GE VERNOVA

PROFICY® SOFTWARE & SERVICES

PROFICY iFIX HMI/SCADA

Creating Recipes

GE VERNOVA

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Creating Recipes

Creating Recipes is intended for process control engineers responsible for designing and creating recipes. The manual assumes that you understand the industrial process, including device controllers and I/O equipment. You should also be familiar with the process database, how it works in an iFIX® system, and terms such as *blocks* and *chains*.

Reference Documents

For related information about iFIX, refer to the following manuals:

- Setting up the Environment
- Building a SCADA System
- Configuring Security Features
- Implementing Alarms and Messages
- Writing Scripts

First Time Users

If you are unfamiliar with the Recipe Builder, read through the first two chapters before you create your first recipe. Take notes as you read along and try to determine how you can apply the software to your particular application.

Learning About Recipes

When you are ready to create recipes, you can create and download them with the Recipe Package. The Recipe Package consists of the following programs:

- Recipe Builder
- Recipe system tasks:
    - Recipe Upload program
    - Recipe Download program

The Recipe Builder

The Recipe Builder is the heart of the Recipe Package. This program provides industry-standard features for creating, modifying, deleting, uploading, and downloading recipes. But the Recipe Builder also provides other powerful features that enable you to:

- Add formulas to recipes.
- Recalculate formulas automatically.
- Override formulas within specified limits.
- Scale the batch size.
- Assign tag groups to recipes.
- Keep an audit trail of recipe activity.

Using Formulas

These features provide you with flexibility when creating recipes. For example, adding formulas to recipes allows you to represent a block value as a mathematical expression or in relation to another block value. This feature enables you to create recipes in terms natural for your industry, thereby making the recipes understandable by any process engineer and enabling you to develop recipes faster.

Recalculating Formulas

When you enter or change a formula, the Recipe Builder automatically recalculates its value. This feature enables you to experiment with possible recipe values by making "on-the-fly" changes.

Overriding Formulas

To help you respond to changing process conditions, you can override a formula by entering a process value. This value is used in place of the formula until the override value is cleared.

Scaling the Batch Size

In addition, the Recipe Builder enables you to dynamically and uniformly scale the batch size. When scaling the batch size, the Recipe Builder preserves the relative proportions among the process values being scaled. Scaling the batch size is useful when you want to continually vary production amounts.

Using Tag Groups

Using the Recipe Builder, you can also assign tag groups to a recipe. With this feature, you can create one recipe that can address many different areas of your process. If a different tag group is needed for a recipe, you can assign that tag group in place of the currently assigned one. By re-using the same recipe with multiple tag groups, you gain flexibility and save time and disk space that would be otherwise needed for multiple recipes.

Keeping an Audit Trail

The Recipe Builder also provides a flexible method for keeping an audit trail. Using this feature, you can track what activity has occurred, when the activity occurred, and who initiated the activity. You can also track activity of individual tagnames. The Recipe Builder sends this information to the available alarm destinations.

Cutting and Pasting Data

In addition, you can cut and paste data to and from a third-party spreadsheet, such as Microsoft® Excel™. This feature provides the convenience of enabling you to create recipes with a program you already know. When you are ready to download a recipe, this feature also allows you to quickly cut and paste the recipe into the Recipe Builder.

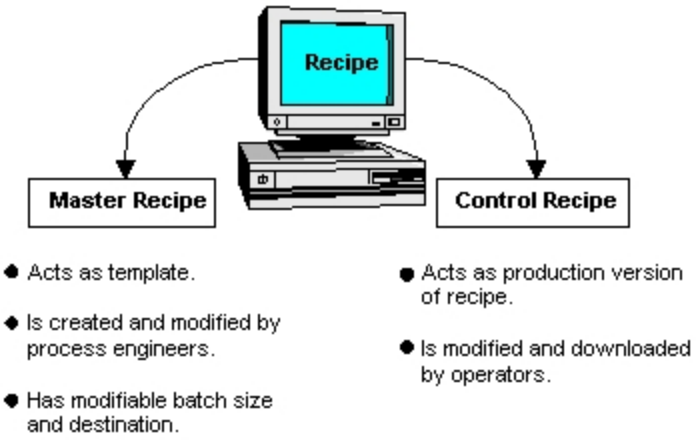
Understanding Recipes

Before you begin using the Recipe Package, review the sections for more information on some central concepts:

- Understanding Master and Control Recipes
- Recipe Items
- Recipe Variables

Understanding Master and Control Recipes

The Recipe Builder creates two types of recipes: *master recipes* and *control recipes*. The following figure summarizes differences between master and control recipes.



Master and Control Recipes

As the previous figure suggests, any recipe you create or modify with the Recipe Builder can be saved as either a master or a control recipe. Saving recipe information as a master recipe enables you to modify it later without restriction. Saving recipe information as a control recipe restricts the operator to modifying process values within specific limits.

Unless otherwise stated, the term recipe applies to both master and control recipes.

Recipe Items

Each recipe consists of one or more *recipe items*. A recipe item is a process value that is identified by a *tagname*. A tagname consists of a SCADA node name, database block name (also called a tag), and the block field name.

Each recipe item contains nine fields. These fields define the item and include information such as the recipe item identifier, description, value, and the unit of measure (UOM).

Up to 850 recipe items can be added to a recipe.

Recipe Variables

In addition to recipe items, you can include *variables* in a recipe. A variable is an internal string or numeric value that is never downloaded to the database. For example, you can represent the temperature of your process using a numeric constant, say 50. You can assign this constant to a tagname or, if you prefer, you can assign this value to a variable and then assign the variable to the tagname as the following table shows:

Identifier	Formula
#Temp	50
SCADA1:T16F1.F_CV	#Temp

While using variables to represent process values is helpful, variables are more powerful when incorporated into a *formula*. A formula is like a programming assignment statement. It enables you to specify how to represent a value for a recipe item or variable. The chapter Working with Formulas provides more information on using formulas and variables.

Using Existing Recipes

You can use recipes created with FIX® 6.x in iFIX® by exporting them on your 6.x node as text recipes, importing them into iFIX, and then saving them. No other steps are required. For more information about creating text recipes, refer to the section Saving Text Recipes.

Creating New Recipes: Overview

If you have no existing recipes, refer to the following figure to get started:

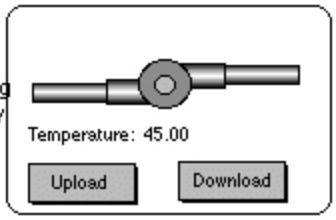
[1] Gather the necessary information and plan out your recipes.

[2] Enter the information into the Recipe Builder spreadsheet and define the required formulas.

	Identifier	Formula	Calc Value
1			
2			
3			

[3] Save the data as a master and/or control recipe.

[4] If you plan to use operator displays for recipe downloading and uploading, create or modify the displays you need.



The following table lists the chapters you can refer to for more information on each steps.

Creating Recipes

To...	Refer to the section...
Gather the necessary information and plan out your recipes.	Developing an Application Strategy
Enter the information into the spreadsheet.	Creating a Sample Recipe
Define the required formulas.	Using Formulas
Save the data as a master or control recipe.	Using the Save As Command
Create or modify the operator displays for recipe downloading and uploading.	Downloading and Uploading Recipes

Developing a Recipe

When you are ready to start developing recipes, obtain the following information about your process:

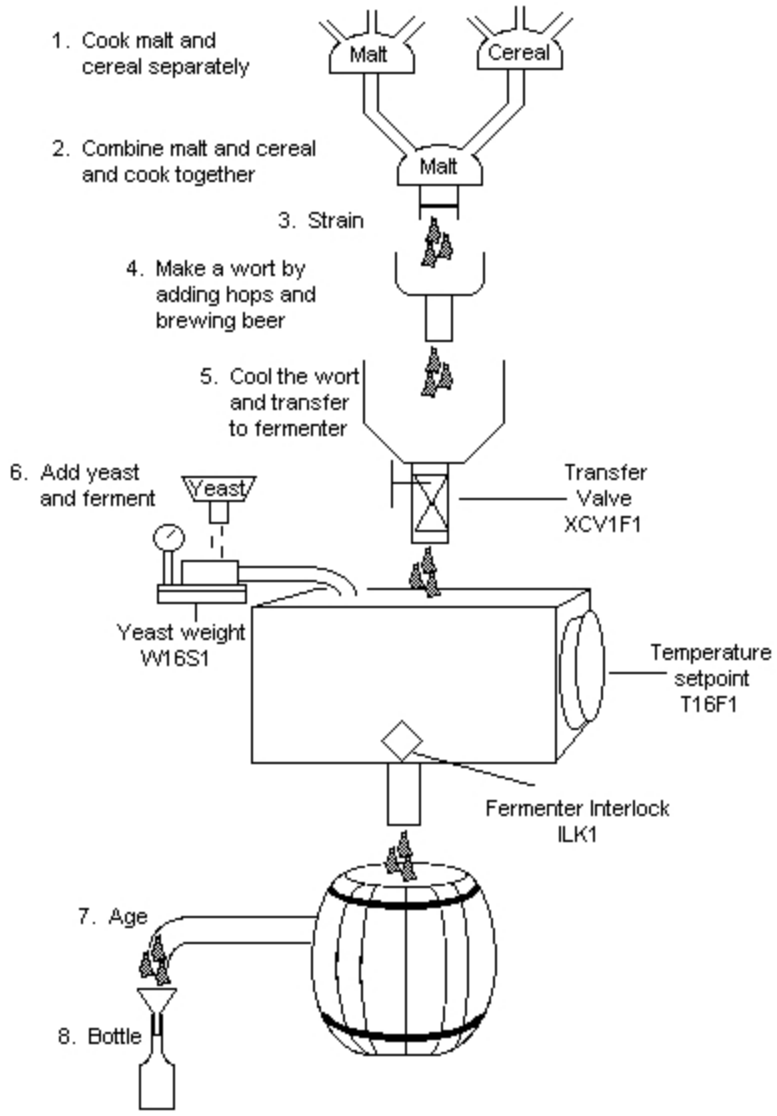
- The process unit and database block names used by the recipe.
- The value you want to download to each database block.
- The block names for any upload or download interlock.
- The recipe items you plan to verify.
- The process values you want operators to be able to change.

Once collected, you can create a recipe by entering the necessary information into the Recipe Builder.

To help you develop your recipes, this chapter explains how to create a sample recipe for making beer. By developing this sample recipe yourself, and using the same steps for your own recipes, you can learn how to develop recipes for your needs.

Developing an Application Strategy

To better understand how the sample recipe was created, this section first explains how beer is produced. The following figure provides an overview of the beer-making process.



Beer Production Overview

As you can see, beer production begins by cooking malt and cereal in water separately and then these mixtures are combined into one and cooked again. The resulting liquid is strained and hops are added to create a wort. The wort is cooled and then yeast is added. By allowing the liquid to ferment, beer is produced.

Typically when making beer, recipes are used while doing the following tasks:

- Cooking the malt and cereal.
- Adding hops and brewing the beer.
- Cooling the wort.
- Adding yeast and fermenting the beer.

Assume now you want to create a recipe that is downloaded when the wort is ready to be fermented. Let's look more closely at this part of the process.

Fermenting Beer

This example describes a beer fermentation process. When fermenting beer, as described in the Developing an Application Strategy section, the following steps occur:

1. Verify that the value of the fermenter interlock, ILK1, is inactive.
2. Transfer the wort from the brew kettle to the fermenter by opening transfer valve XCV1F1.
3. For every barrel of beer being made, add 1.5 pounds of yeast to the wort. Assuming the standard batch size is 100 barrels of beer, this sets the process value W16S1 to 150 pounds of yeast.
4. Set the Analog Output block, T16F1, fermenter temperature set point, to 55 degrees Fahrenheit.
5. Set the target value of a Timer block, K16F1, the fermenter timer, to 132 hours.

After the beer is fermented, it is aged, bottled and ready for shipment.

Creating a Sample Recipe

From the steps in the previous subsection, you can obtain most of the information you need to create the recipe. The following table summarizes this information.

Sample Recipe Information

Step	Tagname	Process Value
Verify the fermenter interlock is inactive.	ILK1.F_CV	0
Open the transfer valve to move the wort from the brew kettle to the fermenter.	XCV1F1.F_CV	0
Weigh out 150 pounds of yeast and add to wort.	W16S1.F_CV	150
Set the fermenter temperature to 55 degrees Fahrenheit.	T16F1.F_CV	55
Set the fermenter timer to 132 hours.	K16F1.F_CV	132

With this information, you can now create a recipe for fermenting beer by selecting the appropriate cell in the Recipe Builder spreadsheet and typing the information into it. Press Enter when you finish typing. The following figure shows the sample recipe.

Units: Fermenter1 **Standard Batch Size:** 100
Product: Beer **Batch UOM:** barrels

Batch Size: Summary Journal

	Identifier	Formula	Calc Val	Override Value	UOM	Description
1	FERMENT1:T16F1.F_CV	55	55		degF	Fermenter setpoint
2	FERMENT1:K16F1.F_CV	132	132		Hrs	Fermenter Timer
3	FERMENT1:W16S1.F_CV	150	150		Lbs	Scale setpoint
4						

Sample Recipe

You can also enter the tagname of the download interlock into the Recipe Builder. Once defined, the Recipe Builder automatically examines the value of this tagname during a download and if the interlock is inactive, the program downloads the recipe. In the sample recipe, you would enter the tagname ILK1.F_CV for the download interlock. For more information about entering the download interlock, refer to the section Defining the Upload and Download Interlocks.

Defining Tagnames and Variables

Preferred Recipe Block Types

Before you create your own recipes, consider the block types to reference. While a recipe item can reference any block in the database, typically recipes download to blocks with an output capability such as Analog Output, Digital Output, Text, Analog Register, and Digital Register blocks. For example, in the sample recipe, the fermenter set point needs to be set to 55 degrees. To send this value out to the process, the recipe uses an Analog Output block.

Preferred Block Types for Recipe Verification

The Recipe Builder can also verify the value of each recipe item by writing to and then reading from your process equipment. To accomplish this, the recipe items being verified must have an input and output capability. If you plan to verify a recipe item, make sure it references an Analog Register, Digital Register, or Text block. Verifying recipe items that reference any other type of block can produce unexpected results.

Preferred Fields

Also consider the field referenced by the recipe item. Typically, as in the sample recipe, the Current Value field is referenced (F_CV). However, any field that operators can read from or write to can also be uploaded from or downloaded to. For example, assume the alarm limits for the fermenter's set point vary

depending on the type of beer being produced. In this situation, the sample recipe could download the alarm limits (F_HI and F_LO) to an Analog Input block.

When specifying a field, use the F_ field for numerical values and the A_ field for text values.

Using Variables

In addition to tagnames, recipes may include variables. Variables represent internal string or numeric values that are never downloaded to the database. When you create a variable, you give it a name. All variable names begin with a number sign (#) and can be up to 15 alphanumeric or underscore characters. Each name you assign to a variable must be unique.

Variables are most helpful when used in a formula to replace a numeric or string constant, particularly if the value is used throughout the recipe. Consider the following example:

Identifier	Formula	Calc Value
#TEMP	100.3456	100.3456
T16F1.F_CV	INT(#TEMP)+5	105
T16F2.F_CV	INT(#TEMP)+10	110

In the above example, the variable #Temp is used in two recipe items. The benefit of using a variable this way is that it allows you to make global changes quickly. If the recipe requires a different value for #Temp, you can change it once instead of many times.

Other advantages of using variables instead of a numeric or string constant are:

- The variable name can be more descriptive than a constant.
- The variable's value can be overridden using a command line parameter.

For more information about overriding a variable with a command line parameter, refer to the section Overriding the Calculated Value.

