# Event Viewer

Part of the Brigger & Associates Event Recorder System

**User Manual**

**for**

**Allen-Bradley ControlLogix™ PLC's**



**BRIGGER**
**& ASSOCIATES**
INDUSTRIAL COMPUTER APPLICATIONS

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# TRADEMARK NOTICES

Excel is a registered trademark of the Microsoft Corporation.

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## ACRONYMS

PLC – programmable logic controller.

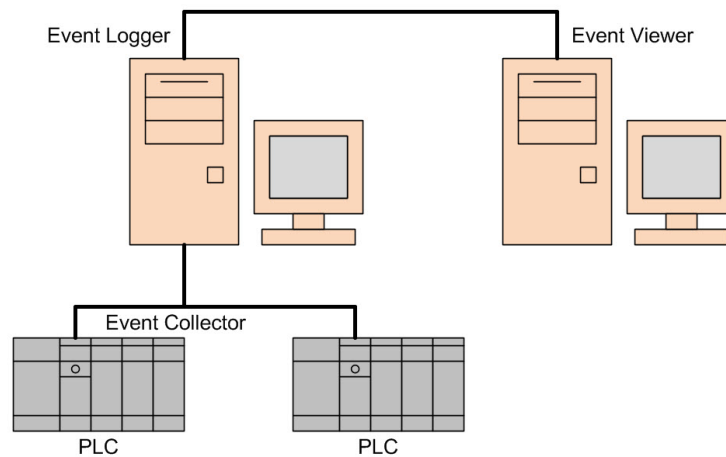PC – Microsoft Windows based personal computer.

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# INTRODUCTION

The Event Recorder System is a tool for logging and displaying changes in digital conditions within a PLC program. It consists of 3 software applications:

- Event Collector – Captures events
- Event Logger – Logs events to a PC database
- Event Viewer – Displays logged events

A typical Event Recorder System is shown in the following figure:



The *Event Viewer* is a Windows based PC application that is used to display the stored event data. It is very user friendly with the following features:

- Events are displayed in a "spreadsheet" format.
- Events are displayed for a specified date/time period.
- All events within the specified date\time period can be displayed or just specific events.
- Event groups can be created in order to only display events that share some commonality.
- Colors can be assigned to events.
- The total number of occurrences of events can be displayed.
- Displayed data can also be printed.

This manual describes how to install the *Event Viewer* program onto a Windows computer and then how to use the features listed above.
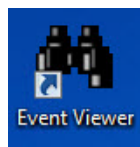
# INSTALLING EVENT VIEWER

The *Event Viewer* can be installed on the same PC as the *Event Logger* or on any other PC that is networked to the *Event Logger* event databases. The *Event Viewer* is provided in the "Event Viewer" folder on the "Event Recorder System" USB flash drive.

The program is automatically installed by double-clicking the "Setup.exe" file in the "Event Viewer" folder. At that time an installation wizard is launched. The wizard will display a default folder in which to install *Event Viewer* on the PC. This default folder is:

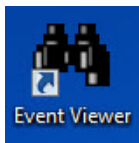<div align="center">c:\Program Files (x86)\Brigger And Associates\Event Viewer .</div>

Another folder can be specified if desired. Once the folder has been specified, the destination folder will be created, if it does not already exist, and *Event Viewer* will be installed and a shortcut to the program, with the following icon, will be added to the desktop.



Once the *Event Viewer* has been installed, it is recommended that Windows Update be checked for any critical changes to the ".NET Framework".

# STARTING AND STOPPING THE EVENT VIEWER

The *Event Viewer* program is started by double-clicking the "Event Viewer" shortcut on the desktop,
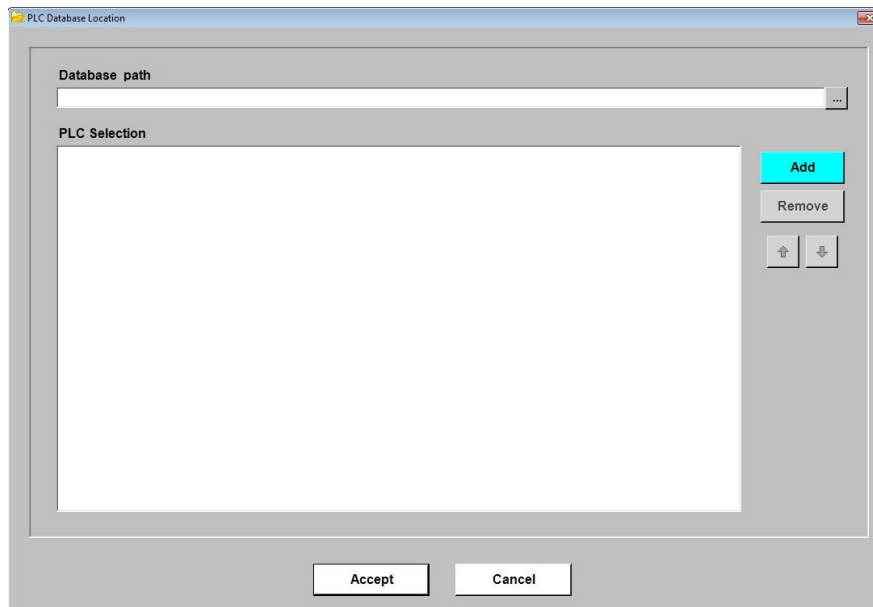


The program can also be started by selecting "Event Recorder System\Event Viewer" from the Windows "Start" menu. When the *Event Viewer* is started, the *Event Viewer* window is displayed. This window is described below.

