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# ControlShop<sup>TM</sup>

Version 10/14/08

## FTLogger FTTrender

By FasTrak SoftWorks, Inc.

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**Contacting FasTrak SoftWorks, Inc.**

FasTrak SoftWorks, Inc.	262-238-8088
Technical Support	262-238-8088
Sales	262-238-8088
Web	<b><a href="http://www.fast-soft.com">http://www.fast-soft.com</a></b>
Email	<b><a href="mailto:support@fast-soft.com">support@fast-soft.com</a></b>
Mail	Attention: Technical Service FasTrak SoftWorks, Inc. PO Box 240065 Milwaukee, WI 53224-9003

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ControlShop™

# FTLogger

Version 3.04

By FasTrak SoftWorks, Inc.

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**Contacting FasTrak SoftWorks, Inc.**

FasTrak SoftWorks, Inc.	262-238-8088
Technical Support	262-238-8088
Sales	262-238-8088
Web	<a href="http://www.fast-soft.com">http://www.fast-soft.com</a>
Email	<a href="mailto:support@fast-soft.com">support@fast-soft.com</a>
Mail	Attention: Technical Service FasTrak SoftWorks, Inc. PO Box 240065 Milwaukee, WI 53224-9003

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# FTLogger Overview

FTLogger collects data from multiple PLC devices and records it in to selected database files.

FTLogger accesses the devices through FasTrak or OPC Data Access Version 2.0 communication servers. Addresses are entered in a spreadsheet format with up to 30,000 addresses per log window. Data is logged based on a specific time frame, deadband or event.



## Row and Column Based Databases

FTLogger can be configured to log data to a row based database, a column based database, or both.

A row based database record contains data about a single address. A column based database record contains data about all the addresses in the log sheet.

### A Table in a Row Based Database

<b>ADDRESS</b>	<b>TAG</b>	<b>VALUE</b>	<b>DATETIME</b>	<b>EVENTID</b>
V1	B1TEMP	99	12:00:00:000	Log1
V2	B1PRESS	402	12:00:00:000	Log1
V1	B1TEMP	105	12:00:10:000	Log2
V2	B1PRESS	83	12:00:10:000	Log2

- **ADDRESS:** The address of the logged point
- **TAG:** The tag (if any) for the address, as found in the documentation database.
- **VALUE:** The value read from the PLC.
- **DATETIME:** The date and time that the value was read from the PLC.
- **EVENTID:** The name of the event that triggered the logging of this point. The name is configured in the **Advanced** dialog.

### A Table in a Column Based Database

<b>EVENTID</b>	<b>DATETIME</b>	<b>V1</b>	<b>V2</b>	<b>...</b>	<b>Tag or Address</b>
Log1	12:00:00:000	99	402		
Log2	12:00:10:000	105	83		

- **EVENTID:** The name of the event that triggered the logging of this point. The name is configured in the **Advanced** dialog.
- **DATETIME:** The date and time that the value was read from the PLC.
- **Tag or Address:** The table includes a column for each address in the log sheet. The tag (if any) for the address, as found in the documentation database, is used as the column name. If there is no tag, the address is used as the column name. The value read from the PLC is stored in this column.


In either type of database, a table is build for each device. The name of the device is the name of the table.

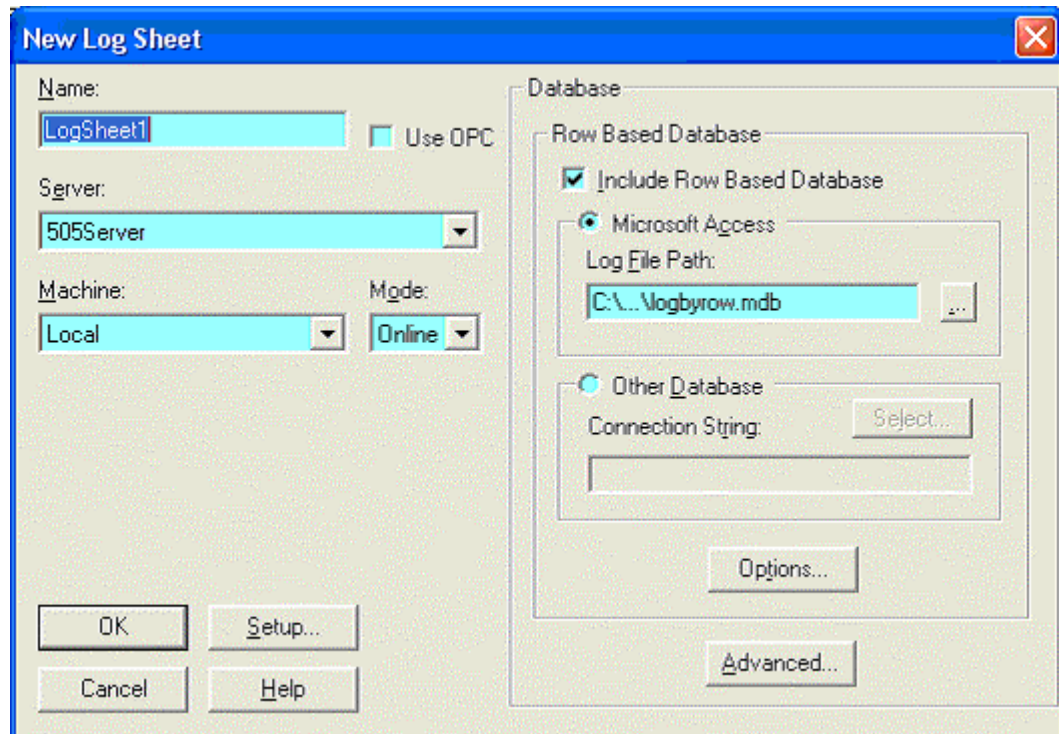


# Creating a Log Sheet

## Creating a Log Sheet

To create a new Log Sheet:

1. Select the **File/New** menu option or click the toolbar button.  The **New Log Sheet** dialog appears.



2. Configure the following options:
  - **Name:** Enter a unique name for the new Log Sheet.
  - **Use OPC:** Select to choose an OPC server listed in the local registry from the Server drop-down menu.
  - **Server:** Select the communication server. The list shows servers that are registered on the PC. When **Use OPC** is checked, this will display all the OPC servers that are listed in the local registry. When **Use OPC** is not checked, this will display all the FasTrak servers that are listed in the local registry.
  - **Mode:** Select Online to start communicating with the PLC as soon as addresses are entered. Select Offline to develop the log sheet without immediately opening communications.
  - **Machine:** Select a PC where the communication server is located. In order to use a server, that server must be registered on the local machine, even if the server is located on another machine. If you are using Windows XP and wish to use a remote machine for your server, additional steps must be performed first. (See **Using Windows XP and a Remote Machine for Your Server** for details.)
  - **Setup:** Click the **Setup** button to access the **Log Window Setup** dialog.
  - **Database:** Use these fields to configure the database where the logged data will be stored.
    - **Include Row Based Database:** A row based database organizes the data as it appears in the log sheet. Check the **Include Row Based Database** box to activate the row based database functionality.

- **Microsoft Access:** To build the row based database in **Microsoft Access** format, select the **Microsoft Access** option button and set the **Log File Path** to the name of the Access (.MDB) file. If the file does not exist, it will be created.
- **Other Database:** To build the row based database in **SQL**, select the **Other Database** option button and click the **Select** button to configure the **Data Link Properties**. The database file must exist before you can select it.
- **Options:** Click the **Options** button to configure the **Row Based Database** options. These options are available only with the full FTLogger package.
- **Advanced:** Click the **Advanced** button to configure the column based database and the event ID name. The column based database functionality is available only with the full FTLogger product. (See **Event ID and Column Based Database Options** for details.)

## Using Windows XP and a Remote Machine for Your Server

If you are using Windows XP and wish to use a remote machine for your server, there are additional steps that must be performed first.

Change the **Force Guest** setting to be **No** in XP as follows:

1. Launch the **Group Policy Editor** (gpedit.msc).
2. Navigate to **Local Computer Policy | Computer Configuration | Windows Settings | Security Settings | Local Policies | Security Options**.
3. Select **Network Access: Sharing and Security model for local accounts**.
4. Set that to be **Classic** and restart the machine, so that same-local accounts (a.k.a. fall-back authentication) will work.

Additionally, if you are using **XP Service Pack 2** complete the following steps.

1. In the **Control Panel**, double click on **Windows Firewall**.
2. In the **General** tab, disable **Windows Firewall** or follow steps 3 through 4.
3. If unable to perform step 2, add an exception for TCP port 135 under the **Exceptions** tab.
4. Add an exception for FTLogger.exe.

Refer to the white paper **Using OPC via DCOM with Microsoft Windows XP Service Pack 2** available from the Download section of <http://www.opcfoundation.org/> for additional information.


## Row Based Database Options

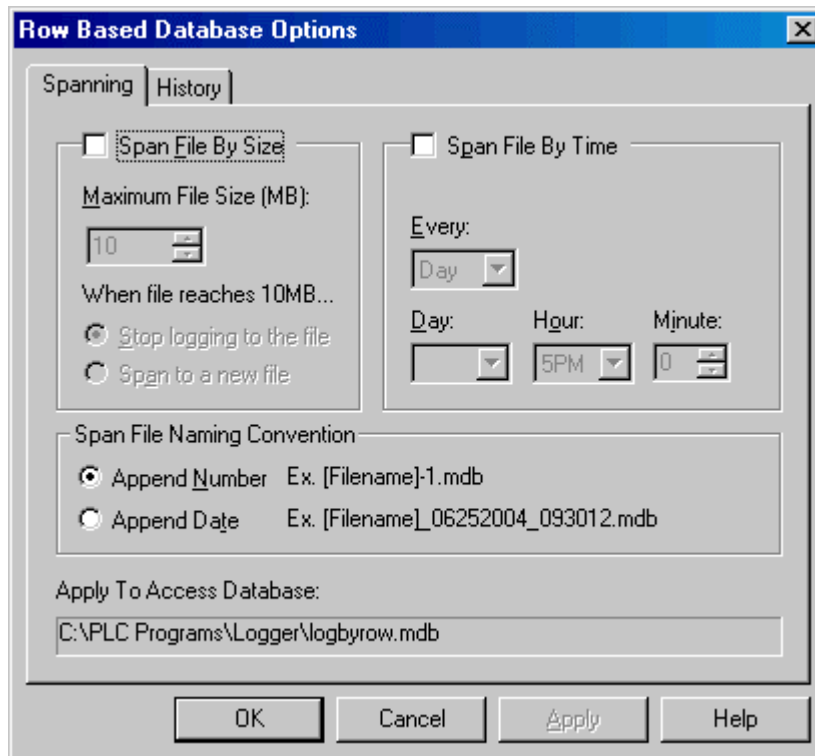
### Row Based Database Options: Spanning

**Spanning** refers to logging data to a series of files, rather than one large file. When the spanning event occurs (either when the file size limit is reached, or at a scheduled time) the current file is closed, a new file is created, and subsequent data points are recorded in the new file.

**NOTE:** During the spanning process, data is not logged for a fraction of a second. Data may be lost.

To configure the spanning options for a **Row Based Database**:

1. Open either the **New Log Sheet** dialog or the **Log Data** tab of the **Log Window Setup** dialog. To open the New Log Sheet dialog, either select the **File/New** menu option or click the toolbar button (  ). To open the **Log Data** tab, select the **Setup/Log Window** menu option and then click the **Log Data** tab.
2. Click the **Options** button.



3. Configure the following options:
  - **Span by File Size:** Limit the size of the database file.
    - **Maximum File Sizes:** Specify the file size limit in megabytes. The allowable range is 1 to 200 megabytes.
    - **When file reaches:** When the file reaches the limit, either **Stop logging to the file and go offline**, or close the file and **Span to a new file**.
  - **Span by Time:** Create a new database file for each specified time period.
    - **Every:** Select the time period: **Month**, **Week**, **Day**, or **Hour**.
    - **Day, Hour, Minute:** Select the cut-off day and time. The options vary depending on the time period. For **Month**, the options for **Day** are **1-28** and **Last**. For **Week**, the options for **Day** are **Sun - Sat**. For **Day**, only the **Hour** and **Minute** can be set. For **Hour**, only the **Minute** can be set.




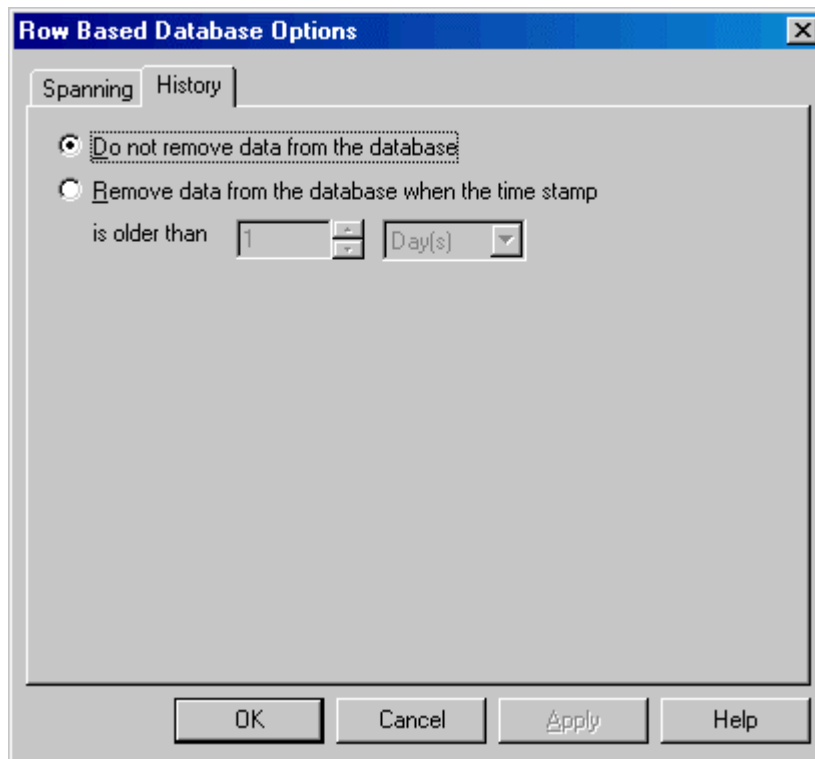
- **Span File Naming Convention:** Specify whether the files are identified by number or by time.

## Row Based Database Options: History

The **History** options control deletion of old data. Old data can be deleted automatically.

To configure the deletion of old data:

1. Open either the **New Log Sheet** dialog or the **Log Data** tab of the **Log Window Setup** dialog. To open the New Log Sheet dialog, either select the **File/New** menu option or click the toolbar button (  ). To open the **Log Data** tab, select the **Setup/Log Window** menu option and then click the **Log Data** tab.
2. Click the **Options** button.
3. Click the **History** tab.



4. Configure the following options:
  - **Do not remove data from the database:** Disable the automatic deletion functionality.
  - **Remove data from the database when the time stamp is older than:** Delete old data. Specify the age of the data to be deleted in the number and time unit fields.

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**NOTE:** Even though data is removed from the database, the file size is not reduced until FTLogger disconnects and then reconnects.

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## Advanced (Event ID and Column Based Database Options)

The **Advanced** options specify the event ID name and the logging of data to a **column based database**.

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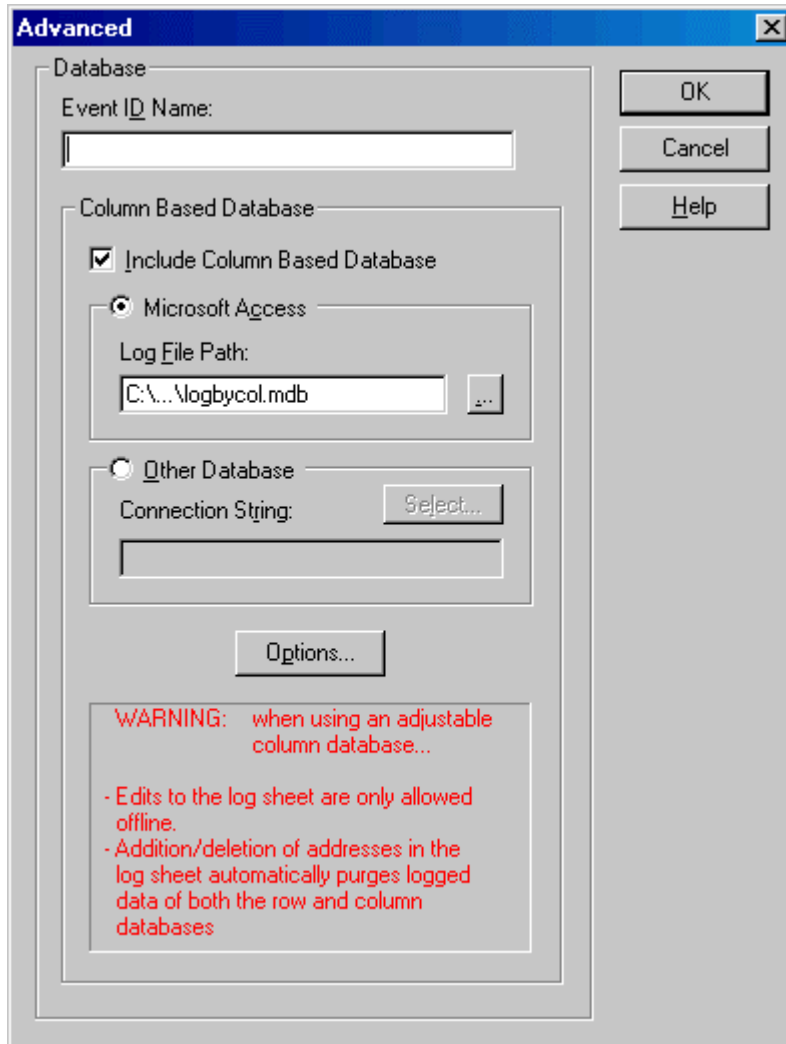
**NOTE:** There are several differences in the operation of FTLogger when logging to a **Column Based Database**:

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1. Edits can only occur offline.
2. Inserting, appending, pasting, or filling addresses causes both the column database and the row database to be flushed of its data. This is done in order to keep the databases consistent, as these inserted addresses have no history in the current database. The row database is forced to be flushed so that the **Event ID** numbers of both databases remains consistent. The **Event ID** numbers are reset to 1.
3. Deletion of an address in a log sheet causes the column of the database to be deleted. This also causes the deletion of rows that refer to an address in the row database when using a column database.

To specify the event ID name and/or configure the column based database:

1. Open either the **New Log Sheet** dialog or the **Log Data** tab of the **Log Window Setup** dialog. To open the **New Log Sheet** dialog, either select the **File/New** menu option or click the toolbar button (□). To open the **Log Data** tab, select the **Setup/Log Window** menu option and then click the **Log Data** tab.
2. Click the **Advanced** button. The **Advanced** dialog appears.



3. Configure the following options:
  - **Event ID Name:** The **Event ID Name** is a tag up to 32 characters that identifies a batch of data that is logged to the database. A batch name makes it easier to identify and separate data in the database. A number is appended to the name, starting with 1, and incrementing with each log.
  - **Include Column Based Database:** Check this box to include logging of data to a column based database. For FasTrak servers, each device in the log sheet will have its own table in the column database. For OPC servers, one table will exist per log sheet. The table name will match the logsheet name. Data can be logged to a column based database, a row based database, or both.
    - **Microsoft Access:** To build the row based database in **Microsoft Access** format, select the **Microsoft Access** option button and set the **Log File Path** to the name of the Access (.MDB) file. If the file does not exist, it will be created.
    - **Other Database:** To build the row based database in a format other than Microsoft Access (currently, **SQL** is the only option) select the **Other Database** option button and click the **Select** button to configure the **Data Link Properties**. The **SQL** database must exist prior to the selection.
    - **Options:** Click the **Options** button to configure the **Column Based Database** options.

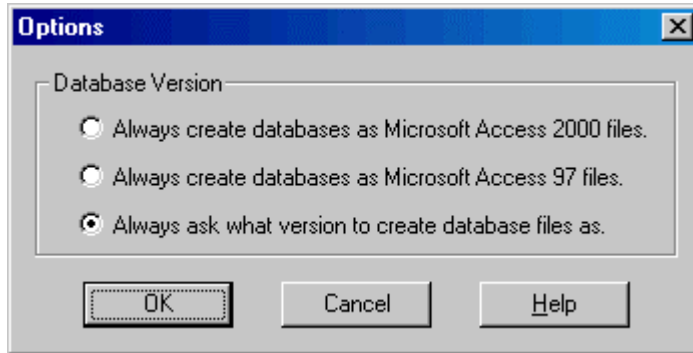


## Database Options

The **Options** dialog is used to control which database version (**Microsoft Access 97** or **Access 2000**) format will be used when creating new log database files.

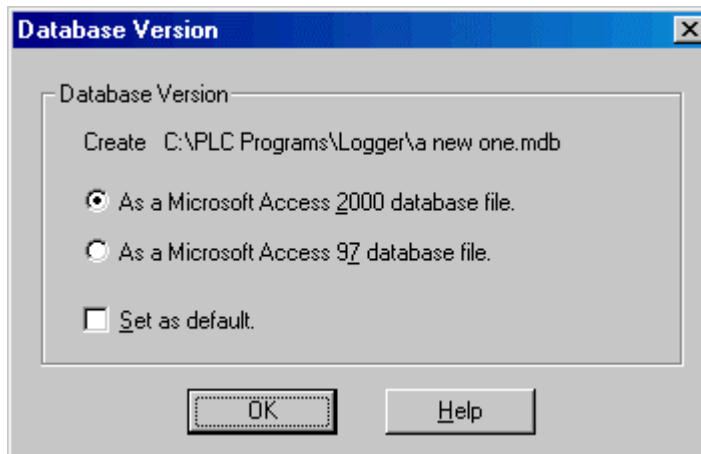
Span files are created in the same format as the base file.

To access the dialog, select the **Setup/Options** menu button. The **Options** dialog appears.



Select the option button for the desired version.

When FTLogger creates a log database file with the **Always Ask** option selected, the following dialog appears:



The **Set as default** check box modifies the setting of the **Options** dialog so that this dialog will not appear on future creations of a database.


## Column Based Database Options

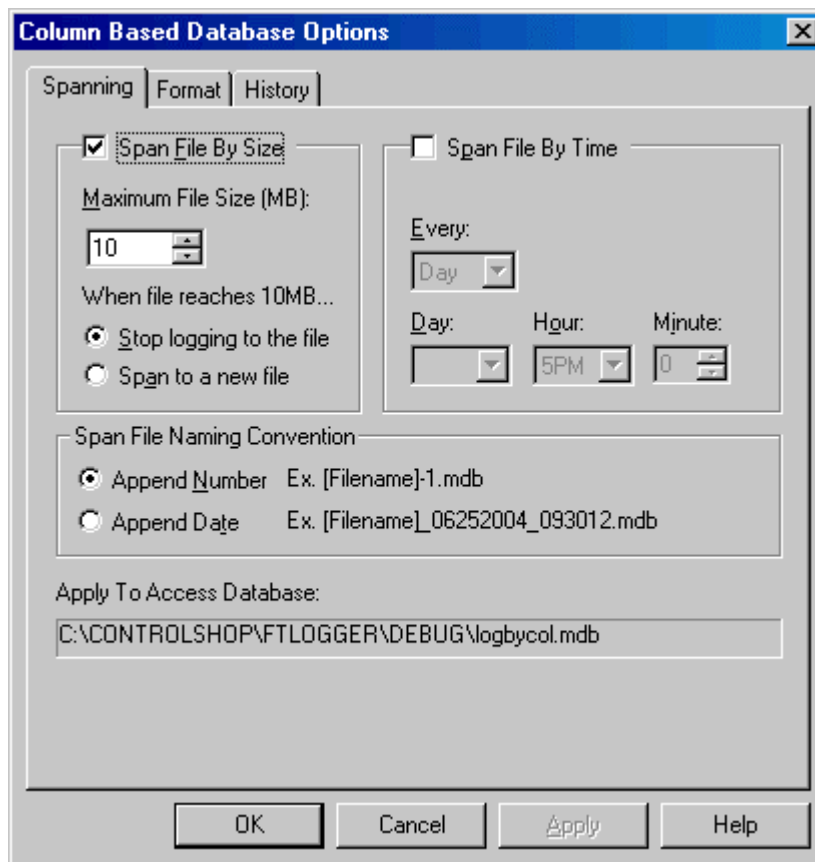
### Column Based Database Options: Spanning

**Spanning** refers to logging data to a series of files, rather than one large file. When the spanning event occurs (either when the file size limit is reached, or at a scheduled time) the current file is closed, a new file is created, and subsequent data points are recorded in the new file.

**NOTE:** During the spanning process, data is not logged for a fraction of a second. Data may be lost.

To configure the spanning options for a **column based database**:

1. Open either the **New Log Sheet** dialog or the **Log Data** tab of the **Log Window Setup** dialog. To open the **New Log Sheet** dialog, either select the **File/New** menu option or click the toolbar button (  ). To open the **Log Data** tab, select the **Setup/Log Window** menu option and then click the **Log Data** tab.
2. Click the **Advanced** button to access the Advanced dialog.
3. Check the **Include Column Based Database** box.
4. Click the **Options** button. The **Spanning** tab is on top when the dialog opens.



