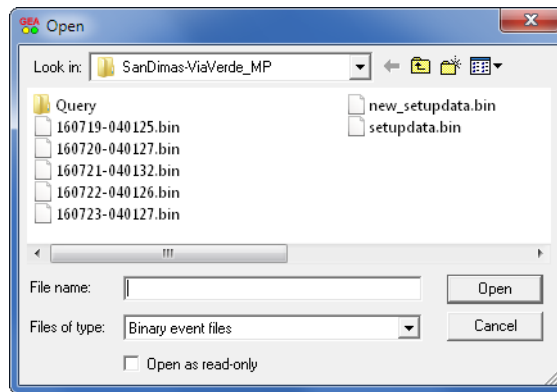
### TEXT VIEW

To view a data file as text perform the following steps.

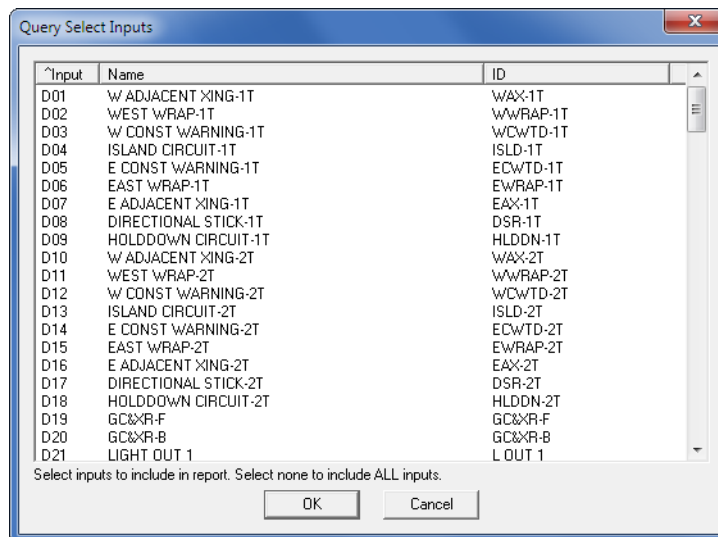


If GEA is enabled to automatically create text files after each scheduled or daily poll, it may be that this procedure is not required. To view these text files simply open the appropriate .txt file in the folder where the .bin file is located. Refer to the section entitled "Create Text Files After Polling" on page 10.

1. Using the mouse, select the recording device by clicking its entry in the GEA Window.
2. Select the "View-Recorder Event Records" command from the command bar. A dialog box similar to the following will be displayed.



3. In the example cited previously five Event Recorder data files are listed along with the Setup Database files. Note, all seven files use a binary file extension. They can only be opened and viewed using GEA.
4. Select the file of interest and click the "Open" button to view it. GEA will then display a dialog box similar to the following.





- To view the Event Records for every input press the “OK” button before selecting any inputs. Individual inputs can be selected by simply clicking their names in the list. Use the Shift and Ctrl keys to select contiguous and non-contiguous groups of inputs, respectively.



The three columns of the Query Select Inputs dialog box are labeled “Input”, “Name” and “ID”. To the left of one of the labels is an up (^) or down (v) arrow character. The arrow character is used to indicate that this column controls the sorting of the various entries. Additionally, an up or down arrow indicates sorting from top to bottom in ascending or descending order, respectively. To change the sorting sequence simply click the label in the appropriate column either once or twice.

Changing the sorting sequence can be useful in locating a specific input in a large 256 or 999 Digital Input recording device.

- After the “OK” button is clicked GEA will open a document using either Notepad or WordPad®. The selection of either Notepad or WordPad is based upon the user’s preference as defined by a setting in the “Edit Properties” dialog box. Refer to the section entitled “Text Files” on page 10 for additional details. A sample file is shown in the following.

```

Events.txt - Notepad
File Edit Format View Help
CWR-72A Event record report for unit
SanDimas-ViaVerde_MP27.51
Report interval 07/21/16 00:00:00.00 to 07/21/16 23:59:59.99
00:00:00.21 06/22 GPS Clock Record GPS Rec OFF S06 0.00SEC
01:00:00.21 06/22 GPS Clock Record GPS Rec OFF S06 0.02SEC
01:14:04.84 06/22 EAST WRAP-1T EWRAP-1T TK DWN D06
01:14:29.64 06/22 W CONST WARNING-1T WCWTD-1T TK DWN D03
01:14:29.67 06/22 GC&XR-F GC&XR-F WARN ON D19
01:14:29.68 06/22 GC&XR-B GC&XR-B WARN ON D20
01:14:31.52 06/22 FLASH RATE 2 FLASH 2 FLASHON D24
01:14:32.16 06/22 FLASH RATE 1 FLASH 1 FLASHON D22
01:14:35.87 06/22 ALL GATES UP GATE UP NOT UP D26
01:14:40.45 06/22 LIGHT OUT 1 L OUT 1 LAMPFAIL D21
01:14:41.62 06/22 SOUTH GATE SG DWN GATE DWN D28
01:14:42.01 06/22 NORTH GATE NG DWN GATE DWN D27
01:14:57.98 06/22 ISLAND CIRCUIT-1T ISLD-1T TK DWN D04

```

- The data can now be viewed, printed or saved elsewhere using the normal Notepad or WordPad commands.
- Close the document file to return to the GEA Window.

The Event Record files include three lines of header information. The type of recording device the data is from (e.g., CWR-72A) and the full Unit Name are listed. The date and time interval of the data is also reported. Finally, a single line of text is used to indicate the Event Record.

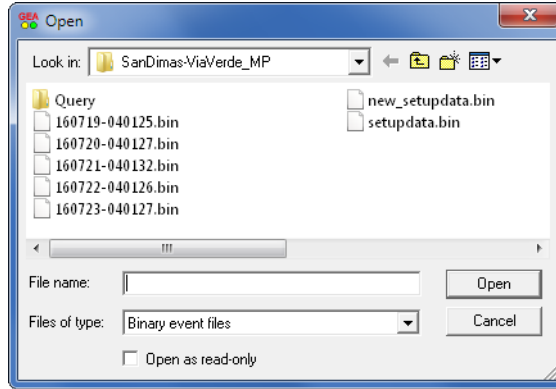


Event Record formats vary by recording device type. Refer to the User Manual for the recording device for a detailed explanation of the single-line record format.

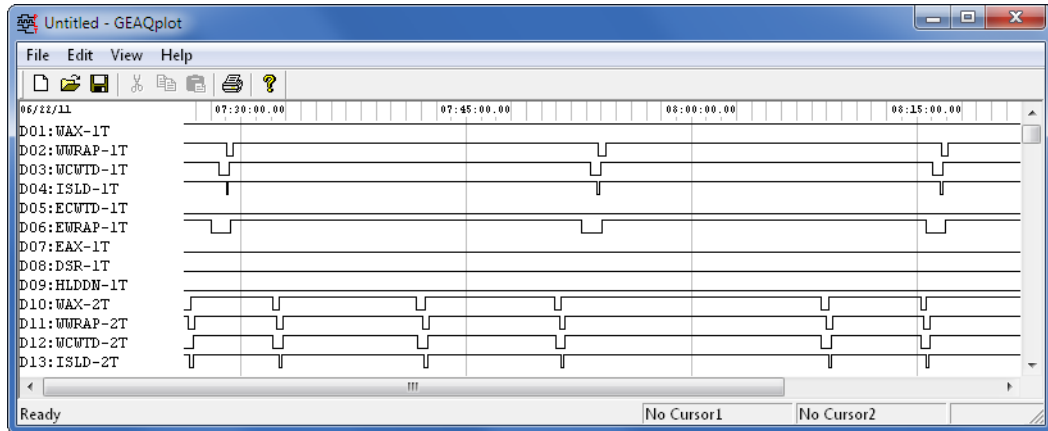
## PLOT VIEW

To view Event Record data as a simulated pin plot image perform the following steps.

- Using the mouse, select the recording device by clicking its entry in the GEA Window.
- Select the “View-Plot Event Records” command from the command bar. A dialog box similar to the following will be displayed.



3. In the example cited previously five Event Recorder data files are listed along with the Setup Database files. Note, all seven files use a binary file extension. They can only be opened and viewed using GEA.
4. Select the file of interest and click the “Open” button. GEA will then display a Plot Window similar to the following (only a small portion of the window is illustrated).



5. The Plot Window can contain as many as 256 channels. Digital, Analog and Virtual Inputs can be assigned in any order to the channels. By default the “View–Plot Event Records” command opens the Plot Window using a default set of input-to-channel assignments that vary by recording device type. In the case of the CWR-72A recorder the 64 Digital, 8 Analog and 32 Virtual Inputs are assigned in sequence to the first 104 channels. Inputs that are assigned to a channel for plotting are listed by their physical input number followed by a colon and their Input Identifier (e.g., D01:WAX-1T).
6. After viewing, close the Plot Window to return to the GEA Window.