The *Event Viewer* is stopped by clicking the "File" pull-down menu of the *Event Viewer* window and then clicking "Exit". It is also stopped by clicking the window close button in the upper right-hand corner.

# SPECIFYING PLC DATABASE LOCATIONS

Each PLC has an associated Microsoft Access database file (.mdb). This database is created when the *Event Logger* is configured. It has all the collected event data for the PLC. It also has the PLC name and the configurations for colors, groups, and totals used by *Event Viewer* (described below). The PLC name is assigned when the *Event Logger* is configured.

The location of the PLC database file is specified in the *PLC Database Location* sub-window:



This sub-window is displayed automatically when the *Event Viewer* is started for the first time following installation. Thereafter, it is accessed from the *Event Viewer* window by clicking the "Setup" pull-down menu and then clicking "PLC Database Location".
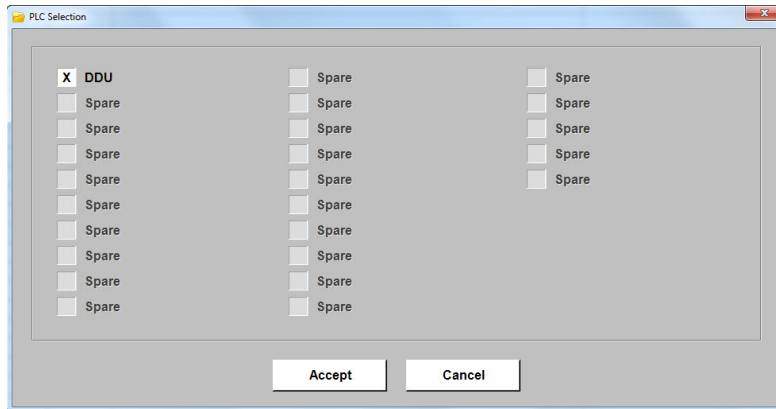
The *Event Logger* can collect data from multiple PLC's that collect event data using the *Event Collector* PLC logic. For each PLC there will be a separate database file. The *Event Viewer* displays the data for a single PLC. However, for those situations in which data is collected for several PLC's the database path for each PLC can be specified in the *PLC Database Location* sub-window. This makes it easier to select a PLC for display, as explained below.

For each PLC, the directory path to the PLC database file is entered in the "Database path" entry box followed by clicking the ADD button. The file name must include the complete path to the file. The file name and path can be entered directly in the entry box or it can be selected from the *Locate Database* window which is displayed by clicking the ellipsis button next to the entry box. When the ADD button is clicked the database file is added to the "PLC Selection" box. The file name is preceded by the assigned name of the PLC. PLC's can be removed from the list by selecting the PLC in the list and clicking the REMOVE button.

The order that the PLC database files are listed in the *PLC Database Location* window is the same order that the associated PLC's are listed in the *PLC Selection* window (see below). This order can be changed by selecting the file and using the up and down arrows to change its location in the list.

# SELECTING THE PLC

The PLC whose events are to be displayed is selected from the PLC Selection sub-window:
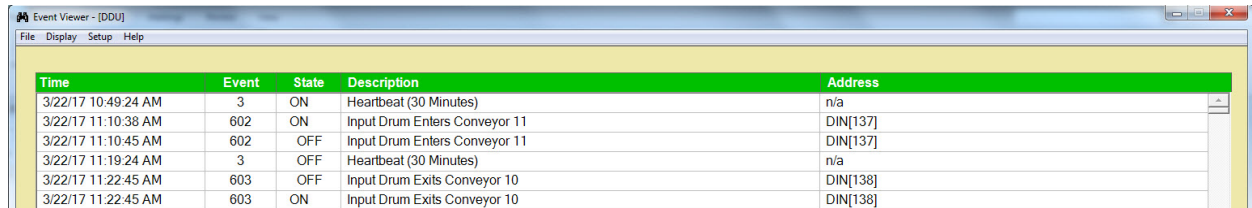


This sub-window is displayed automatically after the PLC's are initially specified in the *PLC Database Location* sub-window. Thereafter, it is accessed from the *Event Viewer* window by clicking the "Display" pull-down menu and then clicking "PLC Selection".

This sub-window displays the name of each PLC listed in the *PLC Database Location* sub-window. A PLC is selected by clicking the check box next to the PLC name and then clicking the ACCEPT button.

The *Event Viewer* can display events of multiple PLC's, although only the events for a particular PLC can be displayed at one time. Therefore, only one PLC can be selected at a time. Note that the order that the PLC's are listed is the same as the order the PLC database paths are listed on the *PLC Database Location* window.

# EVENT VIEWER WINDOW

The events are displayed on the *Event Viewer* window. This is the main window of the *Event Viewer*. All other windows will be displayed over this.



This window not only displays the event data but also has menu selections for selecting other features of the *Event Viewer*. At the bottom of the window are buttons for searching for events or for displaying previous or next occurrences of the selected event.

As shown, the following is displayed for each event:

Time
This is the PLC calendar date and time when the event was captured.

Event Number
This is the assigned event number for the event. Each event is assigned an event number when the event was first configured in the PLC (see *Event Collector* manual).

State
"ON" is displayed if the event digital condition went from off (false or 0) to on (true or 1). "OFF" is displayed if the condition went from on to off.

Description
This is an assigned description of the event. Event descriptions are described in the "Event Descriptions" section below.

Address
This is the assigned address of the monitored digital condition. These are entered when the event descriptions are entered.