5. Configure the following options:
  - **Span File By Size:** Limit the size of the database file.
    - **Maximum File Sizes:** Specify the file size limit in megabytes. The allowable range is 1 to 200 megabytes.
    - **When file reaches:** When the file reaches the limit, either **Stop logging to the file and go offline**, or close the file and **Span to a new file**.


- **Span File By Time:** Create a new database file for each specified time period.
  - **Every:** Select the time period: **Month, Week, Day, or Hour.**
  - **Day, Hour, Minute:** Select the cut-off day and time. The options vary depending on the time period. For **Month**, the options for **Day** are **1-28** and **Last**. For **Week**, the options for **Day** are **Sun - Sat**. For **Day**, only the **Hour** and **Minute** can be set. For **Hour**, only the **Minute** can be set.
- **Span File Naming Convention:** Specify whether the files are identified by number or by time.

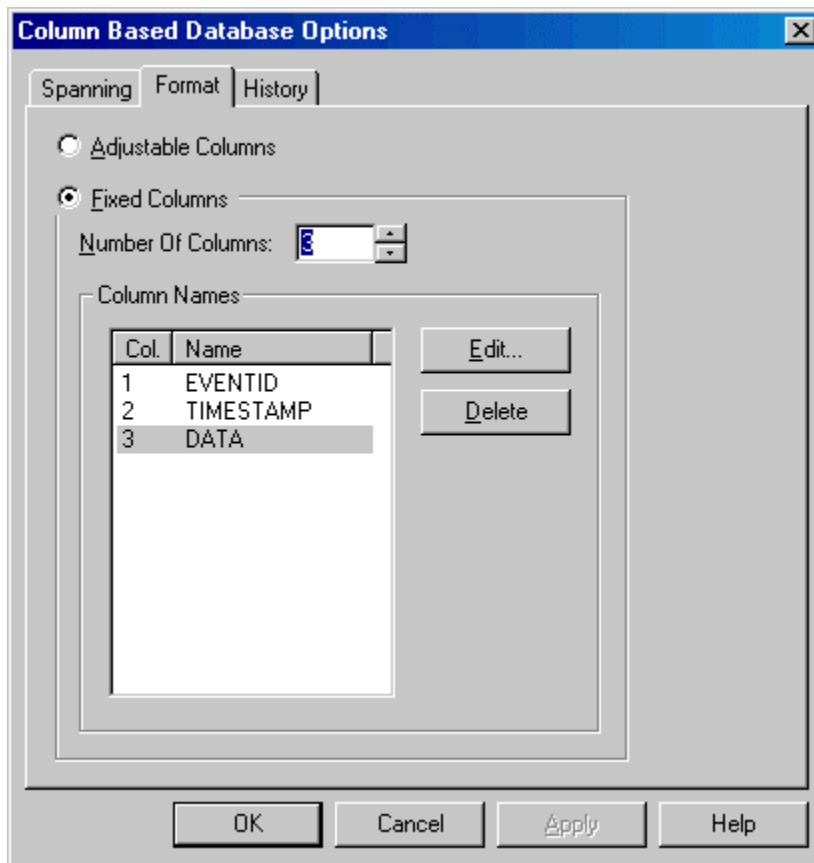


## Column Based Database Options: Format

The **Format** options control the columns in the column-based database.

To configure the database format:

1. Open either the **New Log Sheet** dialog or the **Log Data** tab of the **Log Window Setup** dialog. To open the **New Log Sheet** dialog, either select the **File/New** menu option or click the toolbar button (  ). To open the **Log Data** tab, select the **Setup/Log Window** menu option and then click the **Log Data** tab.
2. Click the **Advanced** button to access the Advanced dialog.
3. Check the **Include Column Based Database** box.
4. Click the **Options** button.
5. Click the **Format** tab.



6. Configure the following options:
  - **Adjustable Columns:** The database columns will be based on the log sheet.
  - **Fixed Columns:** Configure the columns using the following fields.
  - **Number of Columns:** Set the number of columns in the database table. The number cannot be less than 3 - one for the event ID, one for the timestamp, and a minimum of one data value.
  - **Column Names:** To set the names of one or more columns, highlight the columns in the list and click the **Edit** button to access the **Edit Column Name** dialog. To delete columns, highlight the columns to be deleted and click the **Delete** button. The **EVENTID** and **TIMESTAMP** columns cannot be deleted or edited.

### *Adjustable Columns*

With **Adjustable Columns**, the database table has the following columns:

1. **EVENTID**
2. **TIMESTAMP**
3. **(and up)** The tag of the address from which the data was read, if there is a tag. Otherwise, the address. The addresses appear in the log sheet order.

The **Adjustable Columns** option is convenient, but there are several limitations:

- Edits can only occur offline.
- Inserting, appending, pasting, or filling addresses (in short, any action that causes an increase in the number of addresses in the log sheet) causes both the column based database and row database (if any) to be flushed of data. The **Event ID** numbers are reset to 1.
- Deleting an address in the log sheet causes the column of the column based database to be dropped (deleted). This also causes the deletion of rows that refer to the deleted address in the row based database (if any).
- Only one log sheet can log data to a column based database with adjustable columns.

#### *Fixed Columns*

With the **Fixed Columns** option, the database table has the following columns:

1. **EVENTID**
2. **TIMESTAMP**
3. **(and up)** The data read from the PLCs, with user-assigned column names.

Data is placed in the columns in log sheet order: the first address in the log sheet is placed in column 3, the second in column 4, and so on. The number of columns may not match the number of addresses in the log sheet. If there are more columns than addresses, the extra data fields will be left blank. If there are more addresses than fields, data from the excess addresses wraps to the next record, which will have the same event ID and timestamp.

For example, if the table has 5 fixed columns, but the log sheet has only 3 addresses, the table will look like this:

EVENTID	TIMESTAMP	Data1	Data2	Data3	Data4	Data5
Batch1	12:00:01	1	2	3		
Batch2	12:00:02	1	2	3		

But if the log sheet has 7 addresses, the table will look like this:

EVENTID	TIMESTAMP	Data1	Data2	Data3	Data4	Data5
Batch1	12:00:01	1	2	3	4	5
Batch1	12:00:01	6	7			
Batch2	12:00:02	1	2	3	4	5
Batch2	12:00:02	6	7			


Data from more than one log sheet can be collected in a **Fixed Column** database.

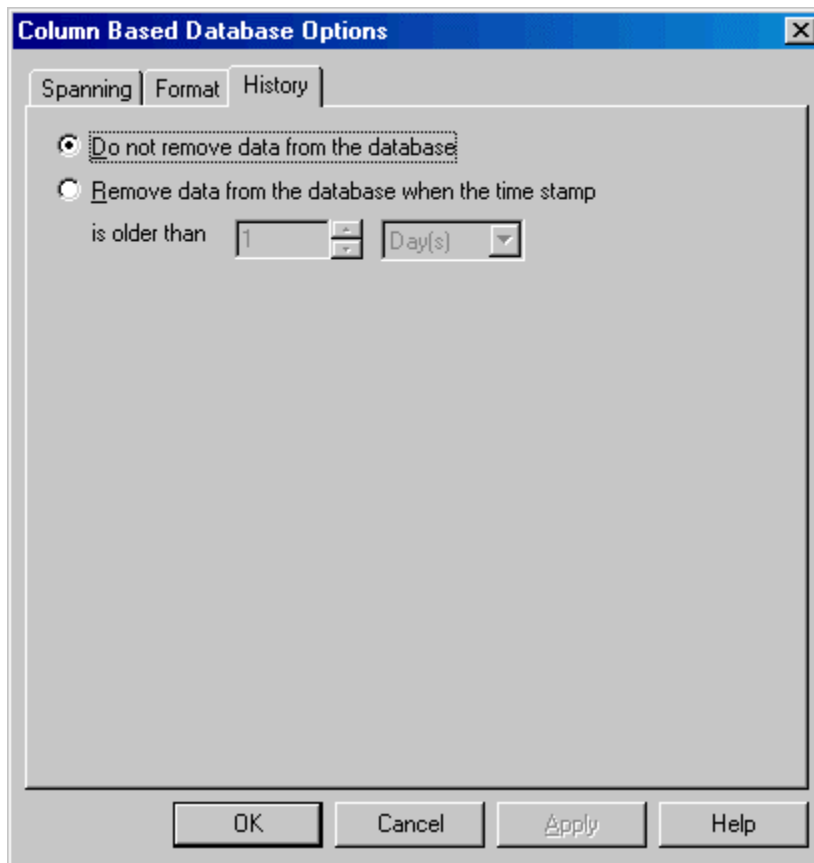
Addresses can be added to, or deleted from, the log sheet without loss of existing data.

## Column Based Database Options: History

The **History** options control deletion of old data. Old data can be deleted automatically.

To configure the deletion of old data:

1. Open either the **New Log Sheet** dialog or the **Log Data** tab of the **Log Window Setup** dialog. To open the **New Log Sheet** dialog, either select the **File/New** menu option or click the toolbar button (  ). To open the **Log Data** tab, select the **Setup/Log Window** menu option and then click the **Log Data** tab.
2. Click the **Advanced** button to access the Advanced dialog.
3. Check the **Include Column Based Database** box.
4. Click the **Options** button.
5. Click the **History** tab.



6. Configure the following options:
  - **Do not remove data from the database:** Disable the automatic deletion functionality.
  - **Remove data from the database when the time stamp is older than:** Delete old data. Specify the age of the data to be deleted in the number and time unit fields.

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
**NOTE:** Even though data is removed from the database, the file size is not reduced until FTLogger disconnects and then reconnects.

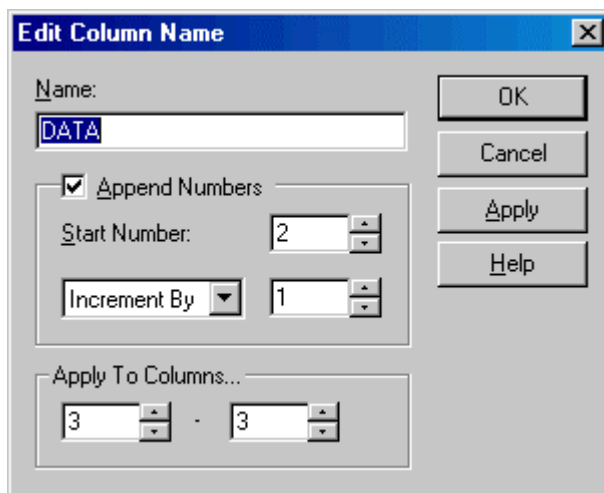
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## Edit Column Name

Use this dialog to edit the names of columns in a column based database.

To access this dialog:

1. Open either the **New Log Sheet** dialog or the **Log Data** tab of the **Log Window Setup** dialog. To open the **New Log Sheet** dialog, either select the **File/New** menu option or click the toolbar button (  ). To open the **Log Data** tab, select the **Setup/Log Window** menu option and then click the **Log Data** tab.
2. Click the **Advanced** button to access the Advanced dialog.
3. Check the **Include Column Based Database** box.
4. Click the **Options** button.
5. Click the **Format** tab.
6. Highlight the columns to be edited.
7. Click the **Edit** button. The **Edit Column Name** dialog appears.



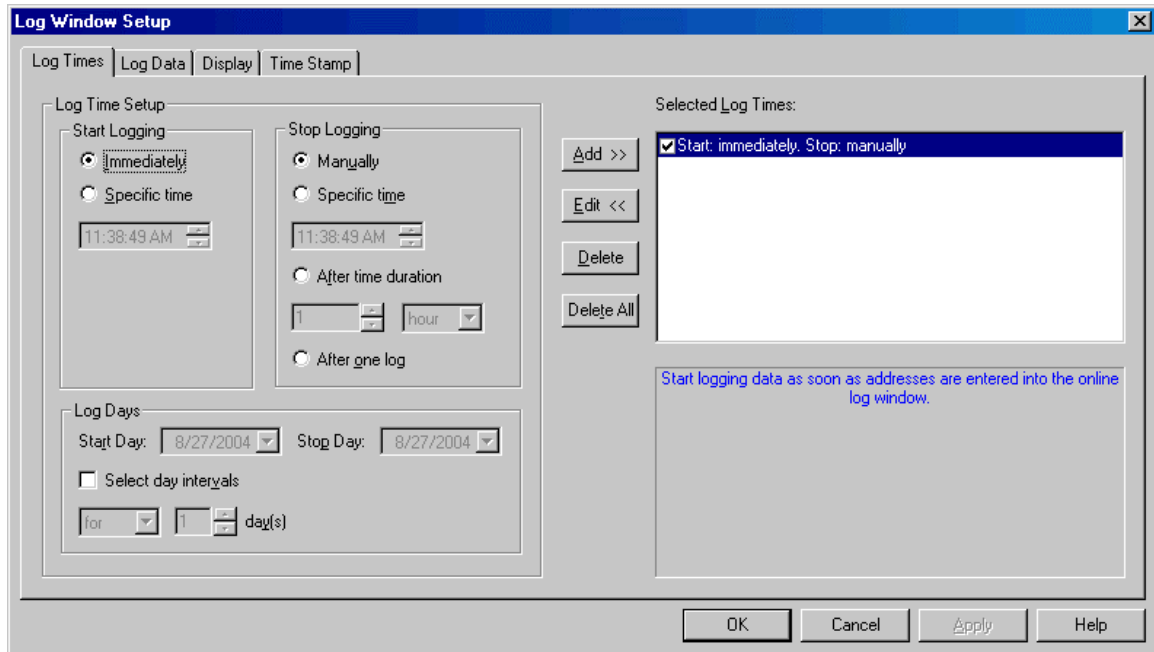
- **Name:** Edit the column name.
- **Append Numbers:** To rename several columns, with a base name followed by a number, enter the base name in the **Name** field, check this box, and specify the details of the number sequence using the following fields.
- **Start Number:** The first number of the sequence.
- **Increment By:** Select either **Increment By** or **Decrement By** to control the direction of the sequence. Set the number to the step from one column to the next.
- **Apply To Columns:** Select the columns where the sequence will be located. The number in the second field must be greater than or equal to the number in the first.

# Log Window Setup

## Log Window Setup

Use the **Log Window Setup** dialog to configure options for the log window as a whole.

To access the **Log Window Setup** dialog, select the **Setup/Log Window** menu option. The **Log Window Setup** dialog appears.



The **Log Window Setup** dialog consists of the following tabs:

- **Log Times:** Configure the times when data will be logged.
- **Log Data:** Configure how, within the log times, data will be read and stored. Configure the databases (row, column, or both) where it will be stored.
- **Display:** Configure the display of the log sheet.
- **Time Stamp:** Select the formats for the date and time.

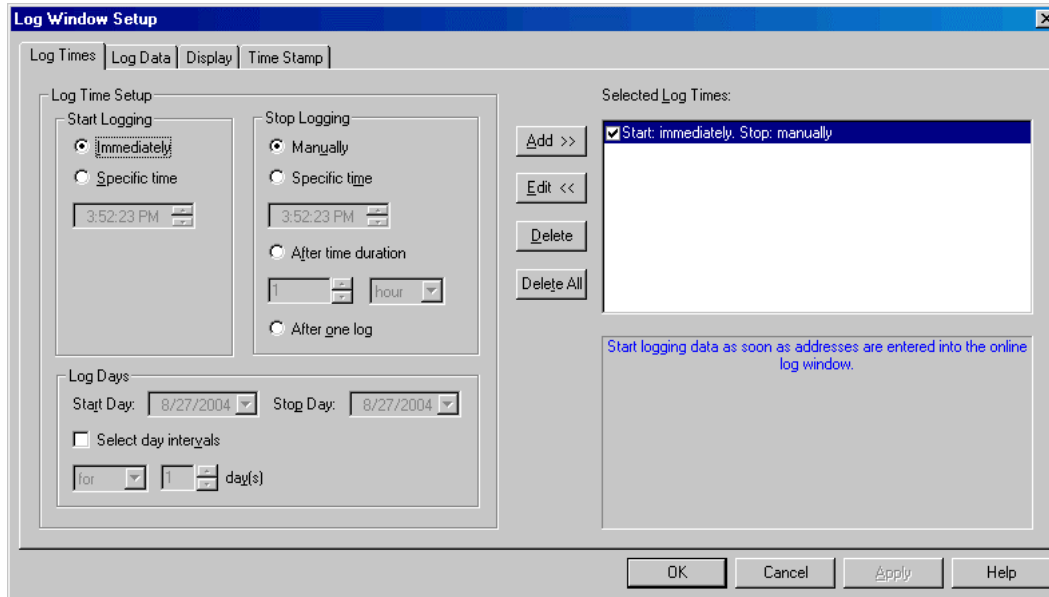
## Log Times

Use the **Log Times** tab to configure the times at which FTLogger will log data.

You can specify a list of up to 256 non-overlapping start and stop times.

To access the **Log Times** tab:

1. Select the **Setup/Log Window** menu option.
2. The **Log Times** tab is the default tab.



- **Log Time Setup:** Specify when logging is to start and stop.
  - **Start Logging:** Select the **Immediately** option button to start logging as soon as FTLogger is opened and data points are configured, or select the **Specific Time** and set the time field to start logging at that time.
  - **Stop Logging:** Select the **Manually** option button to continue logging until a user intervenes. Select the **Specific Time** option button, and set the time field, to stop logging at a particular time. Select the **After time duration** option button and use the number and time unit fields to log for a specified length of time. Select the **After one log** option button to log a single reading of each data point.
- **Log Days:** Specify days on which logging is to occur. The **Start Logging** option must be set to a **Specific time** in order to specify log days. In order to set a **Stop Day**, the **Stop Logging** option must be set to a **Specific time**.
  - **Start Day, Stop Day:** Select the first and last day to log from the start time to the stop time.
  - **Select day intervals:** Check this box to specify that logging is to occur for a specific number of days, or log one interval every so many days. Select **For** or **Every** from the drop-down list, and set the number of days.
- **Selected Log Times:** This is a list of log times. Specify a log time by setting the options listed above, and clicking the **Add** button. Edit an existing time by clicking the time in the list and clicking the **Edit** button. Delete a time by clicking the time in the list and clicking the **Delete** button. Clear the list by clicking the **Delete All** button. The log times must not overlap.

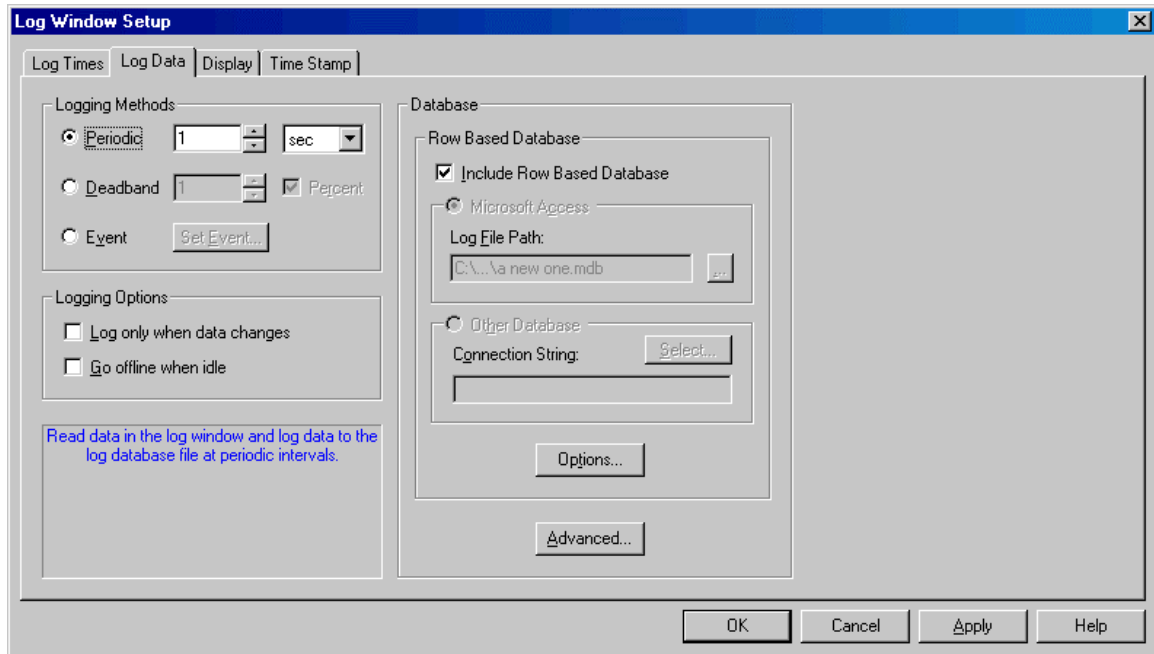
## Log Data

### Log Window Setup: Log Data

Use the **Log Data** tab to configure how, within the log times, data will read and be stored, and the databases (row, column, or both) where it will be stored.

To access the Log Data tab:

1. Select the **Setup/Log Window** menu option.
2. Click the **Log Data** tab.



- **Logging Methods:** Specify how, within the log times specified on the **Log Times** tab, each point is to be read and logged.
  - **Periodic:** Updates the cache in time intervals specified in the edit box. The format is **msec**, **sec**, **min**, and **hour**. Set the value to 0 to update as quickly as possible. The speed at which the data will be read and updated depends on the communication type and the number of addresses in the log sheet. The maximum value is 24 hours.
  - **Deadband:** Data variation value or a percentage of a data variation. Compares each data value from the addresses in the log window with the current value. Only if a particular value fluctuates by the deadband amount (+ or -) will FTLogger log the data.
  - **Event:** When a specified event is true, it will force a database update. Click the **Set Event** button to specify the event. See **Set Event** for details.
- **Logging Options:**
  - **Log only when data changes:** If this box is checked, data will not be logged to the database unless there has been a change in value or status at one of the addresses in the log window.
  - **Go offline when idle:** When this box is checked, FTLogger will go offline with all the devices in the log window if no log times are currently active. If no other log windows or clients are using the communication port, the port will be closed.
- **Database:** Use these fields to configure the database where the logged data will be stored.

- **Include Row Based Database:** A row based database organizes the data as it appears in the log sheet. Check the **Include Row Based** database box to activate the row based database functionality.
- **Microsoft Access:** To build the row based database in **Microsoft Access** format, select the **Microsoft Access** option button and set the **Log File Path** to the name of the Access (.MDB) file. If the file does not exist, it will be created.
- **Other Database:** To build the row based database in a format other than Microsoft Access, select the **Other Database** option button and click the **Select** button to configure the **Data Link Properties**. The SQL database must exist prior to the selection.
- **Options:** Click the **Options** button to configure the **Row Based Database** options.
- **Advanced:** Click the **Advanced** button to configure the column based database and the event ID name. The column based database functionality is available only with the full FTLogger product. See **Event ID and Column Based Database Options** for details.

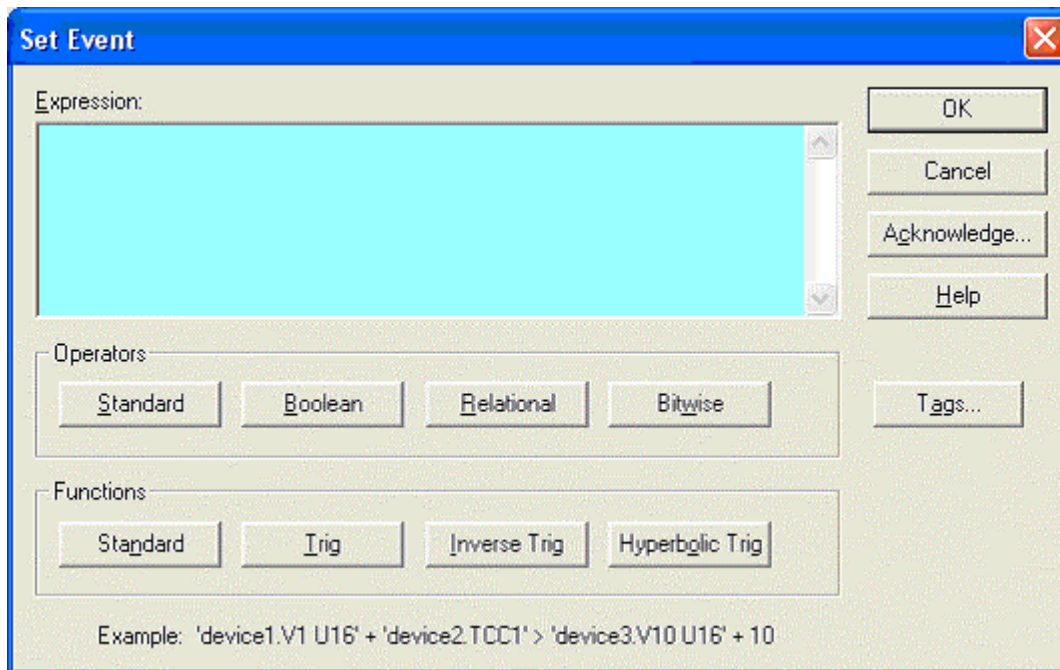


## Set Event

This dialog configures an event that can trigger logging data.