GEA can be used to vary the content of the Plot Window considerably. Color can be added. Measurement cursors can be positioned anywhere in the window. The sequence of inputs can be altered. The image can be printed. A zoom-in and zoom-out feature is also available. All of these capabilities are described in [Chapter 8](#).

This completes the chapter on basic accessing and data viewing techniques. The following chapter describes several advanced access features.

# CHAPTER 7 – ADVANCED ACCESSING

## INTRODUCTION

The previous chapter described several basic methods that can be used to acquire data and status information from a recording device. This chapter introduces three additional methods that are even more powerful, yet very easy to use.

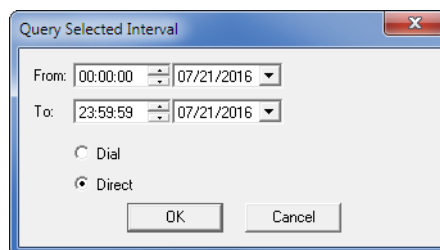


If GEA will be used to access a recording device via an Ethernet-based connection the recording device must be set to communicate with a TCP/IP Mode setting of "Raw TCP/IP". The "Telnet" setting will result in a failure to access the recording device.

## QUERYING AN INTERVAL

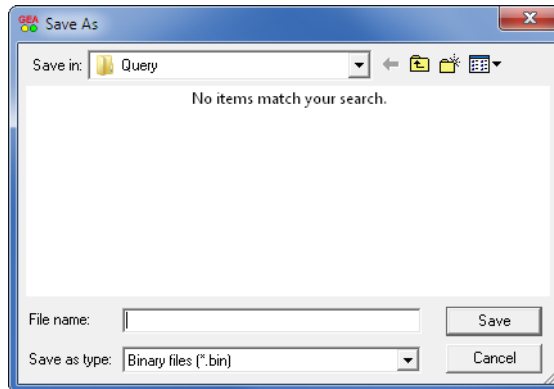
The polling schedule and poll today's data features do not allow the user to select a specific range of dates and times for polling. The "Access-Query Selected Interval" command provides the user with this option. To poll a specific range of times and/or dates perform the following steps.

1. Using the mouse, select the recording device by clicking its entry in the GEA Window.
2. Select the "Access-Query Selected Interval-Get Data" command from the command bar. The following dialog box will be displayed.



3. Enable either "Dial" or "Direct" as the method of connecting to the recording device.
4. Specify the "From" and "To" times for the desired data by editing the appropriate fields. The hour, minute and second fields can be advanced by clicking in one of the time fields and then clicking the up or down arrow.
5. Specify the "From" and "To" dates for the desired data by clicking the appropriate down arrow. A calendar for the current month will appear. Select the date as required.
6. Proceed with the poll by clicking the "OK" button.
7. GEA will then establish a connection with the recording device. Provided the password is verified, GEA will then proceed to automatically acquire the selected data for the specified time interval. The progress of the data exchange is reported in the Status Bar along the bottom edge of the GEA Window. Failures in the connection or password are reported. A successful conclusion to the exchange is also reported.

- The new data file will be saved in a folder named "Query". The Query folder will be automatically created when the "Access-Query Selected Interval-Get Data" command is used. A dialog box similar to the following will be displayed.



- Assign an appropriate name to the file. The .bin file extension will be appended automatically. A single binary file is created even if more than one day of data is saved.
- The new data can be viewed as text or plotted. The "Access-Query Selected Interval-View Data" or "Access-Query Selected Interval-Plot Data" commands are used, respectively. Both viewing techniques are summarized in the section entitled "[Viewing Event Records](#)" on page 24.



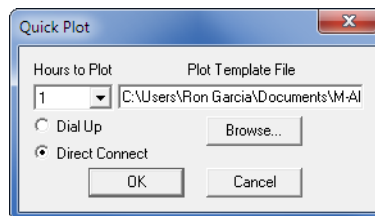
The Query Selected Interval files are always saved in the Query sub-folder.

## QUICK PLOT

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In the event a serious incident has occurred it may be advantageous to gather a limited amount of data that has been logged in the last several hours. With a bare minimum of mouse clicks the "Quick Plot" command allows the user to acquire and view recent data. Use of the Quick Plot feature is described in the following steps.

- Using the mouse, select the recording device by clicking its entry in the GEA Window.
- Click the "Quick Plot" button in the GEA Window. The following dialog box will be displayed.



- Enable either "Dial" or "Direct" as the method of connecting to the recording device.
- From the drop-down list box select the number of hours back in time that GEA will poll.
- The default plot template can be used as a shortcut. Other templates can also be used provided they have been previously defined by the user.



The default plot template is named PlotAll.gpl. The .gpl file extension is recognized by GEA as a plot template file. For ease of use the PlotAll.gpl file should be saved in the Data Folder.

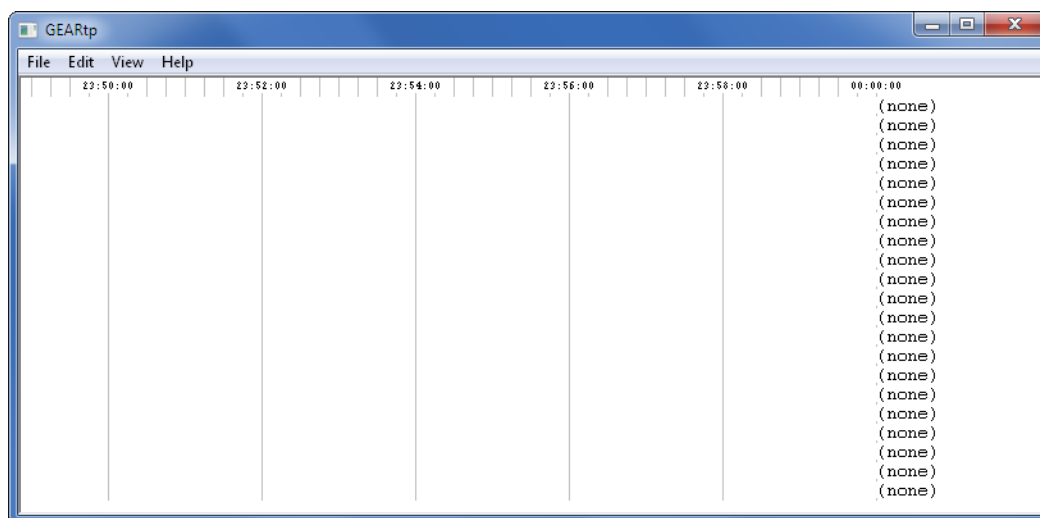
- Click the "OK" button to proceed with the poll.

7. GEA will immediately connect with the recording device provided the listed password is correct. The progress of the connection and data exchange will be reported in the Status Bar at the bottom of the GEA Window.
8. A new Plot Window will be opened. The requested data will be plotted for the time frame specified. The plotted data can be printed at any time while the Plot Window is open.
9. Return to the GEA Window by closing the Plot Window.

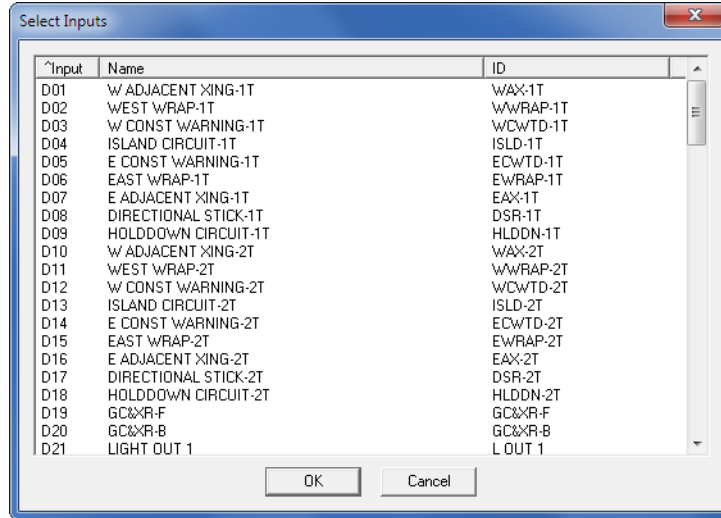
## PLOTting IN REAL-TIME

GEA can further emulate the behavior of a multi-channel pin plotter by plotting input status in real-time. Depending upon the screen resolution employed by the PC, as many as 50 inputs can be displayed and updated automatically. In this way a quick snapshot of the state of critical inputs can be determined. To use the Real-time Plot feature perform the following steps.