The events that are displayed are those events that meet the search criteria specified on the *Parameters* window, described below.
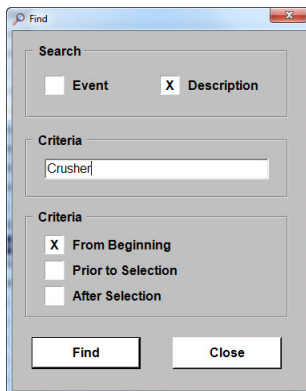
# FINDING AN EVENT

At the bottom of the *Event Viewer* window are buttons for searching for events or for displaying previous or next occurrences of the selected event:



An event is highlighted by clicking anywhere in the event data row. The last occurrence of that event is displayed by clicking on the "Find Previous…" button. Likewise, the next occurrence is displayed by clicking on the "Find Next …" button.

A particular event is found by clicking on the "Find"  button which displays the following sub-window:



An event can be found by either specifying the event number or by text within the event description. To search for event number, the "Event" box is clicked and the number entered in the "Criteria" box. To search by description, the "Description" box is clicked and the text to search for in each event description is entered in the "Criteria" box.

By clicking on the "From Beginning" box, all the events displayed are searched. If the "Prior to Selection" is clicked, the search starts at the beginning of the displayed events up to the currently selected event. Likewise, if the "After Selection" box is clicked, the search starts at the currently selected event and goes to the end of the displayed events.

The search is carried out when the FIND button is clicked. When an event is found it is highlighted.
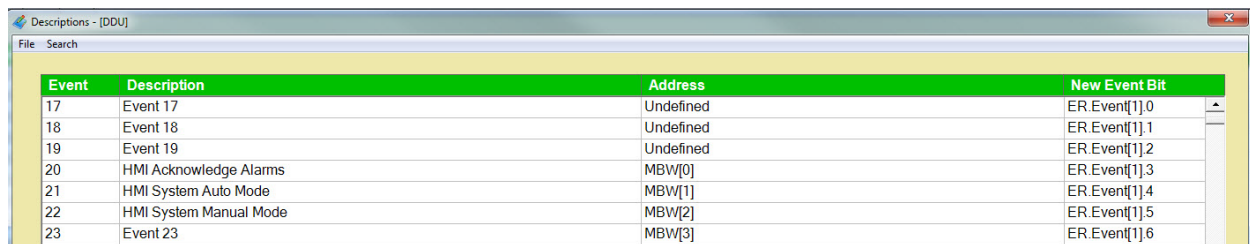
# EVENT DESCRIPTIONS

When events of a PLC are logged to its event database by *Event Logger*, the events are identified by the event number. In order to be able to better read the event data, the *Event Viewer* allows the following to be associated with each event number:

- Event Description
- Monitored PLC address bit

By default, the event description of each event is the event number and the PLC bit address is "Undefined". These can be edited in the *Event Descriptions* window. This window is displayed from the *Event Viewer* window by clicking the "Setup" pull-down menu and then clicking "Event Descriptions".

The *Event Descriptions* window has 4 columns:

- Event
- Description
- Address
- New Event bit.



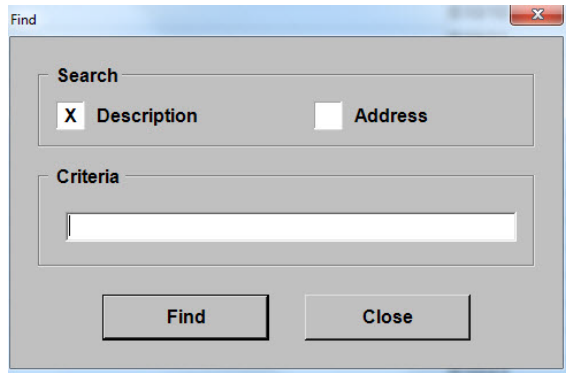| Event | Description | Address | New Event Bit |
|---|---|---|---|
| 17 | Event 17 | Undefined | ER.Event[1].0 |
| 18 | Event 18 | Undefined | ER.Event[1].1 |
| 19 | Event 19 | Undefined | ER.Event[1].2 |
| 20 | HMI Acknowledge Alarms | MBW[0] | ER.Event[1].3 |
| 21 | HMI System Auto Mode | MBW[1] | ER.Event[1].4 |
| 22 | HMI System Manual Mode | MBW[2] | ER.Event[1].5 |
| 23 | Event 23 | MBW[3] | ER.Event[1].6 |

As described in the *Event Collector* manual, each event is numbered and is associated with a unique New Event bit. The values in the "Event" and "New Event Bit" columns are determined when the *Event Logger* is configured.

The "Address" column is the PLC address of the bit monitored in the host PLC program for the associated event number. This is for information purposes only. It is not automatically entered but is entered by clicking on the text box and entering any information of 10 characters or less. It can be edited at any time.

The "Description" column, as the name implies, is a description of the event. This also is for information purposes only. It is not automatically entered but is entered by clicking on the text box and entering any information of 50 characters or less. It can be edited at any time.

Searching for Event Information
Specific event description text or a specific address can be searched by clicking the "Search" pull-down menu and then clicking "Find" or by right clicking the mouse and selecting "Find".

The "Criteria" box is either the text that is searched for in the "Description" column if the "Description" box is selected or the address that is searched for in the "Address" column if the "Address" box is selected. Once an event number is located that matches the search criteria other occurrences can be located using "Next" and "Previous" options on the "Search" pull-down menu.