To access the **Set Event** dialog:

1. Select the **Setup/Log Window** menu option.
2. Click the **Log Data** tab.
3. Set the **Logging Method** to **Event** by clicking the option button.
4. Click the **Set Event** button. The **Set Event** dialog appears.



An event is set up by creating a custom expression based on tags, operators, and functions.

- **Operators:** Choose operators by clicking on the **Standard**, **Boolean**, **Relational**, and **Bitwise** buttons to display drop down boxes of operators. When an operator is selected, it will be inserted into the **Expression** edit box at the cursor location. Any highlighted text will be replaced with the selection. (See **Operators and Functions** for details.)
- **Functions:** Choose functions by clicking on the **Standard**, **Trig**, **Inverse Trig**, and **Hyperbolic Trig** buttons to display drop down boxes of functions. When a function is selected, it will be inserted into the **Expression** edit box at the cursor location. Any highlighted text will be replaced with the selection. (See **Operators and Functions** for details.)
- **Tags:** Click on the **Tags** button to select a tag. The **Tag** dialog that appears will depend on the type of log sheet being used: (See **FasTrak Tag** or **OPC Tag** for details.)
- **Acknowledge:** Click on the **Acknowledgement** button to configure an acknowledgement for the triggered event. The **Acknowledge Event** dialog that appears will depend on the type of log sheet being used: (See **FasTrak Acknowledge** or **OPC Acknowledge** for details.)

## Operators and Functions

The **Expression** box on the **Set Event** dialog allows you to trigger an event on an expression involving an unlimited number of addresses and/or constants. Addresses can be selected from any configured device belonging to any registered FasTrak or OPC server. When typing a FasTrak address, the device and address are separated by a period and enclosed in single quotes. A format specification may be included within the single quotes following the device.address.

For example: 'device1.V1 U16'.

You can also specify an address by tag name.

For example: 'device1.TagForV1 U16'

The format for OPC addresses is vendor specific.

At least one address is required in the equation. The available operations are as follows:

Standard Operators	Boolean Operators	Relational Operators	Bitwise Operators	Standard Functions	Trig Functions	Inverse Trig Functions	Hyperbolic Trig Functions
+	!	==	&	Exp()	Sin()	ASin()	Sinh()
-	&&	!=		Ln()	Cos()	ACos()	Cosh()
*		<=	!& (XOR)	Log()	Tan()	ATan()	Tanh()
/		>=		Abs()	Sec()	ASec()	Sech()
%		>		Sqrt()	Csc()	ACsc()	Csch()
^ (power)		<		Ceil()	Cot()	ACot()	Coth()
- (unary)		?: (if else)		Floor()			
(				Rand()			
)							

### Standard Operators

Standard Operators	Description
+	Addition
-	Subtraction
*	Multiplication
/	Division
%	Modulus
^	Power
-	Unary sign
(	
)	

### Boolean Operators

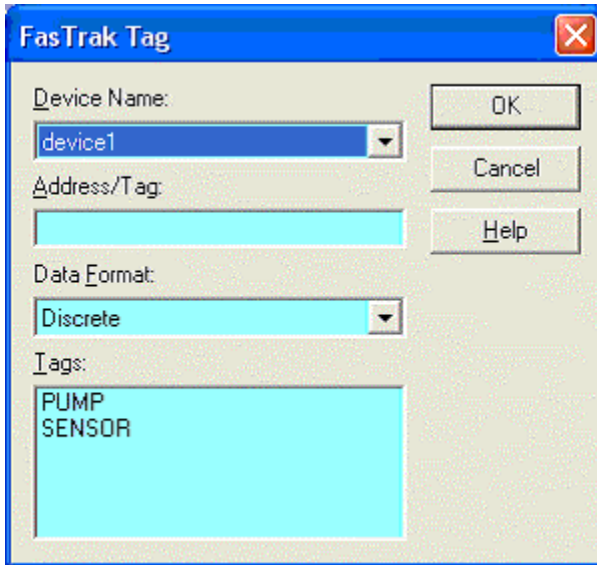
!	Not
&&	And
	Or

<b>Relational Operators</b>	<b>Description</b>
==	Equal To
!=	Not Equal To
<=	Less Than Or Equal To
>=	Greater Than Or Equal To
>	Greater Than
<	Less Than
?:	If (condition1) return(condition2) else return(condition3)
<b>Bitwise Operators</b>	<b>Description</b>
&	Bitwise And
	Bitwise Or
!&	Bitwise Exclusive Or

## FasTrak Tag

Use the **FasTrak Tag Browser** to select a tag.

From the **Set Event** dialog box, click the **Tags** button. The **FasTrak Tag** dialog appears.

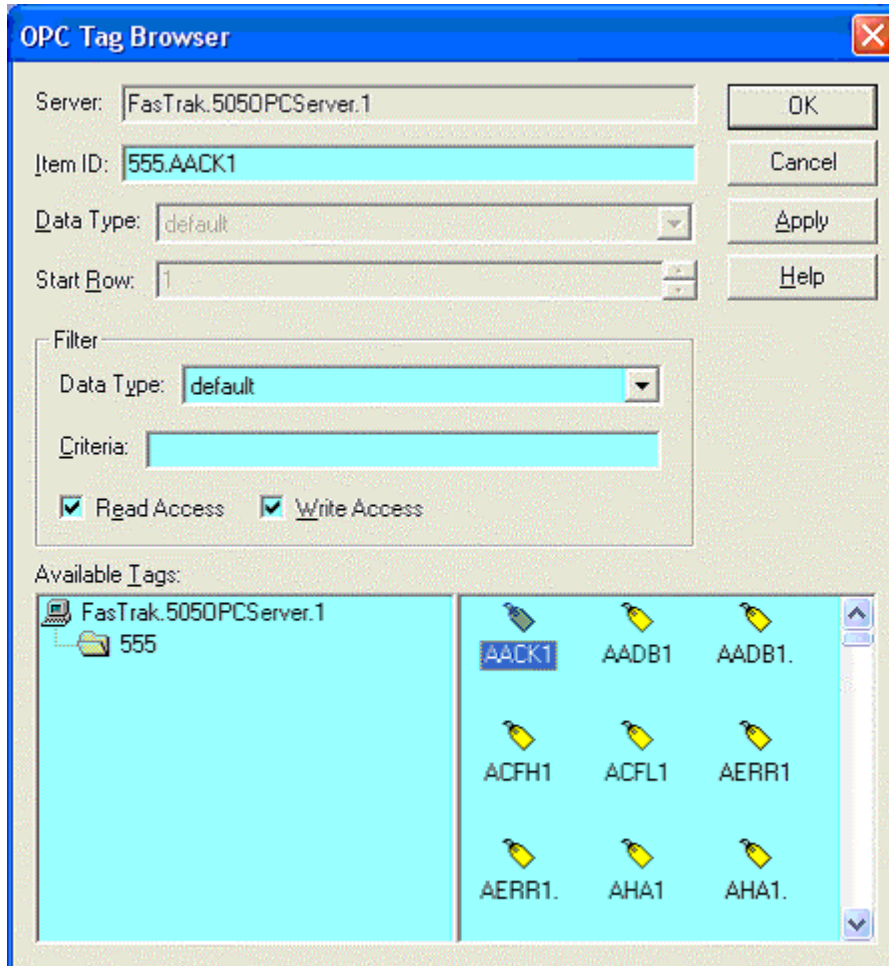


- **Device Name:** Choose from the list of devices that the current log sheet is attached to.
- **Address/Tag:** Manually enter an address or tag from a selected device or click on an item in the **Tags** pane to display the corresponding address.
- **Data Format:** Affects how the value is displayed in the log sheet.

## OPC Tag

Use the **OPC Tag Browser** to select a tag.

From the **Set Event** dialog box, click the **Tags** button. The **OPC Tag Browser** dialog appears.



- **Server:** Lists the server that the current log sheet is attached to.
- **Item ID:** Identifies the tag. Select from the **Available Tags** pane or manually enter or modify.
- **Data Type:** Disabled unless the **OPC Tag Browser** dialog is being used to select an address in the log sheet. There are 13 different data types to choose from, which will affect how the value is displayed in the log sheet. The default will display the canonical (native) data type.
- **Start Row:** Disabled unless the **OPC Tag Browser** dialog is being used to select an address in the log sheet. Used to specify where the address will be inserted into the log sheet.
- **Filter:** Controls which tags display in the **Available Tags** pane.

## FasTrak Acknowledge

When an event occurs, FTLogger has the ability to acknowledge the capture of the data to the communicating device. To send data back to the device:

1. From the **Set Event** dialog box click the **Acknowledge** button. The **Acknowledge Event** dialog appears.

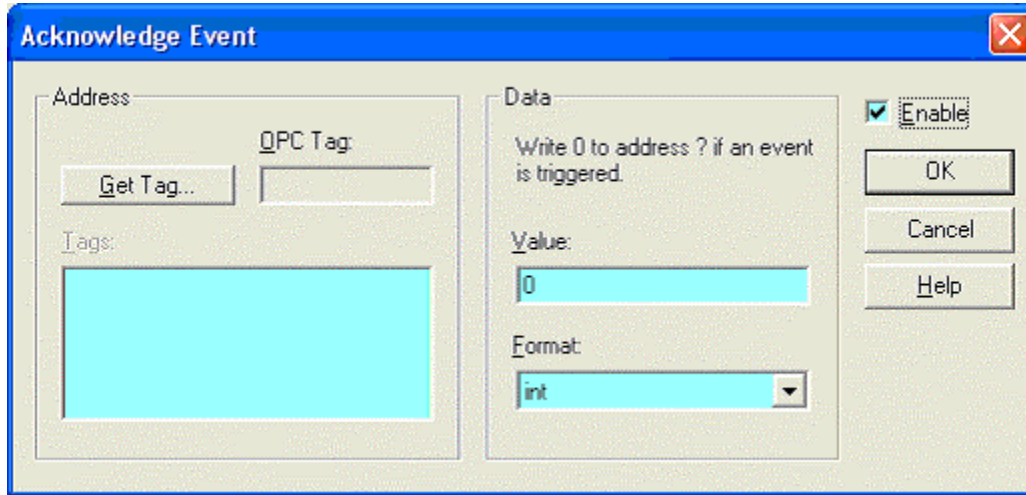
The screenshot shows the 'Acknowledge Event' dialog box. It has a title bar with the text 'Acknowledge Event' and a close button. The dialog is divided into two main sections: 'Address' and 'Data'.  
In the 'Address' section, there are two input fields: 'Device Name' containing 'device1' and 'Address/Tag' containing 'c1'. Below these is a 'Tags' list box containing the following items: 'PUMP1', 'SENSOR', and 'tagrr'.  
In the 'Data' section, there is a text area containing the text 'Write 1 to address c1 if an event is triggered.'. Below this is a 'Value' input field containing '1'. Below the 'Value' field is a 'Format' dropdown menu set to 'Discrete'.  
To the right of the 'Data' section, there is an 'Enable' checkbox which is checked. Below the checkbox are three buttons: 'OK', 'Cancel', and 'Help'.

2. Click on the **Enable** check box to enter data.
3. Specify the **Address** to be written to.
  - **Device Name:** Select the device from which the PLC value is to be written. The device can be any configured device, whether data from that device is being logged or not.
  - **Address/Tag:** Enter the PLC address, or the tag for that address, here. Or select a tag from the **Tags:** list.
4. Specify the **Data** to be sent. Set the **Value** field and select the data's **Format** from the drop down box.

## OPC Acknowledge

When an event occurs, FTLogger has the ability to acknowledge the capture of the data to the communicating device. To send data back to the device:

1. From the **Set Event** dialog box click the **Acknowledge** button. The **Acknowledge Event** dialog appears.



2. Click on the **Enable** check box to enter data.
3. Specify the **OPC Tag** to be written to. Select a tag using the **Get Tag** button.
4. Specify the **Data** to be sent. Set the **Value** field and select the data's **Format** from the drop down box.

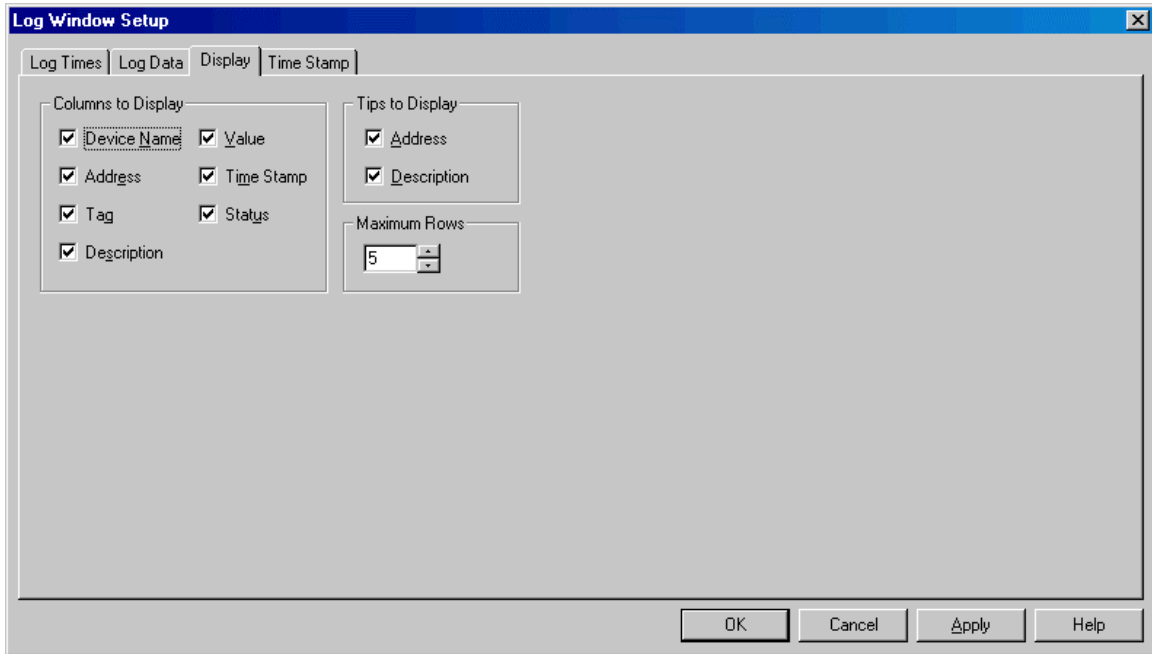


## Display

Use the **Display** tab to configure the display of the data being logged.

To access the **Display** tab:

1. Select the **Setup/Log Window** menu option.
2. Click the **Display** tab.



- **Columns to Display:** Check the boxes for the desired columns in the display. All boxes are checked by default. **Device Name**, **Tag**, and **Description** are disabled for OPC as they are not valid options in the log sheet. For OPC, **OPC Tag** replaces Address.

Row	Device Name	Address	Tag	Description	Value	Time Stamp	Status
1	device1	B3:0	STAMP	1 second on/off tog	ON D1	11:14:20.342 AM 08/31/04	Success
2	device1	F8:1	TEMPERATURE2	0.01 second sine w	0.40009 F32	11:14:20.342 AM 08/31/04	Success
3	device1	N7:4	TANK	0.1 second timer 1-5	38 U16	11:14:20.342 AM 08/31/04	Success
4	device1	V6	TANK_FILL	1 second timer 1-10	953 U16	11:14:20.342 AM 08/31/04	Success
5	device1	400009	SINE1	0.1 second sine wa	-0.836924 F32	11:14:20.342 AM 08/31/04	Success

- **Tips to Display:** In the FasTrak log sheet, the **Tag** combo box in a log window can display the corresponding address (to the left) and description (to the right) of the highlighted tag. For example, in the illustration, the tag **TANK\_FILL** corresponds to the address **V6** and is described as "1 second timer 1-1000". The address and description are referred to as **Tips** and can be turned on and off with these boxes. Both boxes are checked by default.

V6	TANK_FILL	1 second timer 1-1000
F8:1	STAMP	0.01 second sine w
N7:4	STEAM	0.1 second timer 1-5
V6	TANK	1 second timer 1-10
400009	TANK_FILL	0.1 second sine wa
	TANK_PROGRESS	
	TEMPERATURE1	
	TEMPERATURE2	

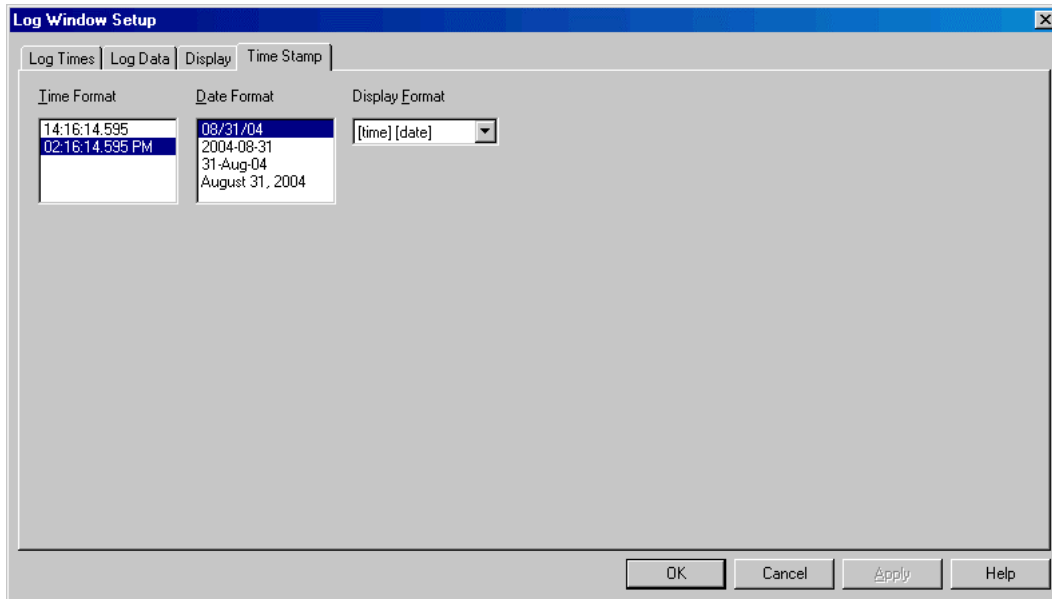
- **Maximum Rows:** Set the number of rows in the log sheet. The **Maximum Rows** may be limited by the package purchased.

## Time Stamp

Use the **Time Stamp** dialog to select the formats for the date and time.

To access the **Time Stamp** tab:

1. Select the **Setup/Log Window** menu option.
2. Click the **Time Stamp** tab.



- **Time Format:** Selects **24 hour** or **12 hour AM/PM** format. The default is standard format.
- **Date Format:** Selects which of the following date formats will be used:
  - **[month]/[day]/[year]:** each represented by 2 digits. This is the default.
  - **[year]-[month]-[day]:** The year is displayed in 4 digits while the month and day are displayed in 2 digits.
  - **[day]-[month]-[year]:** The day and year are displayed in 2 digits while the month is displayed as a 3-character abbreviation.
  - **[month] [day], [year]:** The month is completely spelled out, the day is displayed in minimal digits and the year is displayed as 4 digits.
- **Display Format:** Determines whether the date or time or both will be displayed, and in what order. The options are:
  - **[time] [date]:** the default
  - **[date] [time]**
  - **[time]**
  - **[date]**

# Device Source Configuration


## Device Source Configuration

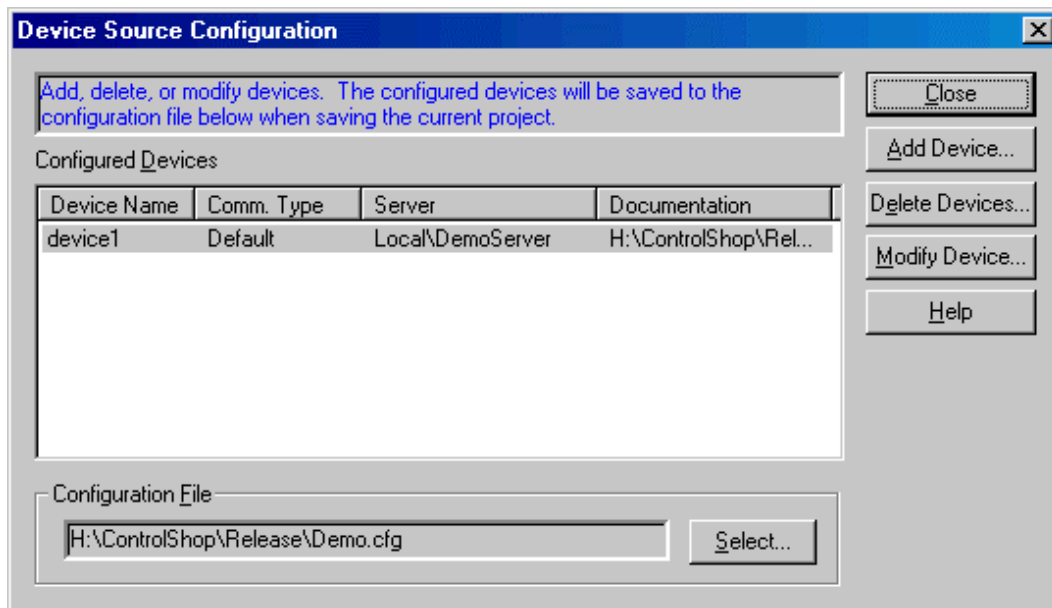
The **Device Source Configuration** dialog allows you to configure the devices from which data points are read. Before any data points can be inserted into a FasTrak log window, devices must be configured so that the servers know where to read the addresses from.

For each device, FTLogger requires the following information:

- **Device Name:** A unique name to identify the device that is connected to a FasTrak Server.
- **Comm Type:** The communication system by which the server communicates with the device - COM port, TCP/IP, etc. The options depend on the device.
- **Server:** The FasTrak Server name that the device is connected to. Communication servers are shared between FasTrak applications, allowing multiple applications to communicate with the same devices at the same time.
- **Doc File Path:** The documentation database, which holds the address documentation for the device. To share documentation (for example, from the shared documentation database for a WorkShop program) set the **File Path** to the shared documentation database. If you set the **File Path** to a database that does not exist, a new database will be created.
- **Communications parameters:** Configuration for communications between the PC and the device. This information is not shown in the table. See **Communication Setup** for details.

To configure devices for OPC Servers, use the OPC Server or separate configuration utility. To configure devices for FasTrak Servers:

1. Select the **Setup/Device Source** menu option or the corresponding toolbar button:  The **Device Source Configuration** dialog appears.



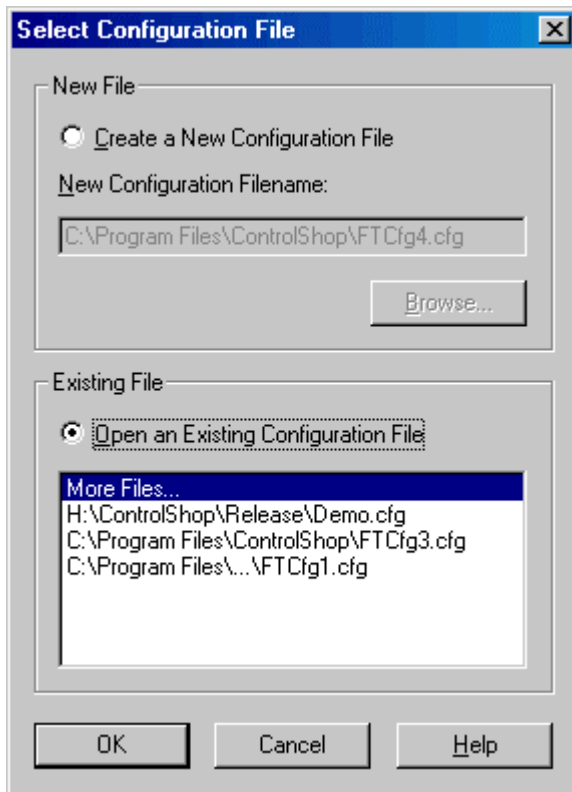
2. Use the buttons to access the configuration actions:
  - **Add Device:** Add a new device to the list.
  - **Delete Device:** Delete the configuration for the highlighted device configuration.
  - **Modify Device:** Edit the highlighted device configuration.
  - **Configuration File:** The configuration for FasTrak Server devices is saved in a .CFG file, not the .TRN Trend file. Click the **Select** button to save the current configuration to a file or to load a saved configuration.

## Configuration File

Device configuration information for FasTrak Server devices is stored in a .CFG file. The project file contains the name of the .CFG file. Several projects can use the same configuration file.

To select the configuration file:

1. Open the **Device Source Configuration** dialog by selecting the **Setup/Device Source** menu option.
2. Click the **Select** button next to the **Configuration File** field. The **Select Configuration File** dialog appears.



- **New File:** To create a new configuration file, select the **Create a New Configuration File** option button, and then **Browse** for the new file location and name.
- **Existing File:** To select an existing configuration file, select the **Open an Existing Configuration File** option button. If the desired file is in the recently-used files list, select it. If not, select the **More Files** option, and browse for the configuration file.

## Adding Devices

To add a device to the current configuration:

1. Bring up the **Device Source Configuration dialog** by selecting the **Setup/Device Source** menu item or the corresponding toolbar button.




