

# **TrendManager Pro V5 Batch Software**

**March 2005**

**Honeywell**

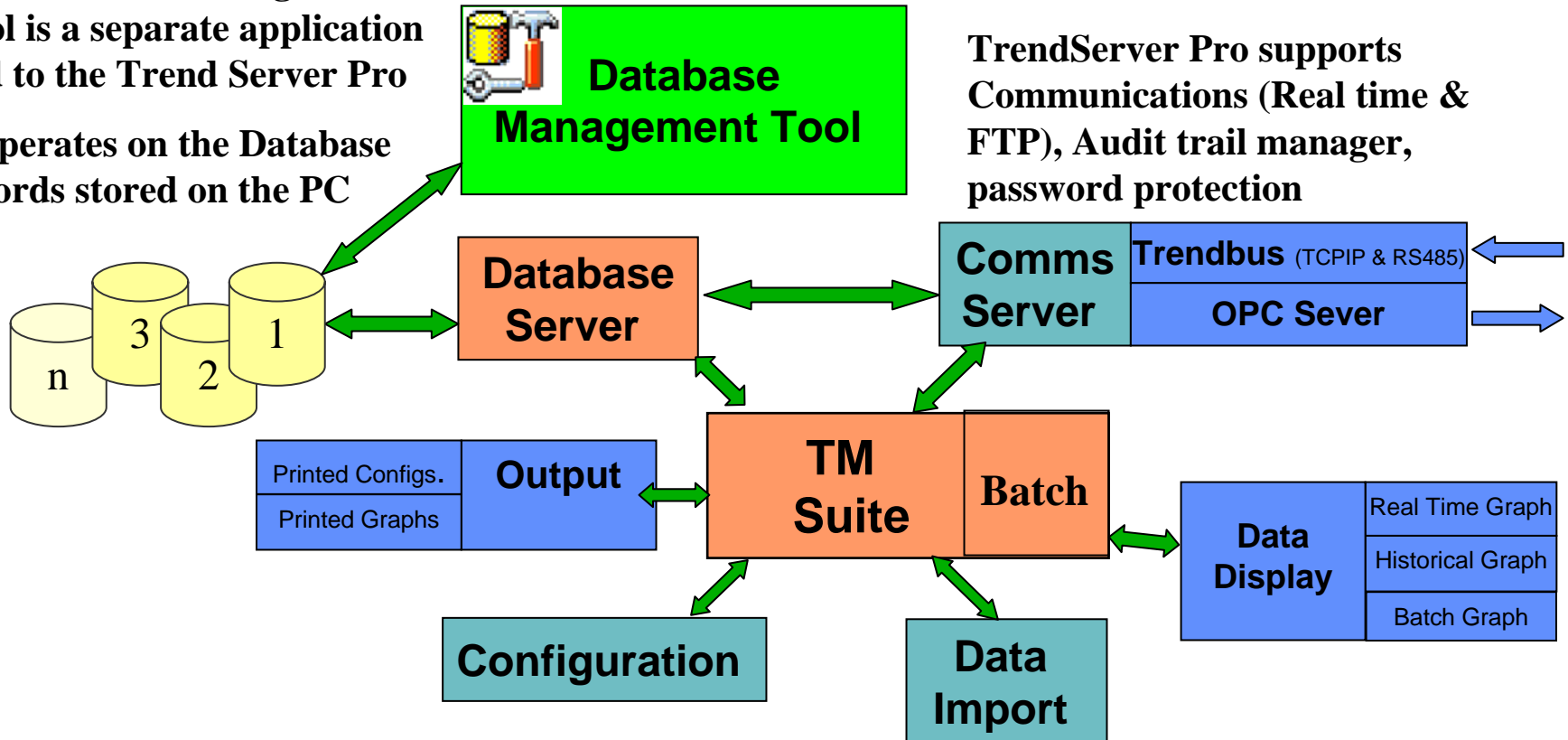
# TrendManager Pro V5 Batch - Introduction

- **TrendManager Pro V5 Batch**
  - **Part of the TrendManager Pro Analysis Software functionality**
  - **TMP uses a “Batch Language” to recognize batches**
  - **Works with files imported from:**
    - ◆ Trendview Recorders – Mintrend, Multitrend Plus, eZtrend, Teletrend, Circuitrend, Multitrend
    - ◆ UMC800, HC900
    - ◆ VRX Recorders – VRX100/150/180
    - ◆ DPR180/250 Recorders with PCMCIA Option
  - **TMP Batch does not affect the Recorder Firmware**
    - ◆ TMP Batch only involves updates to TMP
    - ◆ Uses the existing Event Markers/Message features of the recorder to add Batch Language Tags to the recorded data
  - **TMP Batch does not affect the existing Database files, only the way it is viewed**
  - **The database can be viewed in the normal “Recorder Trend Mode”, (i.e. by recorder names) or by “Batch Names”**

# TrendManager Pro V5 Batch - Introduction

## TrendManager Suite & how things fit

The Database Management Tool is a separate application tied to the Trend Server Pro. It operates on the Database records stored on the PC.



Trend Manager Pro supports: Configuration, Event Set up, Export of data, Archive data, Data analysis and Batch Mode

TrendViewer supports data import and viewing of data

# TMP Batch – How Does It Work

- **Uses a series of Batch Language commands**
  - **These commands are embedded as messages in the recorded data**
    - ◆ Can be done at the recorder level as the data is recorded
    - ◆ Can be inserted at the TMP level after data has been imported
  
- **TMP is used to view the data**
  - **Viewed as Recorders (current functionality)**
    - ◆ Uses recorder names as identifiers
    - ◆ Data is viewed as a continuous file for that recorder
  - **Viewed as Batches (Batch functionality)**
    - ◆ Uses batch names/numbers as identifiers with Start & End Times
    - ◆ Data is viewed as batch data for that database or recorder
    - ◆ Batch List can be filtered by Batch Name or Time & Date

- **Command Keywords**
  - Instructs the system to perform an action
  - Requires no additional data to do that function
  - (i.e. – Start/End/Pause/Resume/Abort/Continue data input)
- **Data Keywords**
  - Informs the system of information required to be stored with batch records
  - Data follows the Keyword command (for example //L 123456 which would indicate this Lot number 123456)
  - Data Keywords are used for Batch Description, User ID, Lot Number, Comments, or to Rename a Batch

# TMP Batch – Batch Language Commands

- **Command Keywords**

- //S Start Batch
- //E End Batch
- //P Pause Batch
- //R Resume Batch
- //A Abort Batch
- //+ Continue Data Input – Allows user to enter data on more than one mark on chart statement

- **Data Keywords**

- //B <data> Batch Name
- //D <data> Batch Description
- //I <data> User Id
- //L <data> Lot Number
- //C <data> Comment

(Spaces are required between keywords and data strings)

- **Example using Batch Language Commands**

- **Compound Batch Statement**

-//S 12345 //C Large Bolts      Start Batch 12345 Large Bolts

- **As a Series of Batch Statements**

-//S      Start Batch (Batch # should be included here)  
-//L 12345      Lot Number 12345  
-//C Large      Comment - Large Bolts  
-//+ Bolts

Each method is equivalent and uses the “Mark on Chart” function or the Event Markers to define the batch command and data statements

# TMP Batch – Batch Language Rules

- **Keywords are identified with the double backslash**
  - // identifies the start of a Batch Language Keyword statement
  - // is followed by the Keyword with no character space (i.e. //S)
- **Command Keywords**
  - No additional information required (i.e. //S), (Batch Names can be added to the Start, End and Abort commands as an aid)
  - Must use the identified commands, Upper Case Only
- **Data Keywords**
  - Data must follow the Keyword command (i.e. //C Large Bolts)
  - Batch Description, User ID, Lot Number, Comments
  - Must use the identified commands - Upper Case for the Keyword but Upper or Lower Case Ok for data statement
  - Max Length of message in the recorder is 43 Characters, can have longer messages in TMP or use the (//+) Keyword
- **Batch Mode Recorder Event Markers**
  - Batch Event Markers set up with pre-defined control commands