Printing Event Descriptions
The Event Descriptions table can be printed or previewed by clicking the "File" pull-down menu and then clicking "Print" or "Print Preview".
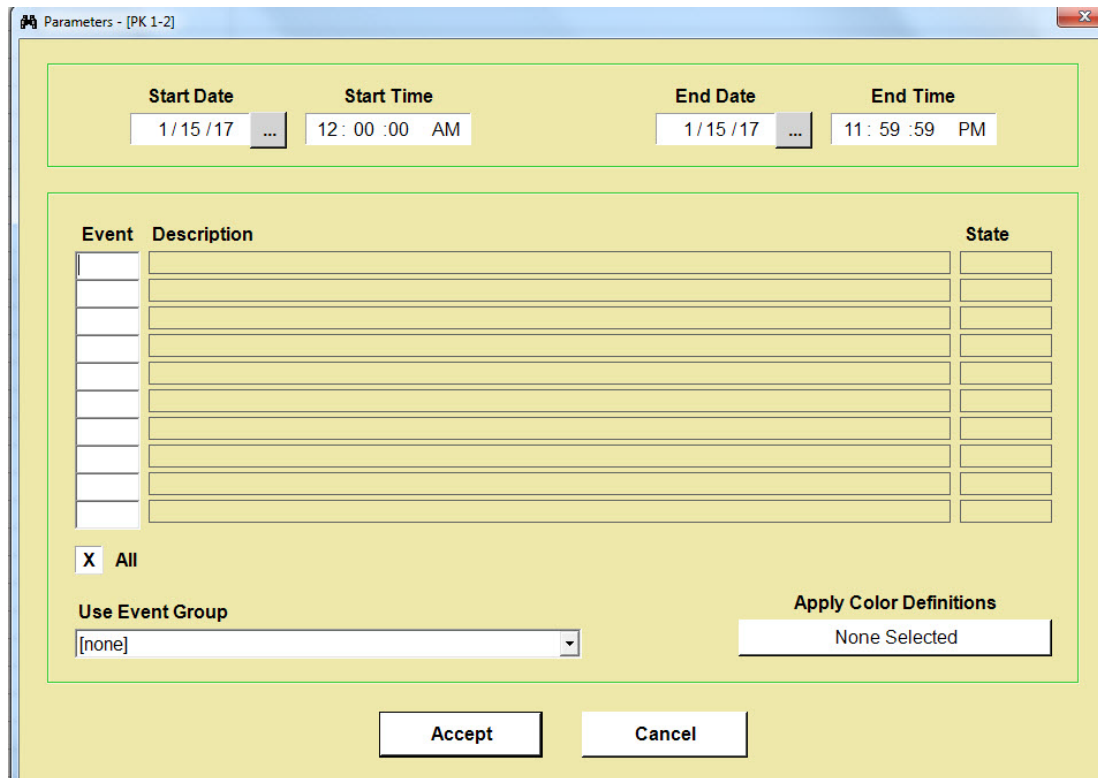
Importing and Exporting Event Descriptions
Event descriptions can be exported and imported by clicking "File" pull-down menu and then clicking "Export" or "Import". When the event descriptions are exported, all 4 columns of data are written to a tab delimited text file. When the event descriptions are imported, a tab delimited text file is read. This file must meet the following conditions:

- Event number between 1-2500
- Event description length of 50 characters or less
- Address length of 40 characters or less

The export and import features are useful for defining large blocks of event descriptions using Microsoft Excel or Notepad.

# EVENT PARAMETERS

Events are displayed for a selected time period. All the events for that period are displayed or optionally, only selected events. These parameters for the events display are specified in the *Parameters* window, shown below. This window is accessed from the *Event Viewer* window by clicking the "Display" pull-down menu and then clicking "Event Parameters" or by right-clicking the mouse and selecting "Event Parameters".



When the ACCEPT button is clicked, the *Event Viewer* window is displayed with the events meeting the selected parameter criteria.

Selecting the Time Period
The start and stop times and dates for the events to be displayed are entered at the top part of the sub-window. The dates can be entered or they can be selected from a calendar by clicking on the ellipsis next to the date. The time is entered in a 1-12 hour format with "AM" or "PM" . Clicking "AM" will change the display to "PM" and visa versa. The start date and time must precede the stop date and time. If not, a message will be displayed and the date and times cannot be accepted.

Selecting the Events to be Displayed
All events within the time period are displayed by clicking the "All" box so that an "x" is displayed. The "x" can be removed by clicking on it. If the "All" box doesn't have an "x" in it,
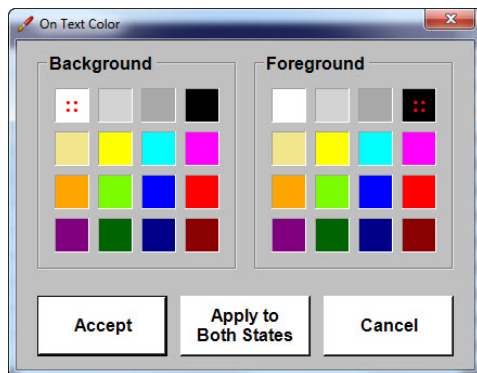
then only specific events are displayed. These events are specified either by entering the event numbers in the "Event" column or by specifying an "Event Group". Event groups are described in the "Event Groups" section, below.

Up to 10 events can be specified by entering the event numbers for these events in the "Event" column. When the event number is entered, the event description is displayed in the "Description" column. The "State" column indicates which status of the event is to be displayed is to be displayed: "ON/OFF", "ON" only, or "OFF" only. Clicking on the status will toggle the selection.