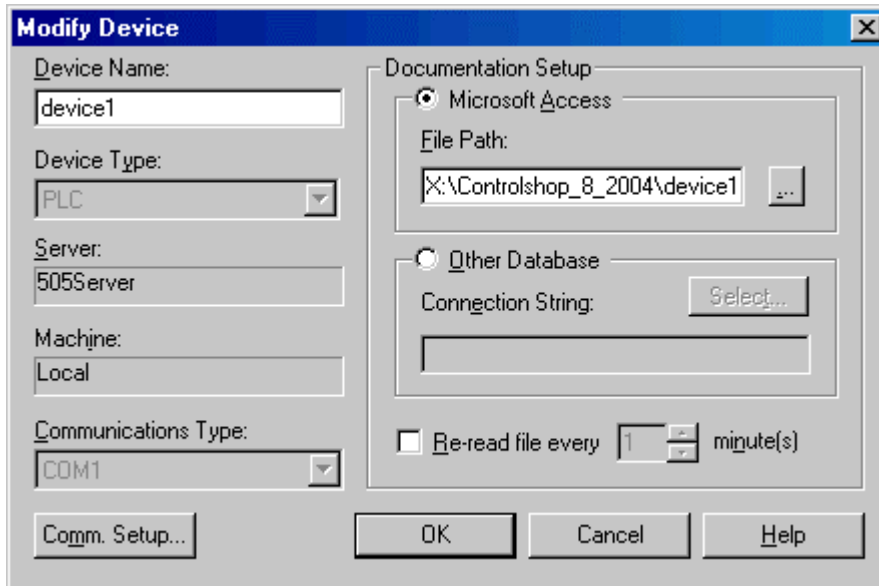
2. Click the **Add Device** button. The **Add Device** dialog appears.

3. Configure the new device, and click the **OK** button.
  - **Device Name:** Enter a name to identify the device. The device name must be unique.
  - **Device Type:** Select the type of device.
  - **Server:** Select the communication server. Communication servers are shared between FasTrak applications and OPC clients, allowing multiple applications to communicate with the same devices at the same time. The drop-down list shows the communication servers that have been installed on the computer.
  - **Communications type:** Select the type of communications that connects the PC to the device. The options depend on the communications server selected above.
  - **Comm Setup:** Configure communications between the PC and the device. See *Communication Setup* for details.
  - **Documentation Setup:** Configure the documentation database, which holds the address documentation for the device. To use existing documentation (for example, from the shared documentation database for a WorkShop program) set the **File Path** to the shared documentation database. If you set the **File Path** to a database that does not exist, a new database will be created.
  - **Re-read file every:** This option should only be selected when sharing the database with other applications and if the database is under development. To keep the documentation up to date, check the box and set the number of minutes to control how often the documentation database should be checked for changes.

## Modifying Devices

To modify a device that is already configured:

1. Bring up the **Device Source Configuration dialog** by selecting the **Setup/Device Source** menu item or the corresponding toolbar button.  

2. Highlight the device in the list and click the **Modify Device** button, or double-click the device in the list. The **Modify Device** dialog appears.



3. Modify the device, and click the **OK** button.
  - **Device Name:** Enter a name to identify the device. The device name must be unique. Unlike the **Add Device** dialog, when we modify the device name here, the documentation filename does not change.
  - **Documentation Setup:** Configure the documentation database, which holds the address documentation for the device. To use existing documentation (for example, from the shared documentation database for a WorkShop program) set the **File Path** to the shared documentation database. If you set the **File Path** to a database that does not exist, a new database will be created.
  - **Comm Setup:** Configure communications between the PC and the device. See *Communication Setup* for details. If no trend windows are online with this device then the communication settings can also be modified. If the device is online then the communication settings can be viewed but cannot be modified.
  - **Re-read file every:** This option should only be selected when sharing the database with other applications and if the database is under development. To keep the documentation up to date, check the box and set the number of minutes to control how often the documentation database should be checked for changes.

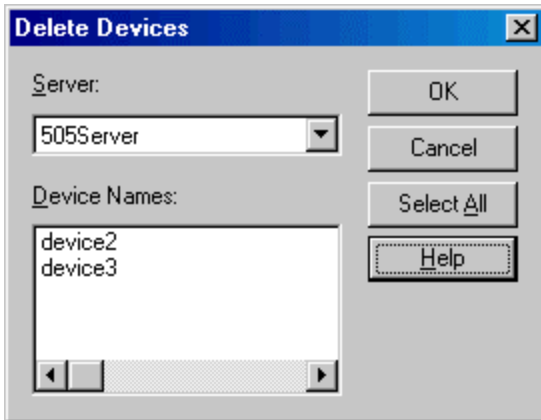
## Deleting Devices

To delete a device from the current configuration:

1. Bring up the **Device Source Configuration dialog** by selecting the **Setup/Device Source** menu item or the corresponding toolbar button.



2. Click the **Delete devices** button. The **Delete Devices** dialog appears.




3. Select the **Server** that controls the devices to be deleted. The **Device Names** list shows the devices configured for that server.
4. Select the device(s) to be deleted. To delete all the devices for a server, click the **Select All** button.
5. Click the **OK** button.

## Communication Setup

The **Communication Setup** dialog configures communication between the PC and one of the configured devices. It varies depending on the type of device and the type of communication.

To configure communication:

1. Open the **Device Source Configuration** dialog by selecting the **Setup/Device Source** menu option or clicking the corresponding toolbar button: 
2. Open the configuration dialog for the device, by clicking the **Add Device** button or selecting the device in the list and clicking the **Modify Device** button. When modifying an existing device, if a data point on the device is used in a log sheet that is currently online, the communication setup can be viewed but not edited.
3. Select the **Server**, if possible. The **Server** and **Communications Type** cannot be changed in an existing device.
4. Select the **Communications Type**, if possible.
5. Click the **Comm Setup** button.



## DemoServer Supported Addresses

The DemoServer provides a simulated device for testing and demonstrating ControlShop applications.

The following addresses are available:

Mod 5-digit	Mod 6-digit	Mod	Siemens 505	AB5	Address Description
40001	400001	4:1	V1	N7:0	Writable
40002	400002	4:2	V2	N7:1	Writable
40003	400003	4:3	V3	N7:2	0.1 second timer 1-1000
40004	400004	4:4	V4	N7:3	1 second timer 1-100
40005	400005	4:5	V5	N7:4	0.1 second timer 1-500
40006	400006	4:6	V6	N7:5	1 second timer 1-1000
40007	400007	4:7	V7	N7:6	0.1 second random
40008	400008	4:8	V8	N7:7	1 second random
40009	400009	4:9	V9.	F8:0	0.1 second sine wave
40011	400011	4:11	V11.	F8:1	0.01 second sine wave
00001	000001	0:1	C1	B3:0	1 second on/off toggle
00002	000002	0:2	C2	B3:1	0.1 second on/off toggle



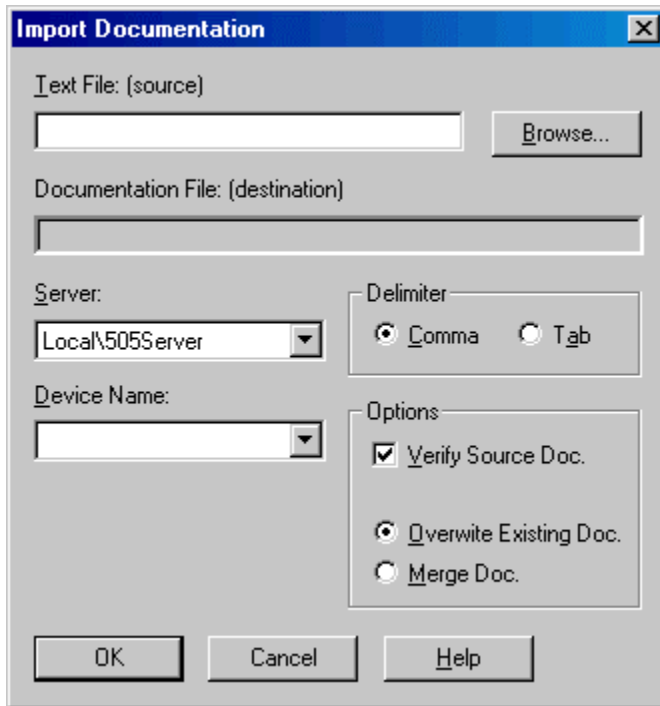
# Import/Export Documentation

## Import Documentation

Documentation for a device can be imported from a text file into the existing database.

To import documentation:

1. Select the **File/Import Documentation/FasTrak Documentation** menu option. The **Import Documentation** dialog appears.



2. Select the source file by typing in the **Text File (source)** field or by clicking the **Browse** button.
3. Select the communication **Server** for the device, which will receive the imported documentation. The list shows servers that are registered on the computer.
4. Select the **Device Name**. The list shows device configuration entries that are connected via the server selected above. The documentation database that corresponds to the selected device will be the recipient of the import.
5. If the Server is set to **ModServer**, select the option button for either **6 Digits** or **5 Digits**. The options are not visible for other servers.
6. The fields in the text file may be separated by either tabs or commas. Select the **Delimiter** by selecting the appropriate option button.
7. Set the **Options** as desired:
  - **Verify Source Doc:** Check the box to verify tags, addresses, and the source file format. Clear the box for a faster import process.
  - **Overwrite Existing Doc:** When this option is selected, the database is cleared, so the imported documentation is all the documentation. If an address is in the database but not in the imported file, the information in the database is lost.

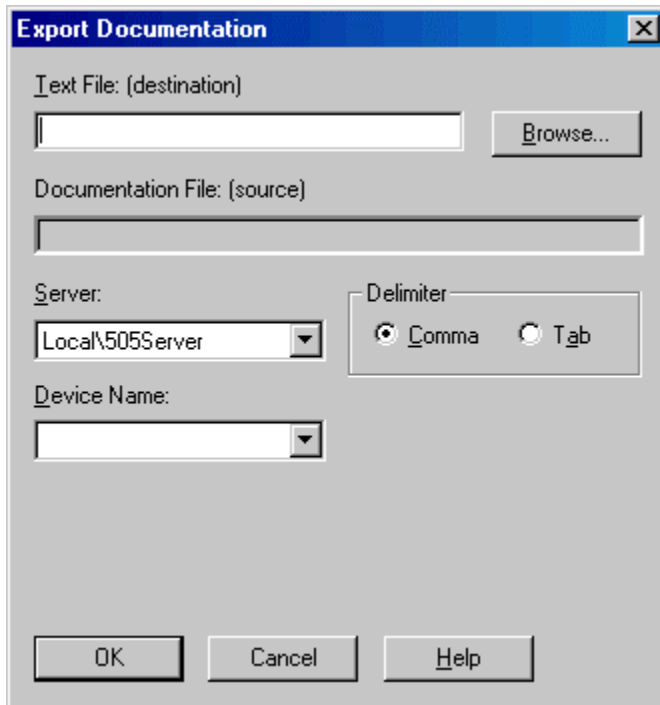
- **Merge Doc:** When this option is selected, the imported documentation is merged into the database. If an address is in the imported file but not in the database, it is added to the database. If an address is in the imported file and already in the database, you will receive a warning. The address in the database will remain. If an address is in the database but not in the imported file, the database information is left as is.

## Export Documentation

Documentation for a device can be exported from the database to a text file, for editing in an outside program such as Microsoft Excel, or for import into another application.

To export documentation:

1. Select the **File/Export Documentation** menu option. The **Export Documentation** dialog appears.



2. Select the destination file by typing in the **Text File (destination)** field or by clicking the **Browse** button.
3. Select the communication **Server** for the device. The list shows servers that are registered on the computer.
4. Select the **Device Name**. The list shows device configuration entries that are connected via the server selected above. The documentation database that corresponds to the selected device will be the source of the exported information.
5. The fields in the text file may be separated by either tabs or commas. Select the **Delimiter** by selecting the appropriate option button.



# Log Sheet

## Log Sheet

The **Log Sheet** is the visual interface to the data logging process. Log sheets differ based on whether they communicate to a **FasTrak Server** or **OPC Server**.

## FasTrak Log Sheet

The **FasTrak Sheet** displays the device, address, tag, and description for each point being logged, along with the current value, the time stamp of the latest reading, and the communication status. Most of the columns are optional - whether they are displayed or not is controlled via the **Display** tab of the **Log Window Setup**.

Row	Device Name	Address	Tag	Description	Value	Time Stamp	Status
1	device1	B3:0	STAMP	1 second on/off tog	OFF D1	04:43:55.842 PM 09/01/04	Success
2	device1	F8:1	TEMPERATURE2	0.01 second sine wa	0.327312 F32	04:43:55.842 PM 09/01/04	Success
3	device1	N7:4	TANK	0.1 second timer 1-5	320 U16	04:43:55.842 PM 09/01/04	Success
4	device1	V6	TANK_FILL	1 second timer 1-10	732 U16	04:43:55.842 PM 09/01/04	Success
5	device1	400009	SINE1	0.1 second sine wa	0.276176 F32	04:43:55.842 PM 09/01/04	Success
6	device1	400001	ACK3	Writeable address	0 U16	04:43:55.842 PM 09/01/04	Success

Each row represents a single address from a single device that is configured in the server from which the log window is connected.

The columns show:

- **Row:** The row number. This column cannot be edited.
- **Device Name:** The name of the device from which the data is to be read. Select a device from the drop-down list. See **Device Source Configuration** for details.
- **Address:** The PLC address from which data is to be read. Type the address here, or select it by tag, using the **Tag** column. Enter a range of addresses (each address will be on a separate line starting with the current line) by typing an address string in one of these formats:
  - **Address\ +-[count][\increment][\format]:** Create log sheet rows for a range of addresses.
  - **Address:** The starting address.
  - **+, -:** For addresses that count up from the starting address, use **+**. For addresses that count down from the starting address, use **-**.
  - **Count:** The number of addresses to create log sheet rows for.
  - **Increment:** The address increment. For example, if the increment is 2, a row will be created for every other address.
  - **Format:** The data format and size.
  - For example, the string `v1\+5\2\u16` results in the rows shown below:

Device Name	Address	Device Name	Address
device1	v1\+5\2\u16	device1	V1
		device1	V3
		device1	V5
		device1	V7
		device1	V9

- **Address1-Address2[\increment][\format]:** Create log sheet rows for a range of addresses from Address 1 to Address 2
- **Address1:** The starting address.
- **Address2:** The ending address.
- **Increment:** The address increment. For example, if the increment is 2, a row will be created for every other address.
- **Format:** The data format and size.
- For example, the string v1-v7\2\u16 results in the rows shown below:

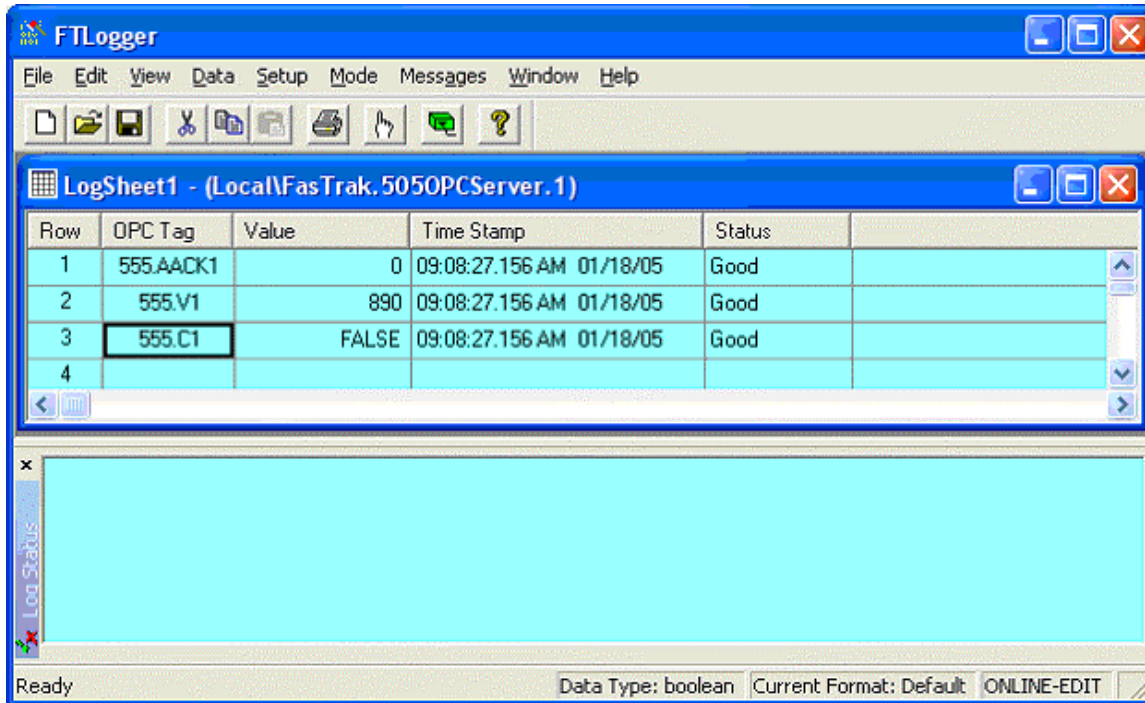
Device Name	Address	Device Name	Address
device1	v1-v7\2\u16	device1	V1
		device1	V3
		device1	V5
		device1	V7

- **Tag:** The tag for the address. The address can be set by selecting the tag from the list. Tags and descriptions are located in the documentation database for the Device. See **Device Source Configuration** for details.
- **Description:** The description for the address. Tags and descriptions are located in the documentation database for the Device. See **Device Source Configuration** for details.
- **Value:** The last value read from the address.
- **Time Stamp:** Displays the time at which the last data value was read.
- **Status:** Displays the status of the data read from the device. Any errors reading addresses will be displayed here. Since many addresses are read in one packet, a status error from one invalid address may appear in multiple rows.



## OPC Log Sheet

The OPC Sheet displays the OPC tag, value, time stamp and status for each point being logged. Most of the columns are optional - whether they are displayed or not is controlled via the **Display** tab of the Log Window Setup.



Each row represents a single address from a single device that is configured in the server from which the log window is connected.

The columns show:

- **Row:** The row number.
- **OPC Tag:** The OPC tag that represents an address.
- **Value:** The last value read from the address.
- **Time Stamp:** Displays the time at which the last data value was read.
- **Status:** Displays the status of the data read from the device and reports the quality of the data. Any errors reading addresses will be displayed here. Since many addresses are read in one packet, a status error may appear in multiple rows.

The status bar displays the data type being used based on the field in which the cursor is placed as well as online/offline status. Data types include: byte, short, unsigned short, int, unsigned int, long, unsigned long, float, double, boolean, date, and character.

## Data Menu

### Data Menu

Use the **Data** menu options to manage the information that is read from the PLC.

- **Format:** Select the display format for the data. This menu option is not available for bit addresses. The options are:
  - Unsigned Dec.
  - Signed Dec.
  - Float
  - Hex
  - Octal
  - ASCII
- **Size:** When the format selected above allows for 16 or 32 bit data, use this option to select the size.
- **Scaling:** Use this option to display and log information in a scaled form. See **Log Row Scaling** for details.
- **Next, Previous:** Move to the next row in the log sheet and insert the next or previous address, with the same device. For example, if the cursor is on row 1, where the address is V1

Row	Device Name	Address
1	device1	V1
2		

and you select the **Data/Next** menu option, row 2 is filled with V2

Row	Device Name	Address
1	device1	V1
2	device1	V2

If the cursor is on row 1, where the address is V5

Row	Device Name	Address
1	device1	V5
2		

and you select the **Data/Previous** menu option, row 2 is filled with V4.

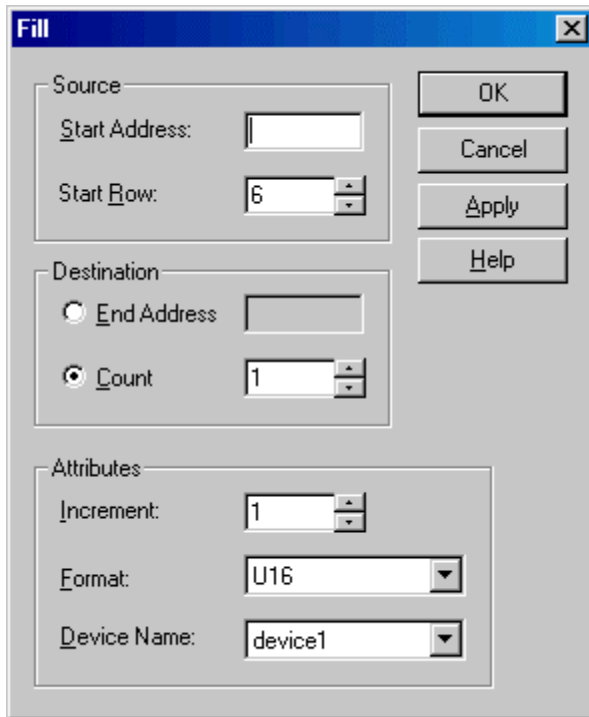
Row	Device Name	Address
1	device1	V5
2	device1	V4

- **Fill:** Use the **Fill** menu option to create several rows at once. See **Fill** for details.

## Fill

Use the **Fill** dialog to fill several log sheet rows, representing a series of addresses, at once.

To access the **Fill** dialog, select the **Data/Fill** menu option. The **Fill** dialog appears.

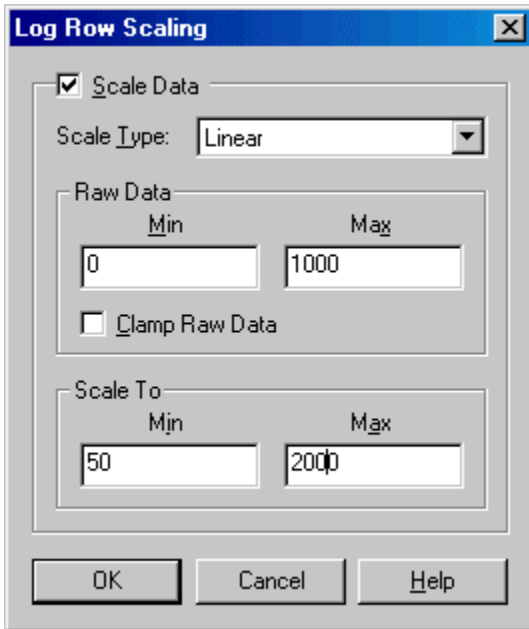


- **Start Address:** Enter the first address in the series.
- **Start Row:** Enter the row number of the line that will hold the start address.
- **End Address:** To specify the range by address, select the **End Address** option button and enter the last address in the series.
- **Count:** To specify the range by number of lines/addresses, select the **Count** option button and enter the number of lines to be filled.
- **Increment:** Set the increment between addresses. For example, with an increment of 1, each address in the range is added to the log sheet. With an increment of 2, starting with an even numbered address, the even numbered addresses will be added to the log sheet.
- **Format:** Select the display format for the data. The options in this list include the size.
- **Device Name:** Select the device from which the data is to be read. See **Device Source Configuration** for details.
- **Apply:** Click the **Apply** button to fill the range without closing the dialog. The **Start Address** and **Start Row** fields will be updated to just past the end of the range specified previously. For example, if the start address was V1, the start row 10, and the Count 10, after the **Apply** button is clicked, the new start address is V11 and the new start row 20.
- **OK:** Fill the range and close the dialog.
- **Cancel:** Close the dialog without filling the range.

## Log Row Scaling

Use the **Log Row Scaling** to display data scaled to a specified range. For example, a thermocouple input might present raw data values in the range 0-1000 for a temperature range from 50 degrees to 200 degrees. Scaling allows you to display the data as a value from 50 to 200.

To access the **Log Row Scaling** dialog, select the **Data/Scaling** menu option. The **Log Row Scaling** dialog appears.



- **Scale Data:** Check the **Scale Data** box to enable scaling for the current row.
- **Scale Type:** Select the type of scaling.
  - **Discrete:** Used with discrete address types to invert the data.
  - **Linear:** Available to all address types except discrete. The raw data from the PLC will be scaled according to the following formula.  

$$\text{ScaledVal} = (\text{RawVal} - \text{MinRaw}) / (\text{MaxRaw} - \text{MinRaw}) * (\text{MaxScaled} - \text{MinScaled}) + \text{MinScaled}$$
  - **Square Root:** Available to all address types except discrete. The raw data from the PLC will be scaled according to the following formula.  

$$\text{ScaledVal} = \text{SQRT}((\text{RawVal} - \text{MinRaw}) / (\text{MaxRaw} - \text{MinRaw})) * (\text{MaxScaled} - \text{MinScaled}) + \text{MinScaled}$$
- **Raw Data: Min, Max:** Enter the range for valid raw data.
- **Scale To: Min, Max:** Enter the desired display range.

## Editing Features

### Cut, Copy, and Paste

**Cut**, **Copy**, and **Paste** can be performed on rows (either the current row or the highlighted rows) in a log sheet.

Log window rows can be cut from one log window and pasted into another provided that the log window's servers match.