1. Using the mouse, select the recording device by clicking its entry in the GEA Window.
2. Select the "Access-Real Time Plot" command from the command bar.
3. Click either "Dial" or "Direct" as the method of connecting to the recording device.
4. GEA will then establish a connection with the recording device. Provided the password is verified, GEA will then automatically acquire the current status data. A blank Real-time Plot Window similar to the one shown in the following will be displayed.



5. Using the mouse, right-click on the top-most channel labeled "none". A small context menu listing two selections will be displayed. Select the option labeled "Select Inputs...".
6. GEA will then display a dialog box similar to the following.



7. Individual inputs can be selected by simply clicking their name in the list. Use the Shift and Ctrl keys to select contiguous and non-contiguous groups of inputs, respectively.



The three columns of the Select Inputs dialog box are labeled "Input", "Name" and "ID". To the left of one of the labels is an up (^) or down (v) arrow character. The arrow character is used to indicate that this column controls the sorting of the various entries. Additionally, an up or down arrow indicates sorting from top to bottom in ascending or descending order, respectively. To change the sorting sequence simply click the label in the appropriate column either once or twice.

Changing the sorting sequence can be useful in locating a specific input in a large 256 or 999 Digital Input recording device.

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8. GEA will update the window in accordance with the real-time status of each input selected.

GEA can be used to vary the content of the Real-time Plot Window considerably. Color can be added. The sequence of inputs can be altered. The image can be printed. A zoom-in and zoom-out feature is also available.

This completes the chapter on advanced access techniques. The final chapter describes in detail the many features that can be used to enhance the Plot Window.

# CHAPTER 8 – PLOTTING

## INTRODUCTION

Many users will find the GEA plotting feature to be the single most valuable tool included with GEA. The Plotting Window can be used to graphically depict Event Record data in a variety of different ways. Its features are independent of the type of recording device. Data that has been collected and saved from months or even years earlier can be viewed. The plotted data can also be printed. A limitless set of plotting templates can be defined and saved for later use. Each template can include a unique collection and sequence of inputs, color content and zoom levels.

## OPENING THE PLOT WINDOW

The Plot Window can be opened using any of the four commands listed in the following.

### VIEW – PLOT EVENT RECORDS

The Open file dialog box will be displayed after the command is executed. The Event Record data file of interest to the user can then be opened from the recording device's main folder. A Plot Window similar to the one shown in the section entitled "[Selecting Inputs](#)" will be opened.

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### ACCESS – QUERY SELECTED INTERVAL – PLOT DATA

The Open file dialog box will be displayed after the command is executed. The Event Record data file of interest to the user can then be opened from the recording device's Query folder. A Plot Window similar to the one shown in the section entitled "[Selecting Inputs](#)" will be opened.

### QUICK PLOT

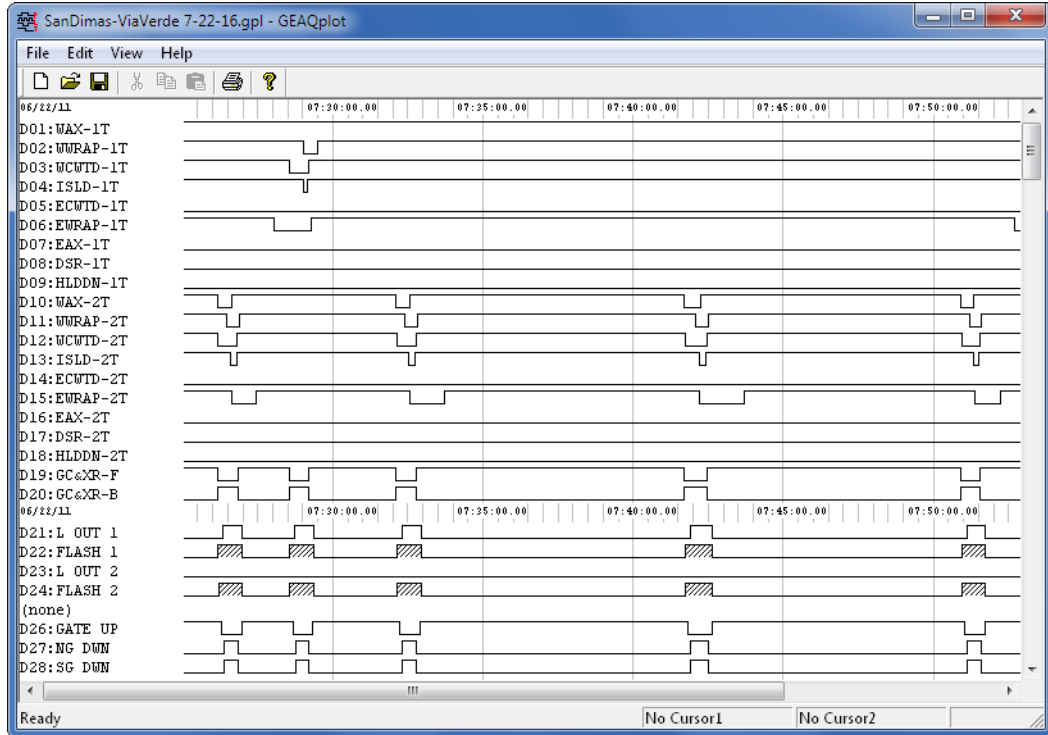
The Quick Plot dialog box will be displayed after the command is executed. The user must then select the number of hours of data to plot and the comm port. After the data has been successfully polled the Plot Window will be opened provided the user has created the PlotAll.gpl template file. Refer to the section entitled "[Quick Plot](#)" on [page 28](#) for additional details.

### ACCESS – REAL TIME PLOT

A slightly modified Plot Window will be opened immediately after executing the command. The Plot Window used by the real-time plotting feature lists inputs at the right of the window. Initially no inputs are assigned to the plotted channels. Refer to the section entitled "[Plotting in Real-Time](#)" on [page 29](#).

## SELECTING INPUTS

Each Plot Window is comprised of a command bar, Status Bar, context sensitive menu and plot channels. As many as 256 channels can be plotted in a single window. Each channel can be assigned its own input. As a matter of convenience, the user may wish to assign a single input to several channels. The sequence, from top to bottom, of input-to-channel assignments can be varied at any time after the Plot Window is opened. Shown in the following is a typical Plot Window.



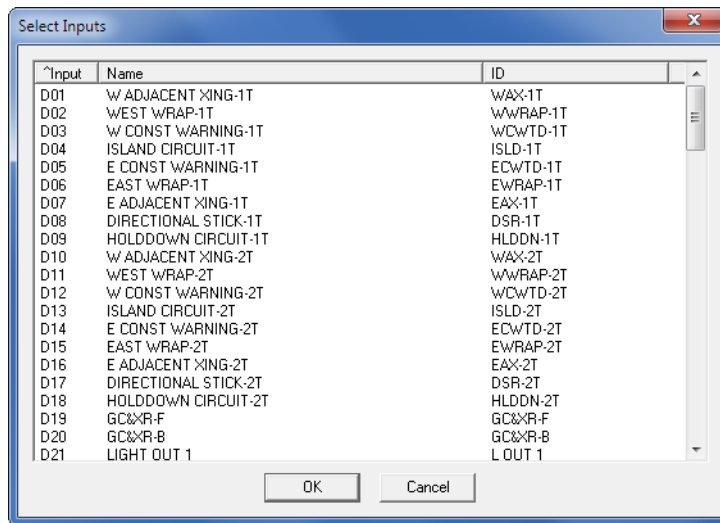
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Channels are listed in sequence from top to bottom. Channels that are not assigned an input are labeled as "(none)". Channels that are assigned to an input will be labeled with the input's physical number, followed by a colon character, followed by the user-assigned Input Identifier (e.g., "D26:GATE UP").

To alter the existing input-to-channel assignments perform one of the following procedures.

### ASSIGNING A SINGLE INPUT

To assign a different input to a specific channel, right-click on the Input Identifier. A small context sensitive menu consisting of four commands will be displayed. Click the "Select Input(s)..." command. A dialog box similar to the following will be displayed.



To assign a different input simply click the desired input from the list and then click the "OK" button. The list of inputs includes all Digital, Analog and Virtual Inputs and Logical Equations. The Plot Window image will be immediately updated to reflect the new channel assignment.



## ASSIGNING MULTIPLE INPUTS

To assign a different set of inputs to a contiguous range of channels, right-click on the uppermost Input Identifier in the range. Then click the "Select Input(s)..." command from the context sensitive menu. The dialog box shown in the preceding section will be displayed.