Specific events can also be displayed using event groups (see below). An event group is selected from the drop-down menu titled "Use Event Group".

Specifying Event Colors
Events can be displayed in various colors. If specific events are to be displayed, the color is specified by clicking on the event description. This will display a color palette for selecting a background color and a foreground color.
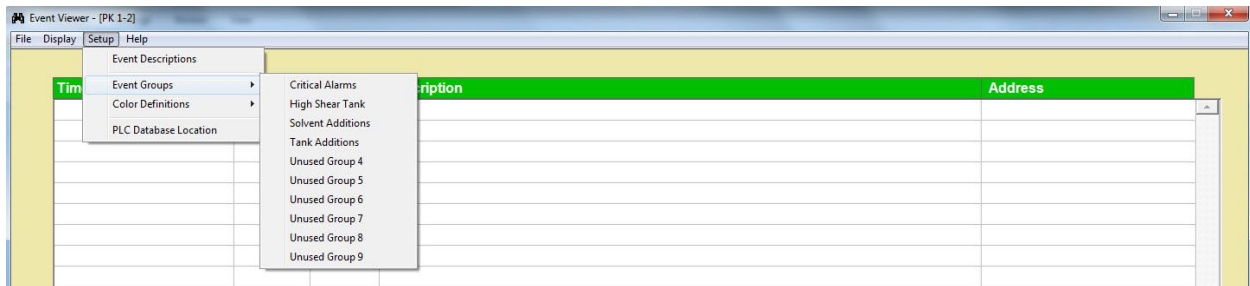


If all events are to be displayed or an event group is to be displayed, the event colors are defined by a color definition (see below).
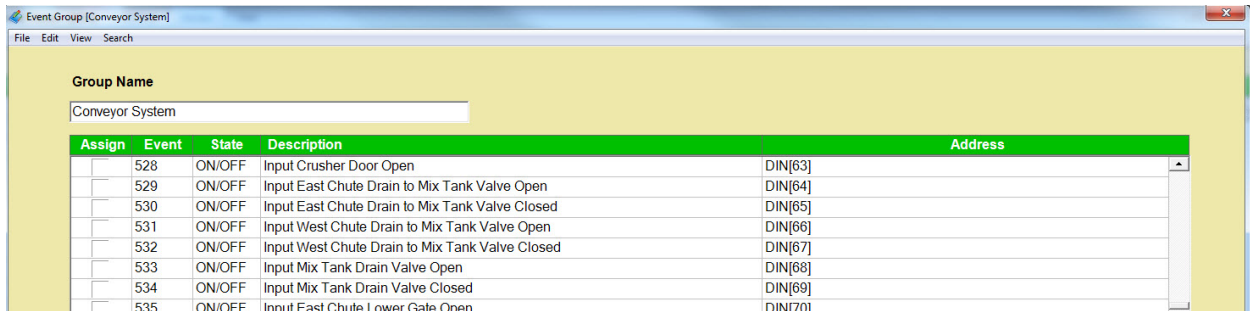
# EVENT GROUPS

An Event Group is a predefined set of events. When an event group is selected then only those events in the Event Group are displayed. Up to 10 Event Groups can be defined. Once defined they can be edited.

An event group is defined or edited by clicking the "Setup" pull-down menu, from the *Event Viewer* window, clicking "Event Groups", and then clicking the name of the event group. These groups are by default named "Group 0" through "Group 9", but the group name can be changed.



Once an Event Group is selected, the *Event Group* sub-window is displayed. This window is similar to the Event Descriptions window with the addition of "Assign" and "State" columns. The "Assign" column is used to select the events to be assigned to the Event Group and the "State" column is used to indicate what states to display: On only, Off only, or both On and Off.
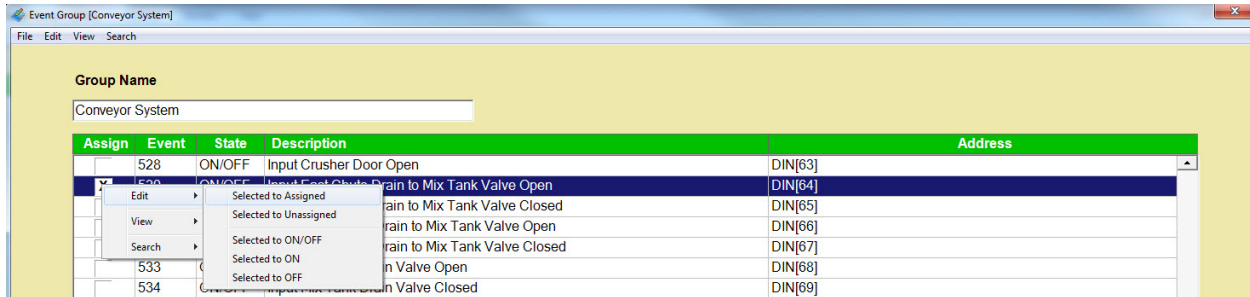


The Event Group name is edited by entering a new name in the "Group Name" text box.

Assigning Events
Initially, each Event Group has no events assigned. An event is assigned to the group by clicking on the box in the "Assign" column so that a check appears. An assigned event can be unassigned by clicking the check in the "Assign" column, clearing the check.

Multiple events can be selected to form a set of events all of which are assigned to the group or unassigned by clicking "Select to Assign" or "Select to Unassign", respectively, from the "Edit" menu at the top of the window or from the "Edit" menu displayed by right-clicking the mouse.