# Batch Mode Recorder Event Markers

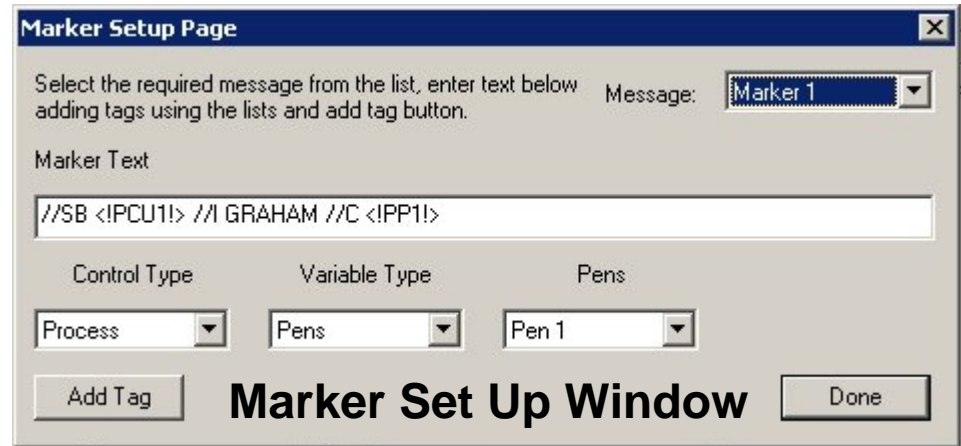
- **Event Messages & Markers**
  - The Event Messages are part of the Event Marker System
  - There are 20 programmable Event Markers available
  - Event Markers are set up in TMP and requires the Event Marker Option on the Recorder
  - For Batch, some markers have pre-defined Keywords
  - Markers 1 through 9 have been initially defaulted to blank markers
  - Markers 10 through 20 have been initially pre-defined with the various Control Commands (see Table)

Marker Number	Control Character	Marker Function
1 to 9	None	Messages
10	//S	Start Batch
11	//E	Stop Batch
12	//P	Pause Batch
13	//R	Resume Batch
14	//A	Abort Batch
15	//+	Joins Text Statements
16	//B	Rename a Batch
17	//D	Batch Description
18	//I	User ID
19	//L	Lot Number
20	//U	User Data/Info

- **Available Methods for Message Entry on Recorder**
  - **Use Mark on Chart feature & Text Entry using the recorder thumbwheel and alphanumeric screen**
  - **Use Mark on Chart & select from list of Pre-formatted Messages (up to 20)**
  - **Use the Event Marker option and a Digital Input, Alarm or other internal Event to trigger a pre-formatted message**
  - **Use the RS232 Port with Event Markers and a serial Bar Code scanner (see application note – 43-TV-07-12)**
  - **Use the RS232 Port, Event Markers and a serial Palm PDA to send a message to the recorder**
  - **Use Internet Explorer and the recorder's internal Web Page – 'Actions' - text entry box to enter a message over the Ethernet link**

# Setting Up Markers in TMP

- **Events Markers are set up using Trend Manager Pro**
  - **Events represent “Cause” and “Effect” Relationships**
  - **Add Cause & Effects using the drop down list (up to 20 Causes or Effects can be in a single Event, there is 32 events available)**
  - **Marker Set up allows the set up of specific messages ( Up to 20 marker messages of 80 characters available)**
  - **Messages can have embedded controls < ! \*\*\*! >**
  - **Embedded Controls allow real time recorder data to be inserted into the text**



**Control Type – Process, System, Label**

**Variable Type – Pens, Digitals, Totals**

**Pens – Active Pens**

**Label – Tag, Description, Units, Scale**

**Message could look like below:**

**Label Pen 1, Label Pen 2, Process Value  
<!LP1U!><!LP2T!>Batch<!IPP1!><!VDU!>**

# Batch Start/Stop Event Markers Example

- **Event Markers Batch Start**

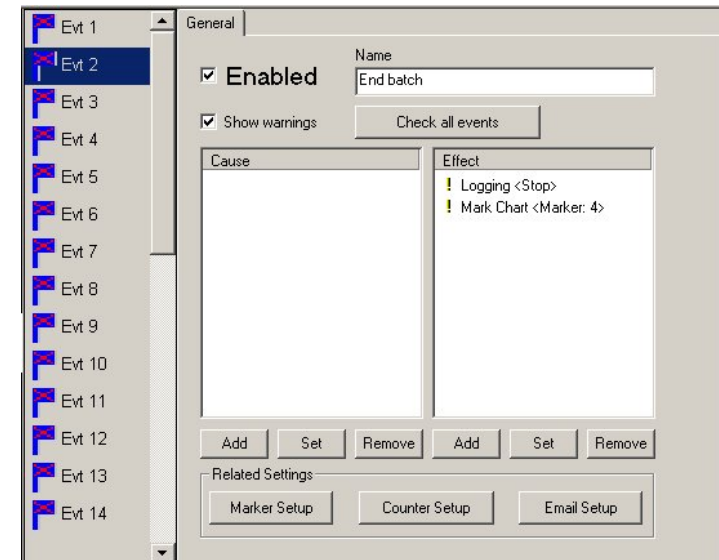
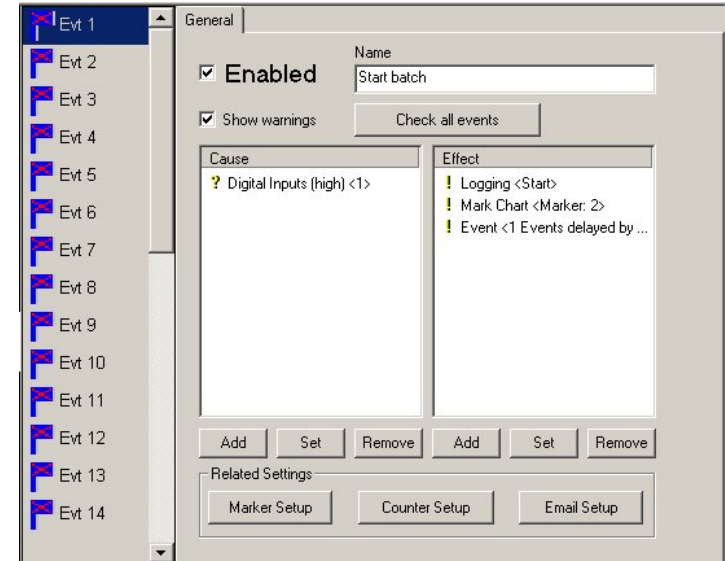
- **Event Marker 1 set for a Start Batch based on a Digital Input**
- **Digital Input effect is**
  - ◆ Logging starts
  - ◆ Marks the chart (Marker 2 -//S #####)
  - ◆ Event 1 is started that will trigger Event 2 delayed in time

- **Event Markers Batch Stop**

- **Event Marker 2 set for a Stop Batch based on result of Event 1 Delay Time**
- **Event Marker 2 effect is**
  - ◆ Stops Logging
  - ◆ Marks the chart (Marker 4 -//E #####)

- **Markers Set Up**

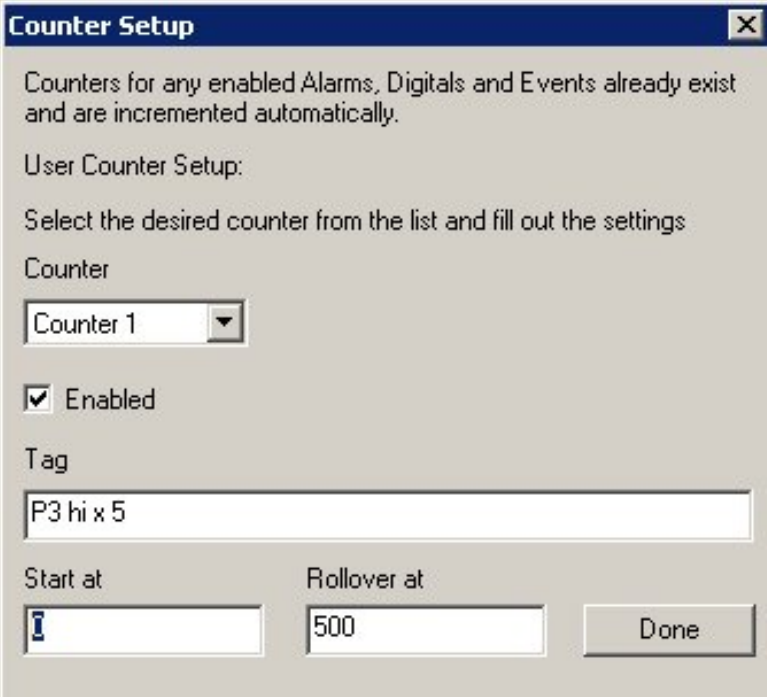
- **Use the Marker Setup button**
- **Set these up before using**



# Batch Counter Event Marker

- **Increment Batch Counter with Markers**

- **Set Up Counter under “Counter Set Up” button**
- **Set up the “Cause” that will increment the Counter (DI, Alarm, User, Other from the list of Causes)**
- **Set up the “Effect”, choose “Counter Control”**
  - ◆ Set Type (Event, Alarm, Digital, User) in the Counter Effect Set up Window
  - ◆ Counter (All or Specific one) in the Counter Effect Set up Window
  - ◆ Set Reset or Increment Value for User Type



**Counter Setup**

Counters for any enabled Alarms, Digitals and Events already exist and are incremented automatically.