Using the mouse, Shift and Ctrl keys, highlight the inputs to be plotted. The inputs can be highlighted in a non-contiguous sequence. The selected inputs will be assigned to channels in top-down order. After clicking the "OK" button the Plot Window image will be immediately updated to reflect the new channel assignments.



The three columns of the Select Inputs dialog box are labeled "Input", "Name" and "ID". To the left of one of the labels is an up (^) or down (v) arrow character. The arrow character is used to indicate that this column controls the sorting of the various entries. Additionally, an up or down arrow indicates sorting from top to bottom in ascending or descending order, respectively. To change the sorting sequence simply click the label in the appropriate column either once or twice.

Changing the sorting sequence can be useful in locating a specific input in a large 256 or 999 Digital Input recording device.

## MOVING AND REMOVING AN INPUT

The top-down sequence of inputs can also be changed by relocating an input. An input can be relocated by performing the "Select Input(s)..." command twice, but a simpler process can be performed.

To directly relocate an input, position the mouse cursor over the desired Input Identifier. Then click and hold down the left mouse button. Do not release the button. Move the mouse so that its cursor is positioned directly on top of the new location. The new location must be the location of an existing Input Identifier. With the cursor positioned correctly, release the mouse button. The location of the previous Input Identifier will be one channel further down. The Plot Window will be immediately updated to reflect the new sequence of inputs.

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An existing channel-to-input assignment can be removed by using the "Remove" command from the context sensitive menu. The channel will be labeled as "(none)" and no data will be plotted for the selected channel.

## INPUT DETAILS

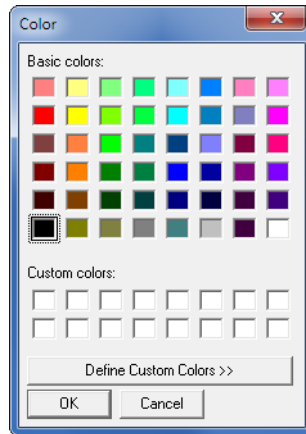
The user may have occasion to verify a channel as containing the data for a particular input. This step may be performed at any time, but it may be of special importance before the Plot Window image is printed.

To verify a channel-to-input assignment, right-click on the Input Identifier. A small context sensitive menu consisting of four commands will be displayed. Click the "Details..." command. A dialog box listing all of the parameters for the selected input will be displayed. The dialog box content will be based upon the type of input selected (i.e., Digital, Analog, Virtual or Logical Equation).

## ASSIGNING COLOR TO AN INPUT

By default, Event Record data and Input Identifiers are painted on screen in black against a white background. The user may wish to highlight an input by giving it a different color. As an example, the failure condition of a particular relay or alarm may be best depicted in red.

To assign a different color to a specific input, right-click its Input Identifier. A small context sensitive menu consisting of four commands will be displayed. Click the "Color..." command. A dialog box similar to the following will be displayed.



Use the mouse to select any one of the color samples. Click the "OK" button to highlight the selected input in the new color.

## USING CURSORS

The ability to determine the time between two separate relay events is at times crucial to analyzing a potential fault condition. Approach times, clear down intervals and relay sequences can be verified by timing separate events. The GEA cursor feature allows the user to set two distinct cursors, each at a different event transition. GEA will then calculate and display the time separation between the two events.

### SETTING A CURSOR

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Cursors can only be placed at an event transition. An event transition is displayed graphically in the Plot Window as a change from either high to low or low to high. To set a cursor, start by positioning the mouse within five pixels of the desired transition and click the right mouse button. A context sensitive menu listing six commands will be displayed. Set the first cursor by selecting the "Cursor1-Set" command. Using the same procedure on another transition, set the second cursor by selecting the "Cursor2-Set" command.



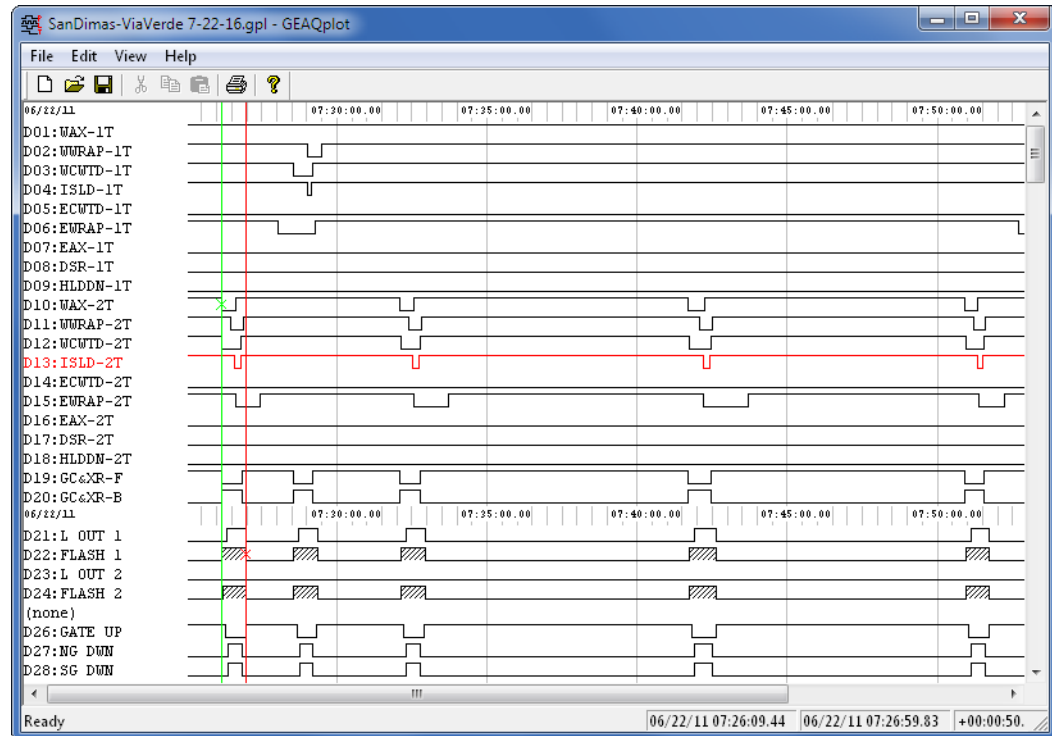

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Cursors can also be set at the transitions of Logical Equations.

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The position of Cursor1 will appear as a green vertical line in the Plot Window. The position of Cursor2 will appear as a red vertical line. The transition that anchors either cursor is marked by an X at the transition edge. The zoom controls will not alter the appearance or position of either cursor. The cursors can be positioned in either sequence from left to right.

Shown in the following is a typical Plot Window that includes both cursors.



## MAKING TIME MEASUREMENTS

Located at the bottom of each Plot Window is the Status Bar. The Status Bar includes four fields. Each field includes a date and time measurement. The Plot Window may need to be expanded horizontally to view all four time measurements. From left to right they are:

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- The date and time position of Cursor1 within the Plot Window.
- The date and time position of Cursor2 within the Plot Window.
- The time difference between the cursors calculated as Cursor2 minus Cursor1. Positive and negative numbers can be displayed.
- The date and time position of the mouse cursor within the Plot Window.

The time measurement fields are labeled as either "No Cursor1" or "No Cursor2" if the cursor is not set. The time difference field is left blank unless both cursors are set.

## REMOVING A CURSOR

To remove a cursor position the mouse anywhere in the Plot Window away from the column of Input Identifiers. Click the right mouse button. Select either the "Cursor1-Clear" or "Cursor2-Clear" command from the context sensitive menu.

## USING LOGICAL EQUATIONS

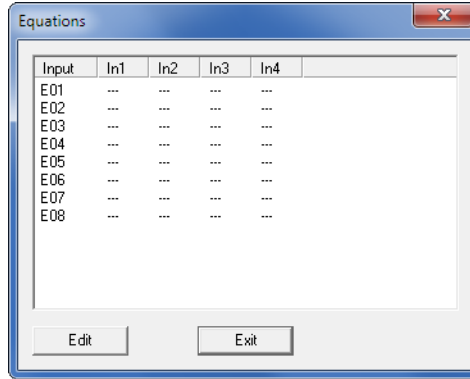
GEA includes an analysis feature that can be very helpful. On occasion the user may need to identify a particular condition among several inputs. One approach would be to plot the data for the inputs of interest and then visually scan the Plot Window attempting to locate the condition of interest. This process can be quite tedious. Fortunately, GEA's Logical Equation feature can be used to perform the scan automatically. As many as eight Logical Equations can be defined and plotted. Each equation can be comprised of four distinct variables. Variables are user selected Digital, Analog or Virtual Inputs. A previously defined Logical Equation can also be selected as a variable.

The procedure for defining Logical Equations consists of three parts. Each part is described in the following sections.