This set can be contiguous rows or non-contiguous rows. Contiguous rows are selected by clicking on the first row of the set and holding down the SHIFT key and clicking on the last row of the set. Non-contiguous rows are selected by holding down the CTRL key and clicking on the individual rows.



Specifying Event State

Assigned events can be further specified to only be displayed for certain event states. This is selected by clicking the "State" column. The selectable states are:

"ON/OFF" (event goes from on-to-off or off-to-on)
"ON" (event goes from on-to-off)
"OFF" (event goes from off-to-on).

As with the group selection, multiple events can be selected to form a set of events all of which have the same "State" criteria by clicking the state from the "Edit" menu at the top of the window or from the "Edit" menu displayed by right clicking the mouse. This set can also be contiguous rows or non-contiguous rows and are selected as described above.

Note that if an event is unassigned its "State" is automatically set to "ON/OFF". If the "State" is changed the event is automatically assigned to the group.
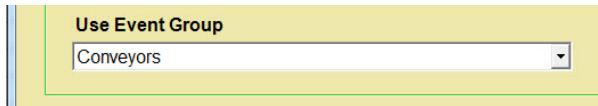
Controlling the Display

The event group display can display 1) all events; 2) only those assigned to the group; or, 3) only those not assigned to the group. This is set by clicking "View" on the pull-down menu at the top of the window and then clicking "Full List", "Only Assigned", or "Only Unassigned", respectively. It can also be set by right clicking the mouse and selecting "View".

Searching

A search for a specific event or specific text within an event description can be performed by clicking the "Search" pull-down menu at the top of the window and then clicking "Find" or by right-clicking the mouse and clicking "Search" and "Find". Clicking "Find" displays the *Find* sub-window. This sub-window is the same as that described on page 9.

Selecting an Event Group

An Event Group is selected from the *Parameters* screen using the "Use Event Group" pull-down menu:
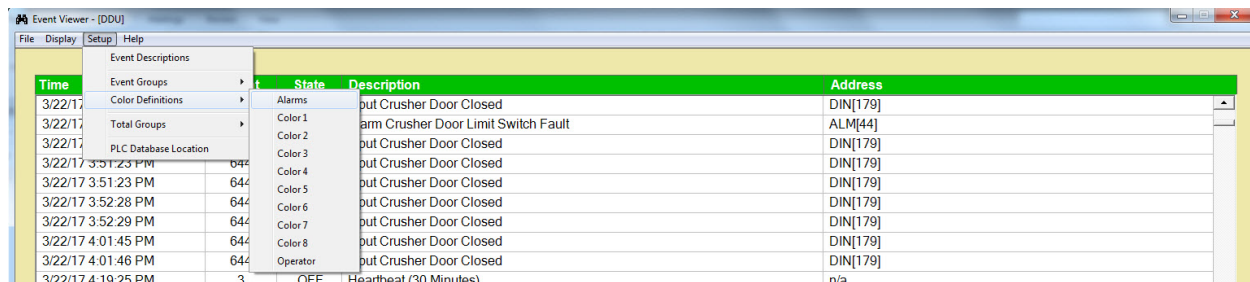


When an Event Group is selected, only the events assigned to that group are displayed. Note that only one Event Group can be displayed at a time.
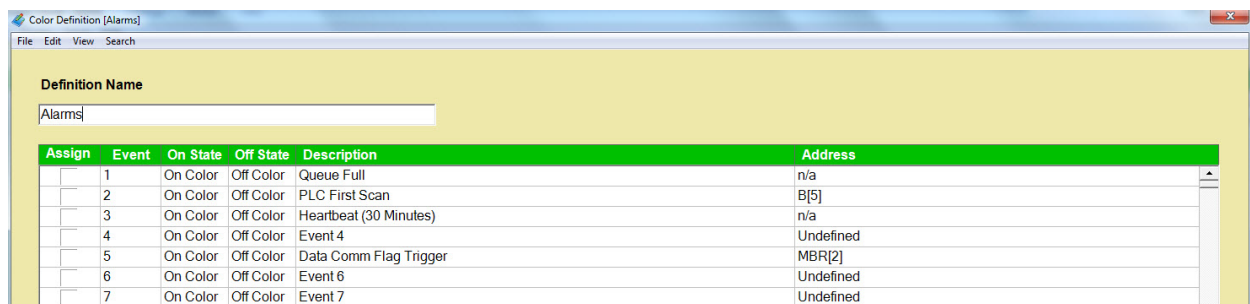
# COLOR DEFINITIONS

A color definition is a set of events with defined colors. When a color definition is selected then those events associated with the color definition are displayed in the colors specified in the definition.

A color definition is defined or edited by clicking the "Setup" pull-down menu, from the *Event Viewer* window, clicking "Color Definition", and then clicking the name of the color definition. These are by default named "Color 0" through "Color 9", but the name can be changed.



Once a Color Definition is selected, the *Color Definition* sub-window is displayed. This window is similar to the Event Descriptions window with the addition of "Assign", "On State", and "Off State" columns.