The menu items can be found under the main **Edit** menu along with hot keys. Alternative hotkeys **Shift-Delete**, **Ctrl-Insert**, and **Shift-Insert** are supported for **Cut**, **Copy**, and **Paste** respectively.

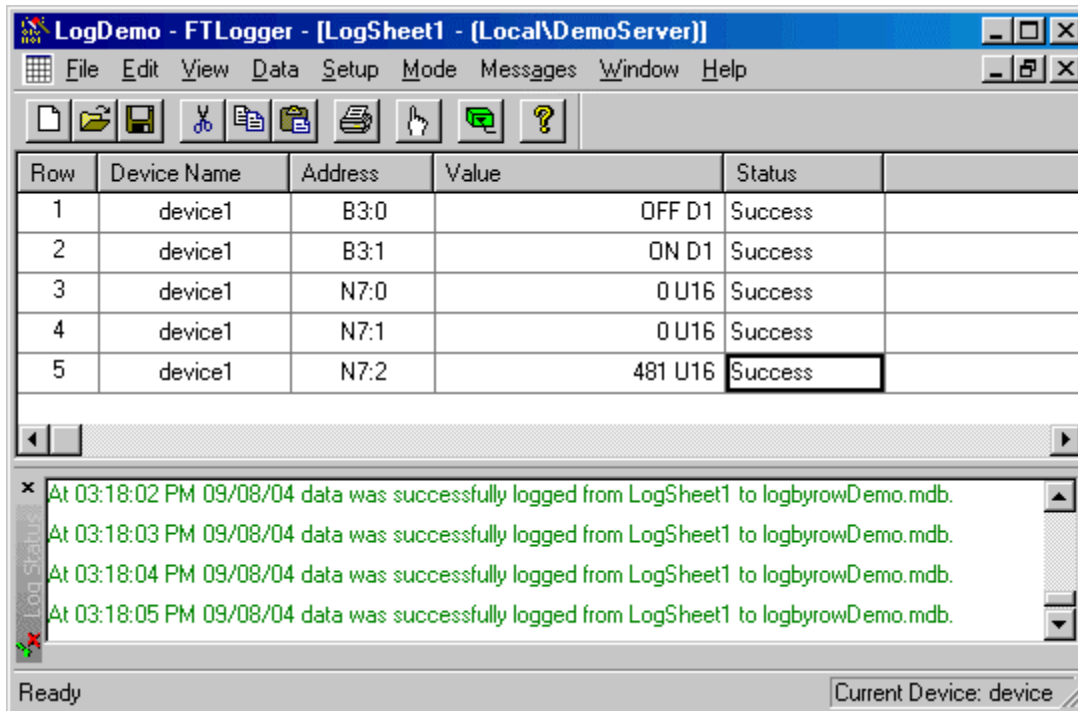
### Select All

To select all the rows in the current log sheet, select the **Edit/Select All** menu option or press **Ctrl-A**.

## Log Status Window

### Log Status Window

The **Log Status Window** can be configured to list successful and failed logs as well as any miscellaneous errors that may occur while attempting to log data.



The **Log Status Window** can be docked to any side of the FTLogger display window, or detached.

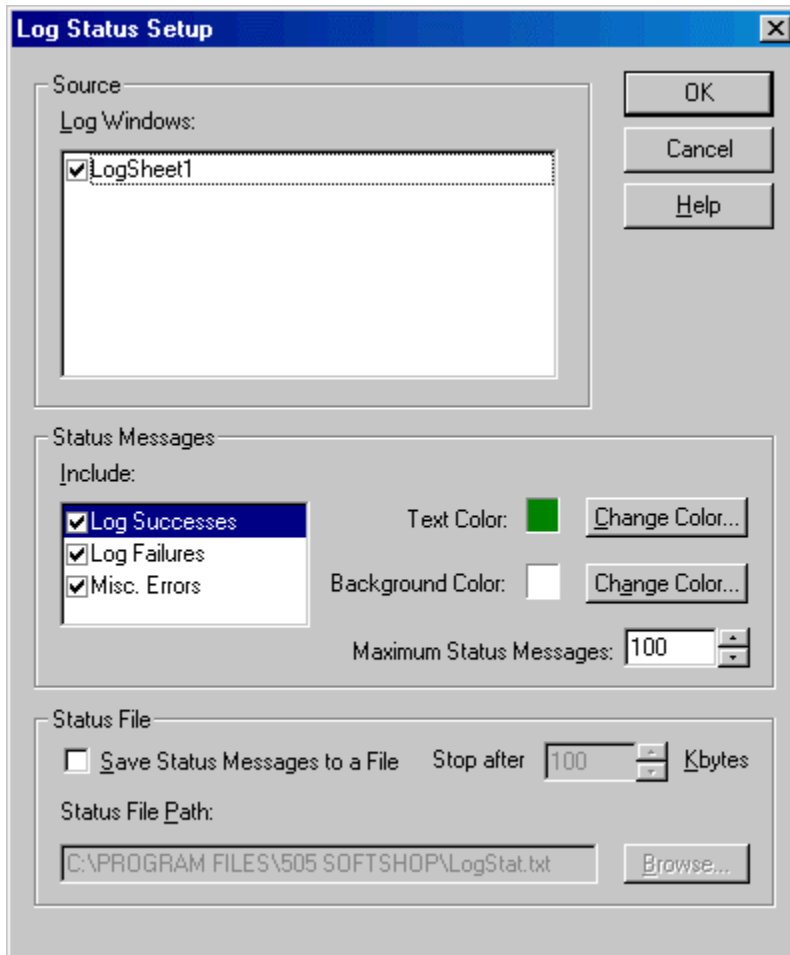
- To clear the **Log Status Window**, select the **Messages/Clear** menu option.
- To configure the **Log Status Window**, select the **Setup/Log Status** menu option to access the **Log Status Setup** dialog.

The **Log Status Window** is displayed docked to the bottom of the window by default, but can be hidden or re-displayed by selecting the **View/Log Status** menu option.

## Log Status Setup

Use the **Log Status Setup** dialog to configure the **Log Status Window**.

To access the **Log Status Setup** dialog, select the **Setup/Log Status** menu option. The **Log Status Setup** dialog appears.



- **Source: Log Windows:** the list shows all the currently open log sheets. Check the box for each log sheet to display messages for. All the boxes are checked by default.
- **Status Messages:**
  - **Include:** Select which messages should be included (Log Successes, Log Failures, Misc. Errors) by checking the box for each type of message. Highlight the message type in the list to select it for color configuration.
  - **Text Color, Background Color:** Select the type of message in the **Include** list, and the text and background colors for that type of message appear in the color boxes. To change the colors for a type of message, click the **Change Color** buttons.
  - **Maximum Status Messages:** The messages are shown in a scrollable box. Set the maximum size of the box by selecting or typing the maximum number of messages. When the box is full, the oldest messages fall off the top of the box.

- **Status File:** Status messages can be saved to a file. To save status messages to a file, check the **Save Status Messages to a File** box, set the size limit (in Kbytes) for the file in the **Stop after** box, and select the file name and location by clicking the **Browse** button. Once the size limit has been reached, no more messages will be stored.

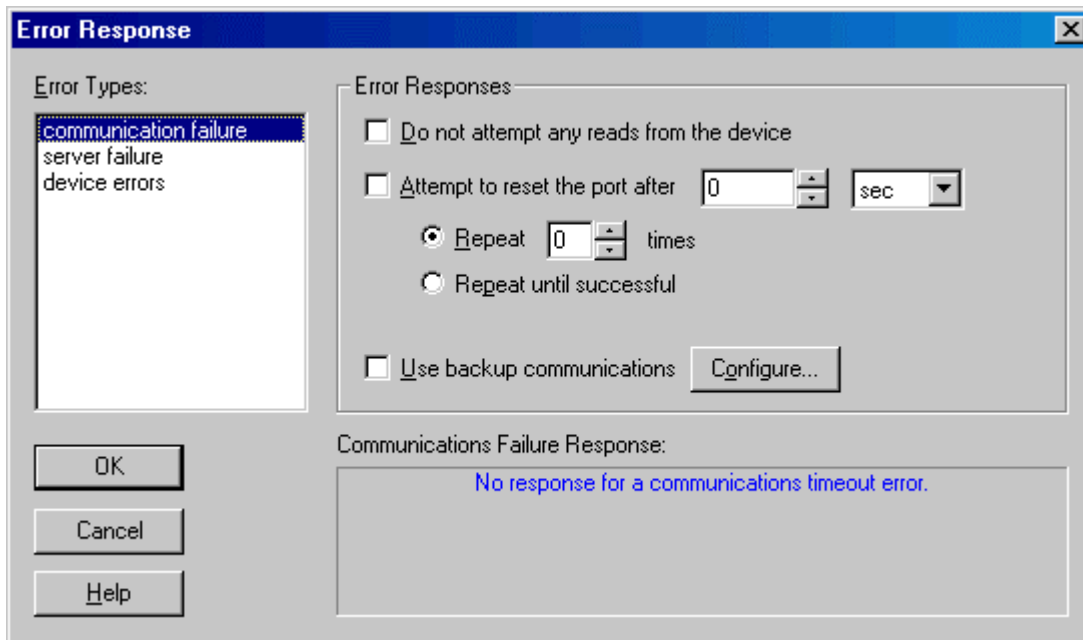


## Error Response

### Error Response Dialog

Configure how FTLogger is to respond to errors by using the **Error Response** dialog.

To access the **Error Response** dialog, select the **Setup/Error Response** menu option. The **Error Response** dialog appears.



The **Error Types** box lists the types of errors for which a response can be programmed. The **Error Responses** box holds the configuration options for the selected error type. Backup servers and communications are available with the full FTLogger package.

The error types are:

- **Communications Failure:** what to do on communications timeout error
- **Server Failure:** what to do when a server cannot be started or fails to respond
- **Device Errors:** what to do with erroneous packets

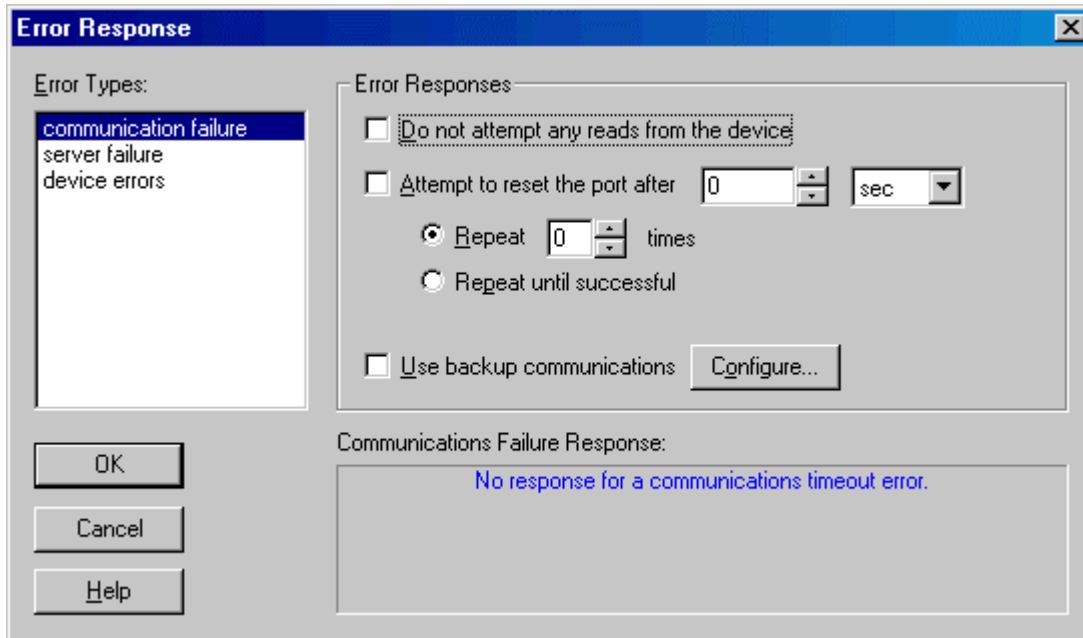
## Error Response: Communications Failure

Use this set of controls to configure how FTLogger is to react to communication failures.

**Communications failures** are specific to the communications type used (e.g. COM, TCP/IP). This can be any error that prevents reading any data out of a PLC. An error that prevents reading one or more particular addresses is referred to as a device error.

To access this set of controls:

1. Select the **Setup/Error Response** menu option.
2. The **communication failure** Error Type is selected by default.



- **Do not attempt any reads from the device:** When this box is checked and a communication failure occurs, FTLogger will stop attempting to read addresses from that device.
- **Attempt to reset the port after:** When this box is checked and a communication failure occurs, FTLogger will wait the configured length of time and then attempt to reset the port.
  - To repeat the attempt a specific number of times, select the **Repeat \_ times** option button and enter the number of times. After the selected number of attempts, if the **Use backup communications** box is checked, FTLogger will attempt to use the backup communications system.
  - To repeat indefinitely until the communication is restored, select the **Repeat until successful** option button.
- **Use backup communications:** When this box is checked and a communication failure occurs, FTLogger will attempt to use a backup communications system. Click the **Configure** button to configure Communication Type Backups.

---

**Note:** Do not use a communications type that is already being used. A client can only have one reference to a device. An attempt to activate a backup communications type that is currently being used will result in the server error **Reference to device already exists**.

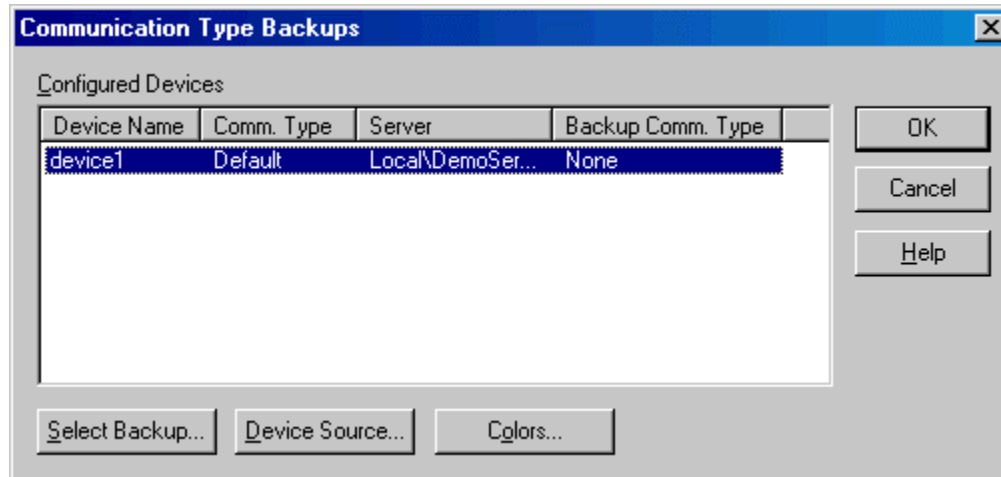
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## Communication Type Backups

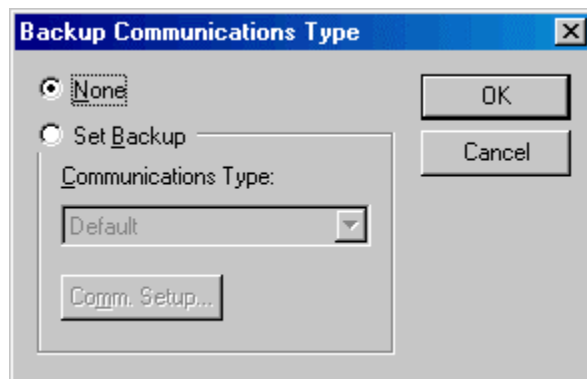
Communication type backups are available with the full FTLogger software package.

To configure backup communications:

1. Select the **Setup/Error Response** menu option.
2. Click **communication failure** in the **Error Types** list.
3. Check the **Use backup communications** box.
4. Click the **Configure** button near the Use backup communications checkbox. The **Communication Type Backups** dialog appears.



5. Select the device to be backed up from the list.
  - **Select Backup:** Click the **Select Backup** button to select the backup communications type. The **Backup Communications** dialog appears.



The list of communications types depends on the server.

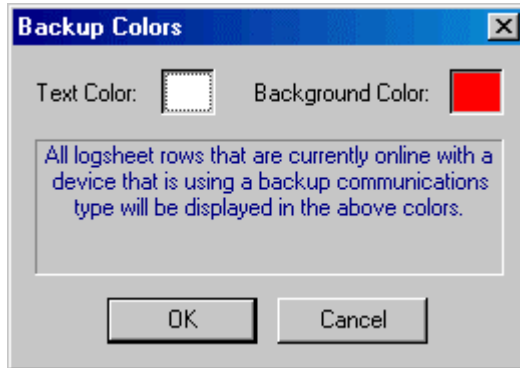
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**Note:** Do not use a communications type that is already being used. A client can only have one reference to a device. An attempt to activate a backup communications type that is currently being used will result in the server error **Reference to device already exists**.

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- **Device Source:** Click the **Device Source** button to access the **Device Source Configuration** dialog.

- **Colors:** Click the **Colors** button to configure the colors that will indicate that backup communications are in use. The **Backup Colors** dialog appears.



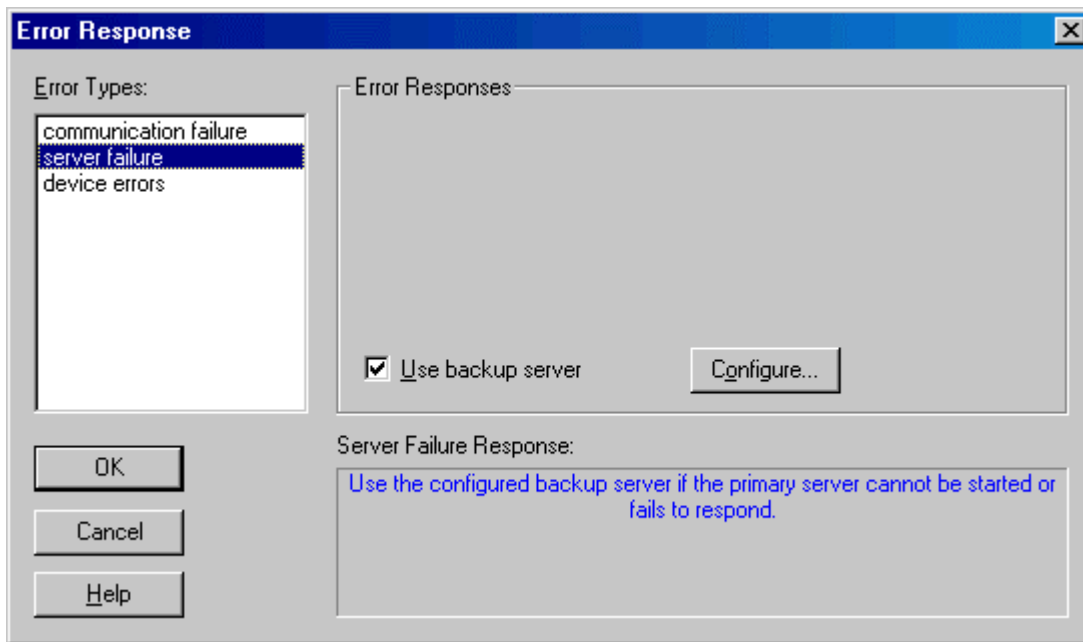
## Error Response: Server Failure

Use this set of controls to configure how FTLogger is to react to server failures.

Two types of server failures exist, a failure to start the server and a failure to communicate with the server. A failure to start the server can occur if the server .EXE does not exist at the registered location or the client does not have rights to start the server. Communications to the server can fail if the machine running the server fails or is forcefully terminated or the server application experienced a lockup.

To access this set of controls:

1. Select the **Setup/Error Response** menu option.
2. Select **server failure** from the **Error Types** list.



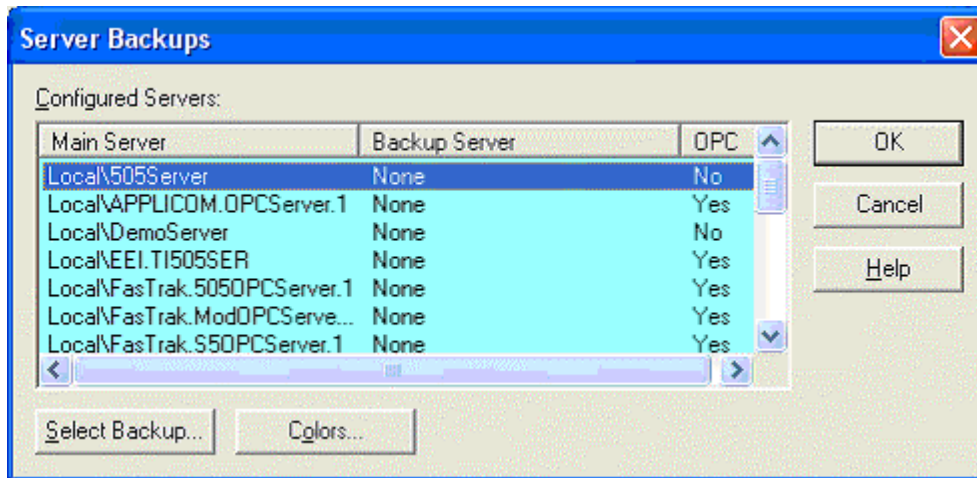
- **Use backup server:** When this box is checked and a server failure occurs, FTLogger will switch to the backup for the affected server. Click the **Configure** button to configure **Server Backups**.

## Server Backups

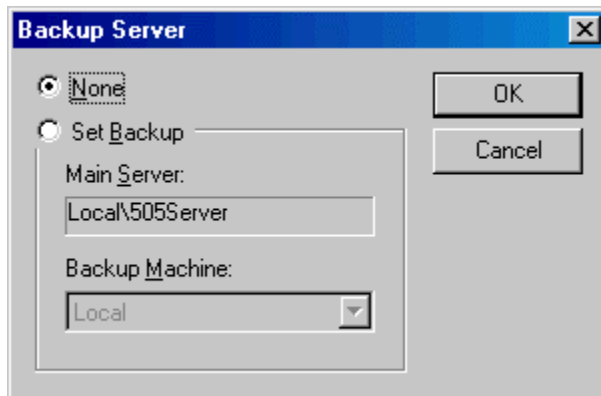
Server backups are available with the full FTLogger software package.

To configure backup servers:

1. Select the **Setup/Error Response** menu option.
2. Click **server failure** in the **Error Types** list.
3. Check the **Use backup server** box.
4. Click the **Configure** button. The **Server Backups** dialog appears.



5. Select the server to be backed up from the list.
6. Click the **Select Backup** button. The **Backup Server** dialog appears.



7. Select the **Set Backup** option.
8. Select the **Backup Machine** from the drop-down list.  
Make sure that you have rights to launch the server (if remote) and that the remote machine's logged on user has rights to access FTLogger. If you are using Windows XP and wish to use a remote machine for your server, additional steps must be performed first. (See **Using Windows XP and a Remote Machine for your Server**.)
9. The grid color of a log sheet that is using a backup server is displayed in an alternate color, red by default. To change the color that indicates use of a backup server, click the **Colors** button.

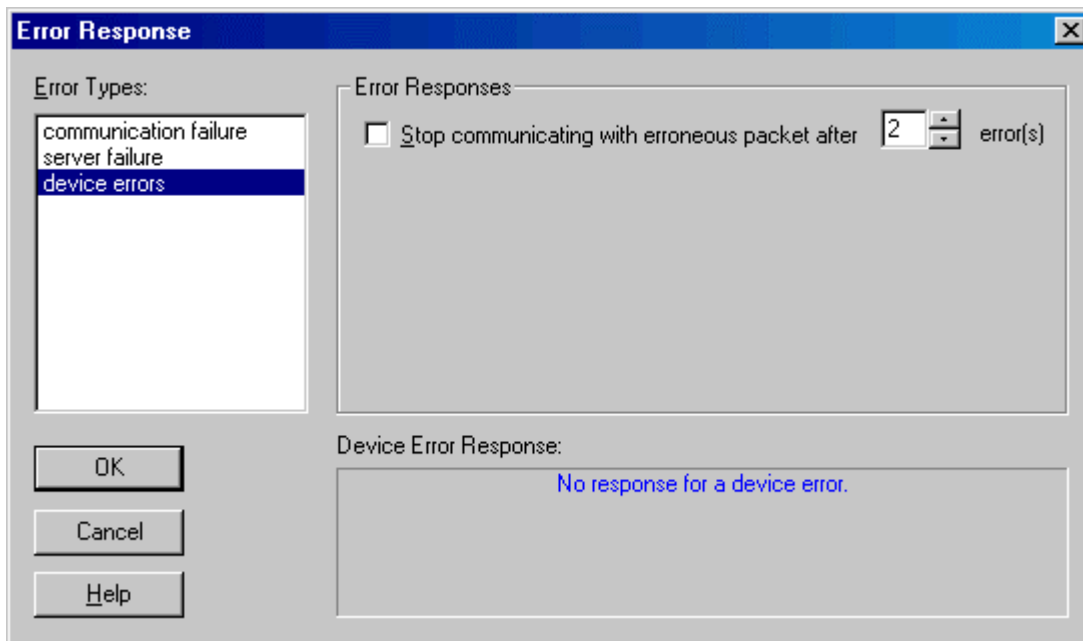
## Error Response: Device Errors

Use this set of controls to configure how FTLogger will react to device errors.