User Counter Setup:

Select the desired counter from the list and fill out the settings

Counter  
Counter 1

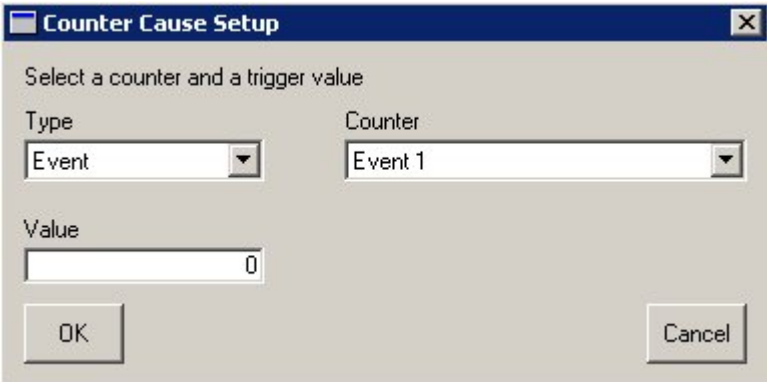
Enabled

Tag  
P3 hi x 5

Start at  
1

Rollover at  
500

Done



**Counter Cause Setup**

Select a counter and a trigger value

Type  
Event

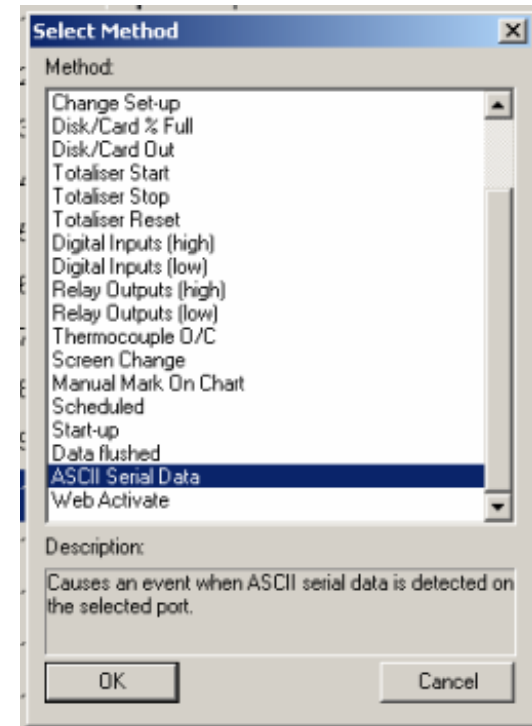
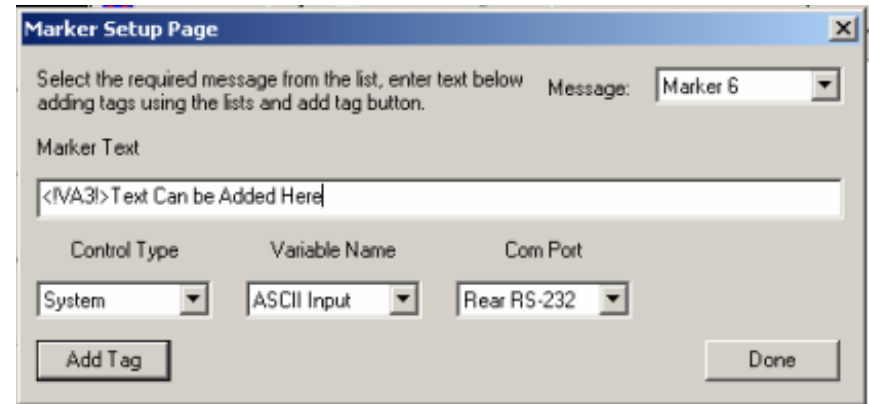
Counter  
Event 1

Value  
0

OK Cancel

# Batch Mode ASCII Input Event Marker

- **Event Markers ASCII Input**
  - **Set Event Marker to accept a message from the RS232 ASCII port, include Keyword //**
  - **Set Cause for ASCII Serial Data**
  - **Set “Effect” for Mark Chart using previously programmed marker**
  - **Set Ports on Recorder to enable RS232 port for bar code reader**
  - **Scan the bar code to create the specific batch message**
  - **Refer to Application Note for additional details 43-TV-07-12**



# TMP Batch – Batch Graphing Event Icons

- **Batch Event Icons**

- **Event Icon Display**

- ◆ Displayed in the Event Bar of TMP
    - ◆ Use the Events switch at bottom of TMP to turn on & off

- **Single Event Icons**

- ◆ These are the icons that show various Event actions that occurred
    - ◆ These may or may not be related to the batch

## Single Event Icons



**Bell – Alarm**



**Flag – Marker**



**Light Bulb – DI or Relay**



**Person – User Text**



**Recorder – System Message**

## Batch Event Icons

- **Batch Event Icons**

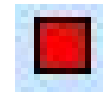
- ◆ Set of icons help determine batch actions that occurred
    - ◆ Start, Stop, Pause, Resume, Abort, Comment



**Start of Batch**



**Resume Batch**



**End of Batch**



**Abort Batch**



**Pause Batch**



**Comment**

# TMP Batch – Starting Batch Viewing

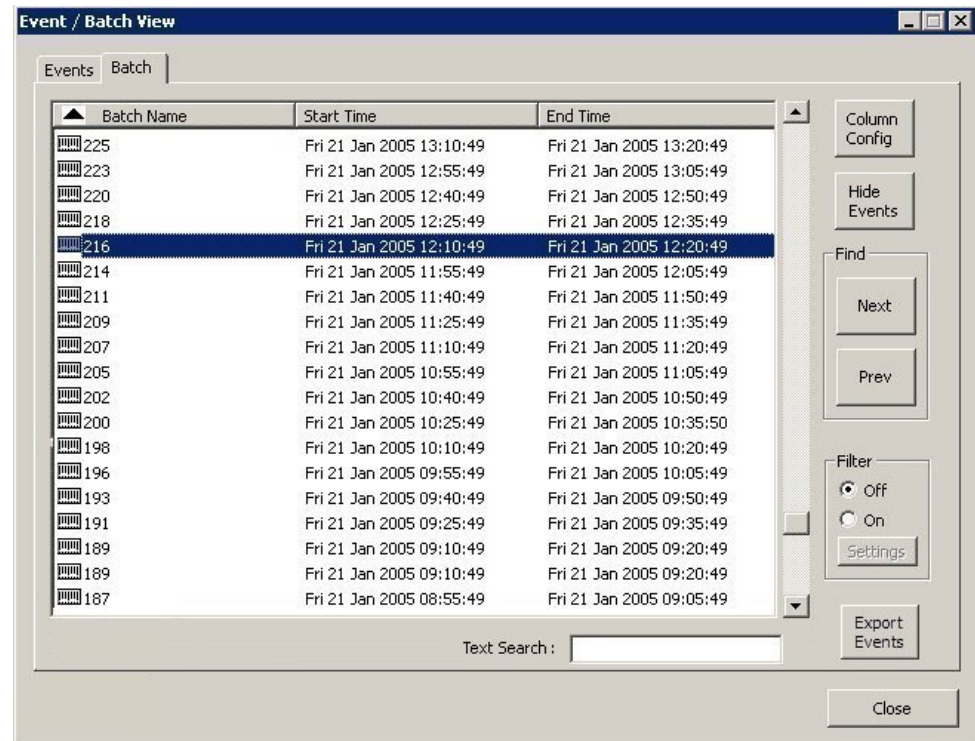
- **Starting Batch Viewing**

- **Use New “Batch” icon**

- ◆ Looks like a Bar code label
    - ◆ Shown at the Database and Recorder levels
    - ◆ Allows for the viewing of the list of Events or Batches