The Color Definition name is edited by entering a new name is the "Definition Name" text box.
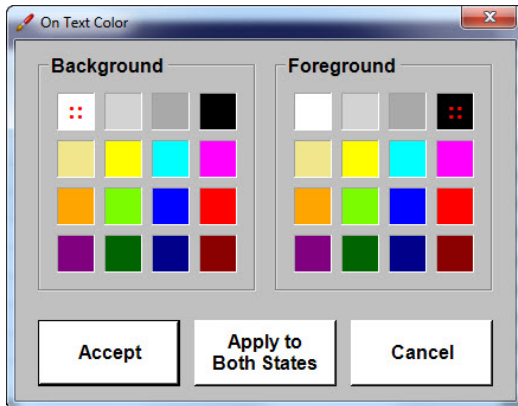
Assigning Events
Initially, each Color Definition has no events assigned. An event is assigned to the group by clicking on the box in the "Assign" column so that a check appears. An assigned event can be unassigned by clicking the check in the "Assign" column, clearing the check. As with the Event Groups, multiple events can be selected to form a set of events all of which are assigned to the definition or unassigned.

Specifying Color of Event State
Colors are assigned to both the "On" state of the event and the "Off" state. The "On State" column is used to select the colors to be assigned when the event state is "On" and the "Off

State" column is used to select the colors to be assigned when the event state is "Off". Clicking one of these columns causes a color palette to be displayed for selecting both foreground and background colors.
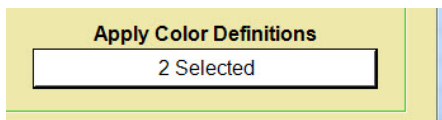


Controlling the Display

As with the Event Groups, each color definition window can display 1) all events; 2) only those assigned to the definition; or, 3) only those not assigned to the definition. This is set by clicking "Full List", "Only Assigned", or "Only Unassigned", respectively on the "View" pull-down menu at the top of the window or from the "View" menu displayed by right-clicking the mouse,

Searching

A search for a specific event or specific text within an event description can be performed by clicking the "Search" pull-down menu at the top of the window and then clicking "Find" or by right-clicking the mouse and clicking "Search" and "Find". Clicking "Find" displays the *Find* sub-window, as described above for Event Groups.

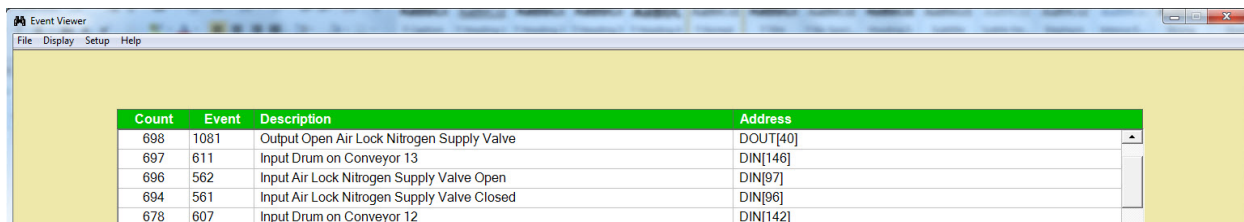Selecting Color Definitions

A Color Definition is selected from the *Parameters* screen using the "Apply Color Definitions" button:



Clicking on this button displays a list of the Color Definitions and a check box next to each. Clicking on box will select and deselect the associated definition. Note that multiple color definitions can be selected. The number selected is displayed in the button.

# TOTALS

The number of occurrences of events, event totals, are calculated and displayed by the "Totals" feature.  These are displayed on a special *Event Viewer* window:



The totals are determined for those events that meet the search criteria specified on the *Parameters* window, described below. The following is displayed for each event:

Count
This is the number of occurrences of the event during the specified time period.

Event Number
This is the assigned event number for the event. Each event is assigned an event number when the event was first configured in the PLC (see *Event Collector* manual).

Description
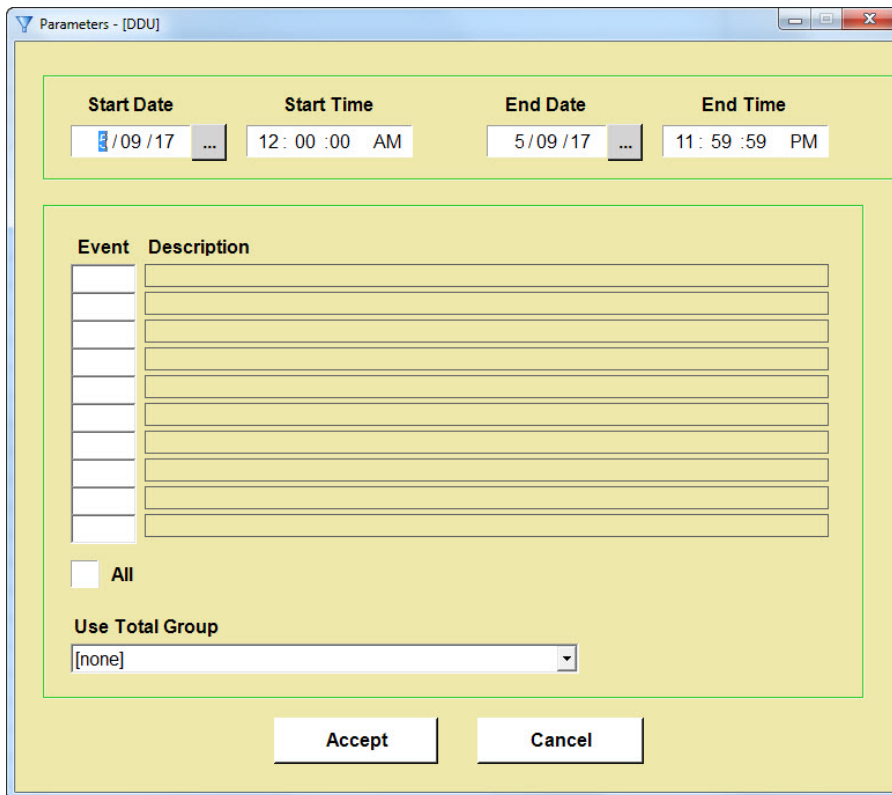This is an assigned description of the event. Event descriptions are described in the "Event Descriptions" section.