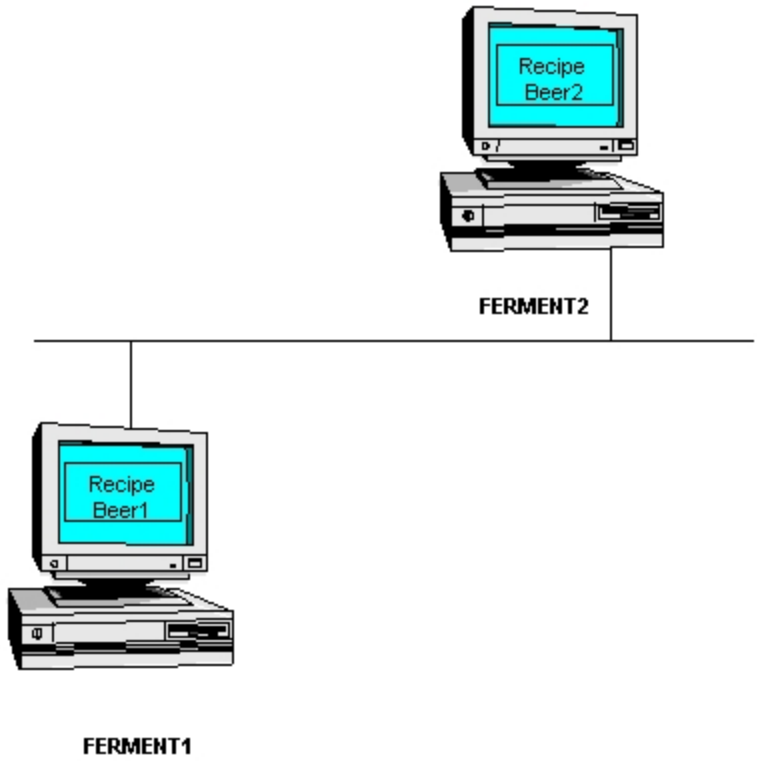
Keywords

Certain variable names are reserved. These reserved names are called *keywords*. Keywords allow access to information about the recipe. For more information about variables and keywords, refer to the chapter Working with Formulas.

Using the Local Node Alias

When you specify a tagname for a recipe item, you have the option of specifying the node name placeholder, THISNODE, for the node portion of the tag. This is ideal for developing recipes that can be shared among different SCADA servers because you shorten the development cycle and keep your maintenance time to a minimum.

For example, let's assume you have the following setup:



In this setup, the recipes Beer1 and Beer2 are used to make beer and download to the SCADA servers FERMENT1 and FERMENT2, respectively. The Beer1 recipe defines the following items:

Identifier	Formula
FERMENT1:ILK1.F_CV	0
FERMENT1:XCV1F1.F_CV	0
FERMENT1:W16S1.F_CV	150
FERMENT1:T16F1.F_CV	55
FERMENT1:K16F1.F_CV	132

The Beer2 recipe is identical except for the node name:

Identifier	Formula
FERMENT2:ILK1.F_CV	0
FERMENT2:XCV1F1.F_CV	0
FERMENT2:W16S1.F_CV	150
FERMENT2:T16F1.F_CV	55
FERMENT2:K16F1.F_CV	132

Notice that in this implementation, two recipes are required because each recipe has hard-coded node name references. With the local node alias feature, you eliminate the need for two recipes. Instead, you create one recipe for both SCADA servers, as the following example shows:

Identifier	Formula
THISNODE:ILK1.F_CV	0

THISNODE:XCV1F1.F_CV	0
THISNODE:W16S1.F_CV	150
THISNODE:T16F1.F_CV	55
THISNODE:K16F1.F_CV	132

After creating this recipe, share the directory that it resides in and map the recipe paths of both SCADA servers to the shared directory. By making these changes, you shorten the development cycle and later, when the recipe needs changing, you keep your maintenance time to a minimum because you only have to make the changes once. For information on changing the recipe paths, refer to the section Understanding Recipe Paths.

To use the local node alias feature, login as an Administrator and select the Local Node Alias check box in the System Configuration Utility (SCU). Refer to the Setting up the Environment manual for more information. To learn about other uses for local node aliasing, refer to the Mastering iFIX manual.

Using Formulas

Formulas enable you to combine variables with numeric or string constants, functions (such as LOG, SIN, or SQRT), and keywords. By using variables and formulas together you can represent process values in terms that are natural for your industry.

IMPORTANT: In formulas, you must include a space following a variable name. The space separates the variable name from whatever follows it. The following example shows the correct syntax. In this example, there is a space between #Lbs_Per_Barrel and the multiplication sign.

For example, in the sample recipe you could create a variable called #Yeast to represent the amount of yeast needed during fermentation. You can represent this amount with the following formula:

```
#Lbs_Per_Barrel * #STD_BATCH
```

where #Lbs_Per_Barrel is the amount of yeast needed for every barrel of beer produced and #STD_BATCH is a keyword for the standard batch size. From the information in the section Fermenting Beer, you can learn:

- Every barrel of beer requires 1.5 pounds of yeast.
- The standard batch size is 100 barrels of beer.

This yields the following formula:

```
1.5*100
```

While you could assign this mathematical expression to the variable #Yeast, you may want to create a variable for the yeast per barrel value so that you can adjust it as process conditions change. The resulting recipe is shown in the following figure:

Units: Fermenter1 **Standard Batch Size:** 100
Product: Beer **Batch UOM:** barrels

Batch Size: Summary Audit Trail

	Identifier	Formula	Calc Val	Override Value	UOM	Description
1	FERMENT1:T16F1.F_CV	55	55		degF	Fermenter setpoint
2	FERMENT1:K16F1.F_CV	132	132		Hrs	Fermenter Timer
3	#LBS_PER_BARREL	1.5	1.5		Lbs	Lbs of yeast per bbl
4	#YEAST	#LBS_PER_BARREL*STD_BATCH	150		Lbs	Amount of yeast
5	FERMENT1:W16S1.F_CV	#YEAST	150		Lbs	Scale setpoint

Adding Formulas and Variables to the Sample Recipe

For more information about using formulas in your recipes, refer to the chapter Working with Formulas.

Using Master and Control Recipes

Using Master Recipes

When you finish creating a recipe, you are ready to save it. The Recipe Builder enables you to save a recipe as a master recipe or a control recipe. How you save it depends on your needs. For example, you might want to save a recipe as a master recipe if you plan to create other recipes that are minor variations of the original. Using the sample recipe, for instance, assume you want to create several other recipes from the sample recipe that vary the fermenting temperature and the fermenting time. One recipe might shorten the fermenting time. Another might increase the temperature.

In this situation, you might save the sample recipe as a master recipe. By doing this, you can easily modify the recipe by changing the necessary process values. By saving each change to a separate control recipe, you can easily create hundreds of additional recipes. Each additional recipe you create in no way affects the original recipe. This feature protects recipes from accidental or unauthorized changes.

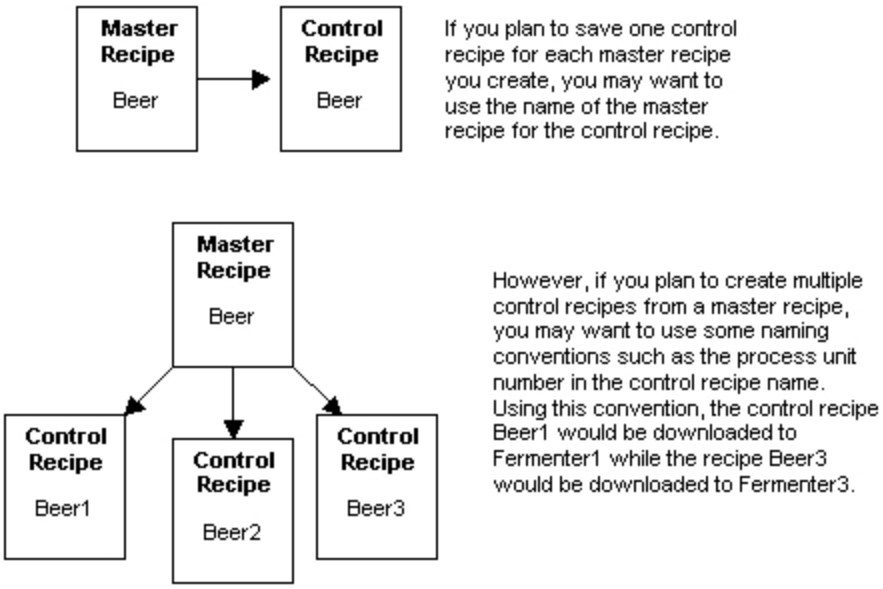
Using Control Recipes

Alternatively, you could save the sample recipe as a control recipe. Typically, control recipes are production versions of a recipe that are downloaded to the database and are intended for use by operators.

Typically, control recipe access is provided to operators through a special window called the Recipe Operations window. Depending on how you set up this window, it can restrict operators from modifying control recipes or it can enable operators to modify control recipes within predefined limits. Information such as the tag group assignment or the batch size cannot be modified from the Recipe Operations window regardless of how you set up the window. However, you can set up the window to allow operators to override specific values prior to downloading.

Keep in mind that you do not have to choose between saving a recipe as just a master recipe or a control recipe. You can save a recipe in both formats and provide yourself the benefits of using both types of recipes.

If you decide to save recipes in both formats, you may want to establish specific naming conventions to help update your control recipes more easily. The following figure shows two possible naming conventions.



Naming Conventions

Another aspect to consider is the format you want to save the recipe in, binary or text. While binary recipes are functionally the same as the equivalent text recipes, binary recipes are faster to upload and download. In addition, binary recipes are more secure because they can only be opened and modified using the Recipe Builder. Text recipes, on the other hand, can be opened and modified with any third-party spreadsheet or text editor.

To help clarify explanations in this manual, the term master recipe refers to master text and master binary recipes unless otherwise stated. Similarly, the term control recipes refers to both control text and control binary recipes.

Other Considerations

In addition to the features already described, you may want to consider which recipe items you want to allow operators to change. With the Recipe Builder, you can make specific columns in the spreadsheet non-modifiable. For more information about doing this, refer to the section Modifying a Column.

The Recipe Builder also provides several advanced features that you may find helpful when creating recipes. These features enable you to assign tag groups, keep an audit trail, scale the batch size, override a value, and verify one or more recipe items. Using these features is optional.

Assigning Tag Groups

If many of your recipes are identical except for the locations they reference, you can consolidate these recipes into one and create multiple *tag groups*. Each tag group defines a set of *symbols*. A symbol is a label and represents a tagname. For more information about tag groups and symbols, refer to the chapter Using the Tag Group Editor.

Keeping an Audit Trail

You can also set up the Recipe Builder to keep an audit trail of recipe activity. This information provides you with a record of the recipes that were downloaded or modified. The section Using an Audit Trail provides more information on keeping an audit trail.

Scaling the Batch Size

If you need to produce a non-standard amount of a product, you can scale the batch size using the Recipe Builder. When scaling the batch size, the Recipe Builder preserves the relative proportions among the recipe items and variables being scaled. Refer to the section Scaling the Batch Size to learn more about this topic.

Overriding a Value

As process conditions change, operators may need to adjust a recipe by overriding the calculated values. When overriding a value, you specify a value to use in place of the calculated value. For more information about overriding a value, refer to the section Overriding the Calculated Value.

Verifying Recipe Items

You may want to verify that certain process critical values are downloaded to your process. Using the Recipe Builder, you can do this by enabling recipe verification for individual recipe items. For more information about recipe verification, refer to the section Verifying a Recipe.

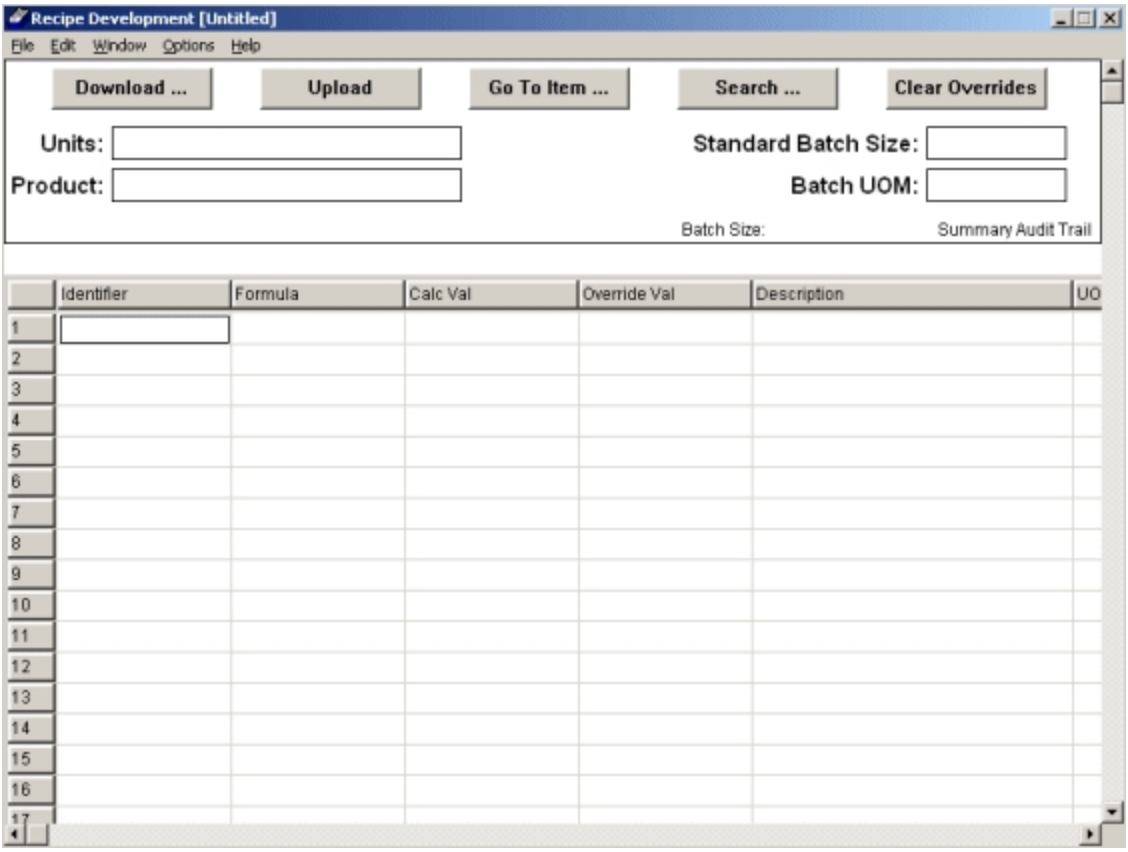
Recipe Builder Basics

This chapter provides the necessary background information to start using the Recipe Builder. Topics described in this chapter include:

- Starting the Recipe Builder
- Exiting from the Recipe Builder
- Recipe Operations and Development Windows
- Working With Recipe Buttons
- Recipe Header Fields
- Creating a Recipe Item or Variable

Starting the Recipe Builder

You can start the Recipe Builder from the iFIX WorkSpace's system tree. By opening the FIX Recipes folder in the system tree and double-clicking the New Recipe icon, you can launch the Recipe Builder. When the application opens, the Recipe Development window, shown in the following figure, appears.



Recipe Development Window

Once the program starts, it displays, by default, a blank untitled recipe.

If you attempt to start the Recipe Builder and you do not have rights for the Recipe Development window, the Recipe Operations window appears.

To obtain the rights to display the Recipe Development window, consult your system administrator.

Once the Recipe Builder starts, you can begin creating a new recipe by entering data into each cell. You can also create a new recipe by selecting the New command. When you select this command, the Recipe Builder closes the open recipe, prompting you to save any unsaved changes, and then displays a blank recipe.

In addition to starting the Recipe Builder with a blank recipe, you can automatically open a master or control recipe by double-clicking an icon from the Master Recipe or Control Recipe subfolders, located in the WorkSpace system tree.

Exiting from the Recipe Builder

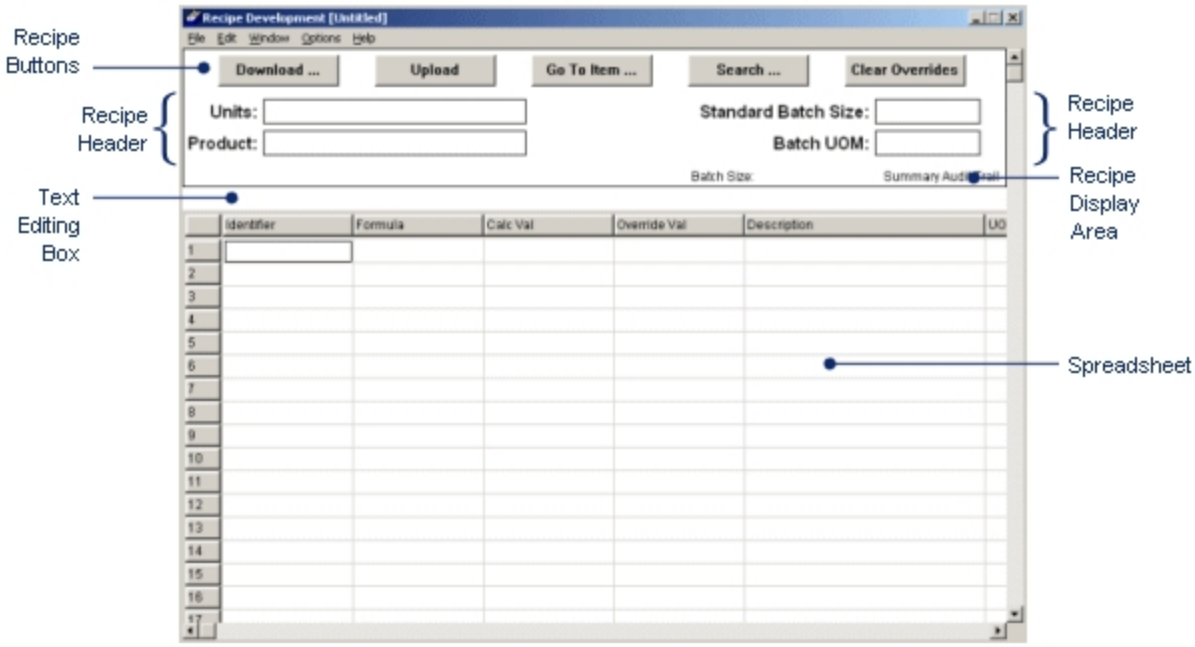
To exit from the program, select Exit from the File menu. If you have made changes to the recipe since your last save, a question message box appears displaying the following text:

```
Do you want to save this recipe?
```

To save your changes, select the Yes button. To exit the program without saving them, select the No button. To resume using the Recipe Builder, select the Cancel button.