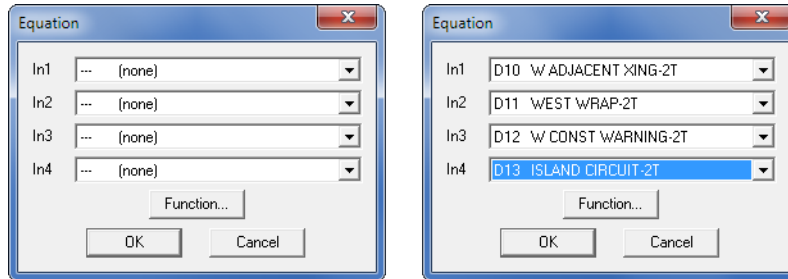
## ASSIGNING THE VARIABLES

The condition of interest is typically defined by a combination of states shared by several inputs. A common example would involve a fault condition that exists only when several relay states occur simultaneously. The inputs are referred to as variables in the equation. To assign the variables perform the following steps.

1. Select the "Edit-Edit Equations" command from the command bar in the Plot Window. The following dialog box will be displayed.



2. Logical Equations can be thought of as Equation Outputs. As such, they are identified as "EO1" through "EO8". With the mouse, highlight one of the equations by clicking its entry in the list. Then click the "Edit" button. The dialog box shown in the following and on the left will be displayed. The dialog box serves as a form.

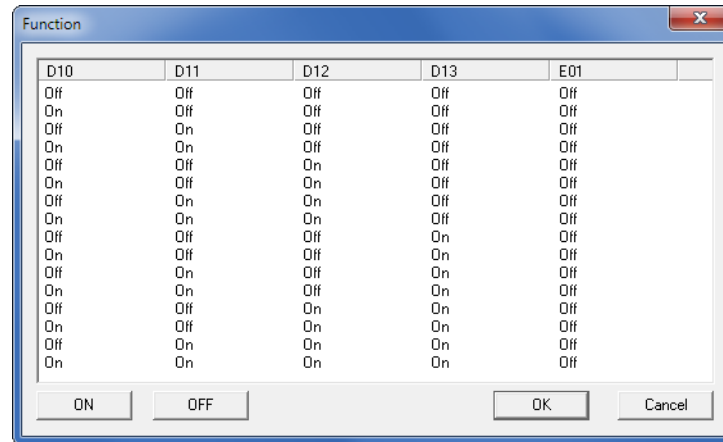


3. The four variables are labeled as inputs "In1" through "In4". To assign a variable to an input start by clicking the down arrow to open the drop down list box. In order from top to bottom are listed Digital, Analog and Virtual Inputs identified by their Input Name. They are followed by the eight Logical Equations. Click on the required Input Name to select it.
4. Assign additional variables by repeating step 3. A completed form is shown in step 2 to the right of the empty form. It is not necessary to assign all four variables.

## DEFINING THE FUNCTION

Once the variables are assigned the logical function for the Equation Output must be defined. To define a function perform the following steps.

1. Click on the "Function..." button. A dialog box similar to the following will be displayed.

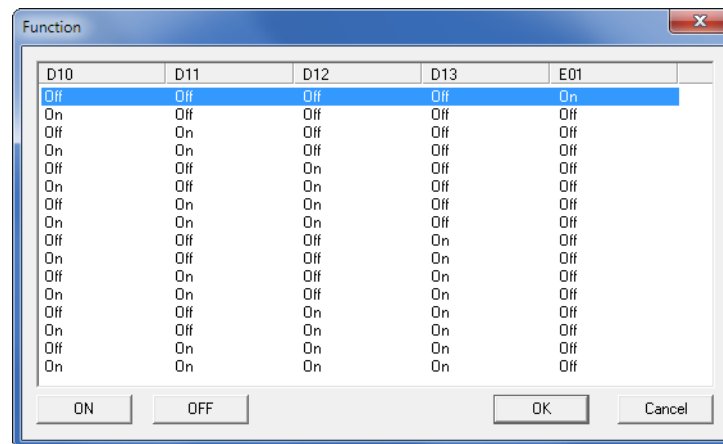


Along the top are listed the assigned variables (e.g., D10, D11, etc.) and the Logical Equation (e.g., E01). They are followed by several lines of text, each of which represents a unique combination of states for the assigned variables. In the example cited previously, four variables collectively define 16 different states. Finally, the right-most column lists the currently assigned states for the Logical Equation. One Logical Equation state can be assigned to each of the 16 variable states.



When plotted, On and Off states are high and low, respectively.

- To change the state of the Logical Equation for one variable state, first select the correct variable state by clicking on it. In the example cited previously, this would be one of the 16. Once selected, click the "ON" or "OFF" button to define the Logical Equation for that specific variable state. In the dialog box shown in the following the Off, Off, Off, Off state will force the Logical Equation to be On and therefore plotted as high.

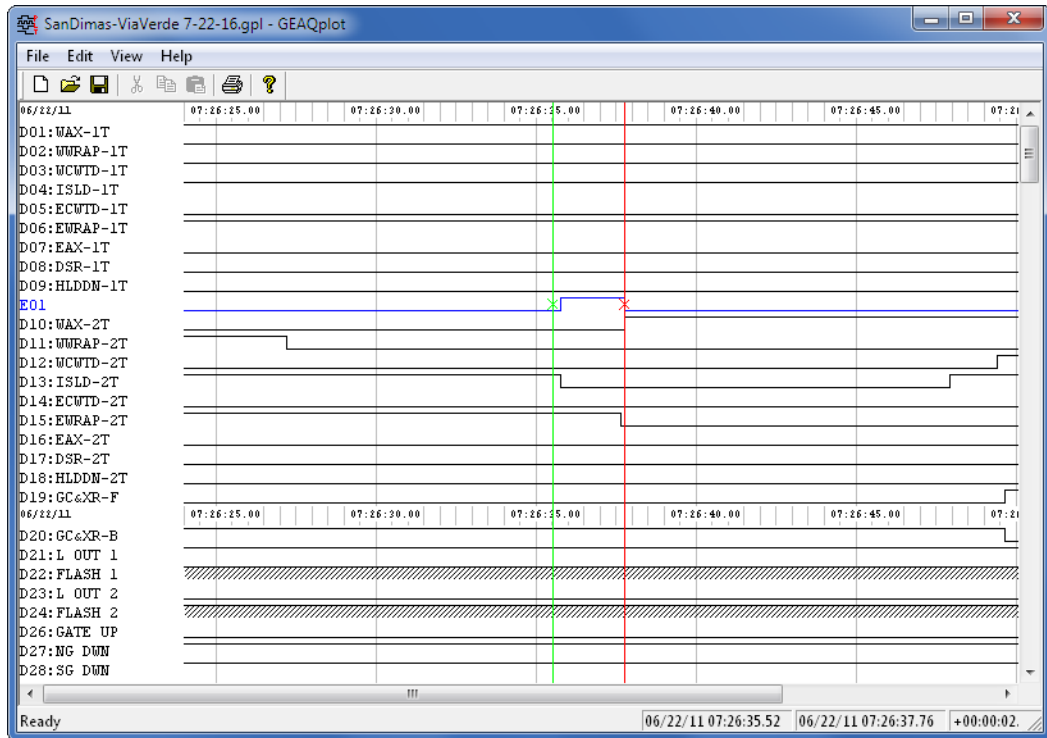


- Repeat step 2 as required for other variable states. After all of the variable states are mapped to the proper On or Off output state click the "OK" button.
- The user will be returned to the dialog box labeled "Equation" (shown in step 2 of the previous procedure). Press the "OK" button to close the dialog box.
- The user will be returned to the dialog box labeled "Equations" (shown in step 1 of the previous procedure). The user can either define additional Logical Equations or complete the procedure by clicking the "Exit" button.

## PLOTTING THE RESULTS

After the Logical Equations are defined they can be plotted. The procedure for doing so is described in the section entitled "Assigning a Single Input" on page 32. Any channel can be selected to plot a Logical Equation.

In the following example, the tenth channel is being used to plot Equation Output 1 (i.e., EO1). For highlighting purposes the EO1 has been plotted in blue. A zoom factor has been applied to the Plot Window. EO1 is high whenever D10 through D13 are all low. Finally, the cursors have been set on the leading and trailing edges of EO1.



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## SAVING AND USING TEMPLATES

### SAVING A TEMPLATE

The user may wish to plot Event Record data from a common time frame, but in several different ways. As an example, data from several timer circuits may need to be plotted separately from lamp or track control circuits. The "File-Save" and "File-Save As" commands allow the user to save, as a template, channel-to-input and input color assignments for later use. It is important to note that the save commands do not save the Event Record data (that has been done previously by the use of various polling and querying commands).