- **“Event / Batch Viewing Window**

- ◆ Clicking on Batch icon opens Event / Batch View window
    - ◆ At the top level - view batches within the database
    - ◆ At the Recorder level - view the batches for that recorder
    - ◆ Displays batch data for all recorders in currently selected database



# TMP Batch – Event Tab View

- **Event Tab**

- **Shows listing of all Events**

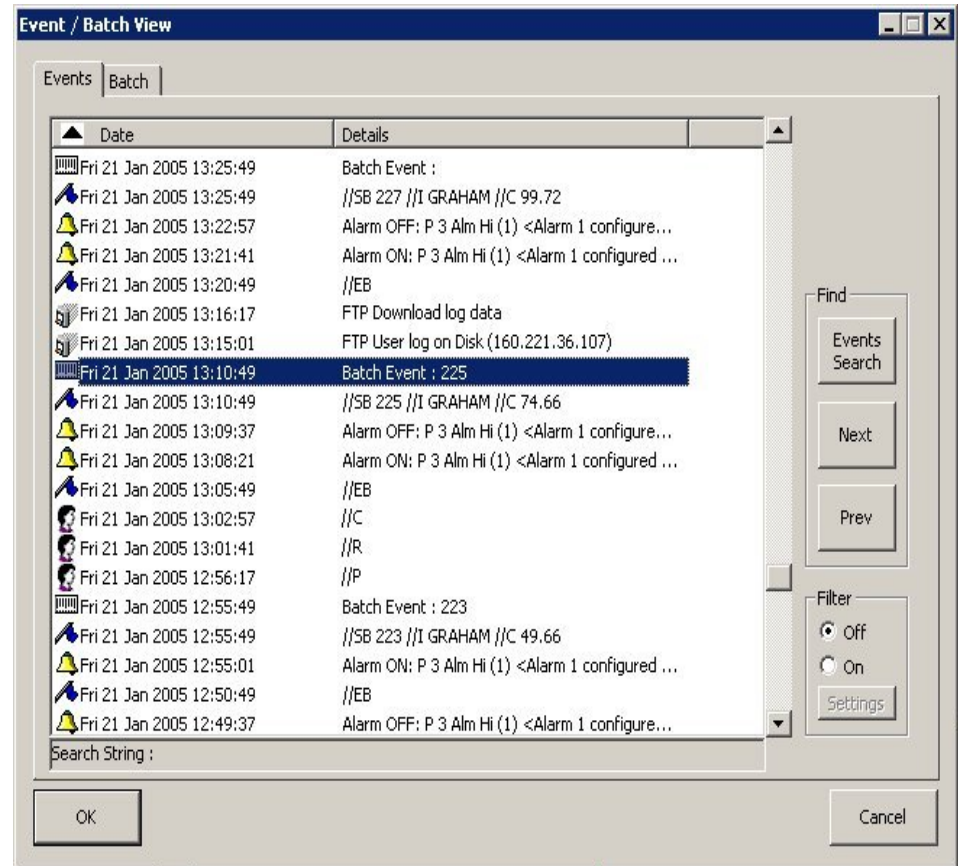
- ◆ Batch events shown with a Bar code label
    - ◆ Occurs when TMP detects a message with “// ” at beginning
    - ◆ These can be automatic (flag) or user (person icon) entered

- **“Navigation” buttons**

- ◆ Find – searches based on data string entered into text box
    - ◆ Next/Prev – moves up and down the list of events

- **“Filter” buttons**

- ◆ Used to filter the list to avoid having unnecessary items included



# TMP Batch – Batch Tab View

- **Batch Tab**

- **Shows all identified batches**

- ◆ Arrange list by Ascending or Descending batch number by Clicking on black arrow
- ◆ Can use “Column Config” button to define parameters in batch window – Start/End Time, Batch Name, Batch #, User ID, Lot #, Comments

- **“Show or Hide Events” button**

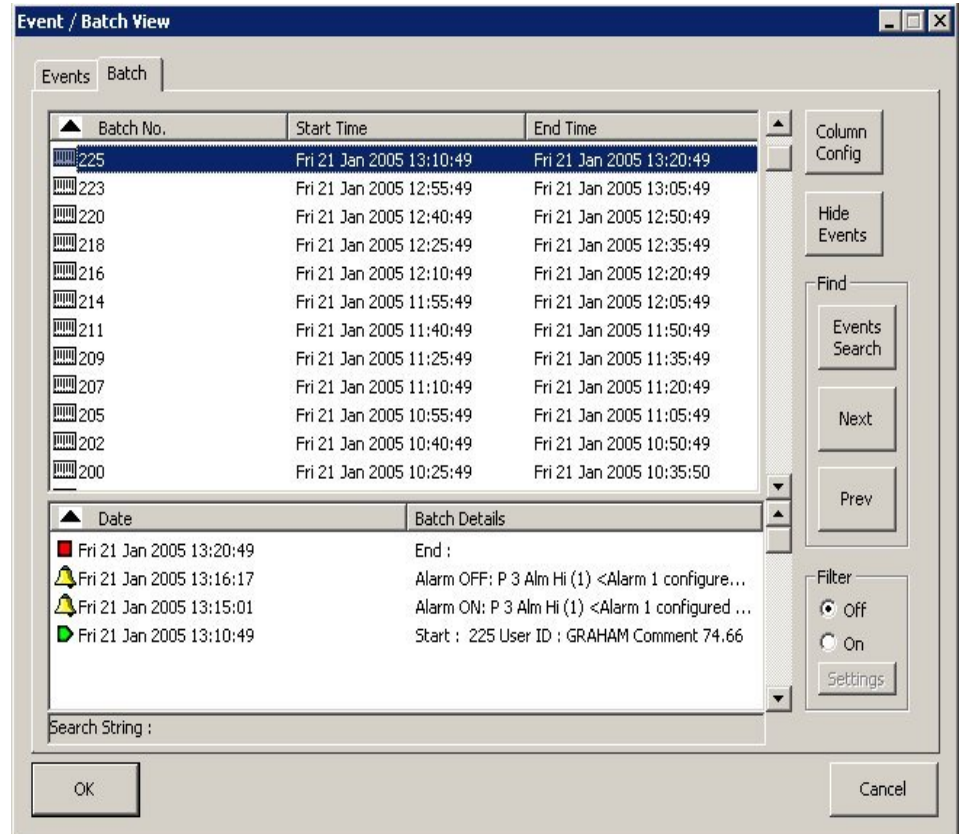
- ◆ Opens window for selected batch
- ◆ Lists events & details for batch

- **Navigation & “Filter” buttons**

- ◆ Use to search and filter to find particular batches, works the same way as on Event Tab

- **Opening a Batch**

- ◆ A selected batch can be dragged to the TMP Graph window
- ◆ Double Click on the Batch icon