Recipe Operations and Development Windows

The Recipe Builder provides two display windows: the Recipe Operations window and the Recipe Development window. The following figure shows the elements of the Recipe Development window.



Recipe Development Window Elements

The following table identifies each element:

Parts of a Recipe Window

Name	Description
Recipe Buttons	A row of buttons that perform common recipe functions such as clearing all override values and downloading recipes. For more information on these buttons, refer to the section Working With Recipe Buttons.
Recipe Header	A set of fields that display recipe information, such as the standard batch size and the batch unit of measure. The section Recipe Header provides more information about these fields.
Text Editing Box	An area where you can enter text into the spreadsheet.
Recipe Display Area	Two display fields that show the recipe's batch size and the type of audit trail currently selected. The section Scaling the Batch Size provides more information on this area.
Spreadsheet	A display area that shows the recipe items and variables. For information about the spreadsheet columns, refer to the section Spreadsheet Columns.

The Recipe Operations and Recipe Development windows represent the two modes of the Recipe Builder. The Recipe Operations window provides limited control recipe access and is intended for the

operator who must download control recipes or override a formula. The Recipe Development window provides full access to all recipes and is intended for the process engineer who must create, modify, and maintain master and control recipes.

The main differences between the two windows are summarized below

Comparing Recipe Windows

Comparing...	Recipe Operations Window
Available menus	Only the File, Window, and Help menus are available.
Recipe buttons	All buttons are available.
Recipe header	All header fields are displayed. These fields cannot be edited.
Recipe items and variables	Cannot be rearranged in or deleted from the spreadsheet.
Spreadsheet	Cannot change whether a column is modifiable or the order that columns appear in the spreadsheet.
Opening and saving recipes	Only control recipes can be opened and saved. Note that the Save As command is not available, preventing operators from creating new control recipes.

Unless otherwise stated, the descriptions in this manual apply to the Recipe Development window only.

NOTE: The menus, fields, buttons, and commands that appear in the Recipe Operations window function in a similar manner to the descriptions provided in this manual. The main difference is that you can only open control recipes in the Recipe Operations window.

Working With Recipe Buttons

Across the top of the Recipe Operations and the Recipe Development windows, a row of button appears. The following table lists these buttons.

Recipe Buttons

Button	Use to...	Mnemonic
Download	Transfer recipe items from the open recipe to one or more process databases.	<Alt>D
Upload	Copy the process values from one or more databases to the open recipe.	<Alt>U
Go To Item	Jump to a specific row in the spreadsheet.	<Alt>G
Search	Search and/or replace data in the selected spreadsheet column.	<Alt>S
Clear Overrides	Remove all override values for the open recipe.	<Alt>C

Recipe Header Fields

Underneath the row of recipe buttons is the recipe header. Each window displays the following fields:

Units field — enables you to enter a description of the process unit the recipe affects. You can enter up to 40 alphanumeric characters into this field.

Product field — allows you to specify a description of the product being made. You can enter up to 40 alphanumeric characters into this field.

Standard Batch Size field — allows you to enter the standard amount of the product that this recipe produces. You can enter any value from 0.0000001 to 9,999,999.0 into this field.

Batch UOM field — enables you to enter the batch unit of measure. You can enter up to four alpha-numeric characters into this field.

In the Recipe Operations window, none of these fields are modifiable.

Spreadsheet Columns

The Recipe Builder spreadsheet displays a predefined set of columns. When you first start the Recipe Builder, it displays the following columns:

Item column — contains the item number of the recipe item or variable. This number can help you reference a specific row and is not downloaded to the database.

Identifier column — enables you to enter a recipe variable name or a recipe item tagname. A variable name is an alphanumeric string, up to 15 characters in length, beginning with the # character. An example of a variable name is: #myNamedVar. Each variable name you enter must be unique.

A tagname is a node-tag-field combination or a symbol. A symbol is a label defined in the Tag Group Editor. For more information about defining variables and tagnames, refer to the section Defining Tagnames and Variables. For more information about symbols, refer to the section Assigning Tag Groups.

Only recipe items are downloaded to the database. Recipe variables are never downloaded.

You can enter text into this field using the text editing box or by double-clicking a cell in this column. When you double-click a cell, the Field Select dialog box appears. This dialog box allows you to select a node-tag-field combination.

Formula column — displays the formula of the recipe item or variable. You can represent a formula by combining one or more of the following:

Formula Type	Examples
Numeric or string constant	5 or "John"
Mathematical operators	+, -, *, /, = =, >, <, <=
Function	Log(234) or Lookup (#COLOR,1,2,3,4,5)
Variable	#COLOR
Keyword	#BATCH or #NAME

For more information on formulas, functions, and keywords, refer to the chapter Working with Formulas.

Calc Val column — displays the current value of the recipe item or variable. The Recipe Builder automatically recalculates the value of all recipe items and variables, and updates this column when you enter or change a formula.

Whenever the text ?????? appears in the Calc Val column, the recipe item or variable is undefined. The Recipe Builder does not download recipes with undefined recipe items or variables.

NOTE: When you download a recipe, only a recipe item value is sent to the database. Recipe variables are never downloaded.

Override Val column — allows you to enter an alphanumeric value in place of the recipe item's or variable's calculated value. Any formulas that reference an overridden variable are recalculated using the override value. When the recipe is downloaded, the override value is sent in place of the calculated value. For more information about overriding the calculated value, refer to the chapter Working with Formulas.

Description column — contains text describing the recipe item or variable. The following table shows how the Recipe Builder completes this column when you initially enter an identifier:

When the identifier is a...	The Recipe Builder...
Tagname	Reads the Description field of the specified block and displays this text in the Description column.
Variable	Leaves the Description column blank.

You can enter up to 40 alphanumeric characters into any cell of this column. If you complete the Description column before specifying a tagname, the Recipe Builder does not overwrite the text you entered. If you want to update the text for a tagname with the text from the block's Description field, double-click a cell in the Description column.

UOM column — contains the unit of measure for a recipe item or variable. The following table shows how the Recipe Builder completes this column when you initially enter an identifier:

You can enter up to four alphanumeric characters into any cell of this column. If you complete the UOM column before specifying a tagname, the Recipe Builder does not overwrite the text you entered. If you want to update the text for a tagname with the text from the block's EGU tag, double-click a cell in the UOM column.

Override Lo Lim and Override Hi Lim columns — defines the highest and lowest possible override value an operator can enter into the Override Value column. The Recipe Builder verifies the override value is within the high and low limit range before it accepts the override value.

The following two tables show the possible override limits and examples of how you can combine the limits.

To learn how to define the high and low limits, refer to the section Entering Override Limits.

NOTE: When the calculated value of a recipe item or a variable is a string constant, you must set both override limits to either Unrestricted or Restricted.

Override Limits

When the Override Limit is...	The operator can...
Unrestricted	Enter any value less than or equal to the high limit and greater than or equal to the low limit. If both override limits are unrestricted any value can be entered. The Recipe Builder sets both override limits to unrestricted for any recipe item or variable you add.
An absolute	Enter an override value less than or equal to the high limit and greater than or equal to

value	the low limit. Any value outside the limit range generates an error.
A relative percentage	Enter an override value based on the calculated value plus or minus the percentage specified in the high and low limit columns. For example, if the calculated value is 100 and the high and low limits are 10%, the operator can enter a value from 90 to 110.
A relative difference	Enter an override value based on the calculated value plus or minus the difference specified in the high and low limit columns. Relative difference limits end with a minus sign (-). For example, if the calculated value is 100 and the high and low limits are 20-, the operator can enter a value from 80 to 120.
Restricted	Enter an override value that is less than or equal to the calculated value (when the high limit is restricted). If the low limit is restricted, the operator can enter an override value that is greater than or equal to the calculated value. If both override limits are restricted no override value can be entered.

Table Caption Outside Table:

Sample Override Limits

When the Calculated Value is...	The Override Low Limit is...	And the Override High Limit is...
25	Unrestricted	50
50	10	Unrestricted
35	10	50
35	-5	3-
35	21-	50
50	1%	5-
50	Restricted	1%
100	5-	10%

Verify column — controls recipe verification. This feature enables the Recipe Package to verify that specific recipe item values have been written to your process equipment. The Recipe Package handles recipe verification by reading the target block fields and comparing their values against the values in the recipe. When the two values match, the recipe item is verified. For more information about recipe verification, refer to the section Verifying a Recipe.

You can enable and disable recipe verification for each recipe item in the spreadsheet. To enable it, enter **ON**. To disable it, enter **OFF**. By default, recipe verification is disabled.

Creating a Recipe Item or Variable

The steps that follow explain how to create a recipe item or variable.

To create a recipe item or variable:

1. Select a cell in the Identifier column and type a tagname, variable name, or a tag group symbol name.

   If you prefer, you can double-click a cell in the Identifier column to display the Field Select dialog box.

2. Select the corresponding cell in the Formula column and enter a formula for the recipe item. When you complete your entry, the text in the Calc Val column changes to reflect the formula's value.

3. Modify the text in the Description and UOM columns as needed. Notice, that if you enter a tag-name the text from the specified block's Description and EGU Tag fields are automatically inserted for you.
4. Modify the override limits as needed. By default, the override limits are sent to Unrestricted. If you want to change them, refer to the section Entering Override Limits for instructions.
5. Modify the Verify column as needed. By default, recipe verification is disabled for each recipe item you add to the recipe. To enable it, select a cell in the Verify column and type **ON** in the text editing box. Keep in mind, it is recommended that you only verify Analog Register, Digital Register, and Text blocks. For more information about recipe verification, refer to the section Verifying a Recipe.

Working with Recipes

Working with recipes requires you to open, close, delete, and save recipes. It also requires you to add, copy, move, modify, and delete recipe items. This chapter provides instructions for completing these tasks. It includes the following sections:

- Opening a Recipe
- Saving a Recipe
- Using the Save As Command
- Inserting Recipe Items or Variables
- Copying Recipe Items or Variables
- Moving Recipe Items or Variables
- Moving All the Recipe Items and Variables
- Deleting Recipe Items or Variables
- Deleting Recipes
- Creating Recipe Reports
- Working with Recipe Notes

Other related, but optional tasks, include creating recipe reports and storing recipe-related information to a file. These operations let you save recipes and related data by creating text files with specific file extensions. Instructions for completing each task is described at the end of this chapter.

Opening a Recipe

Whenever you need to make changes to a recipe, you can use the Recipe Builder to open one of the following types of recipes:

- Master recipes
- Control recipes
- ASCII text versions of master and control recipes
- Backup versions of master, control, and text recipes

You can open master and control recipes by selecting them from the WorkSpace system tree or by starting the Recipe Builder and selecting the Open command from the File menu. To open text and backup recipes, you must use the Open command in the Recipe Builder.

When you select the Open command, a dialog box appears. The exact dialog box and the type of recipe you can open depends on whether you select the Open command from the Recipe Operations window or the Recipe Development window.

Opening a Recipe from the Operations Window

You can only open control recipes located in the control recipe path from the Recipe Operations window by selecting the Open command and displaying the Open Control Recipe dialog box.

This dialog box displays the following controls:

Recipe list box — displays the control recipes you can open.

Recipe Name field — allows you to enter the name of the control recipe you want to open.

Open button — opens the control recipes you selected from the Recipe list box or that you entered in the Recipe Name field.

To open a recipe from the Recipe Operations window:

1. On the File menu, click Open. The Open Control Recipe dialog box appears.
2. Select the recipe you want to open from the list box and select the Open button. The Recipe Builder opens the recipe and displays it on the screen.

   If you prefer, in the Recipe Name field, enter the name of the recipe and click Open, or double-click a recipe name. Regardless of the method you choose, the Recipe Builder opens the recipe and displays it on the screen.

Opening a Recipe from the Development Window

When you select the Open command from the Recipe Development window, the Recipe Builder displays the standard Open dialog box. The following table lists the types of files you can open with this dialog box.

Recipe Types

Recipe Type	File Extension
Master recipes	.RCM
Control recipes	.RCC
Master recipes in text format (called a *master text recipe*)	.RCX
Control recipes in text format (called a *control text recipe*)	.RCY
Backup of master recipes (called a *master backup recipe*)	.^CM
Backup of control recipes	.^CC

(called a *control backup recipe*)	
Backup of master text recipes	.^CX
(called a *master text backup recipe*)	
Backup of control text recipes	.^CY
(called a *control text backup recipe*)	

When the standard Open dialog box appears, select the recipe you want to open and click OK.

Opening Multiple Recipes

Once the Recipe Builder opens a recipe, it cannot open another until you close the current recipe. To close a recipe, select Open again. The Recipe Builder closes the current recipe and opens the recipe you select.

If you have made changes to the old recipe and have not saved them, the Recipe Builder prompts you to save your changes. If you do not want to save your changes, click No. To continue working with the recipe, click Cancel.

Click Yes to save your changes to disk. If you attempt to save a recipe when you have no privileges to do so, a message box with following text appears:

```
The logged-in user does not have the RECIPE SAVE application feature
```

Consult your system administrator to acquire the necessary rights to save the recipe.

Saving a Recipe

When you finish making changes to a recipe, you need to save the recipe to disk. By saving the recipe, you make your changes permanent.

The Recipe Builder only saves master and control recipes in either binary or text format. Each time you save a recipe, the Recipe Builder automatically creates a backup of the original file called *recipe*.^*xx*. The exact extension depends on the type of recipe you are saving. The Recipe Types table lists the possible extensions for backup recipes.

If you are working with recipes from a previous version of FIX software, you must use the Save As command to save your data as text recipes if you plan to use them with iFIX. For more information on completing this task, refer to the section Using the Save As Command.

To save an existing master or control recipe, select Save from the File menu. If the audit trail is enabled when you select this command, the Recipe Mod Log dialog box appears. This dialog box displays the Mod Log field and the Save button.

Mod Log field

The Mod Log field allows you to enter up to 30 characters of text explaining any changes made to the recipe. While completing this field is optional, the text you enter is incorporated into a recipe message and added to the audit trail. If you leave the Mod Log field blank, a portion of the recipe message is left blank. For more information on the recipe audit trail and recipe messages, refer to the section Using an Audit Trail.

Save button

The Save button enables you to store the recipe to disk. Master recipes are stored to the master recipe path and control recipes are stored to the control recipe path.

To save an existing master or control recipe:

1. On the File menu, click Save. The Recipe Mod Log dialog box appears.
2. In the Mod Log field, enter the text you want.
3. Click Save. The Recipe Builder saves the recipe to disk.

Saving a New Recipe

If you are saving a new recipe, the Recipe Builder prompts you to enter a name for the recipe by displaying the standard Save As dialog box.

Using the Save As Command

The Save As command allows you to save the current recipe under a new name. The Save As command also allows you to save the recipe in one of the following recipe types:

- Master recipe
- Control recipe
- Master text recipe
- Control text recipe

If you do not change the name or recipe type, the Save As command makes a backup copy of the original and overwrites the original recipe.

;However, when you change the recipe's name or type, the Save As command does not overwrite the original recipe — it creates a new one. This feature lets you create control recipes from master recipes and master recipes from control recipes. It also lets you create multiple versions of a master or control recipe by repeatedly saving it with different names.

The Save As command is also useful when saving a new recipe. When saving this type of recipe, the command allows you to create a recipe by specifying a name and a recipe type.