To save a previously unsaved Plot Window image as a template use the "File-Save" command. Use the "File-Save As" command to create a template with a new file name. All templates are saved using the .gpl file extension which is unique to GEA. The "File-Save As" dialog box allows the user to save the template with the correct file extension using any Windows appropriate file name. The new template can be saved in any folder, but it is recommended that it be saved in a folder appropriate to the recording device and to GEA in general.

### CREATING THE PLOTALL TEMPLATE

The PlotAll template is the default template used by the "Quick Plot" command. It should be saved in the Data Folder so that it can be accessed by all of the recording devices. Any Plot Window image can

be used to create the PlotAll template; however, it is best to define the template with as many generic properties as possible. In this way it can be used more effectively with a larger variety of recording devices.

To create the PlotAll template simply modify an existing Plot Window image with as many generic properties that are deemed appropriate. Use the "File–Save As" command to save the file in the Data Folder with the name "PlotAll".

## APPLYING A TEMPLATE

A saved template can be used to plot data from any time frame. The new data will be plotted using the channel and color assignments saved in the selected template. Use the "File–Open" command at any time to apply a template to the displayed data.

## PANNING

The user may wish to display a different time span of plotted data. As an example, if the current Plot Window displays data from 09:00 to 9:15 and the user prefers to display data spanning 9:10 to 9:25 the Panning feature can be used.

To pan left or right simply position the mouse cursor in a blank area of the Plot Window between two plotted channels and in the vicinity of plotted data that is to remain on screen. Do not locate the mouse anywhere within the column of Input Identifiers. After the mouse is positioned correctly click and hold down the left mouse button. Do not release the button. Move the mouse horizontally to the desired location and release the mouse button. The Plot Window will be updated immediately to reflect the new time span.



The Status Bar is located at the bottom of the Plot Window. It contains several information fields pertinent to the displayed data. The field at the right end of the bar lists the current mouse position by date and time. It can always be used to ascertain the precise location of the mouse cursor relative to the plotted data.

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## ZOOM CONTROLS

### NORMAL PLOT WINDOW

The plotted data can be displayed at various levels of detail. It may be that for some data only a few minutes of time need to be displayed and reviewed. In other cases a larger overall view may be necessary before the user is able to zero in on a specific time period of interest. The zoom-in and zoom-out controls allow the user to expand or contract the displayed time span, respectively.

There are three zoom controls. They can be accessed by either of two means. The command bar's "View" command includes a sub-menu of commands listing "Zoom In", "Zoom Out" and "Zoom All". Additionally, the user can right-click any blank area of the Plot Window (away from the column of Input Identifiers) and access a context sensitive menu listing the same three commands.

The "Zoom In" and "Zoom Out" controls provide four different levels of detail. Use the 2X, 4X, 8X and 16X settings as required by the need for detail. The "Zoom All" control takes all of the data from the Event Record file and depicts it from left to right using as much of the screen as possible. Multiple days of data can be displayed if the Event Record file contains such data.

### REAL-TIME PLOT WINDOW

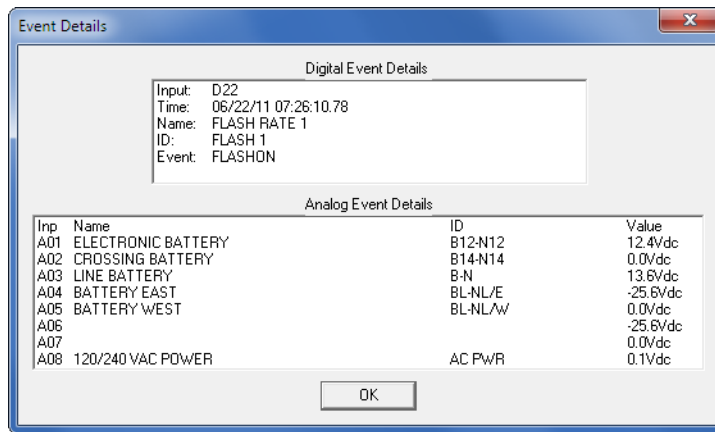
The set of zoom controls used by the real-time plot feature are slightly different than those used in the normal Plot Window. Additionally, the limited set of controls operate differently. Only the "Zoom In" and "Zoom Out" controls are included. However, they are accessed using the same methods employed in the normal Plot Window.

The real-time plot feature collects Event Record data continuously and plots it immediately. As such, it depicts the current state of each displayed input. Accordingly, the "Zoom In" and "Zoom Out" controls allow the user to set the time base of the Plot Window. Zooming-in is the equivalent of selecting a faster plot speed. Zooming-out is the equivalent of slowing the plotter down.

## EVENT RECORD DETAILS

GEA provides another method by which information regarding an event transition can be reviewed. An event transition is always reported within the Plot Window as a change in the vertical position of the input signal. Every vertical change is keyed to a unique Event Record saved within the recording device and later within GEA. Complete details regarding the underlying event can easily be reviewed within the Plot Window.

To view details associated with a transition, position the mouse cursor within five pixels of the desired transition. Click the right mouse button and select the "Details..." command from the context sensitive menu. A dialog box listing information concerning the event will be displayed. A typical dialog box is shown in the following.



The upper half of the dialog box indicates that the information is from a Digital Input whose physical input number is D22. The precise date and time of the event is reported. The assigned Input Name and Input Identifier are listed. The assigned Event Name of "FLASHON" indicates the state of the circuit.

The lower half of the dialog box lists the measured value of each Analog Input identified by input number, name and ID.

## PLOT LEGEND

As has been previously described, the high-to-low and low-to-high transitions depicted in the Plot Window are used to indicate Event Record data. Some recording devices can also record events for flashing and coding signal states. The flash on and coding on states are symbolized within the Plot Window with a crosshatch pattern.

## PRINTING

The Print feature allows the user to create a hardcopy printout of the Plot Window. The Print feature is supported by three commands. The "File-Print...", "File-Print Preview" and "File-Print Setup..." commands all function as standard Windows commands.

Before printing the Plot Window the proper printer must be selected. Additionally, either landscape or portrait orientation should be selected. Use the "File-Print Setup..." command to set these options. The "File-Print Preview" command will depict the exact view to be printed. It will show the page breaks as they will be printed.





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The horizontal dimensions of the Plot Window will be mirrored exactly in the printed image. The vertical dimensions of the printed image may extend beyond the vertical dimensions of the Plot Window to include additional channels not seen on screen. Additional pages will be printed to depict channels available on screen by use of the vertical scroll bar.

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Page breaks are always oriented vertically. That is, a complete printout of the Plot Window can be compiled by placing pages top to bottom starting with page 1. A time scale in hh:mm:ss format is included at the top of every printed page. The time span, cursor position(s) and recording device's Unit Name are always printed at the bottom.

## ADDING ANNOTATIONS

The preceding sections of this chapter describe various methods of creating a Plot Window that best suits a user's specific needs. Channel assignments, color, cursors, zoom levels and panning have been described. Using these features the user can create a Plot Window that depicts the data in an optimized fashion. GEA uses the Windows Paint application to further enhance the final Plot Window image. Using Paint, a near limitless number of informative annotations can be added to the image.

Adding annotations requires that the Plot Window image be imported into Paint. Perform the following steps:

1. Make sure the Plot Window includes the precise degree of detail required. This must include the proper input-to-channel assignments and time frame, and optionally channel colors, cursors, etc.