**Device errors** are errors returned from specific devices referring to specific addresses that FTLogger is attempting to read from the device using the FasTrak Server. Unlike a communications failure, there is no problem communicating to the device but rather a problem with the contents of the read operation. Such problems may occur when an address being requested is out of the configured range or not valid for the PLC. When requesting address values from a PLC, the “read” request typically involves several addresses that are bundled together into one request called a packet. This is much more efficient than requesting one value at a time. Unfortunately, one invalid address in the packet will render the entire packet invalid. When the **device errors response** is checked and this error situation occurs, all the addresses that make up the invalid packet are removed from the log sheet or sheets allowing other reads to continue without hesitation. Without the device error response, device errors can slow down communications to other devices and/or other addresses.

To access this set of controls:

1. Select the **Setup/Error Response** menu option.
2. Select **device errors** from the **Error Types** list.



- **Use backup server:** When this box is checked and a server failure occurs, FTLogger will switch to the backup for the affected server. Click the **Configure** button to configure **Server Backups**.



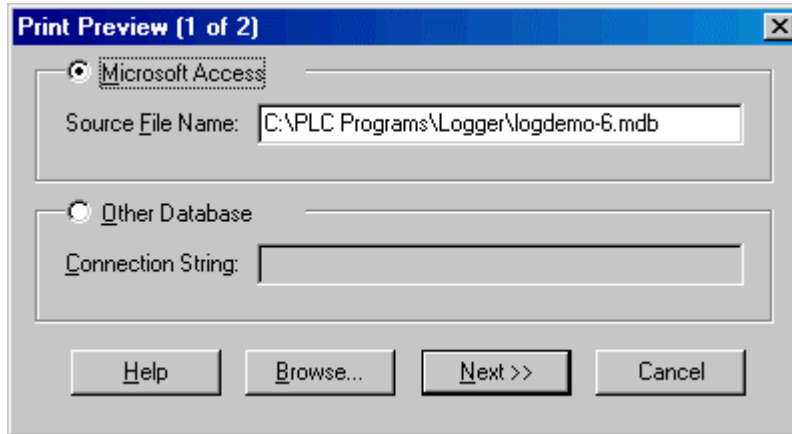


# Print

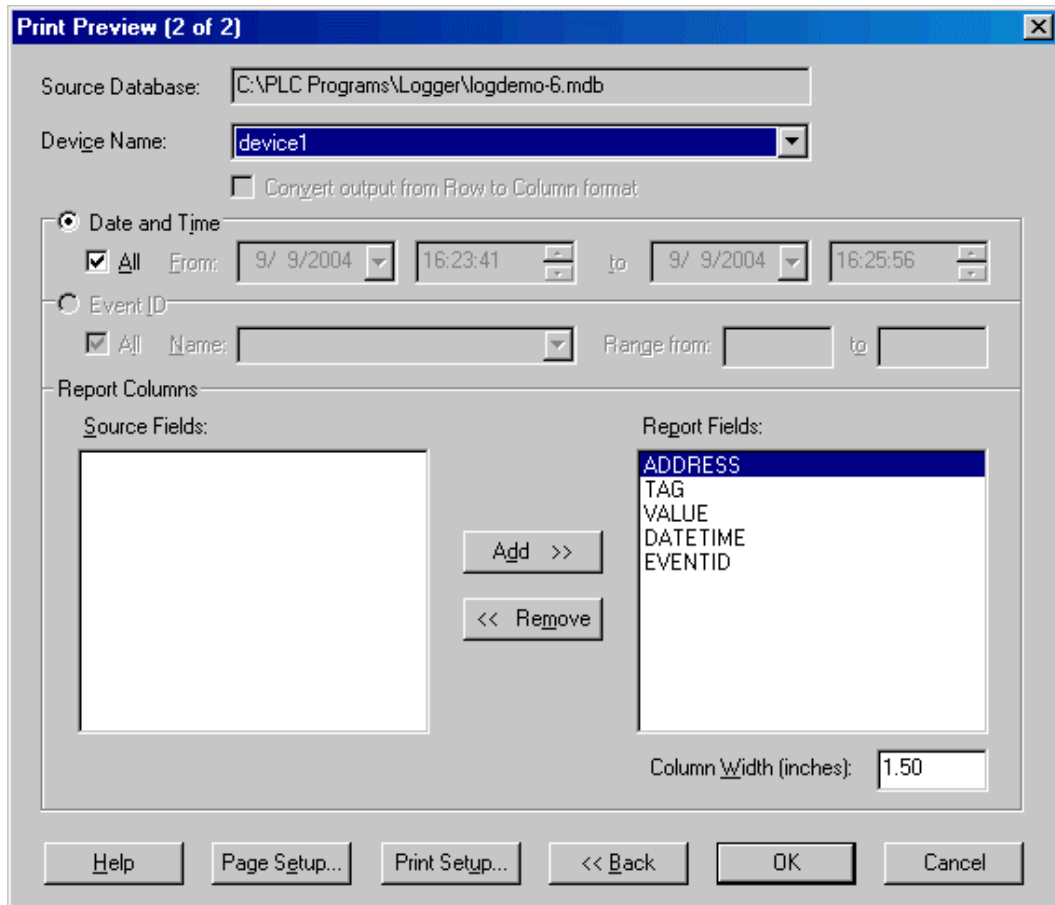
## Print

To print data collected by FTLogger:

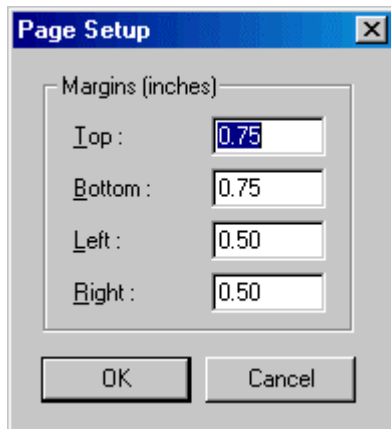
1. Select the **File/Print** menu option.



2. Select the database type (**Microsoft Access** or **Other Database**).
3. Enter the **Source File Name** or the **Connection String**, depending on database type.
4. Click the **Next** button.



5. Select the data to be printed:
  - **Device Name:** of the device for which data is to be printed. The list shows devices in the database.
  - **Date and time:** To print data for a particular time period, select the **Date and Time** option button. Select the time period from the associated fields.
  - **Event ID:** To print data from a particular event, select the **Event ID** option button, and select the event from the associated drop-down list. The list contains event ID names associated with the device name selected above. Select the range of events with that ID name using the associated **Range from** and **to** fields.
  - **Report Columns:** The fields listed in the **Report Fields** list will appear in the report. The fields in the **Source Fields** list are available, but not currently selected. Move fields between the lists using the **Add** and **Remove** buttons.
6. Use the **Page Setup** button to configure margins. The **Page Setup** dialog appears.



7. Set the **Column Width** for each field by highlighting the field in the **Report Fields** list and entering the desired width in inches in the **Column Width** box.
8. Click the **Print Setup** to access your system's print setup dialog.

## Print Preview

Use the **Print Preview** feature to check the print setup without wasting paper.

To use the Print Preview feature:

1. Select the **File/Print Preview** menu option.
2. Proceed as if you were printing. The **Print Preview** feature works exactly the same way as the **Print** feature, except for the actual output. See **Print** for details.

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ControlShop™

# FTTrend

Version 2.03

By FasTrak SoftWorks, Inc.

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**Contacting FasTrak SoftWorks, Inc.**

FasTrak SoftWorks, Inc.	262-238-8088
Technical Support	262-238-8088
Sales	262-238-8088
Web	<a href="http://www.fast-soft.com">http://www.fast-soft.com</a>
Email	<a href="mailto:support@fast-soft.com">support@fast-soft.com</a>
Mail	Attention: Technical Service FasTrak SoftWorks, Inc. PO Box 240065 Milwaukee, WI 53224-9003

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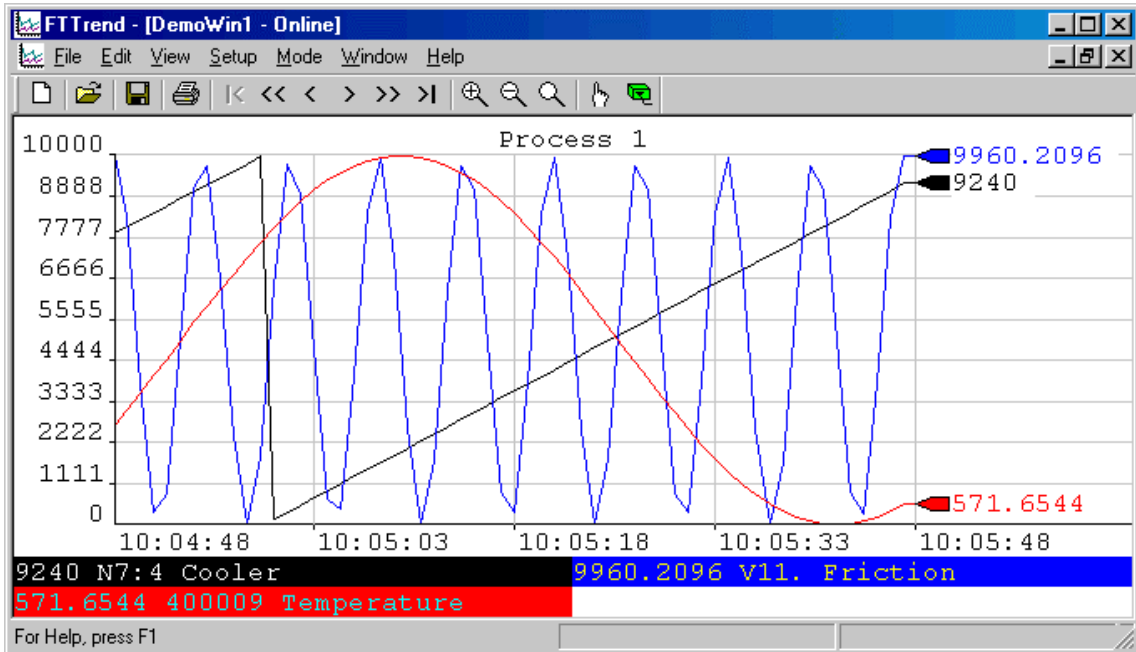
FTTrend

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## FTTrend Overview

FTTrend is an application that enables graphical trending of real-time and logged data from multiple devices. A data trend is illustrated by graphing a series of data values collected for a data point over a period of time. A line connects the values to each other. The real-time access to devices is handled through FasTrak or OPC Data Access Version 2.0 communication servers and the logged data comes from a Microsoft Access or SQL database file created by FTLogger or FTTrend.




FTTrend is an MDI (multiple document interface) application - several trend graphs can be open at the same time. All the trend graphs and their settings will be saved into one .trn file (this includes all the data points). All configured devices will be saved into one .cfg file whose name is saved in the .trn file. A second file format (.trh) is available through 'Export'. This file format will represent historical data points in a "read only" environment that have been collected from a prior trend.


Documentation for each configured device is saved to a separate Microsoft Access or SQL database. The database can be shared with other FasTrak applications, such as WorkShop.



## Online/Offline

When a trend window is **Online**, real-time data is read from the devices and plotted. When a trend window is **Offline**, real-time data is not read or shown, but the chart still shows logged data. When there are multiple trend windows, each window has a separate online/offline status. I.e. one can be online while another is offline.

To start real time trending, select the **Mode/Online** menu option, or click the toolbar button: 

To stop real time trending, select the **Mode/Offline** menu option, or click the toolbar button: 

---

**NOTE:** When plotting logged data, the graph will automatically start after the **Graph Data** dialog box has been configured.

---



## Viewing Time Periods

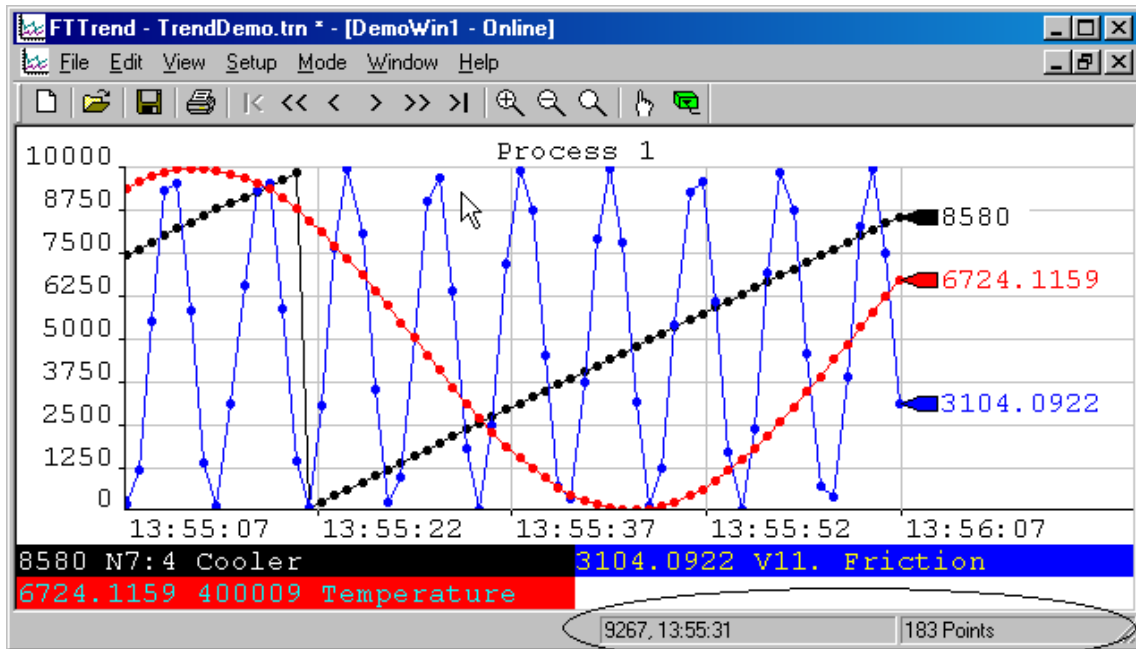
To view different time periods on a graph, select from the following options under the **View** menu:

- **Graph Begin** (| <): Displays the graph start time/date. This is disabled if neither **Use Start Time** nor **Use Start Date** boxes are checked in the X-Axis tab of the **Graph Settings** property sheet.
- **Prev Page** (< <): Goes one page into the past. The time range on a page is defined in the X-Axis tab of the **Graph Settings** property sheet.
- **Prev Time** (<): Goes one time interval into the past. Vertical grid lines on the graph mark each time interval.
- **Next Time** (>): Goes one time interval into the future.
- **Next Page** (> >): Goes one page into the future. The time range on a page is defined in the X-Axis tab of the **Graph Settings** property sheet.
- **Graph End** (> |): Goes to current time for real-time data trending or end of time period for logged data.
- **Zoom In**: Each time **Zoom In** is selected it cuts displayed time in half starting from the middle time period, effectively showing more detail but not as much time.
- **Zoom Out**: Each time **Zoom Out** is selected it doubles the displayed time starting from the middle time period, effectively showing less detail but more time.
- **Reset Zoom**: Returns the zoom to the data range configured for the X-Axis.



## Status Bar

The **status bar** appears at the bottom right corner of the FTTrend window when the mouse cursor is within the x and y axis boundary of a graph.



Status bar

The first section shows the mouse cursor location in graph terms. The first number shows the Y axis value, the second the time. In the image above, the mouse cursor is near the top (10,000) - at 9267, to be precise. The mouse cursor is at the part of the graph representing a time between 13:55:22 and 13:55:37 - 13:55:31, to be precise.

The second shows the number of data points currently displayed. In the image, the data point markers are set to circles. There are 183 of them in this example.





## Trend History File

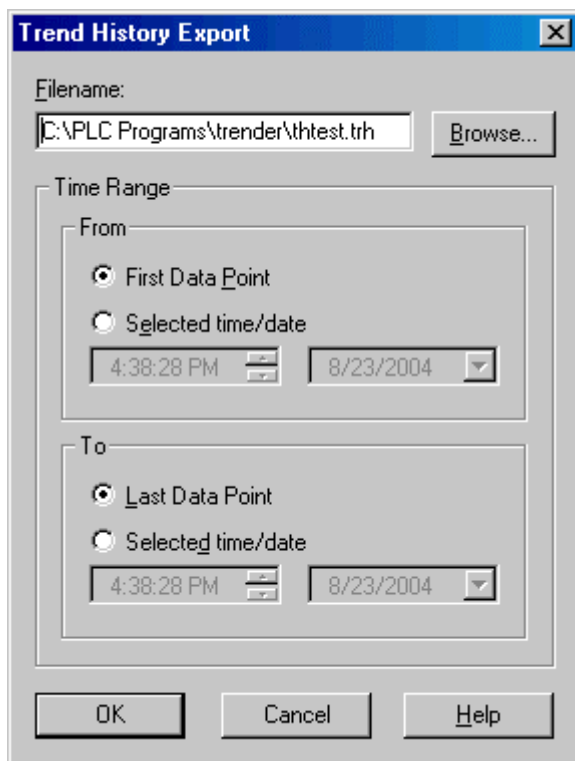
A **trend history file** is an offline, read-only snapshot of a trend graph.

Trend history files are a convenient way to present trend data:

- All information for a trend history file is saved to one .trh file.
- No security key is needed to view trend history files.
- No knowledge of FTTrend is needed to view trend history files. Simply load the file and view the trend.

To create a trend history file:

1. Open a trend project (.TRN file) or create a graph and add one or more data points.
2. When the desired data (real-time or logged) is in the graph, select the **File/Export/Trend History** menu option. Be sure the desired real-time data has not been deleted as a result of the deletion setting on the **database tab**.



3. Select a file name and time range:
  - **Filename:** Select the file name for the trend history file. The extension will be .TRH
  - **Time Range:** Select the data to be stored in the trend history file. Data points in this range will be copied to the trend history file.
  - **First Data Point / Last Data Point:** Automatically select a time range that includes the first/last data point on the graph. Logged data points for addresses that are not on the graph are ignored.

To view a trend history file:

1. Install FTTrend on the computer where the history file will be viewed, if it is not already installed. No security key is needed if the **/readonly** command line option is used.


2. Copy the trend history (.TRH) file to the computer. The .TRH file is self-contained - no other files are needed.
3. Either launch the .TRH file from the Windows Explorer or start FTTrend and use the **File/Open** menu option to open the .TRH file.

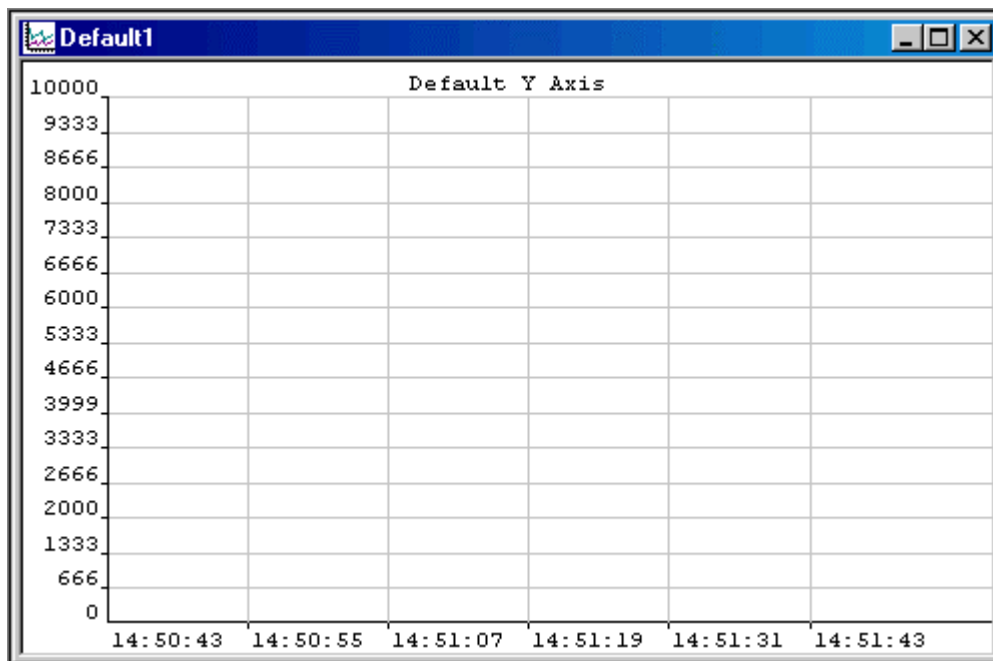
There are several restrictions when using trend history files:

- Trend history files are read only. It is possible to change some of the options while viewing a trend history file, but the changes cannot be saved.
- Trend history files are always offline. You cannot switch to online mode while viewing a trend history file.
- You cannot create a new file while viewing a trend history file.
- Data points cannot be added or deleted.
- The start time and date for a trend history file are fixed.

## Creating a Trend Window

To create a new **Trend Window**:

1. Launch FTTrend.
2. Select the **File/New** menu option or click the corresponding toolbar button: 



The next step is to **configure devices**.



# Device Source Configuration


## Device Source Configuration

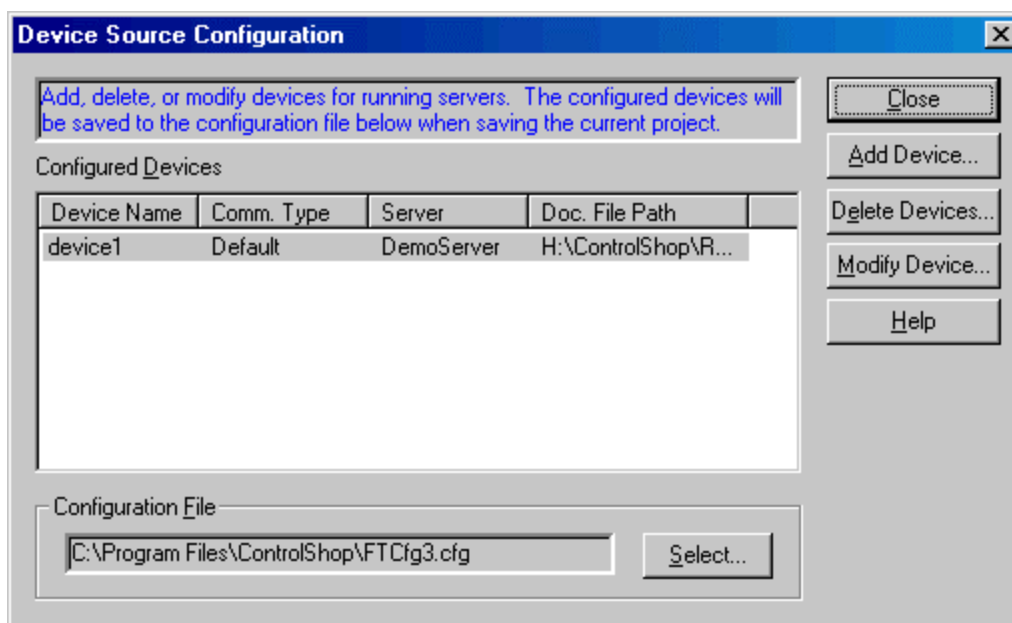
The **Device Source Configuration** dialog allows you to configure the devices from which data points are read.

For each device, FTTrend requires the following information:

- **Device Name:** A name to identify the device.
- **Comm Type:** The communication system - COM port, TCP/IP, etc. The options depend on the device.
- **Server:** Communication servers are shared between FasTrak applications, allowing multiple applications to communicate with the same devices at the same time.
- **Doc File Path:** The documentation database, which holds the address documentation for the device. To share documentation (for example, from the shared documentation database for a WorkShop program) set the **File Path** to the shared documentation database. If you set the **File Path** to a database that does not exist, a new database will be created.
- **Communications parameters:** Configuration for communications between the PC and the device. This information is not shown in the table. See **Communication Setup** for details.

To configure devices:

1. Select the **Setup/Device Source** menu option or the corresponding toolbar button:  The Device Source Configuration dialog appears.



2. Use the buttons to access the configuration actions:
  - **Add Device:** Add a new device to the list.
  - **Delete Devices:** Delete the configuration for one or more devices.
  - **Modify Device:** Edit the highlighted device configuration.

- **Configuration File:** The configuration is saved in a .CFG file, not the .TRN Trend file. Click the **Select** button to select the configuration file where the information will be stored when the trend (.TRN file) is saved.