When you select Save As, the Recipe Mod Log dialog box appears, if the audit trail is enabled. For more information about this dialog box, refer to the section Saving a Recipe.

After you enter the text you want in the Mod Log field, select the Save As button. The standard Save As dialog box appears. To save the recipe, type its name in the File Name field and click OK.

Saving Text Recipes

By using the Save As command and selecting either the master text or control text file type, you can save the current recipe as a text file. You may find saving a text recipe helpful when you want to do one of the following tasks:

- Complete large editing tasks by using a third-party text editor or spreadsheet.
- Convert existing recipes for use with iFIX.
- Convert a binary master or control recipe to a text file prior to downloading it.

For information on the file format of a recipe text file and how to edit it, refer to the chapter Text Recipe Format.

Inserting Recipe Items or Variables

If you forget to enter a recipe item or variable when you initially create a recipe, you can insert a recipe item or variable between two existing items by selecting the Insert Item command. When you select this command, the Recipe Builder inserts a blank row above the currently selected row and then renumbers the recipe items and variables in the spreadsheet beginning with the newly added row.

The following figure illustrates how the Recipe Builder renumbers the spreadsheet.

Suppose the spreadsheet displays the following information:

Item	Identifier	Calc Value
1	FERMENT1:T16F1.F_CV	90
2	FERMENT1:T16F2.F_CV	80
3	FERMENT1:K16F1.F_CV	5
4	FERMENT1:K16F2.F_CV	15

If you select row three, and then select the Insert Item command, the Recipe Builder renumbers the spreadsheet as follows:

Item	Identifier	Calc Value
1	FERMENT1:T16F1.F_CV	90
2	FERMENT1:T16F2.F_CV	80
3		
4	FERMENT1:K16F1.F_CV	5
5	FERMENT1:K16F2.F_CV	15

Renumbering the Recipe Spreadsheet

To insert a recipe item or variable to a recipe:

1. Select a cell in a row of the spreadsheet.
2. On the edit menu, click Insert Item. The Recipe Builder inserts a blank row above the row you selected and renumbers the spreadsheet.

Copying Recipe Items or Variables

If many of the recipe items or variables you want to create are similar, you may find it easier to create one recipe item or variable and copy the remaining items you need. You save time by copying an existing recipe item or variable because you only need to change the information that differs between the original item and the new copy.

The Recipe Builder allows you to copy a recipe item or variable by selecting Copy from the Edit menu. When you select this command, the Recipe Builder copies the entire row of the selected item to the clipboard.

After copying the recipe item or variable, you can insert it into the recipe as many times as you need using the Paste command. Each time you paste a copied item, the Recipe Builder inserts it above the currently selected row and renumbers the spreadsheet as shown in the Renumbering the Recipe Spreadsheet figure.

To copy a recipe item or variable:

1. Select a cell in the row you want to copy.
2. On the Edit menu, click Copy. The Recipe Builder copies the entire row.
3. On the Edit menu, click Paste. If the recipe item or variable is not unique, an error dialog box appears.

   Select the Keep Item button to retain the valid parts of the recipe item being pasted or select the Discard Item button to prevent the item from being pasted into the recipe. To cancel the entire operation, select the Undo Paste button.

If you prefer, you can copy data from a third-party application (such as Excel) and paste it into the Recipe Builder. When you do this, the Recipe Builder reads the data from the standard system clipboard and pastes the data into the recipe. The Recipe Builder pastes the data in the order of the spreadsheet column format starting with the first column in the recipe. Before pasting data into a specific column, the Recipe Builder evaluates its syntax for that column. If the syntax is invalid or if the Recipe Builder has difficulty pasting the data into a column, the error dialog box described previously in step 3 appears.

To avoid this situation, set up the columns in your third-party application to match the display format of the recipe. Make sure that the data in the columns that correspond to the Identifier and Formula columns conforms to the syntax for each column. Also make sure the column that corresponds to the Verify column contains the text **ON** or **OFF**. For more information about identifier and formula syntax refer to the section Spreadsheet Columns.

The number of columns you paste into the recipe can be greater or less than the number of columns in use by the display format. If the number of columns you are pasting is greater than the number of columns in use, the extra columns are not used. If the number of columns is less than the number of columns in use, the Recipe Builder either leaves the corresponding cell blank or uses the default value for the cell if it has one.

You can leave any cell in the third-party spreadsheet blank. When you paste a row with blank cells into the Recipe Builder, the program either leaves the corresponding cell blank or uses the default value for the cell if it has one.

Moving Recipe Items or Variables

Other ways you can insert recipe items and variables to a recipe are by moving them from one recipe and into another or by moving them from one part of a recipe to another. This is helpful when the items you are moving are exactly the same in both locations.

The Recipe Builder allows you to move a recipe item or variable by selecting the Cut and Paste commands from the Edit menu. When you select Cut, the Recipe Builder copies the entire row of the selec-

ted item and removes it from the recipe. Once removed, you can move the recipe item or variable by opening a recipe and selecting Paste.

To move a recipe item or variable from one row of the spreadsheet to another:

1. Select a cell in the row you want to move.
2. On the Edit menu, click Cut. The Recipe Builder copies the selected item and removes it from the recipe.
3. Select a cell in the target row.
4. On the Edit menu, click Paste. The recipe item or variable is inserted above the selected row.

If you prefer, you can move data from a third-party application (such as Excel) and paste it into the Recipe Builder. Moving data from a third-party application is similar to copying it. If you cut the data to the standard system clipboard, the Recipe Builder can paste the data into the recipe. For more information about pasting data from a third-party application, refer to the section Copying Recipe Items or Variables.

Moving All the Recipe Items and Variables

In addition to copying and moving one recipe item or variable at a time, the Recipe Builder enables you to copy and move every recipe item and variable from one recipe to another. When you do this, the Recipe Builder copies the entire row of each item in the spreadsheet. This feature can be useful when you want to copy and paste the entire recipe into a third-party application, such as Excel.

To copy and move every recipe item and variable in a recipe, use the Copy All command. After copying the entire recipe, you can insert them into the target application using the Paste command.

To copy and move an entire recipe from the Recipe Builder to another application:

1. On the Edit menu, click Copy All. The Recipe Builder copies every row in the recipe.
2. Start your target application. For instructions on how to do this, refer to that application's user's manual.
3. Once the application starts, open the spreadsheet you want to paste the recipe into.
4. On the Edit menu from your spreadsheet program, click Paste.

If you prefer, you can copy and move data from a third-party application (such as Excel) and paste it into the Recipe Builder. For information about moving data from a third-party application to the Recipe Builder, refer to the section Copying Recipe Items or Variables.

Deleting Recipe Items or Variables

While creating or modifying a recipe, you may find it necessary to delete one or more recipe items or variables.

You can delete a recipe item or variable from a recipe by selecting the Delete Item command. You can also delete an item by selecting Cut from the Edit menu instead of Delete Item. The main difference between these commands is that when you delete a recipe item or variable with Cut, you can paste back

into the recipe if you accidentally remove the wrong item or if you change your mind. When you select Delete Item, the recipe item or variable is irretrievable.

To delete a recipe item or variable:

1. Select a cell in the row you want to delete.
2. On the Edit menu, click Delete Item. The Recipe Builder removes the selected item from the recipe and renumbers each row in the spreadsheet.

Using <Delete>

Alternatively, you can delete any row in the spreadsheet by selecting the identifier and deleting it by pressing <Delete>. When you do this, a message box appears displaying the following text:

```
This change will destroy this recipe item. Continue?
```

Select the Yes button to delete the row or the No button to abort the procedure. If you select the Yes button, the Recipe Builder deletes the selected item and does not renumber the rows in the spreadsheet.

Deleting Recipes

As your needs change, you may find you no longer need certain recipes. When you decide that a specific recipe is not necessary, you can delete it using the Delete command. This command also deletes all files associated with this recipe.

When you select the Delete command, the Delete Recipe dialog box appears. This dialog box has the following controls:

Recipe Name field — enables you to enter the name of the recipe you want to delete.

Recipe list box — displays the available recipes in the current path that you can delete.

Delete button — deletes the specified master and control recipes and their associated files.

To delete a recipe:

1. On the File menu, click Delete. The Delete Recipe dialog box appears.
2. Type the name of the recipe you want to delete.

   If you prefer, you can select the recipe to delete by selecting it from the list box. The file you select appears in the Recipe Name field.
3. Click Delete. A message box appears displaying the following text:

   Are you sure want to delete recipe *recipe*?

NOTE: Do not attempt to delete files from a file server while they are in use. If you do, the Recipe Builder displays an error message box informing you that the files could not be deleted.

Creating Recipe Reports

You may want to create a recipe report to document the changes you have made or for subsequent printing. A recipe report is a text file that lists each column present in the recipe and the data in each column. By default, the columns appear in the text file in the same order as they appear on the screen.

When the Recipe Builder creates a report, it starts with the data from the current recipe and stores the report in a file named *recipe*.RCR, where *recipe* is the name of the open recipe. The path that the report is stored in depends on the type of recipe opened.

When the open recipe is a...	The Recipe Builder stores the report in...
Master recipe or master text recipe	The master recipe path
Control recipe or control text recipe	The control recipe path

To create a report, select the Report command. This command enables you to select and arrange the columns for the report using the Report Format dialog box. When you select the Report command, this dialog box appears and displays the following controls:

Available Columns list box — lists the columns you can add to the report. If the list box is empty, all the available columns are in use.

Column Layout list box — controls which columns appear in the report and the order that these columns appear. By default, all the columns currently displayed in the recipe appear in the same order that they appear in the recipe.

Using this dialog box, you can customize the report by selecting only those columns you want to include, changing a column heading, or changing a column width. When you change a column heading for a report, the corresponding heading in the recipe does not change. This means if you close and re-open the Report Format dialog box, the Recipe Builder re-reads the recipe column headings and any changes you made are lost.

Similarly the width of each column in the report is independent of the display format column width. This means changing either column width does not affect the other.

NOTE: When the report is created, the Recipe Builder uses the last character of each column to separate the individual columns. It does this by placing a space in this position. This means that if you specify a column width of 15 only 14 characters appear in the report. To display the 15th character specify a width of 16.

To create a report from the current recipe:

1. On the File menu, click Report. The Report Format dialog box appears.
2. If necessary, add or delete the columns to include for the report. Use the following table as a guide.
3. If necessary modify the column widths and heading, and arrange the columns for the report. Use the following table as a guide.
4. Click OK. The Recipe Builder creates a report from the current recipe and stores it in the appropriate recipe path.

Report Format Procedures

To...	Then...
Add a column to the report.	1. From the Available Columns list box, select the column you want to add. 2. Select the Add button. The selected column appears in the Column Layout list box and disappears from the Available Columns list box. If you prefer, you can add a column to the report by double-clicking a column in the Available Columns list box.
Remove a	1. From the Column Layout list box, select the column you want to remove.

column from the report.	2. Select the Delete button. The selected column disappears from the Column Layout list box and appears in the Available Column list box.
Arrange a column in the report.	1. In the Column Layout list box, select the column you want to move. 2. To move the column up in the list box and to left in the report, select the up arrow button. To move the column down and to the right, select the down arrow button.
Change a column heading in the report.	1. In the Column Layout list box, select the column you want to modify. 2. Select the Modify button. The Report Column Details dialog box appears. 3. In the Column Heading field, type up to 39 characters for a column heading and select the OK button. The Report Column Details dialog box disappears and the Recipe Builder changes the heading in the Column Layout list box.
Change a column width in the report.	1. In the Column Layout list box, select the column you want to modify. 2. Select the Modify button. The Report Column Details dialog box appears. 3. In the Column Width field, type the column width you want and select the OK button. The Report Column Details dialog box disappears and the Recipe Builder changes the column width in the Column Layout list box. **NOTE:** A width of less than two does not show any characters.

Working with Recipe Notes

In addition to creating a recipe report, the Recipe Builder allows you to save recipe-related information to a file. This information could provide instructions to operators, version information, comments about the recipe, tips on uploading or downloading the recipe or anything else you want.

When you save this information, the Recipe Builder stores it in a recipe note file in the recipe control path. Recipe note files are ASCII text files and by convention are named *recipe*.RCN. Master and control recipes share the same recipe note file.

To create or modify a recipe notes file:

Select the Notes command from the File menu. This command starts the Windows Notepad application. If a note file does not already exist for the recipe, a message box with the following text appears:

```
Notes file [path\recipe.RCN] not found.
Create it?
```

Click Yes to create a note file with the name *recipe*.RCN. To abort the procedure, click No.

Once the program starts, you can enter the information you want to save. For information on how to add and modify text with Notepad, refer to your Microsoft Windows documentation.

When you are ready to save the note file, select Save from the File menu. If you are working with a new, untitled recipe, make sure you save the file with a .RCN extension and that the name of the note file and the recipe match; otherwise, the Recipe Builder will not be able to locate the note file subsequently. Also, make sure you save the note file in the control recipe path.

For example, if you plan to name the current recipe BEER, save the note file with the name BEER.RCN.

To disable recipe notes:

1. In a text editor, open the rcp.ini file. If you installed iFIX to the default location, this file is located in the C:\Program Files (x86)\Proficy\iFIX\Local folder.
2. In the [startup] section, change notes.disable to 1. (0 is the default.)
3. Save the changes and close the rcp.ini file. The Notes command in the File Menu will be grayed out.

Locating and Displaying Data

Many times while creating or modifying a recipe, it may be necessary to verify a specific recipe item or variable value. For example, you may want to examine the calculated value of a specific tagname prior to downloading it. Alternatively, you may want to verify the high and low override limits of a variable.

Using the Recipe Builder, you can do these tasks by locating the information you need and displaying it. This chapter explains how to locate and display information by searching and replacing data or jumping to a specific location within a spreadsheet. The chapter also includes instructions for customizing a spreadsheet to display only the columns you want, and saving and loading these custom display formats, setting the default startup window, and switching between Recipe Operations and Recipe Development windows.

This chapter includes the following sections:

Searching for and Replacing Data

You can locate recipe items and variables by scrolling through the recipe using the scroll bars or arrow keys. However, as the recipe becomes larger you may find it time-consuming to scroll through it. For this reason, the Recipe Builder allows you to locate recipe items and variables by searching the recipe for a piece of text and optionally replacing it.

Locating Substrings

When searching and replacing data, the Recipe Builder can locate each occurrence of the string you are searching for. The string you enter can be the entire contents of a cell or can be a part of a longer string. By entering a piece of a longer string (called a substring), you can quickly modify an existing recipe for a different node or a different set of blocks. For example, you could search the Identifier column and change all the node names in a recipe from FERMENT1 to FERMENT2.

If you enter a substring and the Recipe Builder finds multiple occurrences of this string, a message box appears displaying text similar to the following:

```
Search string was found x times.
Replace each one?
```

CAUTION: Select the No button to abort the search, select the Yes button to replace the current cell or select the All button to replace every occurrence in the column.

The following table provides additional examples of searching and replacing substrings.

Replacing Substrings

When the search string is...	And the replacement data is...	And the column contains...	The resulting data is...
T16F1	T16F2	FERMENT1:T16F1.F_CV	FERMENT1:T16F2.F_CV
CV	LO	FERMENT1:T16F1.F_CV	FERMENT1:T16F1.F_LO
50	75	15050	17575
1	55	111	555555
11	55	111	551

NOTE: When searching and replacing data in a recipe with more than 400 recipe items, the node may lose sessions. The sessions are re-established when the search is complete.

Before the Recipe Builder can search for a specific piece of text, you must select the column you want it to search and the data to search for (called the search string). Before you search and replace data, you must select the column to search, a search string, and the new data that replaces the search string. This data is called the replacement string.

You can select the column to search by selecting a cell. When you select a cell, the Recipe Builder assumes you want to search the column the cell belongs to, starting with the row that follows the selected cell.

You can specify the search string and the replacement string by selecting the Search button. When you select this button, the Search and Replace dialog box appears.

Unlike other dialog boxes that prohibit you from selecting a cell in the spreadsheet, you can switch between the spreadsheet and the Search and Replace dialog box once the dialog box appears. This feature enables you to search a part of one column and then select a cell in a different column and continue searching and replacing data.

The Search and Replace dialog box has the following controls:

Search for field — enables you to enter a search string of up to 100 characters. Wildcard characters (such as * or ?) are treated as text.

The characters you enter into this field remain until you enter a different search string. This feature allows you to search for multiple occurrences of the search string by selecting the Search Next or Search Previous buttons.

If the Recipe Builder cannot find a match for the search string in the selected column, a message box appears displaying the following text:

```
Text not found
```

Replace with field — allows you to enter up to 100 characters as the replacement data. Wildcard characters (such as * or ?) are treated as text.