# TMP Batch – Event / Batch Filtering

- **Filter Buttons- Event/Batch**

- **“Filter” by Date/Time (Event)**

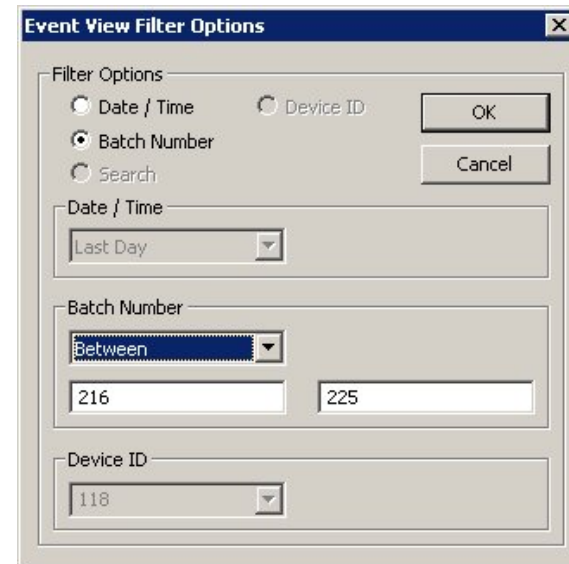
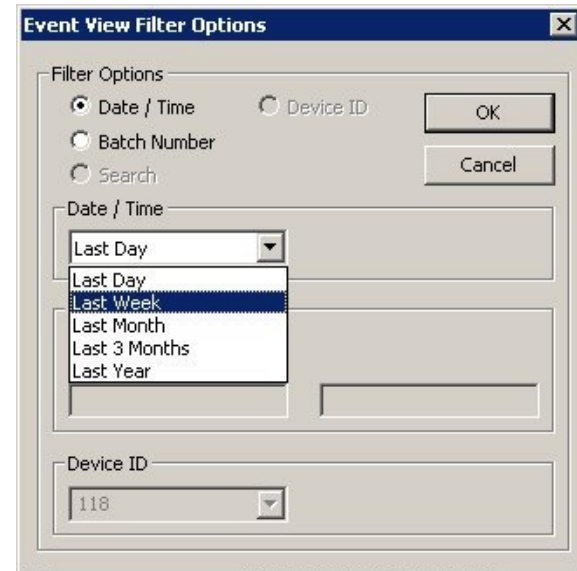
- ◆ Used to filter the list to avoid having unnecessary items included
- ◆ Allows selection of events for a selected time period (day, week, month, 3 months, year)

- **“Filter” by Event Type (Event)**

- ◆ Allows selection of events by type – All, System, Alarm, Digital, User, Marker, Batch

- **“Filter” by Batch Number (Batch)**

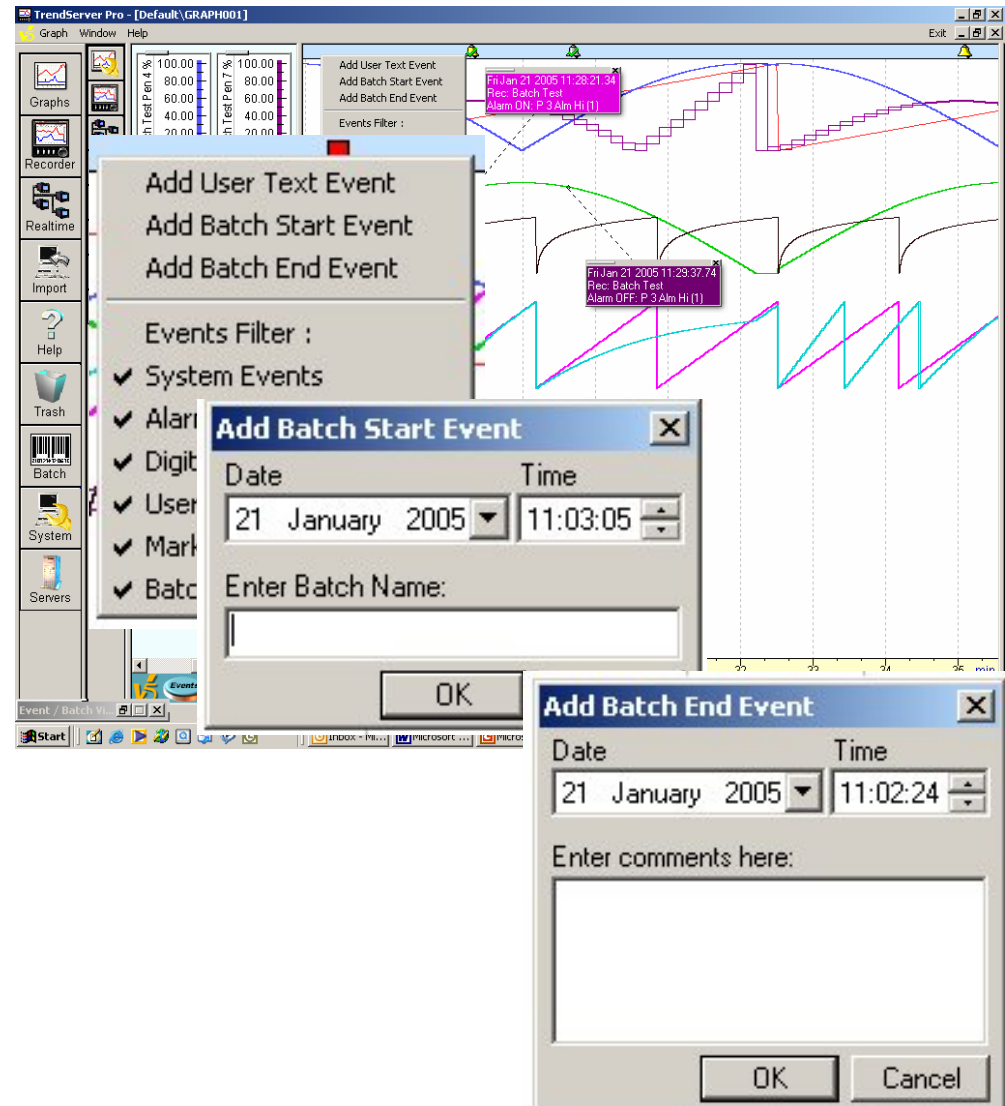
- ◆ Used to filter the list to avoid having unnecessary items included
- ◆ Can view “From” or “To” a Batch number
- ◆ Search is a Character search not a numeric search



- **Batch Language Keyword Entry in TMP**
  - **Batch Language Keywords are entered as User Text Messages**
  - **Batch Keywords can be added to recorded data after importing the recorded into TMP**
  - **Previous recorder data files that did not record tagging information need to have Batch Keywords added to do batch analysis and printing**
  - **New recorder data files not using Keyword information during data recording need to have Batch Keywords added to do batch analysis and printing**
  - **UMC800/HC900/VRX Recorders that do not support Event Markers need to have Batch Keywords entered to do batch analysis and printing**

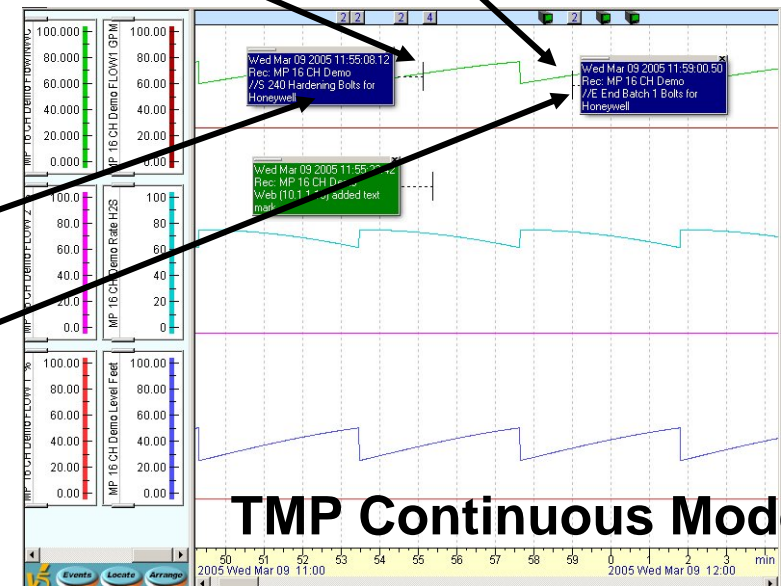
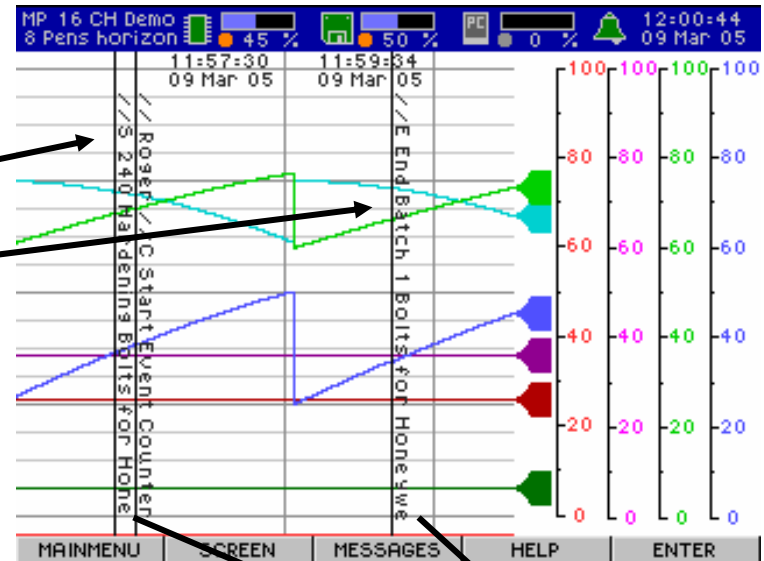
# Entering Messages at TMP