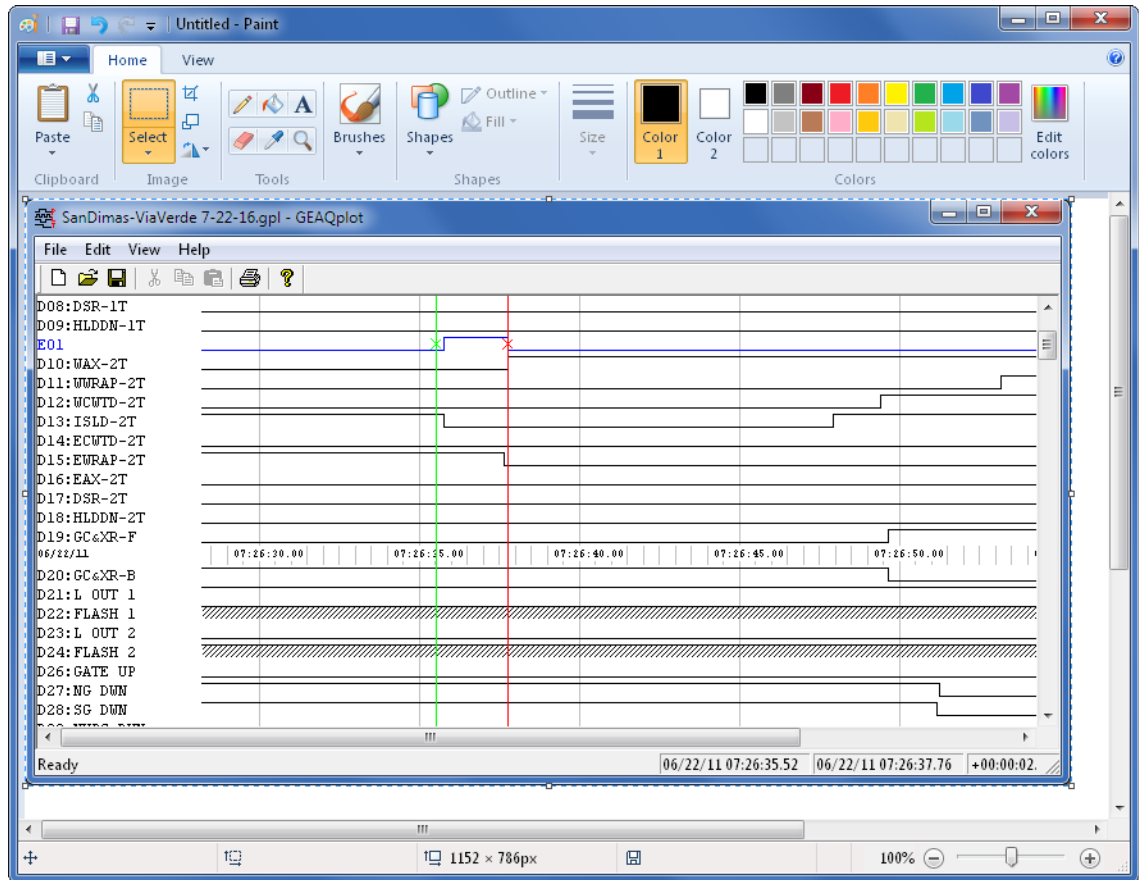


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It is not possible to alter the Plot Window-derived content after it is imported into Paint.

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2. Select the "Edit-Capture Window" command from the command bar in the Plot Window.
3. The Paint application will be launched. It will automatically open an untitled file that includes a bit map image of the Plot Window. The following depicts a typical Plot Window image within Paint.



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4. The Paint image can now be annotated as required by the user. All of the Paint tools can be used to enhance the informative value of a particular channel or of the image as a whole.
5. When the image is complete, remember to save the file with an appropriate name and to an appropriate folder.
6. Print the image or create a PDF version as may be required prior to closing the file.

This completes the User Manual for the GEA application. Two appendices have been included at the end of this document. They include a list of GEA requirements and a description of each folder and file type used by GEA.

Any comments the reader may have on how to improve this manual are welcomed. Comments should be forwarded to the Director of Marketing, MICRO-AIDE Corporation.



# APPENDIX A – TECHNICAL DATA

## GEA REQUIREMENTS

GEA can be installed and run successfully on a variety of PCs using several different Windows operating systems. The requirements for GEA are quite generic. Listed in the following are the minimum requirements for GEA.

**Processor Type**–Intel Pentium® II or higher, Intel Celeron®, AMD K5 or higher, 300MHz or faster.

**Operating System**–Windows 95, 98, 98SE, NT, 2000, XP, Vista, Windows 7, Windows 8 and Windows 10.

**Available Disk Space**–11 MBytes for program storage, minimum 500 MBytes for saving Event Record data and plot files (1 GBytes recommended).

**Available RAM**–As recommended by the operating system requirements.

**Monitor**–Minimum 256 colors and 800 by 600 pixels (1024 by 768 preferred).

**Mouse**–Qty. one, any type.

**Serial Ports**–Qty. one if a portable PC is used to provide a direct connection locally (or USB-to-serial adapter).

**Modem**–Qty. one for remotely accessing Event Recorders and Data Loggers.

**Printer**–Qty. one for printing Event Records and plots, preferably color.

A

## COMPATIBILITY

GEA software Version 5.06 is fully compatible with the following MICRO-AIDE products:

**Event Recorders**–CWR-22xT, -22XL, -24A, -24E, -40, -40A, -40E, -56, -72, -72A, -72E, -264, -264A, -264E, -264XL, -272, -272A, -272E, -264AX and -264XC.

**Vital-Processor Data Loggers**–VDL Microlok II, VDL S7-300 (256 and 999 Digital Input versions), VDL-A MLII and VDL-A S7.

GEA is not compatible with the following products:

**MICRO-AIDE Event Recorders**–Model 24, 24D, 48, 48D, 240D and 240MS.

**Non-MICRO-AIDE products**–HCA-1, SEAR, etc.

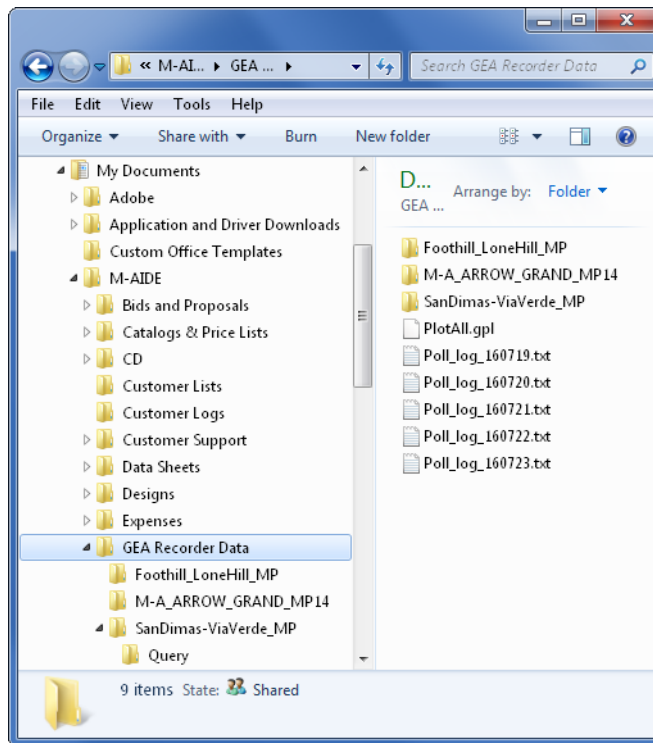


# APPENDIX B – FOLDERS AND FILES

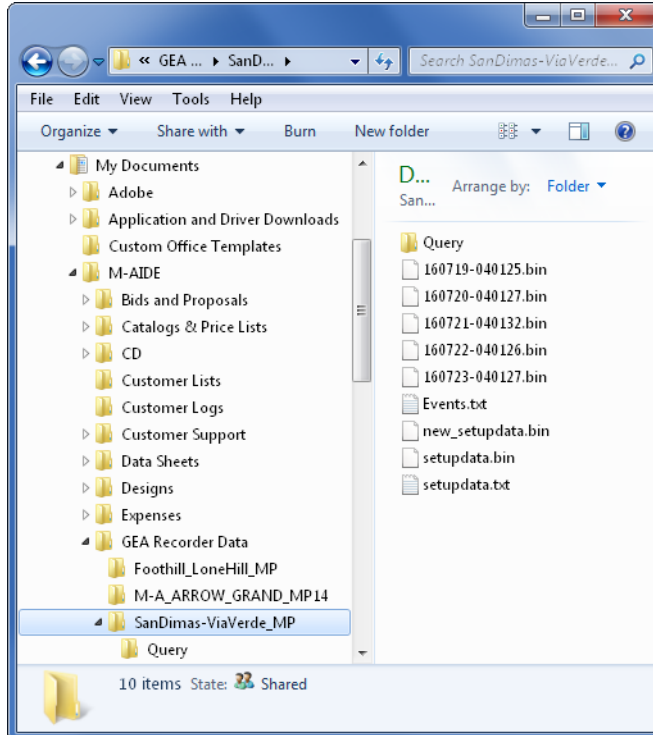
## INTRODUCTION

GEA includes a variety of methods for accessing, saving, viewing and plotting recording device data. Additionally, it can interact with a large number of recording devices. GEA utilizes a defined folder structure and a specific set of file types to facilitate these capabilities.