The characters you enter into this field remain until you change them. This feature allows you to search and replace for multiple occurrences of the search string by selecting either the Replace Next or the Replace Previous buttons. Completing this field is optional.

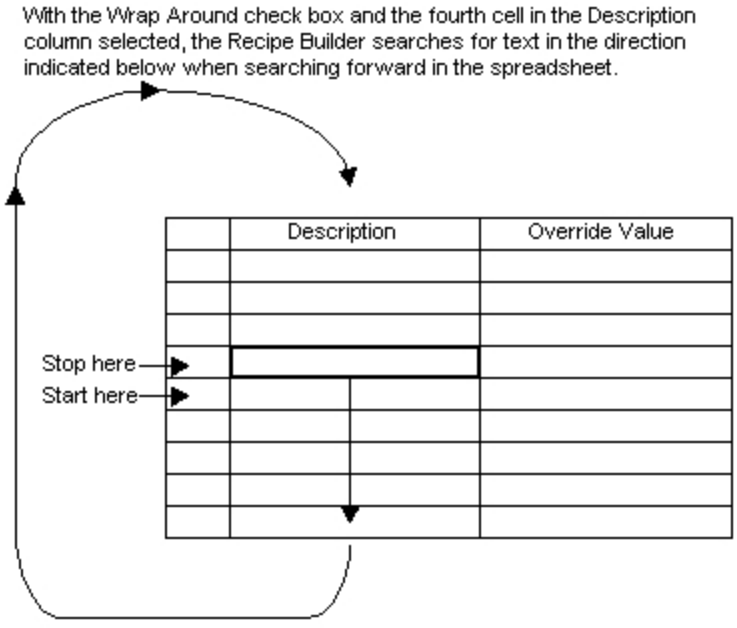
NOTE: The Recipe Builder only uses the text in this field when you select the Replace Next or Replace Previous buttons. If you do not select either button, the program does not replace any data.

Case Sensitive check box — controls whether the search string is case-sensitive. When you select the check box, the search string is case-sensitive. When you clear the check box, the search is *not* case-sensitive. The following table shows how case sensitivity affects Recipe Builder searches.

Case Sensitivity

When Case Sensitivity Is...	And the Seach String is...	The Recipe Builder Searches for...
Selected	A1	A1
Deselected	AI1	AI1, Ai1, aI1, ai1

Wrap Around check box — enables you to search an entire column by selecting any cell. When you select this check box, the Recipe Builder automatically wraps and continues searching the selected column when it reaches the spreadsheet's beginning or end. The following figure shows how this works when searching forward.



Searching the Spreadsheet

When the Wrap Around check box is cleared, the Recipe Builder searches the selected column until it reaches end (when searching forward) or beginning (when searching backward) of the spreadsheet.

Search Next button — instructs the Recipe Builder to search forward for the next occurrence of the search string in the selected column starting at the selected row.

Search Previous button — instructs the Recipe Builder to search backward for the next occurrence of the search string in the selected column starting at the selected row.

Replace Next button — instructs the Recipe Builder to search forward for the next occurrence of the search string and replace it.

Replace Previous button — instructs the Recipe Builder to search backward for the next occurrence of the search string and replace it.

To search for data in a column (or search and replace data):

1. Select the column you want searched.
2. Click the Search button. The Search and Replace dialog box appears.
3. In the Search for field, enter the text you want to locate.
4. If you want to search and replace data, in the Replace with field, enter the replacement data.
5. Use the following table for instructions on searching forward and backward, replacing data, and doing a case sensitive search.
6. When you finish searching the selected column, you can return to the spreadsheet by selecting a cell. The Search and Replace dialog box remains on the screen. Alternatively, you can close the dialog box by selecting the Exit button.

Search and Replace Procedures

To...	Then...
Search forward for an occurrence of the search string.	Select the Search Next button.
Search backward for an occurrence of the search string.	Select the Search Previous button.
Search forward for an occurrence of the search string and replace it.	Select the Replace Next button.
Search backward for an occurrence of the search string and replace it.	Select the Replace Previous button.
Do a case sensitive search.	Select the Case Sensitive check box.
Do a non-case sensitive search.	Clear the Case Sensitive check box.
Continue searching a column when the Recipe Builder reaches the spreadsheet's beginning or end.	Select the Wrap Around check box.

Using the Go To Item Button

Another method to help you display information faster is to use the Go To Item button. This button allows you to jump to a specific row. The feature is very useful when you want to move the length of the spreadsheet quickly.

When you select the Go To Item button, the Go To dialog box appears. You can switch between the spreadsheet and the Go To dialog box, allowing you to jump to different locations in the recipe. You may find this feature most helpful when you need to modify many different recipe items throughout the spreadsheet.

The Go To dialog box contains the Item Number field and the Go button. The Item Number field allows you to enter the number of the row you want to jump to. When you select the Go button, the Recipe Builder jumps to the specified row.

The Item Number Field

You can enter any row number up to 32,000 into the Item Number field. If the spreadsheet has less than 32,000 rows, the Recipe Builder allows you to enter a row number equal or less than the last row in the spreadsheet. If you enter a larger number, the Recipe Builder jumps to the last row of the spreadsheet after displaying the following text in a message box:

```
Row is beyond end of recipe
```

If you enter a negative number or if you enter non-numeric characters, the Recipe Builder displays an error message box, indicating that your entry was invalid.

To jump to a specific row:

1. Click the Go To Item button. The Go To dialog box appears.
2. In the Item Number field, enter the number of the row you want to jump to.
3. Select the Go button.
4. To jump to a different row repeat steps 2 and 3. When you finish jumping to specific rows, you can return to the spreadsheet by selecting a cell. The Go To dialog box remains on the screen. Alternatively, you can close the dialog box by selecting the Exit button.

Understanding Recipe Paths

One important aspect of locating and displaying recipe files is knowing which paths the Recipe Builder uses to store master and control recipes. The following table describes the paths that the Recipe Builder uses, the contents of each path, and its default value.

Recipe Paths

Path	Stores...	Default Value
Master recipe path	Master recipes, master text recipes, master recipe error files, and report files produced from master recipes.	C:\Program Files (x86)\Proficy\iFIX\Rcm
Control recipe path	Control recipes, control text recipes, control recipe error files, recipe note files, and report files produced from control recipes.	C:\Program Files (x86)\Proficy\iFIX\Rcc

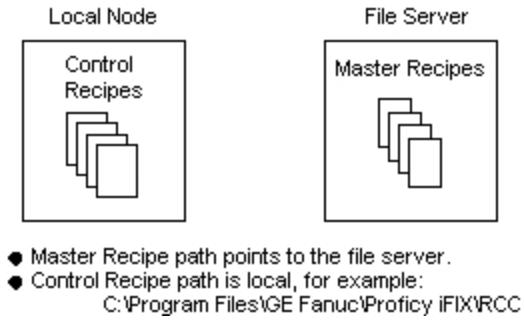
Defining Paths Without a File Server

Both paths are defined in the Path Configuration dialog box of the SCU. Refer to the Setting up the Environment manual for more information.

How you define the master and control recipe paths depends on your process and your needs. It is recommended that you accept the defaults unless you plan to have a file server with iFIX or unless the paths conflict with another path already in use. If you must redefine the recipe paths, make sure that each path is unique. Doing this keeps master recipe files separate from control recipe files.

Defining Paths With a File Server

If you plan to use a file server with iFIX, it is recommended that you define a file server directory as the master recipe path and define a local directory as the control recipe path, as the following figure shows.



Storing Recipes on a File Server

This configuration has the following benefits:

- Provides one location for storing master recipes, making updates to them quick and easy.
- Enables operators to use the control recipes they need without relying on the file server. Should the file server become unavailable, operators can continue working.

Setting the Startup Window

The Recipe Builder provides two windows for displaying information: the Recipe Operations window and the Recipe Development window. The Recipe Operations window provides limited control recipe access and is intended for the operator who must download control recipes or override a calculated value. The Recipe Development window provides full access to all recipes and is intended for the process engineer who must create, modify, and maintain master and control recipes. For more information about each window refer to the section Recipe Operations and Development Windows.

If you plan on working in one window more than another, you can set the Recipe Builder to automatically display either the Recipe Development or Recipe Operations window on startup. Select the Start in Dev Window command to automatically display the Recipe Development window on startup. To automatically display the Recipe Operations window, select the Start in Op Window command.

Switching Between Windows

In addition to setting the startup window, you can switch between the two windows using the Switch to command. Select the Switch to OP command to switch to the Recipe Operations window. To switch to the Recipe Development window, select the Switch to DEV command.

If you attempt to switch to a window, but your system administrator has not assigned you rights to use it, a message box appears indicating you do not have the necessary rights. To proceed, contact your system administrator.

Applying Fonts

The Recipe Builder enables you to control how the text in the spreadsheet appears by applying a font to it, changing the font style, or adjusting the point size. You can do any of these operations by selecting the Font command. When you select this command, the standard Font dialog box appears.

The exact font, style, and point size you select depends on your needs and the fonts installed on your node. However the following guidelines provide helpful tips for applying fonts effectively:

- Select an easy to read font, such as Times or Courier.
- Avoid hard to read font styles, such as underline and italics.
- When you display a large recipe, adjust the point size to eight or nine. This allows you to display more rows in the spreadsheet.

NOTE: Make sure the font you select for the recipe is available on all nodes. If the font you select is not available on another node, the operating system substitutes the System font for it when you open the recipe, ignoring the font, point size, and style you selected.

Displaying Tag Group Tagnames

The Recipe Builder enables you to display the tagnames or symbols from a tag group.

To display tagnames or symbols from a tag group:

1. Assign a tag group to the open recipe. For more information on how to do this, refer to the section Assigning Tag Groups. To learn how to create a tag group, refer to the section Creating a New Tag Group File.
2. Enter a symbol name in the Identifier column that is defined in the assigned tag group file.
3. Select one of the commands listed in the following table.

Displaying Tag Group Tagnames and Symbols

When you select the...	The Recipe Builder...
Show Tagnames command	Enables you to substitute tag group tagnames for symbol names.
Show	Disables tagname substitution and displays only the symbol names you

Symbols command	entered. If you save the recipe with this command selected, the Recipe Builder automatically displays the symbol names in the recipe.

If the symbol specified in the recipe is undefined in the tag group or if the symbol is associated with a nonexistent tagname, and you select the Show Tagnames command, the Recipe Builder has no tagname to display. In this situation, no tagname substitution occurs.

Adding and Removing Columns

Another way you control what information appears on the screen is by customizing the spreadsheet to display only the columns you want. This feature is particularly useful when you want to display only specific columns for the operator, such as the recipe identifier, the calculated value and the override value.

You can customize the spreadsheet displayed in both windows by adding and removing only the specific columns you want. By selecting the Edit Display Formats command, you can add a column to or remove a column from the spreadsheet. This command also allows you to edit the text of each column heading and control whether the column is modifiable.

When you select Edit Display Formats from the Window menu, the Window Display Format dialog box appears. This dialog box has the following controls:

Available Columns list box — lists the columns you can add to the spreadsheet. If the list box is empty, all the available columns are in use.

Column Layout list box — lists the columns currently displayed in either the Recipe Operations window or the Recipe Development window. By default, the columns in the Recipe Development window appear. The list box displays the columns in the same order as they appear in the recipe and indicates which columns are modifiable.

The following table provides instructions for using the Window Display Format dialog box.

Window Display Format Procedures

To...	Then...
Add a column to the spreadsheet.	1. From the Available Columns list box, select the column you want to add. 2. Select the Add button. The selected column appears in the Column Layout list box and disappears from the Available Columns list box. If you prefer, you can add a column to the spreadsheet by double-clicking a column in the Available Columns list box.
Remove a column from the spreadsheet.	1. From the Column Format list box, select the column you want to remove. 2. Select the Delete button. The selected column disappears from the Column Layout list box and appears in the Available Columns list box.
Arrange a column in the spreadsheet.	1. In the Column Layout list box, select the column you want to move. 2. To move the column up in the list box and to the left in the recipe, select the up arrow button. To move the column down and to the

	right, select the down arrow button.
To display the columns from the Recipe Operations window.	Select the Switch to OP button. The columns from the Recipe Operations window appear in the Column Layout list box.
To display the columns from the Recipe Development window.	Select the Switch to DEV button. The columns from the Recipe Development window appear in the Column Layout list box.

Modifying a Column

Besides adding and removing columns, the Recipe Builder lets you customize the spreadsheet by restricting input into specific columns and by changing a column heading. For example, if you want operators to change only override values, make the other columns in the Recipe Operations window non-modifiable.

You can modify columns attributes using the Column Details dialog box. This dialog box displays the Column Heading field and the Modifiable check box.

Column Heading Field

The Column Heading field enables you to enter the heading you want for the selected column. The field contains the current heading of the selected column. You can enter up to 39 characters into field.

Modifiable Check Box

The Modifiable check box controls whether values in the selected column are modifiable. When the box is selected, the column is modifiable. When the box is cleared, the column is not modifiable.

Follow the instructions in the following table to use the Column Details dialog box.

To display the Column Details dialog box:

1. On the Window menu, click Edit Display Format The Window Display Format dialog box appears.
2. From the Column Layout list box, select the column you want to modify.
3. Select the Modify button, or in the Column Layout list box, double-click the column. The Column Details dialog box appears.

Column Details Procedures

To...	Then...
Modify the column heading.	Enter the heading you want for the selected column in the Column Heading field.
Make a column modifiable.	Select the Modifiable check box.
Make a column non-modifiable.	Clear the Modifiable check box

When you finish using the Column Details dialog box you can apply the changes you have made.

To apply column changes:

1. From the Column Details dialog box, click OK. The Recipe Builder updates the Column Layout list box to reflect the changes you made.
2. From the Window Display Format dialog box, click OK. The Recipe Builder updates the spreadsheet for the selected column.

Saving Format Files

After you customize the spreadsheet the way you want it, you can save it to a format file. A format file is a binary file with an .RFT extension. The file is stored in the Local path and defines the following spreadsheet attributes for the Recipe Operations and Recipe Development windows:

- The column layout (including the specific columns in the spreadsheet, the column headings, column width, and which columns are modifiable).
- The font, style, and point size of the text in the spreadsheet.
- The type of tag group substitution that is enabled (whether the recipe shows symbol names or tag group tagnames).

The Recipe Builder also uses the data in the format file to determine the order to display each column.

By saving the current spreadsheet format, you make it permanent. After saving a display format, you can load it as needed.

You can save the current format using the Save Display Formats command. When you select this command, the standard Save As dialog appears. To save the display format, type its name in the File Name field and click the OK button.

Loading Format Files

After you create some format files, you may find it helpful to load a specific format or switch between two or more format files when displaying recipes. The Recipe Builder allows you to load a format file with the Load Display Format command. Once loaded, the Recipe Builder replaces the existing display format of the spreadsheet with the display format you selected.

After you select the Load Display Formats command, the standard Open dialog appears. To load the display format, type its name in the File Name field and click the OK button.

Overriding the Default Format Settings

Each time you start the Recipe Builder, it loads its default format file, DEFAULT.RFT. You can change the display format by loading a format file, as described in the section Loading Format Files. However, you may find that loading a format file each time you start the Recipe Builder inconvenient, particularly if you primarily use only one format file more than any other.

You can remedy this situation by overriding the preset defaults.

To override the preset defaults:

1. Rename DEFAULT.RFT, the original file, to something else, such as ORIGINAL.RFT.

   CAUTION: If you do not rename the original format file, you will be unable to display the recipe using the preset defaults.

2. Customize the spreadsheet as described in the sections Adding and Removing Columns and Modifying a Column.
3. Save your customized format to the file, DEFAULT.RFT. The Recipe Builder overwrites the pre-set defaults. The next time you start the Recipe Builder, it automatically loads the new set of defaults you saved to the format file.

If, for any reason, you need to display a recipe using the preset defaults, load the original format file as described in the section Loading Format Files.

Downloading and Uploading Recipes

One of the most common tasks that the Recipe Package does is uploading or downloading a recipe. The Recipe Package enables you to upload and download master and control recipes using:

- The Recipe Builder
- An operator display
- A Program block
- The Scheduler

This chapter provide detailed explanations of each method. It includes the following sections:

- Downloading from the Recipe Builder
- Uploading from the Recipe Builder
- Uploading and Downloading From an Operator Display
- Scheduling a Recipe for Automatic Upload or Download

Downloading from the Recipe Builder

Downloading a recipe from the Recipe Builder lets you preview the calculated values of each recipe item prior to sending these values to the process database.