- **Adding Batch Language Tags in TMP (User Text)**
  - **Right Click on Event Bar**
  - **Select 'Add Batch Start Event'**
    - ◆ 'Add Batch Start Event' Pops up
    - ◆ Add Batch Name (text info)
    - ◆ Click OK, Message Appears
    - ◆ Save Graph for later recall
  - **Select 'Add Batch End Event'**
    - ◆ 'Add Batch End Event' Pops up
    - ◆ Add Batch Comments (text info)
    - ◆ Click OK, Message Appears
    - ◆ Save Graph for later recall



# Recorder Screen vs. TMP Recorder Graph

- Recorder uses messages to denote batch data
  - Start Batch Message //S 240 .....
  - End Batch Message //E End Batch 1 Bolts for Honeywell
  - Message was sent over Ethernet but could have been entered using thumbwheel or other method
- TMP Recorder Mode - shows messages with identifying batch keyword commands
  - Start Batch Message //S 240 .....
  - End Batch Message //E End Batch 1 Bolts for Honeywell



# TMP Batch – Batch Graphing

- **Batch Graphing**

- **Batch Event Icons**

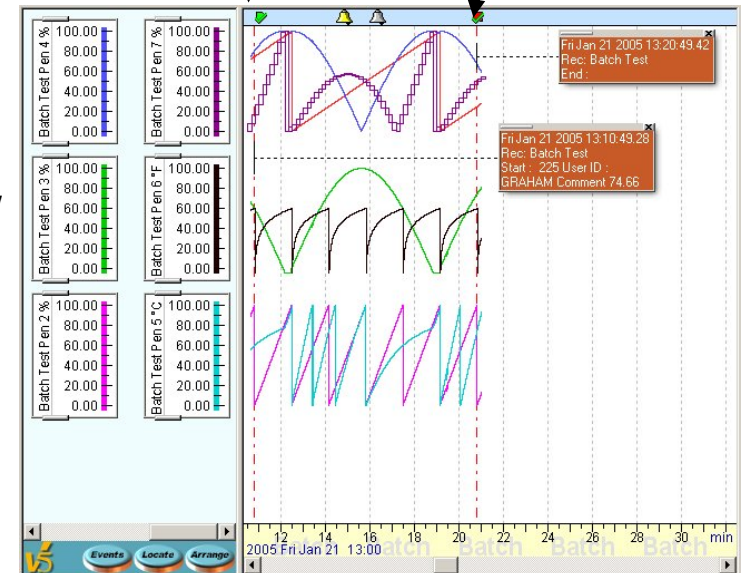
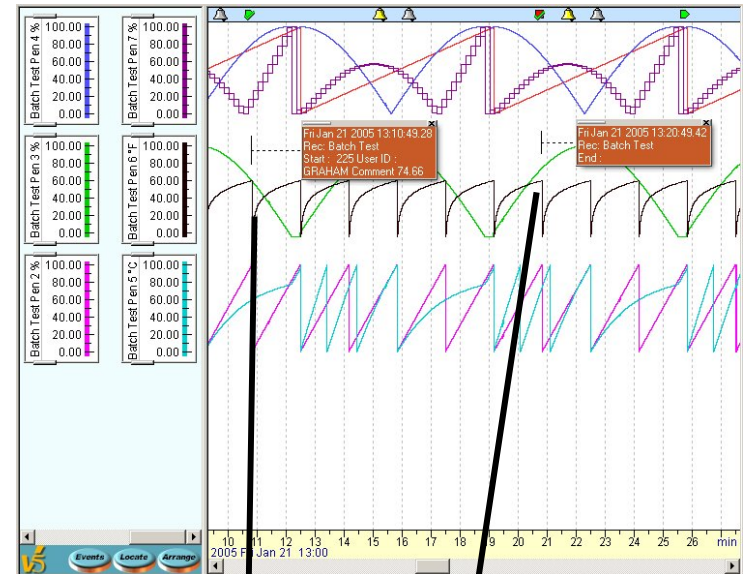
- ◆ Set of icons help determine batch actions that occurred
    - ◆ Start, Stop, Pause, Resume, Abort, Comment

- **Import of Batch data**

- ◆ TMP handles import of data across different media

- **Graphing (Opening a Batch)**

- ◆ Double click on Batch Event in TMP Event Trend Display to open just the Batch Graph
    - ◆ Drag selected batch onto graph window from Batch Event Window
    - ◆ Double click on batch number in Batch Event Window to show Batch Graph of that single batch
    - ◆ Only one batch can be open



# TMP Batch – Batch Printing & Exporting

- **Batch Printing**

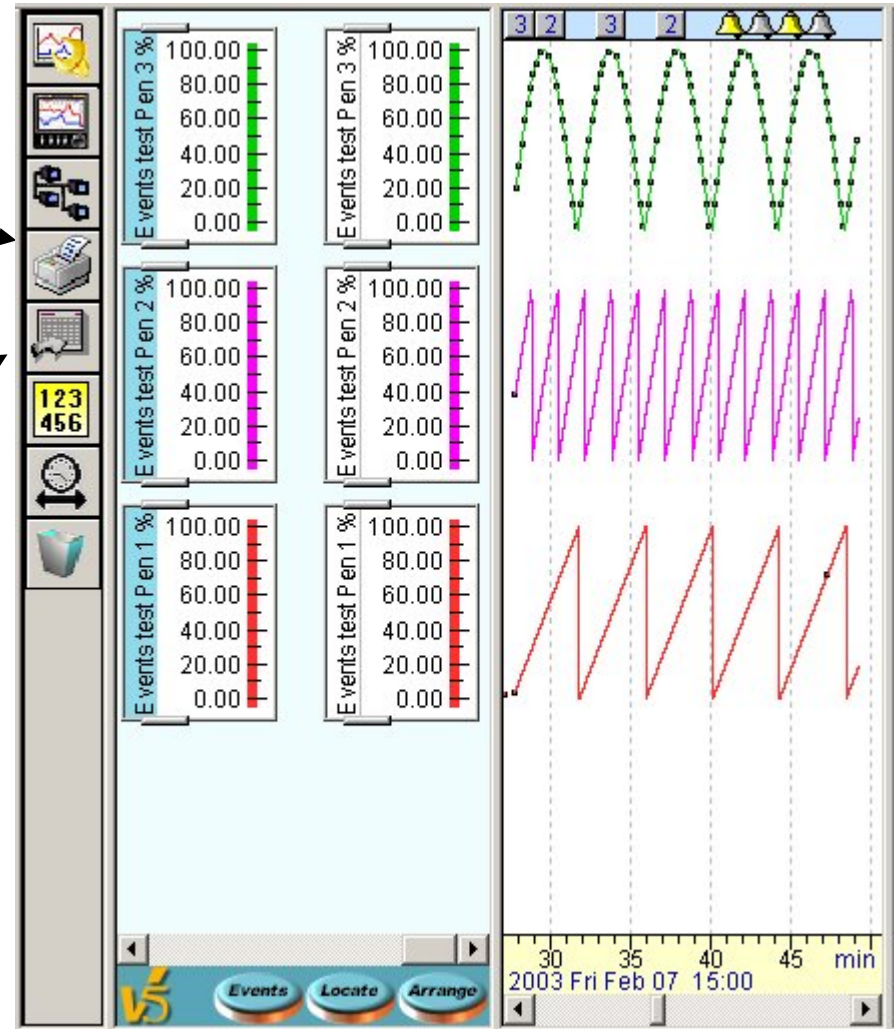
- **Printing Batch Graph**

- ◆ With Batch Open Click on Print Icon
    - ◆ Select Standard or Legend Print format
    - ◆ Prints Batch Graph