Address
This is the assigned address of the monitored digital condition. These are entered when the event descriptions are entered.

# TOTALS PARAMETERS

The number of event occurrences are calculated for a selected time period. As with the display of events, this can be for all of the events for that period or, optionally, only selected events. These parameters are specified in the *Parameters* window, shown below. This window is accessed from the *Event Viewer* window by clicking the "Display" pull-down menu and then clicking "Total Parameters" or by right-clicking the mouse and selecting "Total Parameters".



When the ACCEPT button is clicked, the *Event Viewer* totals window is displayed with the events meeting the selected parameter criteria.

Selecting the Time Period
The start and stop times and dates for the events to be displayed are entered at the top part of the sub-window. The dates can be entered or they can be selected from a calendar by clicking on the ellipsis next to the date. The time is entered in a 1-12 hour format with "AM" or "PM" . Clicking "AM" will change the display to "PM" and vice versa. The start date and time must precede the stop date and time. If not, a message will be displayed and the date and times cannot be accepted.

Selecting the Events to be Displayed
All events within the time period are counted by clicking the "All" box so that an "x" is displayed. The "x" can be removed by clicking on it. If the "All" box doesn't have an "x" in it,

then only specific events are counted. These events are specified either by entering the event numbers in the "Event" column or by specifying a "Total Group". Total groups are described in the "Total Groups" section, below.

Up to 10 events can be specified by entering the event numbers for these events in the "Event" column. When the event number is entered, the event description is displayed in the "Description" column.
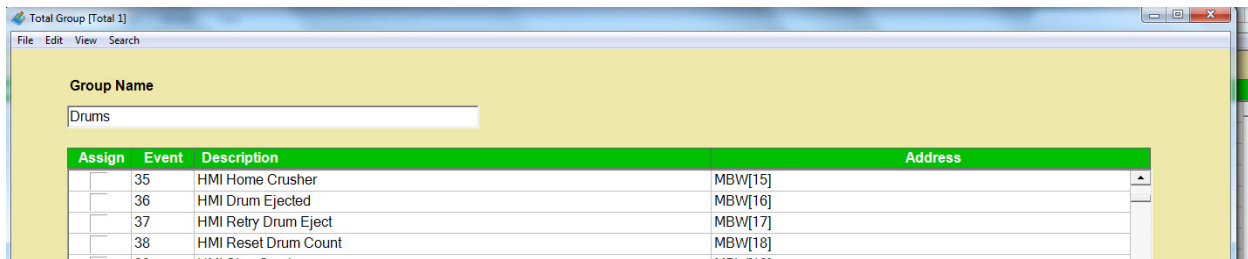
Specific events can also be displayed using total groups (see below). An total group is selected from the drop-down menu titled "Use Total Group".

# TOTAL GROUPS

A Total Group, like an Event Group, is a predefined set of events. When a total group is selected then only those events in the group are counted. Up to 5 Total Groups can be defined. Once defined they can be edited.

An total group is defined or edited by clicking the "Setup" pull-down menu, from the *Event Viewer* window, clicking "Total Groups", and then clicking the name of the event group. These groups are by default named "Group 0" through "Group 4", but the group name can be changed.

Once an Total Group is selected, the *Total Group* sub-window is displayed. This window is similar to the Event Description window with the addition of an "Assign" column. The "Assign" column is used to select the events to be assigned to the Total Group.



The Total Group name is edited by entering a new name in the "Group Name" text box.

Assigning Events
Initially, each Total Group has no events assigned. An event is assigned to the group by clicking on the box in the "Assign" column so that a check appears. An assigned event can be unassigned by clicking the check in the "Assign" column, clearing the check.

Multiple events can be selected to form a set of events all of which are assigned to the group or unassigned by clicking "Select to Assign" or "Select to Unassign", respectively, from the "Edit" menu at the top of the window or from the "Edit" menu displayed by right clicking the mouse. This set can be contiguous rows or non-contiguous rows. Contiguous rows are selected by clicking on the first row of the set and holding down the SHIFT key and clicking on the last row of the set. Non-contiguous rows are selected by holding down the CTRL key and clicking on the individual rows.

Controlling the Display
The total group display can display 1) all events; 2) only those assigned to the group; or, 3) only those not assigned to the group. This is set by clicking "View" on the pull-down menu at the top of the window and then clicking "Full List", "Only Assigned", or "Only Unassigned", respectively. It can also be set by right clicking the mouse and selecting "View".

Searching

A search for a specific event or specific text within an event description can be performed by clicking the "Search" pull-down menu at the top of the window and then clicking "Find" or by right-clicking the mouse and clicking "Search" and "Find". Clicking "Find" displays the *Find* sub-window. This is the same as that described on page 9.

Selecting an Total Group

An Total Group is selected from the Parameters screen using the "Use Event Group" pull-down menu:



When an Total Group is selected, only the events assigned to that group are counted. Note that only one Total Group can be selected at a time.

# PRINTING

The displayed events are printed by selecting "Print" from the "File" drop down menu. All of the events can be printed or a single page or range of pages. The printout of the events can be displayed by clicking "Print Preview" from the "File" drop down menu in order to determine which pages to print.