The window being displayed determines the type of recipe you can open and subsequently download, as the following table shows:

Downloading Master and Control Recipes

You can download a...	From...
Master recipe	Recipe Development window
Control recipe	Recipe Development or Recipe Operations window

Regardless of the window you download a recipe from, the process is the same and is summarized in the following steps.

To download a recipe:

1. Select the Download button from the recipe header.
2. Complete the Download dialog box if it appears.

   The Recipe Builder does error-checking. If the Recipe Builder detects an error, the download aborts. If the Recipe Builder detects no errors, the download begins. The Recipe Builder completes the download and displays the results in a message or dialog box.
3. Acknowledge the message box or dialog box that appears.

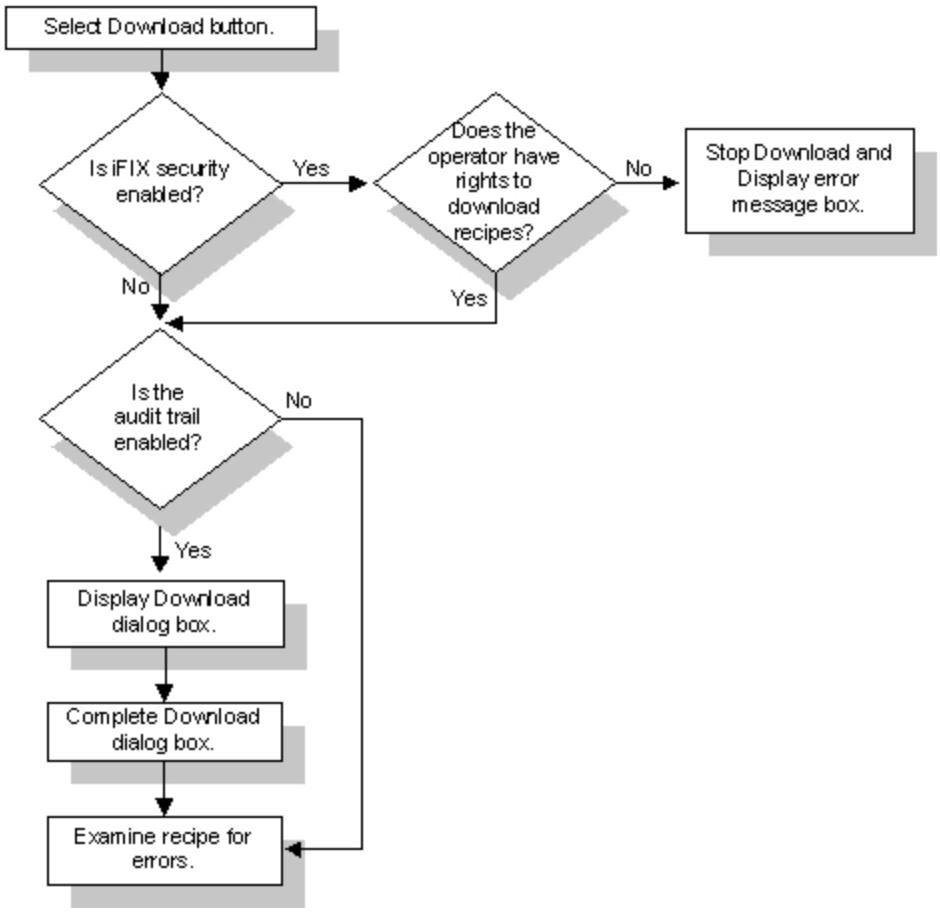
The sections Starting the Download, Checking for Errors Before Downloading, and Displaying Download Results describe each step of the download process. Refer to these sections for more information about the download process.

IMPORTANT: Make sure no recipes are downloading when you reload a process database. Unexpected results can occur if the Recipe Builder attempts to download during a database reload.

Starting the Download

The first step in downloading a recipe from the Recipe Builder is to select the Download button. If the audit trail is disabled, the Recipe Builder examines the recipe for errors. Refer to the section Checking for Errors Before Downloading for more information.

If the audit trail is enabled, the Download dialog box appears. The following figure provides a flowchart of the first part of the download process.



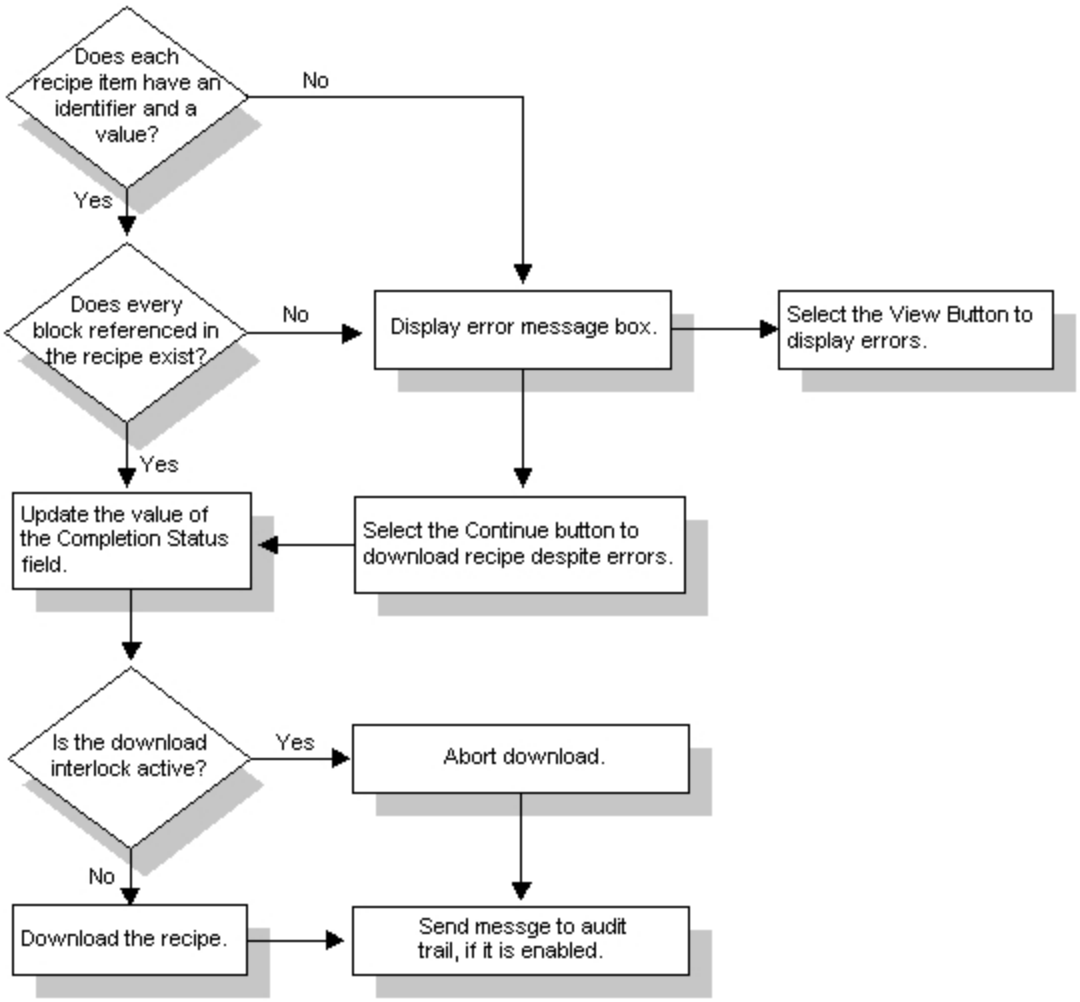
Starting the Download Process

To complete the Download dialog box:

1. Click the Download button. If the audit trail is enabled, the Download dialog box appears.
2. In the Batch ID field, enter an identifier for the download of a recipe. This identifier can be up to 10 characters. The text you enter into the Batch ID field appears in all recipe messages, uniquely identifies the download, and is assigned to the keyword #BATCH_ID for the current download. If you do not want to specify a batch ID, you can leave this field blank.
3. In the Remarks field, enter up to 20 characters explaining why the recipe is being downloaded. The text you enter is included in all recipe messages when the audit trail is enabled and is assigned to the keyword #REMARKS for the current download. If you do not want to enter any text, you can leave this field blank.

Checking for Errors Before Downloading

After you complete the Download dialog box, the Recipe Builder examines the recipe for errors. The following figure provides a flowchart of the steps the Recipe Builder performs before downloading the recipe.



Examining a Recipe for Errors During a Download

Notice that the program examines all recipe items and variables for an identifier and a value. Variables are not downloaded, however. If the formula of a recipe item references a variable, that variable must exist in the recipe and must have a value, otherwise the download aborts.

Also notice that the Completion Status field is updated prior to downloading. Refer to the section Defining the Completion Status Indicator for more information about possible Completion Status field values.

Handling Errors

Should the Recipe Builder find errors prior to downloading the recipe, it displays an error message box with the following text:

```
Precheck of recipe recipe
completed with x database errors
```

You can display these errors by selecting the View button on the message box. When you select this button, the Precheck Error List dialog box appears and displays a list of errors.

Common download precheck errors include an active download interlock, downloading to a node that is not running SAC, attempting to download a recipe item without a formula or override value, and

attempting to download to a tagname that does not exist. To correct these, or any other errors, you must cancel the download first. For additional information about handling precheck errors, refer to the section Understanding Audit Trail and Error File Messages.

NOTE: If the Recipe Builder encounters precheck errors for the upload or download interlock, the Item No. field in the Precheck Error List dialog box is left blank for that block. To correct the error for either interlock, open the database and make the necessary changes or change the interlock with the Advanced Options dialog box.

Displaying Download Results

After the recipe has been downloaded, the Recipe Builder displays its results. The exact results depend on whether recipe verification has been enabled.

If none of the recipe items have verification enabled, the Recipe Builder displays the following text when it successfully downloads the recipe:

```
Download of recipe recipe completed with
NO ERRORS
```

Click OK to acknowledge the message.

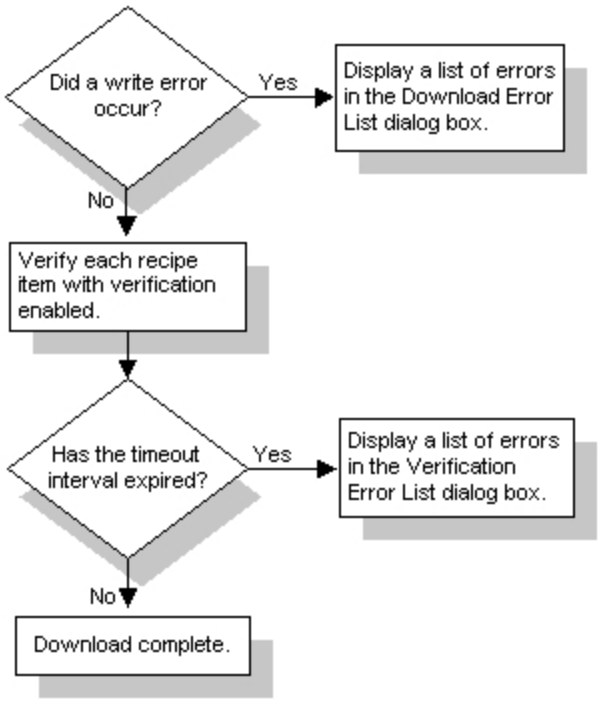
NOTE: If you notice alarm entries missing from an alarm file after a recipe is downloaded, the alarm file queue may not be large enough. To correct this problem, increase the size of the Alarm File Queue so that it is larger than the recipe. For example, if the recipe has 100 recipe items, the queue size should be at least 101. For information on how to increase the size of an alarm queue, refer to the section Modifying the Alarm Queues in the Implementing Alarms and Messages manual.

If the Recipe Builder was unable to download one or more of the recipe values to the database, the Download Error List dialog box appears.

NOTE: The information listed in this dialog box reflects the state of the recipe at the time of the download. If you modify the recipe after the Download Error List dialog box appears, the information displayed in the dialog box will not reflect the current state of the open recipe.

Common causes for write errors are if the target block is in Automatic mode instead of Manual mode, if the block is off scan, or if the block is assigned to a security area that is not defined in the recipe user account on the target node. For additional information about handling download write errors, refer to the section Understanding Upload and Download Messages. For information about using the recipe user account, refer to the chapter Recipe Security.

The following figure shows what happens when recipe verification is enabled.



Displaying Verification Results

Notice that when a write error occurs, the Download Error List dialog box appears.

Verifying a Recipe

If no write errors occur, the Recipe Builder begins verifying each recipe item that has verification enabled. Using the Verify column in the spreadsheet, you can select the recipe items you want to verify.

The Recipe Builder handles recipe verification by reading the target block field and comparing its current value in the database against the value in the recipe. When the two values match, the recipe item is verified.

IMPORTANT: Because the Recipe Package reads and writes from the same set of blocks, you can only verify recipe items that specify blocks with an input and output capability. These blocks include the Analog Input, the Analog Alarm, the Analog Register, the Digital Input, the Digital Alarm, the Digital Register, and the Text block. Attempting to verify a recipe that contains any other type of block can produce unexpected results.

When verifying Digital Register blocks, make sure the type of formula agrees with the type of field specified in the identifier. Only use strings with the A_CV field and only use numeric values with the F_CV field. If you do not, the Recipe Builder cannot verify the block's value. For example, if you specify the field A_CV, enter a string formula that matches the label for the appropriate state of the block, such as "OPEN".

If one or more recipe items reference an Analog Register or Digital Register block, you may experience difficulty verifying these items. To resolve this problem, create an Analog Input block for each poll record referenced by the recipe. Make sure the scan time of the Analog Input block is shorter than the access time of the poll record it is assigned to. This setup ensures that the I/O driver does not time out and stop

polling the poll record. By continuously polling each address, you ensure that data is available for verification.

As it verifies a recipe, the Recipe Package continually reads the values of the target blocks until each recipe item that you selected is verified or the time-out interval expires. All recipe items must verify at the same time in order to verify a recipe successfully. For example, consider the following.

	First Pass	Second Pass	Third Pass
Recipe Item 1	Verified	Not verified	Verified
Recipe Item 2	Not verified	Verified	Verified
Recipe Item 3	Verified	Verified	Verified

In this example, the recipe is verified only on the third pass through it, because only on the third pass are all recipe items verified. When one or more recipe items are not verified, as shown above, the Recipe Builder starts from the beginning of the recipe and attempts to verify each recipe item you have selected again.

The time-out interval specifies the amount of time the Recipe Builder spends verifying the recipe. If this interval expires without verifying the recipe, a time-out error occurs and the verification process ends.

NOTE: The time-out interval you specify applies to the local node. All recipes downloaded from the local node will use this time-out interval.

If the time-out interval expires, the Recipe Builder displays the Verification Error List dialog box.

NOTE: The information listed in the Verification Error List dialog box reflects the state of the recipe at the time of the download. If you modify the recipe after the Verification Error List dialog box appears, the information displayed in the dialog box will not reflect the current state of the open recipe.

Common verification errors include attempting to verify a block that is off scan or attempting to verify blocks on a node that does not have SAC running. For additional information about handling verification errors, refer to the section Understanding Upload and Download Messages.

Changing the Verification Time-out Interval

By default, the verification time-out interval is 30 seconds. However, if you find that the verification process is timing out you may need to give your system more time to read process values and update the database.

To modify the time-out interval:

1. From the Recipe Builder, on the File menu, click Exit. If necessary, save any changes you have made to the current recipe.
2. In a text editor, open the RCP.INI file. This file resides in the Local path. You should see the following text:

```
[startup]
startup.mode=2
verification.timeout=30
```

3. Modify the time-out interval by changing the value from 30 to some other value. Possible values for the time-out interval are from 1 to 65,535 seconds.

4. After modifying the time-out interval, save the RCP.INI file and restart the Recipe Builder.
5. With the new time-out interval, try downloading the recipe again.

For information about verification errors, refer to the section Verifying a Recipe.

Uploading from the Recipe Builder

Uploading a recipe is the process of reading process values from the database and storing them in the open recipe. While uploading values from your process may not be done very often, it can be useful when you want to quickly create a recipe by capturing the current process values being used.

When the Recipe Builder uploads a recipe, it replaces recipe item formulas that contain numeric or string constants. Formulas containing variables, mathematical expressions, keywords, or recipe functions are not replaced.

CAUTION: If the Recipe Builder cannot read a process value from the database, it clears the existing formula for that recipe item without inserting a new value to indicate that the associated tagname could not be read or could not be found in the database. Before saving the uploaded recipe, make sure you examine your recipe for completeness. If any formulas are blank, do not save the recipe or you will overwrite the formulas saved in the file.