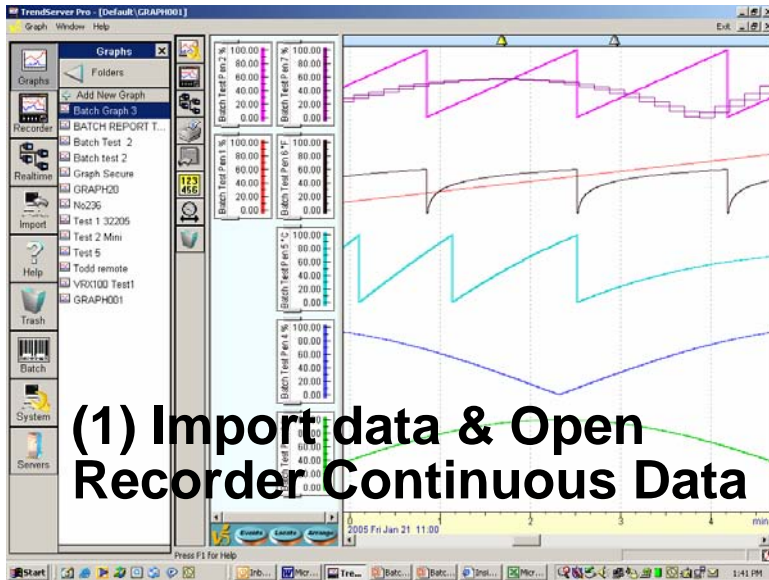
- **Batch Exporting**

- **Export Batch**

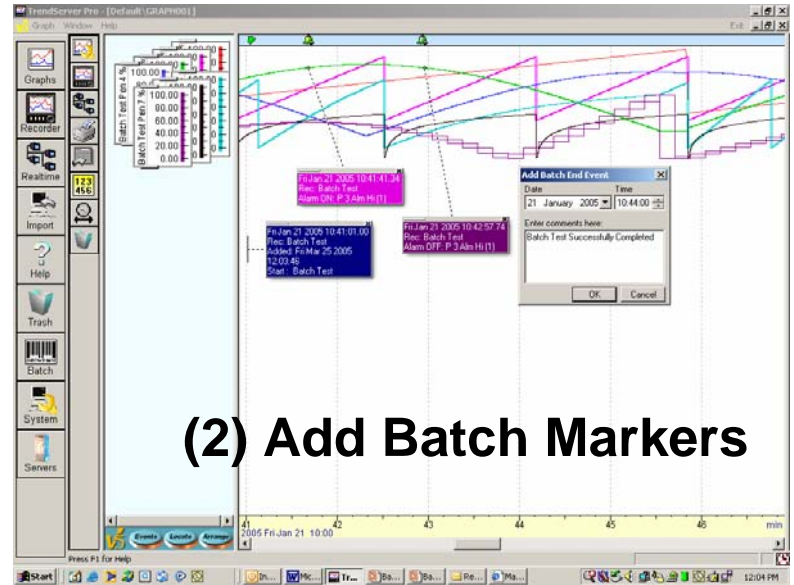
- ◆ With Batch Open Click on Export Icon to export the batch data
    - ◆ Set up Export parameters
    - ◆ Exports just the data in the batch with events



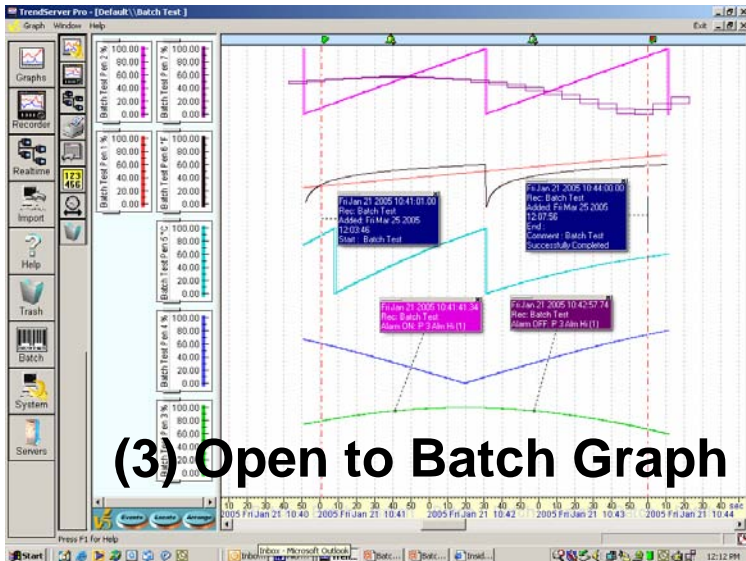
# TMP Batch – Creating & Graphing a Batch



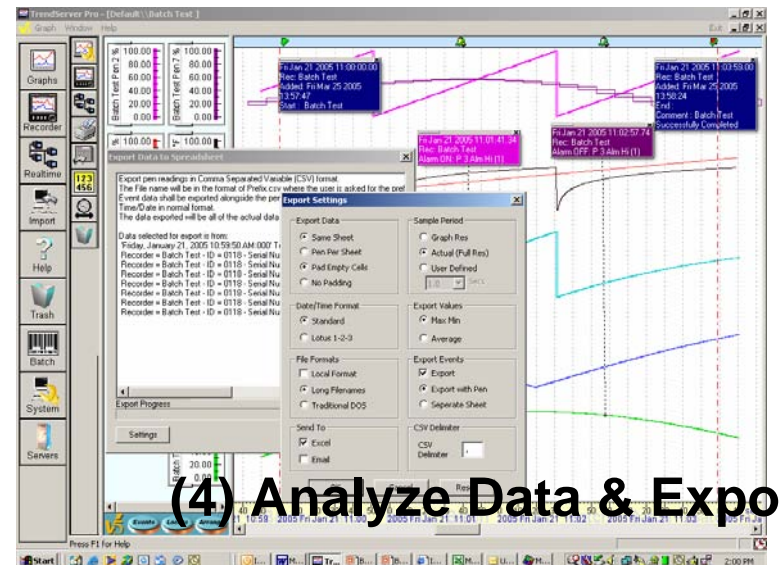
(1) Import data & Open Recorder Continuous Data