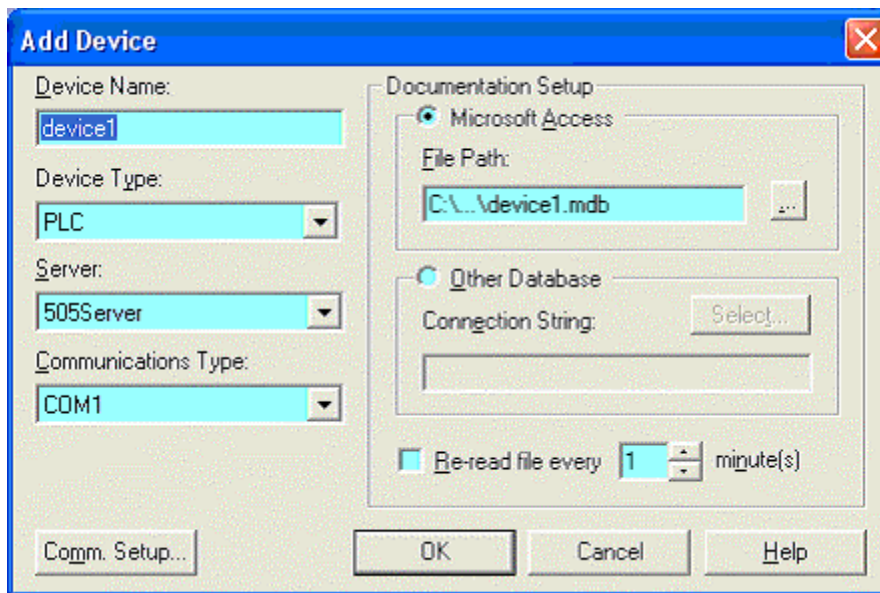
## Adding Devices

To add a device to the current configuration:

1. Bring up the **Device Source Configuration dialog** by selecting the **Setup/Device Source** menu item or the corresponding toolbar button:



2. Click the **Add Device** button. The **Add Device** dialog appears.



3. Configure the new device, and click the **OK** button.
  - **Device Name:** Enter a name to identify the device. The device name must be unique.
  - **Device Type:** Select the type of device.
  - **Server:** Select the communication server. Communication servers are shared between FasTrak applications and OPC clients, allowing multiple applications to communicate with the same devices at the same time. The drop-down list shows the communication servers that have been installed on the computer.
  - **Communications Type:** Select the type of communications that connects the PC to the device. The options depend on the communications server selected above.
  - **Comm Setup:** Configure communications between the PC and the device. See **Communication Setup** for details.
  - **Documentation Setup:** Configure the documentation database, which holds the address documentation for the device. To use existing documentation (for example, from the shared documentation database for a Workshop program) set the **File Path** to the shared documentation database. If you set the **File Path** to a database that does not exist, a new database will be created.
  - **Re-read file every:** This option should only be selected when sharing the database with other applications and if the database is under development. To keep documentation up-to-date, check the box and set the number of minutes to control how often the documentation database should be checked for changes.

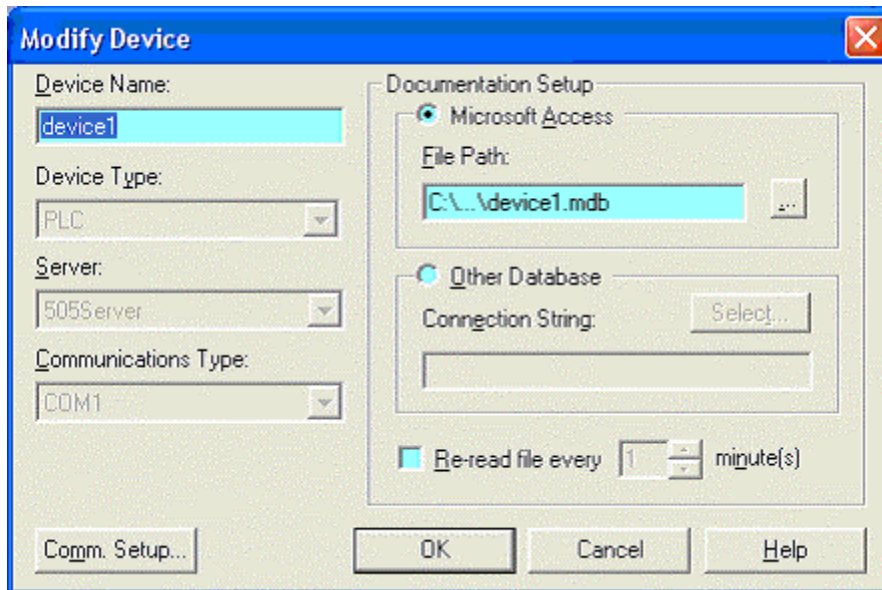
## Modifying Devices

To modify a device that is already configured:

1. Bring up the **Device Source Configuration dialog** by selecting the **Setup/Device Source** menu item or the corresponding toolbar button:



2. Highlight the device in the list and click the **Modify Device** button, or double-click the device in the list. The **Modify Device** dialog appears.



3. Modify the device, and click the **OK** button.
  - **Device Name:** Enter a name to identify the device. The device name must be unique. Unlike the **Add Device** dialog, when we modify the device name here, the documentation filename does not change.
  - **Documentation Setup:** Configure the documentation database, which holds the address documentation for the device. To use existing documentation (for example, from the shared documentation database for a **WorkShop** program) set the **File Path** to the shared documentation database. If you set the **File Path** to a database that does not exist, a new database will be created.
  - **Comm Setup:** Configure communications between the PC and the device. See **Communication Setup** for details. If no trend windows are online with this device then the communication settings can also be modified. If the device is online then the communication settings can be viewed but cannot be modified.
  - **Re-read file every:** This option should only be selected when sharing the database with other applications and if the database is under development. To keep documentation up-to-date, check the box and set the number of minutes to control how often the documentation database should be checked for changes.



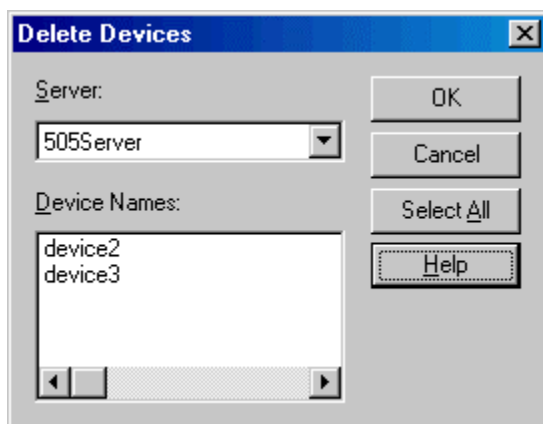
## Deleting Devices

To delete a device from the current configuration:

1. Bring up the **Device Source Configuration dialog** by selecting the **Setup/Device Source** menu item or the corresponding toolbar button:



2. Click the **Delete devices** button. The Delete Devices dialog appears.




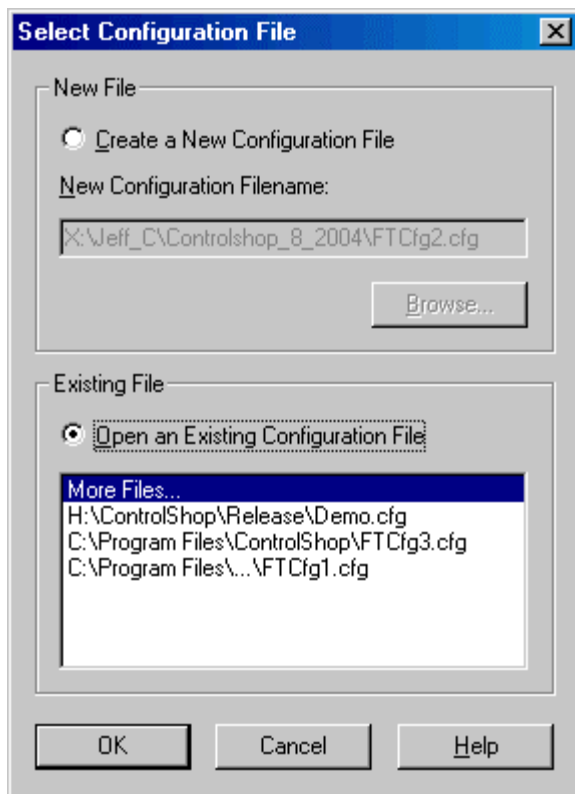
3. Select the **Server** that controls the devices to be deleted. The Device Names list shows the devices configured for that server.
4. Select the device(s) to be deleted. To delete all the devices for a server, click the **Select All** button.
5. Click the **OK** button.

## Select Configuration File

The configuration, which holds the device source configuration information, is saved in a .CFG file, not the .TRN Trend file.

To select the configuration file:

1. Select the **Setup/Device Source** menu option or the corresponding toolbar button: 
2. Click the **Select** button in the **Configuration File** area. The **Select Configuration File** dialog appears.




- **New File:** To create a new configuration file, select the **Create New Configuration File** option button and **Browse** for the file name and location.
- **Existing File:** To select an existing file, select the **Open an Existing Configuration File** option button. If the desired file is in the list, click it. Otherwise, click the **More Files** line in the list and browse for the file.

## Communication Setup

The **Communication Setup** dialog configures communication between the PC and one of the configured devices. It varies depending on the type of device and the type of communication.

To configure communication:

1. Open the **Device Source Configuration** dialog by selecting the Setup/Device Source menu option or clicking the corresponding toolbar button: 
2. Open the configuration dialog for the device, by clicking the **Add Device** button or selecting the device in the list and clicking the **Modify Device** button. When modifying an existing device, if a data point on the device is used in a graph that is currently online, the communication setup can be viewed but not edited.
3. Select the **Server**, if possible. The **Server** and **Communications Type** cannot be changed in an existing device.
4. Select the **Communications Type**, if possible.
5. Click the **Comm Setup** button.



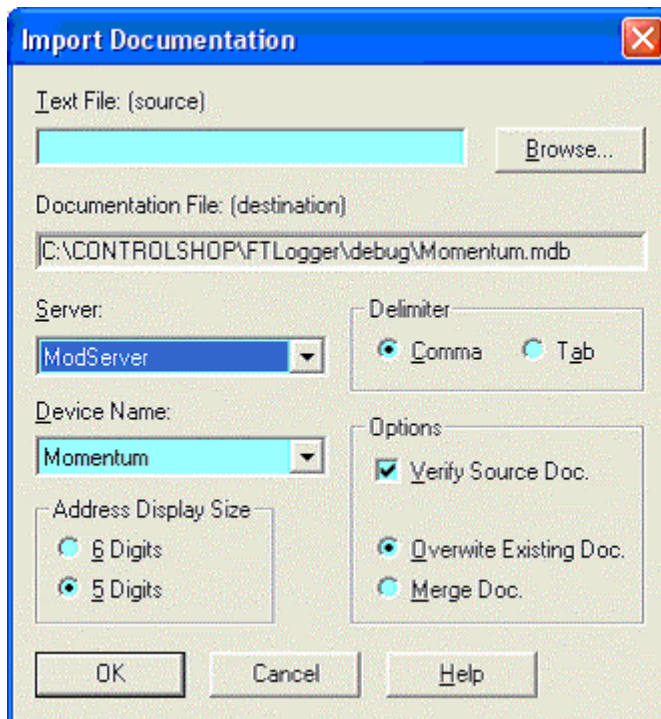
# Import/Export Documentation

## Import Documentation

Documentation for a device can be imported from a text file into the existing database.

To import documentation:

1. Select the **File/Import Documentation** menu option. The **Import Documentation** dialog appears.



2. Select the source file by typing in the **Text File (source)** field or by clicking the **Browse** button.
3. Select the communication **Server** for the device which will receive the imported documentation. The list shows servers that are registered on the computer.
4. Select the **Device Name**. The list shows device configuration entries that are connected via the server selected above. The documentation database that corresponds to the selected device will be the recipient of the import.
5. If the **Server** is set to **ModServer**, select the option button for either **6 Digits** or **5 Digits**. The options are not visible for other servers.
6. The fields in the text file may be separated by either tabs or commas. Select the **Delimiter** by selecting the appropriate option button.
7. Set the **Options** as desired:
  - **Verify Source Doc:** Check the box to verify tags, addresses, and the source file format. Clear the box for a faster import process.
  - **Overwrite Existing Doc:** When this option is selected, the database is cleared, so the imported documentation is all the documentation. If an address is in the database but not in the imported file, the information in the database is lost.

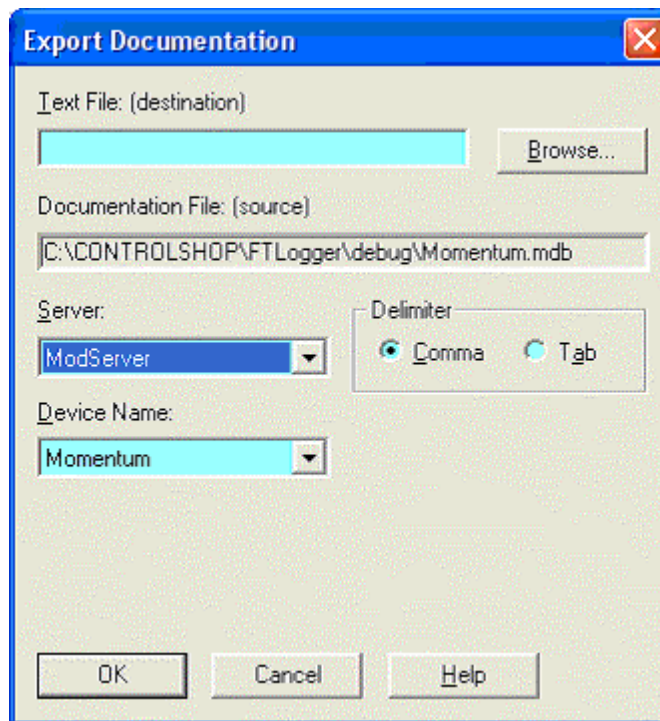
- **Merge Doc:** When this option is selected, the imported documentation is merged into the database. If an address is in the imported file but not in the database, it is added to the database. If an address is in the imported file and already in the database, you will receive a warning. The address in the database will remain. If an address is in the database but not in the imported file, the database information is left as is.

## Export Documentation

Documentation for a device can be exported from the database to a text file, for editing in an outside program such as Microsoft Excel, or for import into another application.

To export documentation:

1. Select the **File/Export Documentation** menu option. The **Export Documentation** dialog appears.



2. Select the destination file by typing in the **Text File (destination)** field or by clicking the **Browse** button.
3. Select the communication **Server** for the device. The list shows servers that are registered on the computer.
4. Select the **Device Name**. The list shows device configuration entries that are connected via the server selected above. the documentation database that corresponds to the selected device will be the source of the exported information.
5. The fields in the text file may be separated by either tabs or commas. Select the **Delimiter** by selecting the appropriate option button.



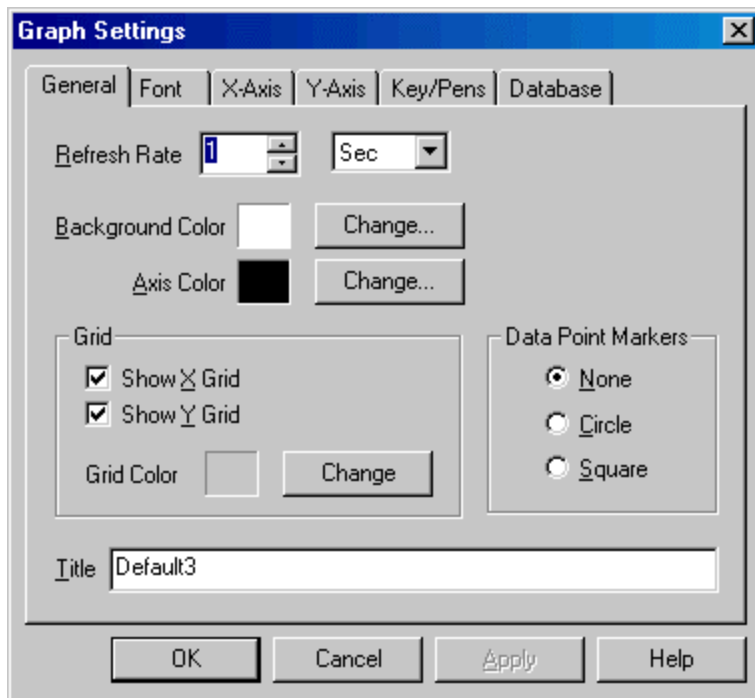


# Graph Settings

## Graph Settings

To configure the graph settings:

1. Select the **Setup/Graph** menu option. The **Graph Settings** property sheet is displayed.



The tabs on this property sheet are:

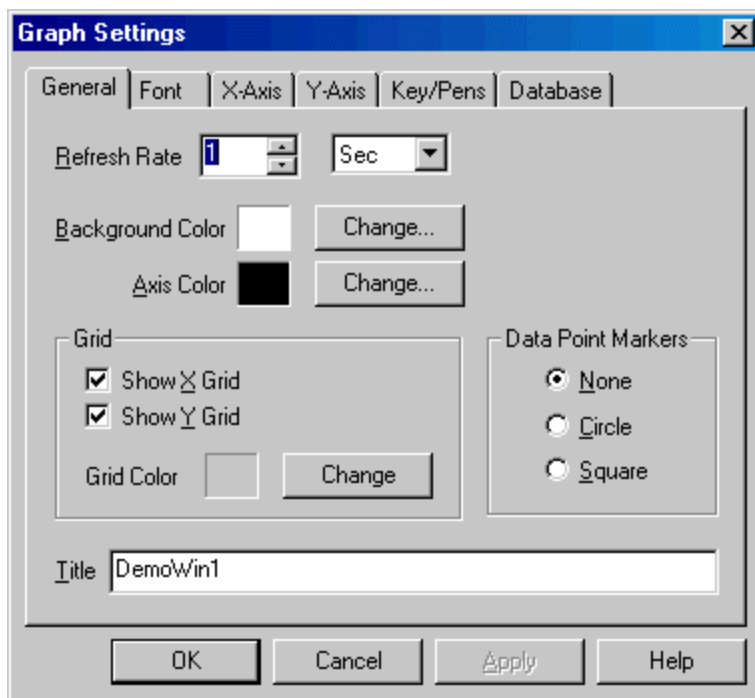
- **General:** This tab configures the general appearance of the graph.
- **Font:** This tab configures the font used for characters in the graph.
- **X-Axis:** This tab configures time scale, and related details, of the graph.
- **Y-Axis:** This tab configures data range, and related details, of the graph.
- **Keys/Pens:** This tab configures how the data is labeled on the graph.
- **Database:** This tab configures the database where data for real-time points is stored.

## General Tab

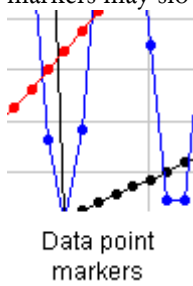
This tab configures the general appearance of the graph.

To configure the graph:

1. Select the **Setup/Graph** menu option.
2. Click the **General** tab.



- **Refresh Rate:** The time between screen updates. This value should not be confused with a data point sample rate, which is configured for each data point.
- **Background Color:** Sets the color of the graph background.
- **Axis Color:** Sets the X and Y-axis color.
- **Grid:** Turns on and off the X and Y reference lines.
- **Grid Color:** Sets the color of the X and Y reference lines.
- **Data Point Markers:** Mark data that has been read from the device. Displaying data point markers may slow the screen update.



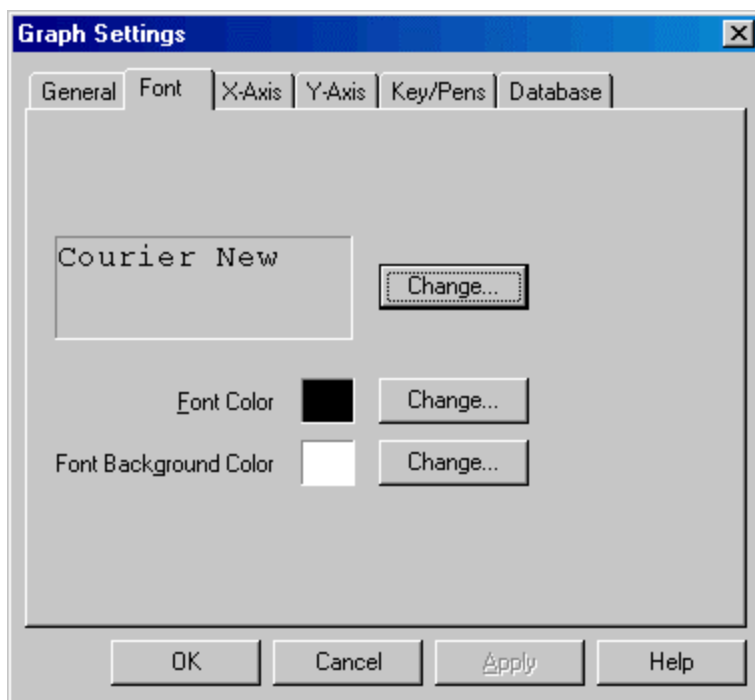
- **Title:** The name of the graph. Any name up to 64 characters can be used.

## Font Tab

This tab controls the font used for characters in the graph.

To set the font:

1. Select the **Setup/Graph** menu option.
2. Click the **Font** tab.



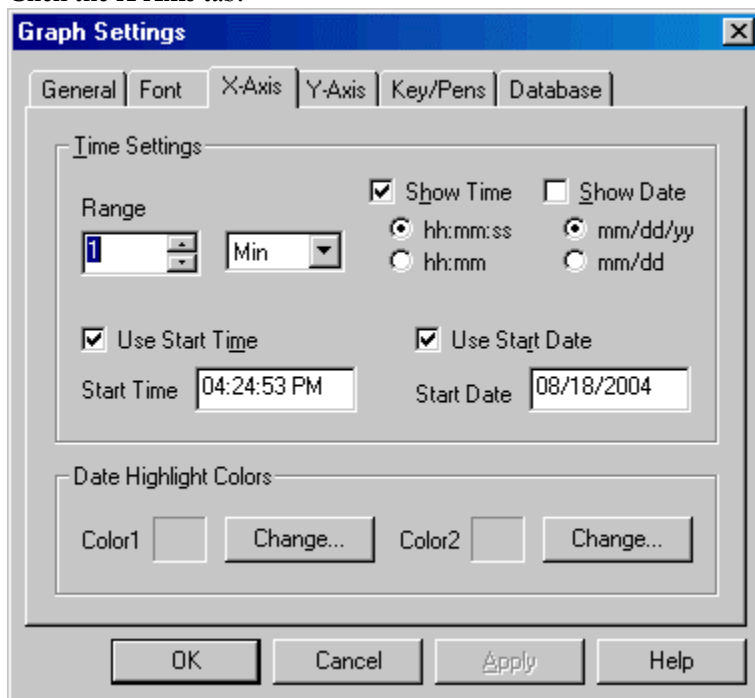
- **Font name (Courier New, by default):** Set the typeface.
- **Font Color:** Set the default color for lettering. In some parts of the graph, the color is controlled by the **Data Point** configuration.
- **Font Background color:** Set the default color to appear behind lettering. In some parts of the graph, the color is controlled by the **Data Point** configuration.

## X-Axis Tab

This tab configures the time scale and related details.

To configure the X-Axis:

1. Select the **Setup/Graph** menu option.
2. Click the **X-Axis** tab.



### *Time Settings*

- **Range:** Sets the length of time that is visible at once.
- **Show Time:** If this box is checked, the time is displayed at the bottom of the graph, in the selected format.
- **Show Date:** If this box is checked, the date is displayed at the bottom of the graph, in the selected format.
- **Use Start Time, Use Start Date:** If either of these boxes is checked, the graph will start with the specified date and/or time. The graph will not animate (move so that the current time is at the right edge of the graph).

### *Date Highlight Colors*

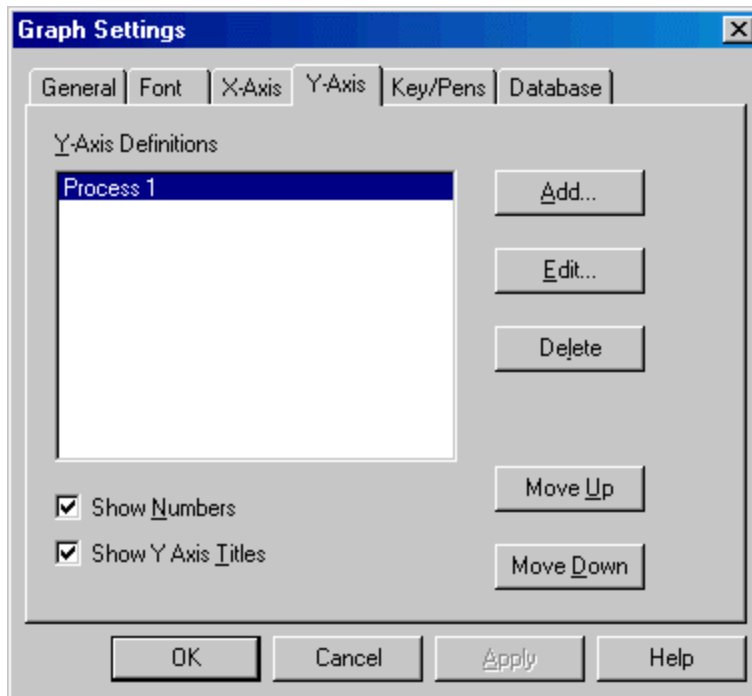
- **Color 1, Color 2:** If the date is shown (the **Show Date** box described above is checked) the dates are shown on alternating color backgrounds. These settings control those background colors.

## Y-Axis Tab

This tab configures data range, and related details, of the graph.