Aside from these differences, uploading a recipe is similar to downloading a recipe except that recipe verification is not available. The recipe upload process is summarized below.

To upload a recipe:

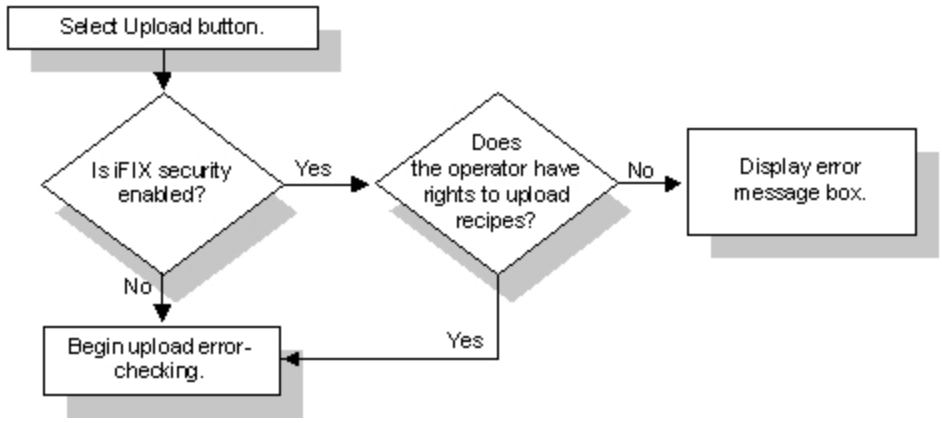
1. Select the Upload button from the recipe header.

   The Recipe Builder does error-checking. If the Recipe Builder detects an error, the upload aborts. If the Recipe Builder detects no errors, the upload begins. The Recipe Builder completes the upload and displays the results in a message or dialog box.
2. Acknowledge the message box or dialog box.

The sections Starting the Upload Process, Checking for Errors Before Uploading, Displaying Upload Results describe each portion of the upload process. Refer to these sections for more information about the upload process.

Starting the Upload Process

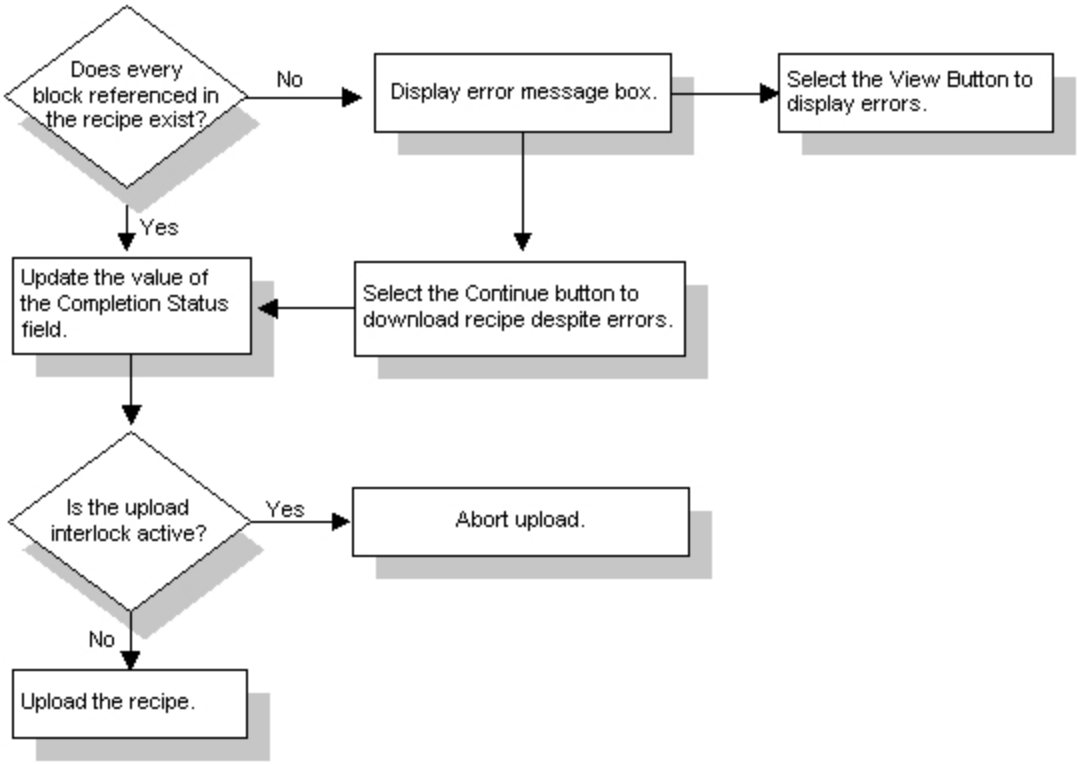
You can start the upload process from the Recipe Builder by selecting the Upload button. The following figure provides a flowchart of what happens when you select this button.



Selecting the Upload Button

Checking for Errors Before Uploading

As the previous figure shows, if iFIX security has not been enabled or if the user account has the necessary application feature, the Recipe Builder examines the recipe for errors. The following figure provides a flowchart of the steps the Recipe Builder performs before uploading a recipe.



Examining a Recipe for Errors During an Upload

As you can see, this process is similar to the steps taken when downloading a recipe. For example, just as with downloading, the Recipe Builder examines the database to ensure the specific blocks exist.

Similarly, the Completion Status field is updated when the upload process begins. The Completion Status Values *table* describes the possible values and their meaning.

Should the Recipe Builder detect an error, it displays an error message box with the following text:

```
Precheck of recipe recipe
completed with x database errors
```

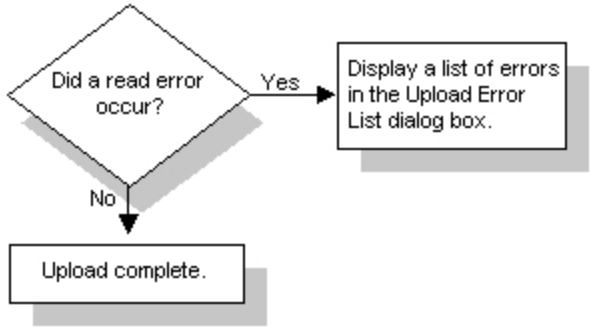
You can display these errors by selecting the View button on the message box. When you select this button, the Precheck Error dialog box appears and displays a list of errors.

Common upload precheck errors include an active upload interlock or an attempt to upload from a tag-name that does not exist. To correct these, or any other errors, you must cancel the upload first. For additional information about handling precheck errors, refer to the section Understanding Audit Trail and Error File Messages.

NOTE: If the Recipe Builder encounters precheck errors for the upload or download interlock, the Item No. field in the Precheck Error List dialog box is left blank for that block. To correct the error for either interlock, open the database and make the necessary changes or change the interlock with the Advanced Options dialog box.

Displaying Upload Results

After the recipe has been uploaded, the Recipe Builder displays its results. The following figure summarizes the possible results.



Displaying Recipe Upload Results

Notice that when a read error occurs, the Upload Error List dialog box appears.

NOTE: The information listed in this dialog box reflects the state of the recipe at the time of the upload. If you modify the recipe after the Upload Error List dialog box appears, the information displayed in the dialog box will not reflect the current state of the open recipe.

Common upload read errors include an active upload interlock or uploading from a block that is off scan. For additional information about handling upload read errors, refer to the section Understanding Upload and Download Messages.

Uploading and Downloading From an Operator Display

While it is possible to upload or download a recipe from the Recipe Builder, you may want to create or modify operator displays that upload or download recipes.

When an operator uploads or downloads a recipe from an operator display, the Recipe Package uploads or downloads each recipe item. No dialog or message boxes appear to inform you about the status of the recipe during the upload or download. Any errors that occur are not saved unless you enable the audit trail or use the Error File command line parameter.

When uploading a recipe, the Recipe Package automatically saves the recipe. If the Recipe Upload system task cannot read a process value from the database, it clears the existing formula for that recipe item.

If the recipe being downloaded has recipe items with verification enabled, these recipe items are verified as part of the download process. Refer to the sections Displaying Download Results, Verifying a Recipe, and Changing the Verification Time-out Interval for more information about recipe verification.

In addition, if security has been enabled, iFIX compares the security areas of the target blocks to the security areas assigned to the Recipe user account. If the security system finds a match, it downloads the recipe value. Otherwise, the value is not written to the database.

Similarly, iFIX compares the security area of the operator display against the security areas assigned to the currently logged in user. If a match is found, iFIX opens the display. Neither the security rights to recipe application features nor the security area of the recipe is examined.

To upload or download a recipe from an operator display, create a picture with the necessary objects. For each object you want to use for uploading or downloading include a script with the Shell function. This function, when executed, starts the recipe system task you specify.

For example, you may want to add push button objects to upload and download recipes. The following sample script shows how you can download a recipe:

```
Private Sub Button1_Click()
Dim download As String
Dim return_value As Double

download = System.ProjectPath + "\RCPDOWN" + " /cRCPFILE /e"
return_value = Shell (download, 0)
End Sub
```

To create an upload script, define a variable called upload in place of the download variable and substitute the reference to RCPDOWN with RCPUP as follows:

```
upload = System.ProjectPath + "\RCPUP" + "/cRCPFILE /e"
```

Including Command Line Parameters

As these examples show, you can include command line parameters in the script. To help troubleshoot the upload and download process, you should include the Error File parameter so that any errors are saved in an error file called *recipe*.RCE. This file resides in either the Master Recipe path or the Control Recipe path, depending on the type of recipe that was uploaded or downloaded. You can display the contents of this file using a text editor.

If you have enabled the audit trail for the recipe, you may also want to include the Batch ID and Download Remarks parameters. To learn more about the command line parameters for the Recipe Upload and Recipe Download programs, refer to the appendix Command Line Parameters. For more information about the Shell function, refer to the Microsoft Visual Basic Reference Help system.

Scheduling a Recipe for Automatic Upload or Download

Depending on your needs, you may want to automatically upload or download a recipe. You can automatically upload or download a recipe, using a Program block or the Scheduler. For more information about the Scheduler, refer to the Mastering iFIX manual.

When you upload or download from a Program block, no dialog or message boxes appear to inform you about the status of the recipe during the upload or download. Any errors that occur are not saved unless you enable the audit trail or use the Error File command line parameter.

When uploading a recipe, the Recipe Package automatically saves the recipe. If the Recipe Upload system task cannot read a process value from the database, it clears the existing formula for that recipe item.

If the recipe being downloaded has recipe items with verification enabled, these recipe items are verified as part of the download process. Refer to the sections Displaying Download Results, Verifying a Recipe, and Changing the Verification Time-out Interval for more information about recipe verification.

In addition, if security has been enabled, iFIX compares the security areas of the target blocks to the security areas assigned to the Recipe user account. If the security system finds a match, it allows the block's process value to change. Otherwise, no value is written to the database. Neither the security rights to recipe application features nor the security area of the recipe is examined.

Configuring a Program Block

You can schedule a recipe for automatic uploading or downloading by configuring a Program block with the RUNTASK command. This command allows you to run the recipe system tasks automatically at specific times or when a specific event occurs. The following table provides examples of the RUNTASK syntax you need to execute the Recipe Download and Recipe Upload programs for a control recipe.

Automatic Upload/Downloads with a Program Block

To run the...	Use the command...
Recipe Download program	RUNTASK RCPDOWN /c*control_recipe* /e
Recipe Upload program	RUNTASK RCPUP /c*control_recipe* /e

To help troubleshoot the use of the RUNTASK command, you should include the Error File parameter with the Recipe Upload and Recipe Download programs. Using this parameter enables the Recipe Package to record errors in an error file called *recipe*.RCE. The file resides in the Control Recipe path (when working with control recipes) or the Master Recipe path (when working with master recipes). You can display the contents of this file using a text editor.

Scheduling an Upload or Download

By using other Program block commands with the RUNTASK command, you can schedule when to upload and download a recipe. For example, to schedule a control recipe to be downloaded once a day,

use the following commands:

Command	Action
WAITFOR TIME = 12:00:00	Wait until noon.
RUNTASK RCPDOWN /c*control_recipe* /e	Download the recipe.

To download the recipe at a different time, change the time in the WAITFOR command.

Alternatively, you can configure a Program block to upload or download a recipe when a specific event occurs. For example, assume you want to download a recipe when the download interlock becomes inactive. To do this, use commands similar to the following:

Command	Action
WAITFOR ILK1=0	Wait until interlock becomes inactive.
RUNTASK RCPDOWN /c*control_recipe* /e	Download the recipe.

To learn about the command line parameters for the Recipe Upload and Recipe Download programs, refer to the chapter Command Line Parameters.

Accelerating the Upload or Download

To accelerate the upload or download time, you can change the display time of the dialog box that automatically displays. Add the dialogdisplaytime setting to the rcp.ini in the iFIX Local path. For example:

```
dialogdisplaytime=1000
```

where 1000 is equal to a 1 second (1000 milliseconds) display time.

Working with Formulas

One of the most flexible features of the Recipe Builder is its ability to include formulas in recipes. A formula is like a programming assignment statement. It enables you to specify how the Recipe Builder should calculate a value for a recipe item or variable.

You can construct a formula by entering one or more of the formula items listed in the following table into the Formula column of the spreadsheet.

Formula Items

Formula	Examples
String constant	"John"
Numeric constant	5 or 0.5
Mathematical operators	+, -, *, /,^, = =, <=
Function	Log(234) or Lookup (#BATCH;1;2;3;4;5)
Variable name	#COLOR
Keyword	#BATCH

By combining the items listed above, you can represent a value as best fits your needs. For example, the sample recipe, you may remember, requires 150 pounds of yeast to be added during fermentation. You can represent this amount as a numeric constant by entering 150 in the Formula column for the appropriate tagname. If you prefer, you can also assign this value to a variable and then use the variable as the formula for the block as shown below:

Identifier	Formula
#Yeast	150
FERMENT1:Q16F1.F_CV	#Yeast

You could also represent the quantity as a mathematical expression such as 100*1.5. Assuming 100 is the standard batch size and 1.5 is the amount of yeast required for every barrel of beer produced, you can also represent the quantity with the following keyword and variable as follows:

```
#STD_BATCH*#Lbs_Per_Barrel
```

Understanding Formula Syntax

Before you begin using formulas in your recipes, refer to the following sections to learn about the syntax of recipe keywords, functions, and operators:

- Working with Functions
- Understanding Formula Operators
- Understanding Recipe Keywords

In addition to the syntax of these items, all strings in a formula must be enclosed in quotation marks (" ") and you must precede a number less than one with a leading zero (for example, 0.5).

Working with Functions

The Recipe Builder provides a set of functions common to most spreadsheet programs. The following table summarizes the available recipe functions and their syntax. All trigonometric functions require values entered in radians.

Functions

When you select the function...	The Recipe Builder calculates the...	Syntax
ABS	Absolute value of *number*.	ABS (*number*)
ACOS	Arccosine of *number*.	ACOS (*number*)
ASIN	Arcsine of *number*.	ASIN (*number*)
ATAN	Arctangent of *number*.	ATAN (*number*)
COS	Cosine of *number*.	COS (*number*)
EXP	Anti-log of *number*.	EXP (*number*)
INT	Integer value of *number*.	INT (*number*)
LOG	Natural log of *number*.	LOG (*number*)
LOG10	Base 10 log of *number*.	LOG10 (*number*)
SIN	Sine of *number*.	SIN (*number*)
SQRT	Square root of the *number*.	SQRT (*number*)
TAN	Tangent of *number*.	TAN (*number*)

In addition to the functions listed in the previous table, the Recipe Builder also provides the Lookup and Index functions. These functions help you locate a value within a list.

The Lookup Function

The Lookup function locates and uses the *n*th value in a list, where *n* is a zero-based integer. You can use the following syntax for this function:

```
LOOKUP (number; numeric list)
or
LOOKUP (number; string list)
```

The Lookup function also allows you to substitute a variable name or keyword anywhere you can use a number or string value.

When the Recipe Builder evaluates the Lookup function, it uses the value of *number* to select the appropriate value from the list. For example, consider the following:

Identifier	Formula	Calc Val
#Yeast	3	3
#Result	LOOKUP (#Yeast;0;150;300;450;600)	450

When the Recipe Builder evaluates this function, it uses the value of the variable #Yeast to determine the value of the function. The following table lists the possible values of the function.

If the value of #Yeast is...	Then the function evaluates to...
0	0
1	150
2	300
3	450

4	600
None of the above	??????