(2) Add Batch Markers



(3) Open to Batch Graph



(4) Analyze Data & Export

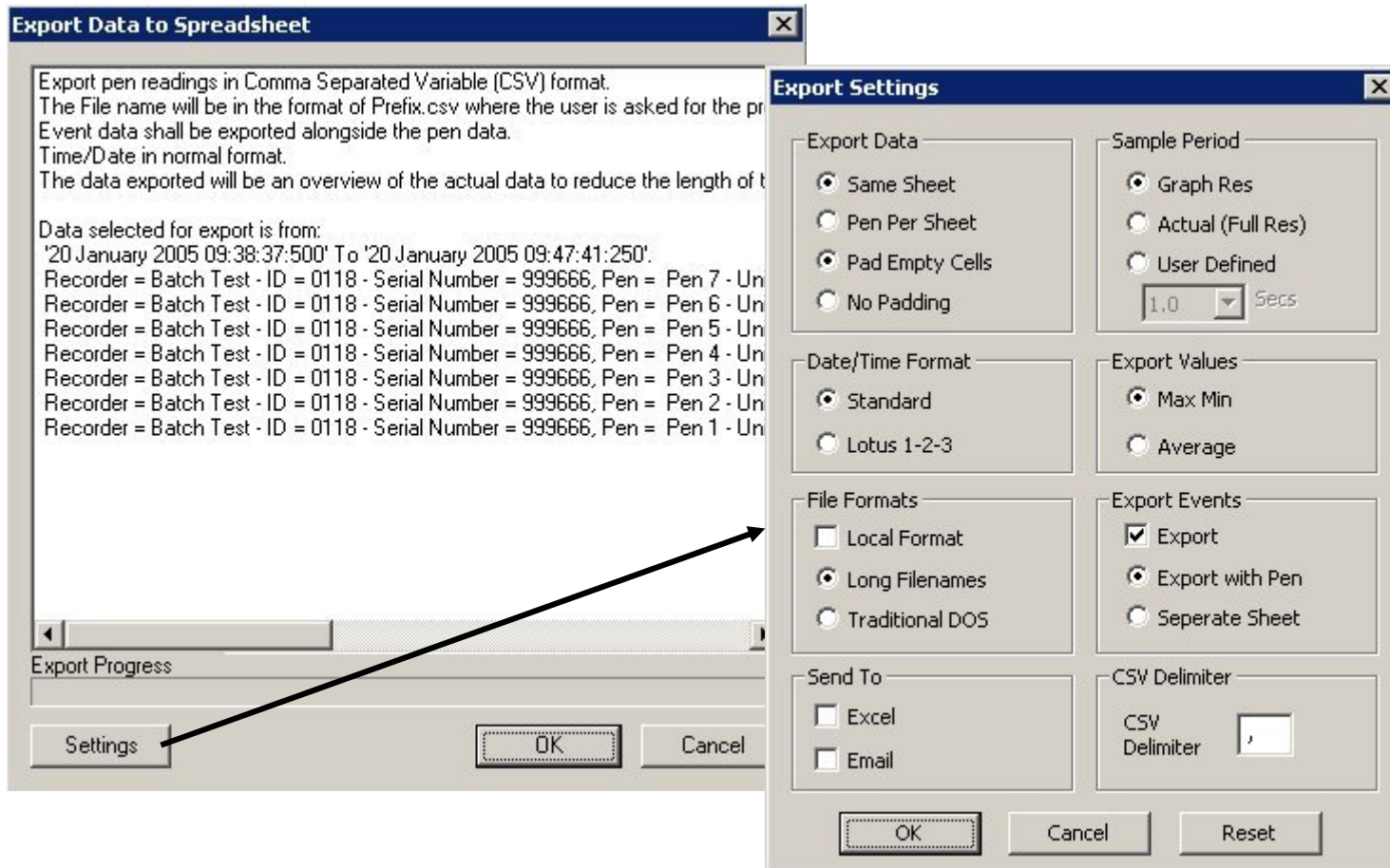
# TMP– Export Capability Improvements

- **Export Capabilities - Existing**
  - Data can still be exported to individual pages in Excel
  - Data is still exported as character strings
- **Export Capabilities - New**
  - Data can be exported to same spreadsheet page
  - Event Data can be selected for export with Pen data either in its own column or to a separate sheet (under Export Events)
  - Selection can be made to fill in blank spaces or not too
    - ◆ Filling in data is called “Padding”
    - ◆ Padding needed because different recording rates can be used
    - ◆ Fills in spaces with last valid reading when slower rate was used
  - **Can select whether to export Min/Max or Sample/Avg. data**
    - ◆ Min/Max gives two sets of reading for each time stamp
  - **Allows selection of the resolution of the data to be exported**
    - ◆ Graph Resolution
    - ◆ Actual or Full Resolution of data
    - ◆ User Defined Resolution (selected from a drop-down menu)

# TMP Export Screen

- **Export Screen in TMP**

- Previously data for each “Pen” exported independently
- Export all data together to single spreadsheet



# Example of Data Exported to Single Spreadsheet Honeywell

Batch

Start = 20 January 2005 09:40:50:190

Span = 0 Day(s) 0 Hour(s) 5 Min(s) 18 Sec(s) 80 mSec(s)

This data has been sampled using the sample period of the graph.

Blank cells are padded with the previous data value.

Recorder Name(s)

ID

Serial No.

Scale and Units

Pen No.

Pen Name

Date and Time

Elapsed Time

Batch Test

Batch Test

Batch Test

118

118

118

1E+06

999666

999666

0 - 100%

0 - 100°F

0 - 100°C

7

6

5

Pen 7

Pen 6

Pen 5

Max

Min

Max

Min

Max

Min

Event Marks

20 January 2005 09:40:51:190 0 Day(s) 0 Hour(s) 0 Min(s) -9 Sec(s)

53.79

52.9

59.45

57.94

79.28

67.39

20 January 2005 09:40:52:190 0 Day(s) 0 Hour(s) 0 Min(s) -8 Sec(s)

54.2

53.79

59.52

59.45

85.18

79.28

20 January 2005 09:40:53:190 0 Day(s) 0 Hour(s) 0 Min(s) -7 Sec(s)

54.2

53.79

59.58

59.52

85.18

79.28

20 January 2005 09:40:54:190 0 Day(s) 0 Hour(s) 0 Min(s) -6 Sec(s)

54.2

53.79

59.65

59.58

85.18

79.28

20 January 2005 09:40:55:190 0 Day(s) 0 Hour(s) 0 Min(s) -5 Sec(s)

54.2

53.79

59.72

59.65

85.18

79.28

20 January 2005 09:40:56:190 0 Day(s) 0 Hour(s) 0 Min(s) -4 Sec(s)

54.2

53.79

59.78

59.72

85.18

79.28

20 January 2005 09:40:57:190 0 Day(s) 0 Hour(s) 0 Min(s) -3 Sec(s)

54.2

53.79

59.85

59.78

85.18

79.28

20 January 2005 09:40:58:190 0 Day(s) 0 Hour(s) 0 Min(s) -2 Sec(s)

54.2

53.79

59.92

59.85

85.18

79.28

20 January 2005 09:40:59:190 0 Day(s) 0 Hour(s) 0 Min(s) -1 Sec(s)

54.2

53.79

59.98

59.92

85.18

79.28

20 January 2005 09:41:00:190 0 Day(s) 0 Hour(s) 0 Min(s)

54.2

53.79

59.99

-4

85.18

79.28

1 Start : 0 User ID: GR

20 January 2005 09:41:01:190 0 Day(s) 0 Hour(s) 0 Min(s) 1 Sec(s)

54.2

53.79

-1.41

-4

85.18

79.28

20 January 2005 09:41:02:190 0 Day(s) 0 Hour(s) 0 Min(s) 2 Sec(s)

54.58

54.2

4.35

-1.41

91.07

85.18

20 January 2005 09:41:03:190 0 Day(s) 0 Hour(s) 0 Min(s) 3 Sec(s)

54.58

54.2

8.34

4.35

91.07

85.18

20 January 2005 09:41:04:190 0 Day(s) 0 Hour(s) 0 Min(s) 4 Sec(s)

54.58

54.2

11.39

8.34

91.07

85.18

20 January 2005 09:41:05:190 0 Day(s) 0 Hour(s) 0 Min(s) 5 Sec(s)

54.58

54.2

13.85

11.39

91.07

85.18

20 January 2005 09:41:06:190 0 Day(s) 0 Hour(s) 0 Min(s) 6 Sec(s)

54.58

54.2

15.93

13.85

91.07

85.18

# TMP Batch – Ordering/Revision Levels

- **Part of the new version of TrendManager Pro V5**
  - Enabled when TrendManager Pro is “Unlocked”
  - Batch is supported in Version 5.0.4.0 & higher
  - Can be upgraded to have Batch functionality using P/N
  - Provide Part number and Unlock code of existing package
- **Event Markers can be added to the recorders using the Upgrade Model Selection Guide**
  - Event Markers help with creating Event Actions and adding Batch Language Tags to the recorder data files
  - Use 43-TV-16-06 MSG
  - Need Model #, Serial #, & Internal 15 digit Recorder Options Code number to aid in providing new options code

# Batch Processes – Some Applications

- **Heat Treatment/Metal Processing**
  - Annealing, Hardening, Tempering, Lot Reporting/Control
- **Pharmaceutical**
  - Batch Reactors, Sterilizers, Fermentation, Freezer Monitoring, Stability Chambers
- **Food Processing**
  - Sterilizers, Canning, Pasteurization, Cookers, Fermentation, Freeze Drying
- **Chemical**
  - Batch reactors, Mixing & Weighing Operations
- **Manufactured Goods**
  - Tire Presses, Autoclave, Final Product Test, QA Auditing

- **Batch Function**
  - Part of the TrendManager Pro software
  - It uses a Marker language allowing TMP to determine Batches
  - It works best when used with the Recorder Event Markers
  - It allows the data to be view in a Batch mode
    - ◆ View Batch Events and trend data
    - ◆ Create Batch Graphs
    - ◆ Export Batch Data
  - It does not impact the Recorder firmware
  - Existing data can be set up for Batch viewing
- **Export Capability Improved**
  - Ability to export to single or multiple spreadsheets
  - Greater flexibility to set resolution of exported data and type

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