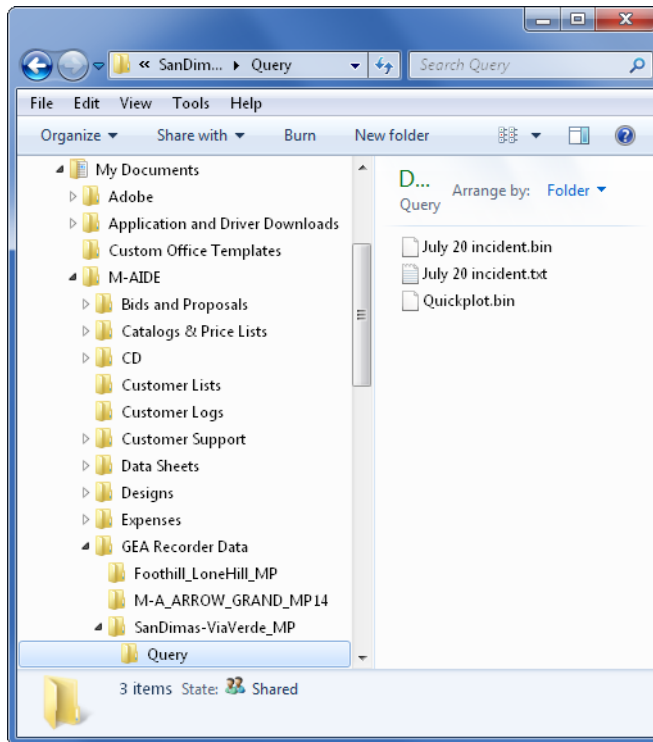
Shown in the following are three views of a typical GEA Data Folder. In sequence, from top to bottom, each view details a sub-folder contained in the preceding folder view. The first view is of the Data Folder named "GEA Recorder Data". In each case the contents of the folder highlighted in the left-hand view is shown to the right. Windows Explorer® was used to create each of the views.



B



B



## FOLDER STRUCTURE

All recording device data and folders, regardless of type, are saved within the Data Folder or one of its many sub-folders. In the sample structure shown previously, the Data Folder is named "GEA Recorder Data". This folder must be defined before GEA can be used. The "Edit-Properties..." command is used to

specify the Data Folder. Refer to the sections entitled “Before Launching GEA” on page 7 and “Data Folder” on page 9 for additional details.

The Data Folder contains a single folder for each assigned recording device. The name of the folder is taken directly from the name assigned to the recording device as it appears in the GEA Window. Since the Recorder ID serves as a folder name the ID must be comprised of alpha-numeric characters suitable for use in defining a folder. Three recording devices are assigned in the sample structure shown previously. In the discussions that follow the recording device named “SanDimas-ViaVerde\_MP” will be used.

Finally, the recording device folder may contain a folder named “Query”. The Query folder is automatically created by GEA whenever the user polls data using the “Access–Query Selected Interval–Get Data” or “Quick Plot” commands. Data from either of these sources is saved in a folder separate from the data that is polled using the schedule and today’s data commands. In this way, confusion concerning the source of the data is minimized.

## FILE TYPES

Listed in the following are the four file types that GEA will create as the result of polling, viewing and plotting data.

### BINARY FILES – .BIN

When GEA polls and saves Event Record data it saves the data in files using the .bin extension. The Setup Database files for each recording device are also saved with the .bin extension. Binary files are highly compressed. They can only be opened within GEA by using either a view or plot command.

Seven binary files are contained within the “SanDimas-ViaVerde\_MP” folder previously shown. The 160719-040125.bin through 160723-040127.bin files contain data that has been saved via the poll schedule or poll today’s data commands. The file named “setupdata.bin” is the setup database file that GEA uses to edit the database. The file named “new\_setupdata.bin” is the database file received from the recording device. The two database files are compared for differences.

The Query folder previously shown contains two binary files. Binary files in this folder can only be created by using the “Access–Query Selected Interval–Get Data” or “Quick Plot” commands. Data from the “Quick Plot” command is always saved in a file named “Quickplot.bin”. Selected interval data is saved in a file named by the user; however, GEA will always include a .bin extension to its name.

B

### PLOTS FILES – .GPL

Gpl files serve as templates for viewing data within the Plot Window. Gpl files are unique to GEA and can only be used within GEA. They can only be created by using the “File–Save” command after the Plot Window has been opened.



Gpl files are used as templates only. The Plot Window interprets information within the .gpl file to determine which inputs will be plotted and which zoom level and colors to use. The Plot Window “File–Save” command does not save the image on screen.

The user can create and save an unlimited number of .gpl template files. The most important .gpl file is the PlotAll.gpl file. It is defined by the user. It contains the sequence of inputs preferred by the user when working with the “Quick Plot” command. Specifically, it is used as the default plotting template shown in the “Quick Plot” dialog box. Any plot image can be saved as a template named “PlotAll.gpl”. If it is saved in the Data Folder it becomes the default template for the “Quick Plot” command.

Plotting templates can be used with any binary file containing Event Record data. Consequently, it is best to save them in the Data Folder as opposed to one of the recording device folders. They can only be opened using the “File–Open” command within the Plot Window and only after a binary file has been selected as the data source.

## NOTEPAD FILES – .TXT

Simple text files are used to create the polling log and to view a Setup Database. The polling log files are always saved in the Data Folder. In the following example from the previously listed data, the polling log is named "Poll\_log\_160719.txt". The numeric field at the end of the file indicates the year, month and day the file was first created. Each day a new log file will be created. Since the log will always be a relatively small file it can be viewed using Notepad or any other word processing application. GEA uses the default text application selected by Windows.

The log will contain two- or three-line entries that are used to indicate successful polls, password errors, database discrepancies, etc. The time of day and Recorder ID always precedes the message. A few sample lines of text are shown in the following. If the polling interaction between GEA and the recording devices is functioning normally the polling log should be filled with entries labeled "Success".

```
04:01:26 Polling:SanDimas-ViaVerde_MP
Success
04:05:31 Polling:Foothill LoneHill_MP
WARNING - setup database does not match saved version
Success
04:09:18 Polling:M-A_ARROW_GRAND_MP14
Success
```

*Sample Log Print-Out*

As described earlier, Setup Databases are saved as binary files. However, GEA allows the user to view these files as simple text. The "View-Recorder Setup Data" command will automatically open and save a Notepad text version of the database file. The file is given the same name as its binary version, but with a .txt extension.

In the case of scheduled or daily polled Event Record data, GEA can be enabled to automatically create a text file version of the data. These files are saved to the same folder as the .bin file version. They are given a .txt extension. Refer to the section entitled "[Create Text Files After Polling](#)" on page 10.



The Setup Database files cannot be edited by using a word processing application. They can only be modified within GEA using the "Edit-Edit Recorder Setup Data" command. Refer to the section entitled "[Editing the Setup Database](#)" on page 16 for additional details.

## WORDPAD FILES – .WRI

Event Records can always be viewed using a text format. Specifically, the "View-Recorder Event Records" and "Access-Query Selected Interval-View Data" commands can be used to view records. GEA converts the binary data to text and changes the file extension to .txt or .wri when naming the resulting file. The selection of .txt or .wri file types is controlled by the "Use .TXT files for report" setting as described in the section entitled "[Text Files](#)" on page 10. The Notepad application available in Windows versions prior to Windows XP is limited to opening files no larger than 64KBytes. For these older versions of Windows, the .wri file type should be used to create Event Record text files. Wri files can be opened with most Microsoft word processing applications. Some versions of Windows may use the Write® application instead of WordPad.



## MATERIAL RETURN

In the event the customer identifies a malfunction in any product, call or write MICRO-AIDE and obtain a Return Material Authorization (RMA) number from the customer service department. Return the product to MICRO-AIDE, freight prepaid, with a note (in-warranty repair) or a purchase order (out-of-warranty) for the repair listing the following information:

- RMA number issued by MICRO-AIDE
- Return shipment address
- Name and e-mail address or telephone number of person familiar with the problem
- Brief description of the problem (include any printouts that may have a bearing on the problem)
- Method of payment for repair costs (out-of-warranty)
- Send product to the following address:

### **MICRO-AIDE CORPORATION**

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Covina, CA 91722

Tel: 626-915-5502 Fax: 626-331-9484

E-mail: [support@micro-aide.com](mailto:support@micro-aide.com)

## LIMITED WARRANTY

MICRO-AIDE warrants its products to be free from defects in material and workmanship for a period of five (5) years from the date of shipment. This warranty is in lieu of any other warranty, expressed or implied. In no event shall MICRO-AIDE be held liable for incidental or consequential damage resulting from (1) the use of any of its products, or (2) any alleged breach of this warranty provision. MICRO-AIDE's liability shall be limited to repairing or replacing, at its sole discretion, any defective product which is returned in accordance with the MICRO-AIDE Material Return Policy.

Product that has been subjected to abuse, misuse, alteration, accident, lightning damage, neglect or unauthorized installation or repair shall not be covered by this warranty. MICRO-AIDE reserves the right to make a final decision as to the existence of any failures and the cause of such failures. No warranty is made with respect to custom equipment or products produced to buyer's specifications except as mutually agreed upon in writing.

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