To configure the Y-Axis:

1. Select the **Setup/Graph** menu option.
2. Click the **Y-Axis** tab.



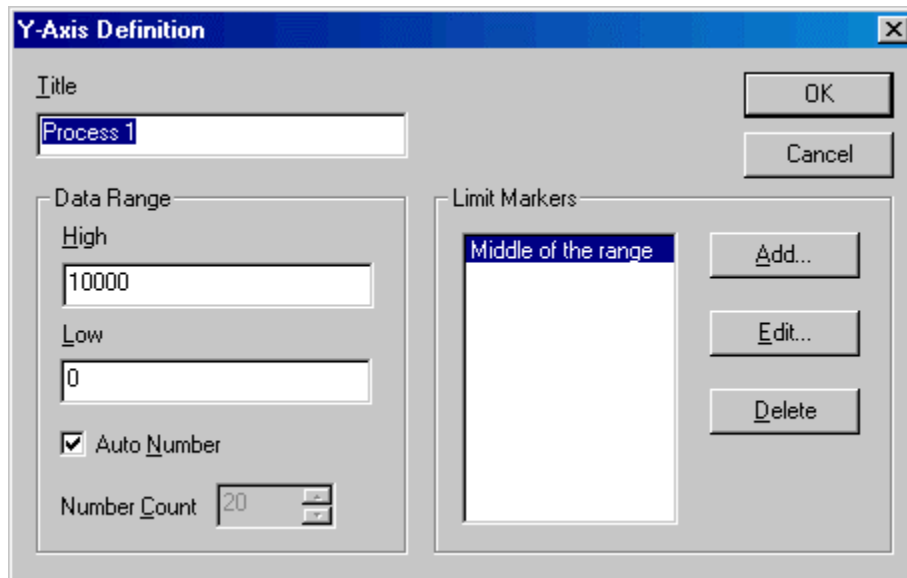
The check boxes apply to the display as a whole:

- **Show Numbers:** Show numbers at the left of the graph, indicating what value each horizontal line represents.
- **Show Y Axis Titles:** Show the title for each Y-Axis at the top of the graph.

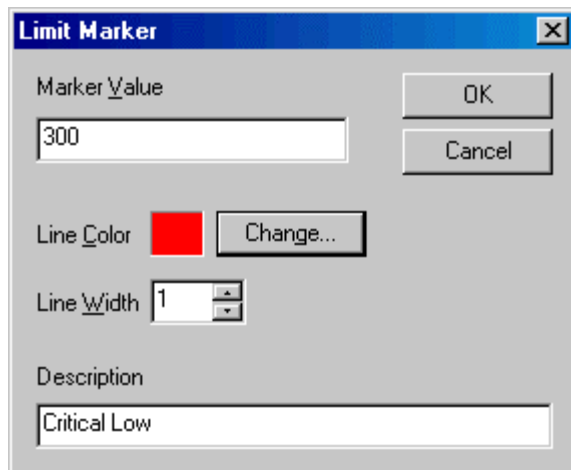
There can be up to 16 different Y-axis definitions per trend graph. The following buttons manage Y-axis definitions:

- **Add:** Add a new Y-axis definition.
- **Edit:** Edit the highlighted Y-axis.
- **Delete:** Delete the highlighted Y-axis.
- **Move Up, Move Down:** Move the highlighted Y-axis in the list. This controls the order in which they appear on the graph.

When you click the **Add** or **Edit** button, the **Y-Axis Definition** dialog appears.



- **Title:** Text to identify this Y-Axis. If the **Show Y Axis Titles** box is checked, the title will appear on the graph.
- **Data Range High, Low:** Specify the values represented by the top and bottom of the Y-Axis. The **High** must be more than the **Low**.
- **Auto Number:** Let FTTrend decide how many lines to divide the range into.
- **Number Count:** Specify the number of lines to divide the range into.
- **Limit Markers:** Static horizontal lines to provide a visual reference for specific values. Click the **Add** button to add a marker, the **Edit** button to edit the highlighted marker, the **Delete** button to remove the highlighted marker. When you click the **Add** button or the **Edit** button, the **Limit Marker** dialog appears.



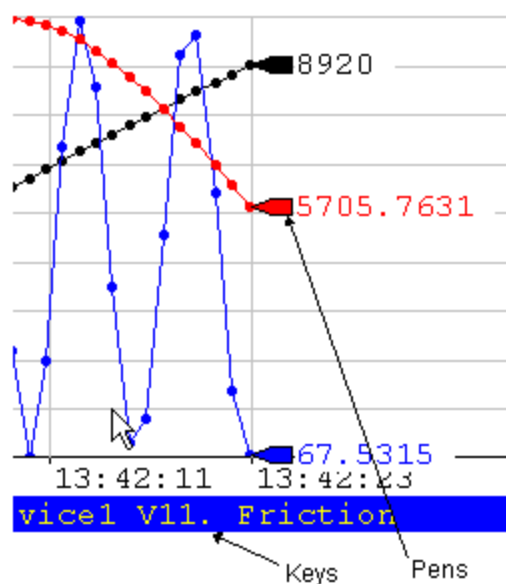
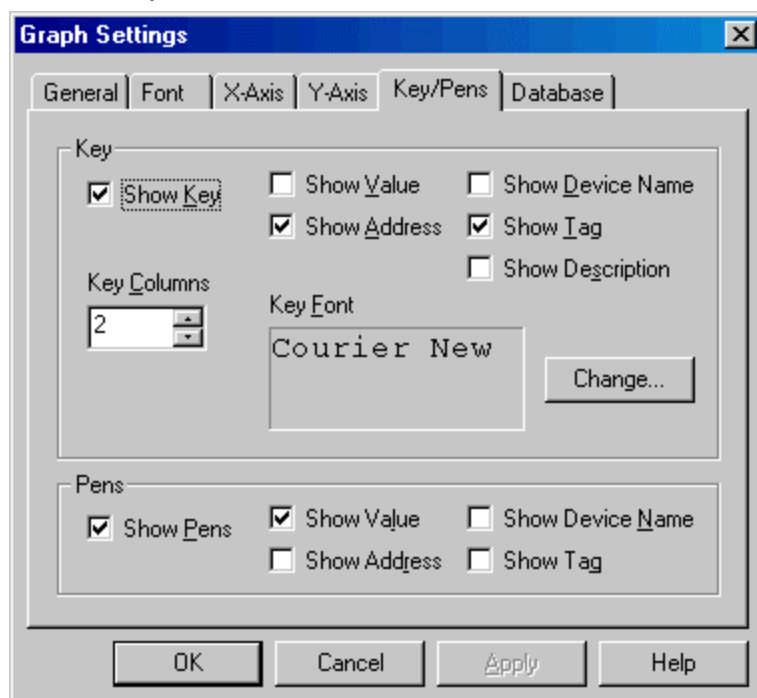
- **Marker Value:** The value that the marker indicated. This number must be within the Y-Axis range.
- **Line Color:** The color of the marker.
- **Line Width:** The width of the marker in pixels.
- **Description:** A text description of the marker. The description appears on the graph. This field is required.

## Key/Pens Display

This tab configures how the data is labeled on the graph.

To configure the graph:

1. Select the **Setup/Graph** menu option.
2. Click the **Keys/Pens** tab.



- **Key:** The key is a color-coded label of a specific data point on the graph. The keys appear below the graph.
  - **Show Key:** Determines whether the key will be displayed.

- **Show Value:** The value of the data point being read.
- **Show Address:** The current address being read.
- **Show Device Name:** The name of the device to which communication is established.
- **Show Tag, Show Description:** Address documentation.
- **Key Columns:** Divide the key area into this number of columns.
- **Key Font:** Click the **Change** button to configure the font used in the keys
- **Pens:** Markers showing the current value of each data point at the end of the graph.
  - **Show Pen:** Determines whether the key will be displayed.
  - **Show Value:** The value of the data point being read.
  - **Show Address:** The current address being read.
  - **Show Device Name:** The name of the device which communication is established.
  - **Show Tag:** Address documentation.



## Database Tab

This tab configures the database where data for **real-time points** is stored. For details on the database, see **Real-Time Database**.

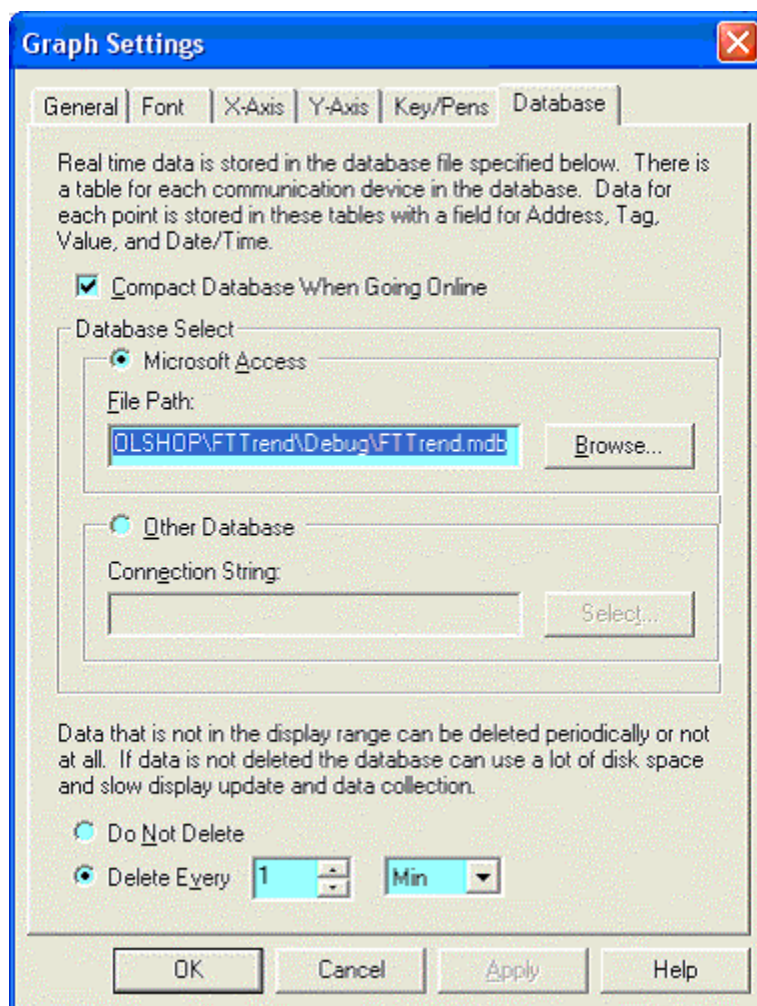
---

**NOTE:** While this database may be used as a source for **logged points**, FTLogger provides far more functionality and flexibility in logging data.

---

To access the Database tab:

1. Select the **Setup/Graph** menu option.
2. Click the **Database** tab.



- **Compact Database When Going Online:** Check this box to compact the database as part of the process of going online.

---

**NOTE:** Disk space that was occupied by deleted database records is not available until the compact is performed.

---

- **Database Select:** Specify the database.

- **Microsoft Access:** To build the database in **Microsoft Access** format, select the **Microsoft Access** option button and set the **File Path** to the name of the Access (.MDB) file. If the database does not exist, FTTrend will create it.
- **Other Database:** To build the database in a format other than Microsoft Access (currently, **SQL** is the only option) select the **Other Database** option button and click the **Select** button to configure the **Data Link Properties**. The SQL database must exist prior to the selection.
- **Delete:** Select the **Delete Every** option button and set a number and time unit to delete old data.

---

**NOTE:** When data is deleted from a database, the disk space is not freed until the database is compacted. The database cannot be compacted while FTTrend is online. If the **Compact Database When Going Online** box is not checked, the **Delete Every** option will not reduce the file size.

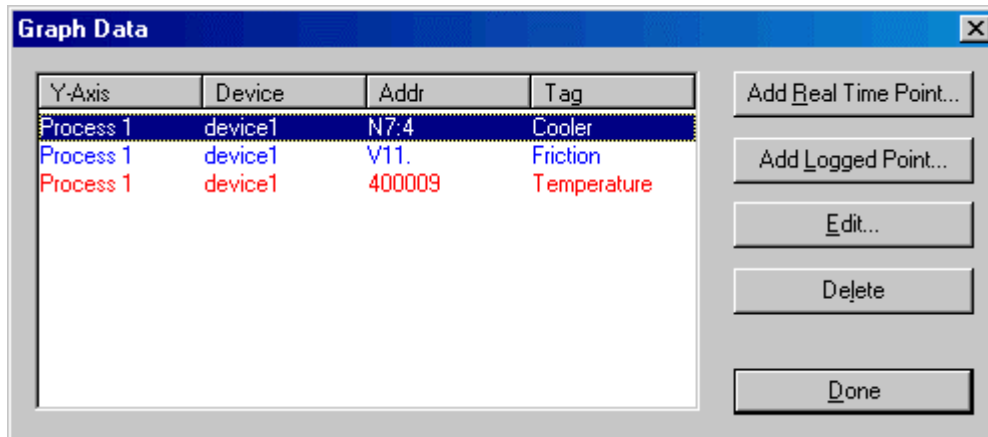
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# Configuring Graph Data Points

## Configuring Graph Data Points

To configure graph data points to trend:

1. In order to configure a data point, the device from which the data will be read must be defined. See **Configure Devices** for details.
2. Select the **Setup/Data** menu option. The **Graph Data** dialog appears.



3. Use the buttons to access the configuration actions:
  - **Add Real Time Point:** Add a point that reflects the current state of the system, a point that will be read from a device while the trend is online.
  - **Add Logged Point:** Add a point that reflects the state of the system at some point in the past, reading data from a database created by FTLogger or FTTrend.
  - **Edit:** Change the configuration of the highlighted data point.
  - **Delete:** Delete the highlighted data point.

## Configure a Real Time Data Point from a FasTrak Server

To configure a real time point from a FasTrak Server:

1. Select the **Setup/Data** menu option.
2. To create a new data point, click the **Add Real Time Point** button. To edit an existing point, select it in the list and click the **Edit** button. Either way, the **Data Point - Real Time** dialog appears.

- **PLC:** Select the device that was configured in the **device source configuration**.
- **OPC:** Select to choose a data point from an OPC server. (See **Configure a Real Time Data Point from an OPC Server** for details.)
- **Address:** Enter the address of the data point, or enter the tag below. If there is a tag for the address in the device documentation database, it appears below.
- **Tag:** Addresses can be specified by tag. To specify the address by tag, select the tag from the Tag drop-down list. The corresponding address appears in the field above.
- **Y-Axis:** Select the **Y-Axis** on which the point will be displayed.
- **Sample Rate:** Select the time unit and number to specify how often data for this point will be collected.

---

**NOTE:** Large amounts of data may not be read at the desired sample rate.

---

- **Data Type:** Select the data type (signed, unsigned, float, size) for the point.
- **Line Properties:** Set the line width and color for the trend line representing the data point.
- **Scaling:** To scale the data, check the **Scale Data** box and enter the appropriate **Min** and **Max** for the **Raw Data**, and the values to **Scale To**. For example, if the values at the specified address range from 0 to 32000, but the graph is on a scale of 0 to 100, set the Raw Data Min to 0, the Raw Data Max to 32000, the Scale To Min to 0, and the Scale To Max to 100.

## Configure a Real Time Data Point from an OPC Server

To configure a real time point from an OPC Data Access Version 2.0 Server:

1. Select the **Setup/Data** menu option.
2. To create a new data point, click the **Add Real Time Point** button. To edit an existing point, select it in the list and click the **Edit** button. Either way, the **Data Point - Real Time** dialog appears.
3. Select the **OPC** option button. The modified **Data Point - Real Time** dialog appears.

- **Servers:** Select the OPC server from the drop-down list of locally registered servers.
- **OPC Tag:** Enter the OPC tag or click the **Get Tag** button to select a tag. (See **OPC Tag** for details.)
- **Y-Axis:** Select the **Y-Axis** on which the point will be displayed.
- **Sample Rate:** Select the time unit and number to specify how often data for this point will be collected.

---

**NOTE:** Large amounts of data may not be read at the desired sample rate.

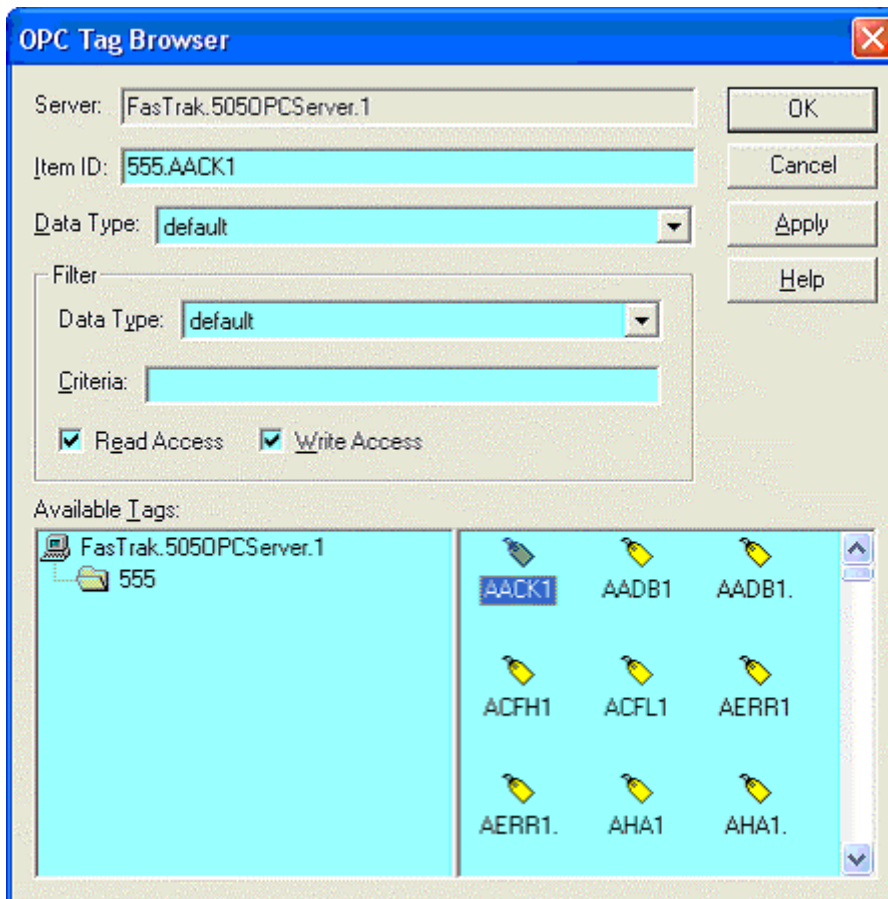
---

- **Data Type:** Select the data type for the point. There are 13 types to choose from including default, byte, short, float, etc.
- **Line Properties:** Set the line width and color for the trend line representing the data point.
- **Scaling:** To scale the data, check the **Scale Data** box and enter the appropriate **Min** and **Max** for the **Raw Data**, and the values to **Scale To**. For example, if the values at the specified address range from 0 to 32000, but the graph is on a scale of 0 to 100, set the Raw Data Min to 0, the Raw Data Max to 32000, the Scale To Min to 0, and the Scale To Max to 100.

## OPC Tag

Use the **OPC Tag Browser** to select a tag.

From the modified **Data Point-Real Time** dialog, click to **Get Tag** button. The **OPC Tag Browser** dialog appears.



- **Server:** Lists the server that was selected in the **Data Point - Real Time** dialog.
- **Item ID:** Identifies the tag. Select from the **Available Tags** pane or manually enter or modify.
- **Data Type:** There are 13 different data types to choose from, which will affect how the value is displayed in the graph. The default will display the canonical (native) data type.
- **Filter:** Controls which tags display in the **Available Tags** pane.

## Configure a Logged Data Point

To configure a logged point:

1. Select the **Setup/Data** menu option.
2. To create a new logged data point, click the **Add Logged Point** button. To edit an existing point, select it in the list and click the **Edit** button. Either way, the **Data Point - Logged** dialog appears.

- **Database Select:** Select the database containing the logged data. The data must be logged by FTLogger in a row-based database, or by FTTrend.
  - **Microsoft Access:** To select the database in **Microsoft Access** format, select the **Microsoft Access** option button and set the **File Path** to the name of the Access (.MDB) file.
  - **Other Database:** To select the database in a format other than Microsoft Access (currently, **SQL** is the only option) select the **Other Database** option button and click the **Select** button to configure the **Data Link Properties**.
- **PLC:** When logging, the data for each device is stored in a separate table. The name of the table is the name of the device. For OPC, the table name matches the name of the log sheet. Select the table/device name here.

- **Address:** Select the address of the data point. If there is a corresponding tag for the address in the log file, it will automatically be selected in the **Tag Combo** box.
- **Tag:** Addresses can be specified by tag. To specify the address by tag, select the tag from the Tag drop-down list. The corresponding address in the log file will automatically be selected in the **Address Combo** box.
- **Y-Axis:** Select the **Y-Axis** on which the point will be displayed.
- **Time Offset:** Time Offset allows you to offset the time stamp in the database to line up with the current time. This is useful if the user would like to see data trend animation as if it was currently being read from a PLC. For example, If real-time data starts logging at 1 p.m., and logged data started at 11:00 a.m., enter '2' in the 'Hours' edit box to synchronize the time. A time offset is not necessary if the address is currently being logged to the log file via FTLogger.
- **Line Properties:** Set the line width and color for the trend line representing the data point.
- **Search for Spanned Log Files:** FTLogger can be configured to log data to a series of spanned files, instead of one large file. If this box is checked, FTTrend uses data from the series of spanned files. The data appears as one continuous trend.  
The selected log file must be the original FTLogger database file, not one of the span files.



## Cut, Copy, Paste and Undo


**Cut**, **Copy**, **Paste** and **Undo** can be performed on trend text selection boxes only. The menu items can be found under the main **Edit** menu along with hot keys. Alternative hotkeys **Shift-Delete**, **Ctrl-Insert**, and **Shift-Insert** are supported for Cut, Copy, and Paste respectively.

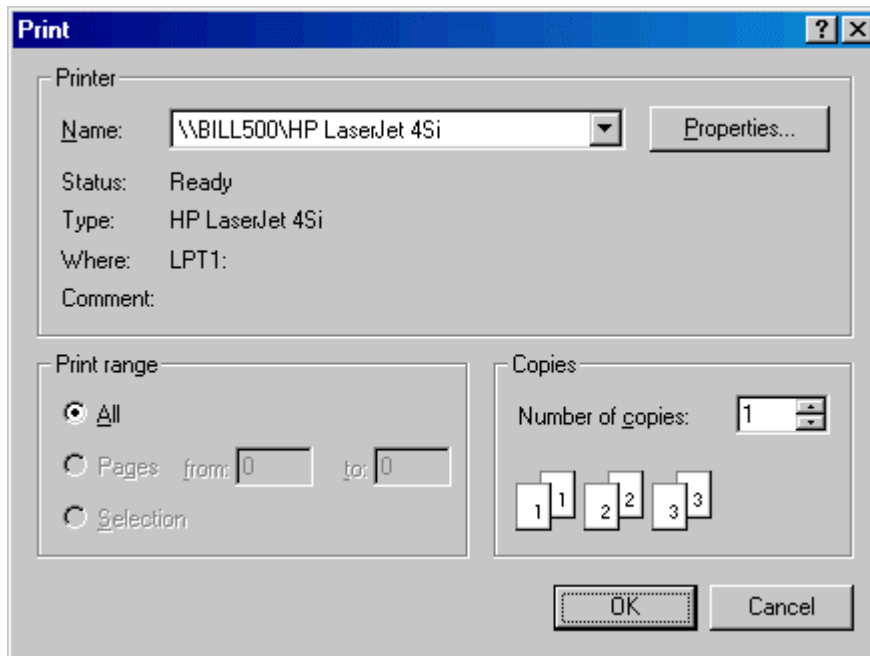
Cut, Copy, and Paste will observe highlighted text.



# Print

To print a graph:

1. If there are multiple graphs, select the graph to be printed.
2. Select the **File/Print** menu option or click the corresponding toolbar button: 



3. A standard Windows print dialog (which varies depending on your system) appears. Select the printer and configure any other print options as appropriate, then click **OK**.



# Command Line Options

## **/Online**

The command line option **/online**, together with a filename, can be used to load a file and immediately go online.

For example, if FTTrend is started using the command line

```
FTTrend.exe demo.trn /online
```

the file "Demo.trn" will be loaded and the mode will be set to **Online**. Files that are loaded without this option will be loaded in offline mode.

For example, if FTTrend is started using the command line

```
FTTrend.exe demo.trn
```

the file "Demo.trn" will be loaded and the mode will be set to **Offline**.

## **/readonly**

The command line option **/readonly** restricts FTTrend to viewing trend history (.TRH) files. When FTTrend is started with the **/readonly** option, security key checks are not performed. The user will not need a security key, and no demo messages will be displayed.

The **/readonly** option can be used with or without a .TRH file. For example, if the command line is

```
FTTrend.exe demo.trh /readonly
```

the file "demo.trh" will be loaded, and FTTrend will not allow the user to open any regular trend (.TRN) files. If the command line is

```
FTTrend.exe /readonly
```

no file will be loaded, but FTTrend will allow the user to open only trend history (.TRH) files.



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