The Index Function

The Index function is similar to the Lookup function. The Index function locates the position of a number or string within a list. The position of each item is zero-based. As a result, the first item evaluates to zero, the second item to one, the third item to two, and so on. You can use the following syntax for this function:

```
INDEX (number; numeric list)
or
INDEX (string; string list)
```

The Index function also allows you to substitute a variable name or keyword anywhere you can use a number or string value.

When the Recipe Builder evaluates this function, it searches for a match between *number* or *string* and the accompanying list. If it does not find a match, the value of function equals the number of items in the list. If it finds a match, the function equals the position of the located item in the list.

For example, consider the following:

Identifier	Formula	Calc Val
#Beer_Type	"Ale"	"Ale"
#Result	INDEX (#Beer_Type; "Dark Beer"; "Ale"; "Mead"; "Stout")	1

When the Recipe Builder evaluates these recipe items, it searches the list for the value of #Beer_Type. Since the value of #Beer_Type is "Ale", the Index function yields a value of one. The following table lists all possible values of the function.

If the value of #Beer_Type is...	The value of the formula is...
"Dark Beer"	0
"Ale"	1
"Mead"	2
"Stout"	3
None of the above	4

NOTE: The Index function does non-case sensitive string matching when string values are specified.

iFIX supports the international formats supported in Windows. The recommended list separator for the Index and Lookup functions is a semicolon (;).

Understanding Formula Operators

Operator Precedence

The Recipe Builder provides a set of operators common to many spreadsheet programs. The following table lists the available formula operators from high to low precedence. The Recipe Builder uses the precedence of an operator to determine which operator to evaluate first. An operator with a higher

precedence is evaluated first. Operators with the same precedence are evaluated in the order they occur in the formula from the left to right.

Formula Operators

Operator	Syntax	Precedence
( ) (parentheses)	(*expression*)	1
- (unary minus)	- *number*	2
All functions	See the Functions table.	2
^ (exponentiation symbol)	*number* ^ *number*	3
* (multiplication)	*number* * *number*	4
/ (division)	*number* / *number*	4
+ (addition)	*number* + *number*	5
- (subtraction)	*number* - *number*	5
< (less than)	*number* < *number*	6
<= (less than or equal to)	*number* <= *number*	6
> (greater than)	*number* > *number*	6
>= (greater than or equal to)	*number* >= *number*	6
!= (not equal to)	*number* != *number*	6
== (equal to)	*number* = =*number*	6

Changing the Order of Precedence

You can change the order in which the Recipe Builder evaluates a formula by enclosing a portion of it in parentheses. Expressions enclosed in parentheses have the highest precedence of any part of the formula.

For example, consider the formulas listed below:

Formula	Value
5*3^2	45
(5*3)^2	225

Understanding Recipe Keywords

Recipe keywords are variables reserved for use by the Recipe Builder. The following table summarizes the available recipe keywords. The keywords #STD_BATCH, #BATCH, and #SCALE contain numeric values. All other keywords contain string values.

Recipe Keywords

The keyword...	Contains the...	To set the value of the keyword...

#BATCH	Current batch size	Select the Set Batch Size from the Options menu. The Batch Size dialog box appears. Complete the Batch Size field in the dialog box.
#BATCH_ID	Batch ID	With the audit trail enabled, select the Download button from the Recipe Builder. The Download dialog box appears. Complete the Batch ID field in the dialog box.
#REMARKS	Download remarks	With the audit trail enabled, select the Download button from the Recipe Builder. The Download dialog box appears. Complete the Download Remarks field in the dialog box.
#BATCH_UOM	Batch unit of measure	Complete the Batch UOM field in the recipe header.
#NAME	Recipe name	Open a recipe or save an untitled recipe.
#PRODUCT	Name of the end product	Complete the Product field in the recipe header.
#SCALE	Batch scaling factor	1. Complete the Standard Batch Size field in the recipe header. 2. Select the Set Batch Size from the Options menu. The Batch Size dialog box appears. 3. Complete the Batch Size field in the dialog box. The Recipe Builder automatically calculates the scaling factor dividing the #STD_BATCH by #BATCH.
#STD_BATCH	Standard batch size	Complete the Standard Batch Size field in the recipe header.
#TAG_GROUP	Assigned tag group file name	1. Select the Assign Tag Group from the Option menu. The Assign Tag Group dialog box appears. 2. Complete the Tag Group File name field in the dialog box.
#UNITS	Process unit used by the recipe	Complete the Units field in the recipe header.

NOTE: The keyword #BATCH_ID and #REMARKS always appear blank in the recipe, but the text you enter for each keyword is downloaded to the database when you assign either keyword to a tagname.

The Recipe Builder allows you to use a keyword containing a string value in place of a string constant. For example, consider the following formula:

```
INDEX ("BEER"; "ALE"; #PRODUCT; "MEAD")
```

In this example the value of the keyword #PRODUCT is used in place a string constant.

You can also substitute a keyword with a numeric value for an actual number. For example:

```
INT(#BATCH)
```

This formula calculates the integer value of the current batch size.

Working with Variables and Formulas

Including Variables in Formulas

Just as you can use keywords in place of string and numeric constants, you can use variables in place of string and numeric values. For example, in place of the #BATCH in the previous example, you can use the variable #YEAST.

Deleting Variables

Be careful about deleting a variable. If you delete a variable that another variable or recipe item references, the Recipe Builder displays the text ?????? in the Calc Val column of the item that referenced the deleted variable. While the Recipe Builder displays this text, the recipe cannot be downloaded. To fix this situation, do one of the following actions:

- Edit the formula of the recipe item or variable that references the deleted variable.
- Create a variable with the same name as the variable you deleted.
- Override the recipe item or variable that references the deleted variable.

To avoid deleting variables that are referenced by another item in the spreadsheet, search the Formula column for the variable name before you delete it from the recipe.

Creating Formulas

Once you know the keywords, operators, and functions you want to use, you can define a formula by selecting a cell in the Formula column of the spreadsheet and entering the formula into the text editing box.

If your recipe has a value that is repeatedly reused, you may find it helpful to represent the value with a variable at the top of the spreadsheet. While you do not have to keep variables at the beginning of the spreadsheet, doing so makes maintaining and customizing a recipe easier.

Modifying and Recalculating Formulas

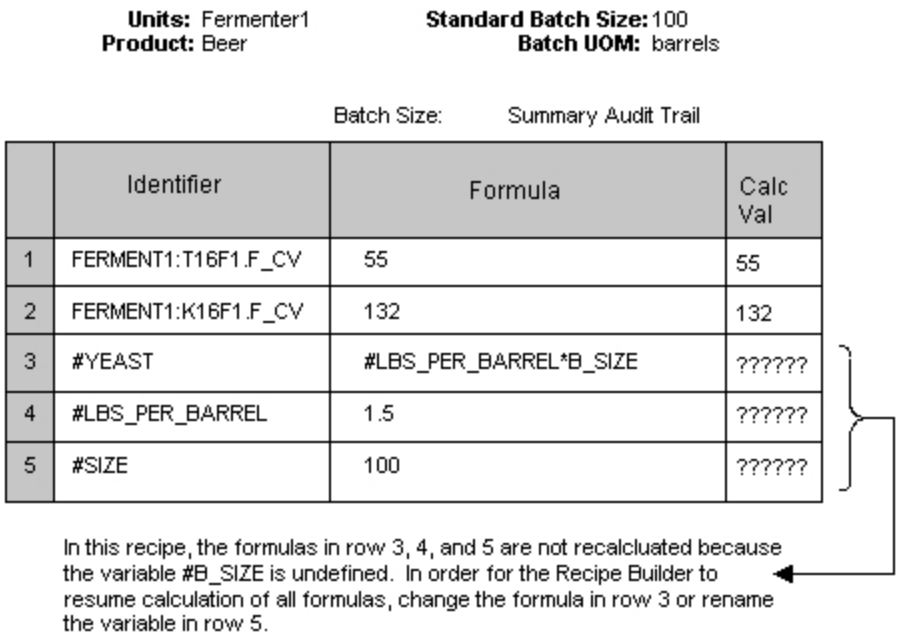
As your needs change, you may find it necessary to modify a formula. You can do this by selecting the formula you want to edit and modifying it as needed.

When you finish editing the formula, press <Enter>. The Recipe Builder automatically recalculates all recipe formulas in the order they occur.

If the Recipe Builder cannot recalculate a formula (for example, when one or more variables referenced by the formula are undefined) an error message box appears displaying the following text:

```
Recalculation failed at item #x. Error xxxxerror_text
```

The Recipe Builder also stops recalculating all formulas that come after the incalculable formula. The following figure shows an example of this and how to correct the error.



Recalculating Formulas

You cannot change a recipe item with a field type of A_ and a string formula to an F_ field. If you attempt to do this, the following error message appears:

```
Checking this item. Only F_ and A_ fields are allowed.
```

Overriding the Calculated Value

Formulas enable you to represent a value in a generic way. For example, you can represent the batch size of a product with the following formula:

```
#STD_BATCH*0.5
```

By representing the batch size with this formula, you can adjust its value by changing the value in the Standard Batch Size field or the scaling factor represented by the numeric constant 0.5.

However, you may find circumstances when using a formula is inappropriate. For example, suppose you are making beer for an upcoming holiday. Assume for this product that you need to lower the temperature that the beer ferments at and increase the fermentation time.

Using the Recipe Builder, you can adjust the formulas for the temperature set point and fermentation time. Alternatively, you can override the calculated value for these items. When you override a value, you specify a process value to use in place of the recipe item's or variable's calculated value.

Entering an Override Value

You can enter an override value by selecting the appropriate cell in the Override Val column and typing the new value in the text editing box. The range of values you can enter into the Override Val column

depends on the high and low override limits defined for a specific recipe item or variable. To set the override limits for a recipe item or variable, refer to the section Entering Override Limits.

After you enter an override value, the Recipe Builder continues recalculating the formula of the overridden item. All recipe items that reference the overridden recipe item or variable are recalculated using the override value.

Batch Resizing Overridden Values

The Recipe Builder also warns you when attempting to scale overridden recipe items and variables by displaying a message box with the following text:

```
There are recipe items with OVERRIDE VALUES
```

Select the Clear All button to clear all override values or select the Continue button to keep the overrides in effect and set the batch size. To quit without making any changes, select the Cancel button. For more information on scaling batches, refer to the section Scaling the Batch Size.

Entering Override Limits

When you add or insert a recipe item or variable, the Recipe Builder automatically sets the high and low override limits to UNRESTRICTED. This allows anyone to enter any override value needed. If you want to restrict the possible value of the override value, change the override limits.

To enter an override limit into the Override Lo Lim column or the Override Hi Lim column, select a cell in either column and type the limit you want in the text editing box.

The following table provides guidelines for entering values in each column. If you are entering values from the text editing box, follow the guidelines below.

Override Limits

To set an override limit to...	**Type...**
Unrestricted	U
An absolute value	The value you want to use. For example, to set the low limit to 50, type **50**<Enter> in the Override Lo Lim column.
A relative percentage of the calculated value	The percentage of the calculated value you want to use. Be sure to include a percent sign (%) after the percentage. For example, to set the high limit to 10%, type **10%**<Enter> in the Override Hi Lim column.
A relative difference from the calculated value	The difference from the calculated value you want to use followed by a minus sign (-). For example, to set the high limit to 10 over the calculated value type **10-**<Enter> in the Override Hi Lim column.
Restricted	R

For more information about override limits, refer to the section Spreadsheet Columns.

If you prefer, you can enter the override limits using the Override Limit dialog box. To display this dialog box, double-click a cell in either override limit column.

When the Override Limit dialog box appears, select the appropriate radio button and, if there is a field to the right of the button, use the guidelines in the table Override Limits to enter a value into that field.

Deleting Overrides

When you want to remove an override value, select it and press <Delete>. To delete all the override values in use, select the Clear Overrides button. When you select this button, a message box with the following text appears:

```
Are you sure you want to clear all overrides?
```

Select the Yes button to delete every override value. To retain the override values select the No button.

Advanced Features

The Recipe Builder provides some advanced features that you may find helpful when using recipes. The following table lists each feature, the command associated with it, and the section to refer to for more information.

Recipe Builder Advanced Features

Feature	Command	Section
Scaling the batch size of a recipe	Set Batch Size	Scaling the Batch Size
Assigning a tag group to a recipe	Assign Tag Groups	Assigning Tag Groups
Defining the upload and download interlocks for a recipe Assigning a recipe to a security area Defining the completion status indicator Keeping an audit trail of recipe activity	Advanced Options	Using an Advanced Option

Scaling the Batch Size

Whenever you want to produce a varied amount of the product you are making, the Recipe Builder enables you to scale the batch size of a recipe. When scaling the batch size, the Recipe Builder preserves the relative proportions among the recipe items and variables being scaled.

The Recipe Builder allows you to scale a recipe's batch size in the Recipe Development window. The first step in scaling a batch is to complete the Standard Batch Size field in the recipe header. The Recipe Builder assigns the batch size value you enter to the #STD_BATCH keyword. The program then uses the specified value to calculate the scaling factor. For more information on the Standard Batch Size field, refer to the section Recipe Header.

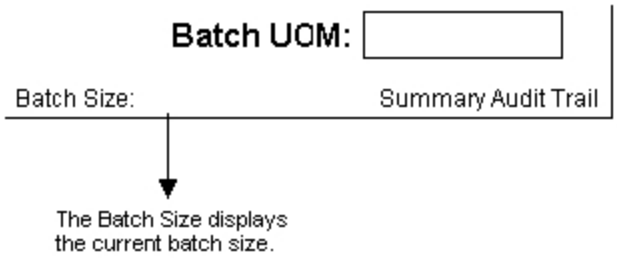
After you define the standard batch size, you must define the current batch size of the recipe. You can define this quantity with the Set Batch Size command.

When you select this command the Batch Size dialog box appears. This dialog box contains the Batch Size field. This field allows you to specify a value for the current batch size from 0.000001 to 9,999,999.0.

To set the batch size:

1. On the Options menu, click Set Batch Size. The Set Batch Size dialog box appears.
2. In the Batch Size field, enter the amount of the product you want to make.

When you select the OK button on the Set Batch Size dialog box, the Recipe Builder assigns the value you entered to the #BATCH keyword and displays it in the Batch Size field of the recipe display area, as the following figure shows. The Recipe Builder also divides #BATCH by #STD_BATCH to compute the scaling factor. The result of this calculation is stored in the #SCALE keyword.



The Recipe Display Area

The next step is to multiply the formula of each recipe item you want to scale by #SCALE. Once this is done, you can scale a batch by changing the current batch size. The following figure shows how to use #SCALE in a recipe.

Current Batch Size = 50
Standard Batch Size = 100
Scaling Factor = .5

You can scale the batch size of the sample recipe by adding the keyword #SCALE to the formula of #Yeast. Then by changing the current batch size to 50, the Recipe Builder recalculates the value of the variable #Yeast according to the scaling factor. If you change the current batch again, say to 200, the Recipe Builder recalculates #Yeast again.

	Identifier	Formula	Calc Val
1	FERMENT1:T16F1.F_CV	55	55
2	#YEAST	B_SIZE*LBS_PER_BARREL*#SCALE	75
3	#LBS_PER_BARREL	1.5	1.5

Scaling a Batch

If you attempt to change the batch size of a recipe item or variable with an overridden formula, the Recipe Builder warns you by displaying a message box with the following text:

```
There are recipe items with OVERRIDE VALUES
```

Select the Clear All button to clear all override values or select the Continue button to keep the overrides in effect and set the batch size. To quit without making any changes, select the Cancel button.

Assigning Tag Groups

With the Recipe Builder, you can create one recipe for each production line you have. When the product being made on each line is different, this is the most straightforward way to use recipes. However, if you have similar production lines that produce similar products, you may want to assign a tag group to a recipe. The tag group defines a set of tagnames.

Tag groups enable you to put generic symbols in the Identifier column of a recipe. A symbol is a label defined in the Tag Group Editor. In a recipe, a symbol represents a tagname. During a download or upload, the Recipe Builder reads the tag group file assigned to the recipe and substitutes the tagnames for the symbols in the recipe. By having different tag group files for each product you want to make, you can create one, multi-purpose recipe that functions with many different locations and different equipment.

For example, suppose you want the option of switching among three fermenters. One way you could do this is to duplicate the sample recipe for the second and third fermenters. These recipes would be identical to the sample recipe except for the tagnames that control the fermenting time, the temperature set point, and the scale set point.

However, by creating three tag groups you can save yourself the need of creating the two additional recipes. And since the production lines share the same recipe, when you update a recipe for one line, you update it for every line using that recipe.

Each tag group you plan to use lists the tagnames required for the fermenter used by the recipe as shown below:

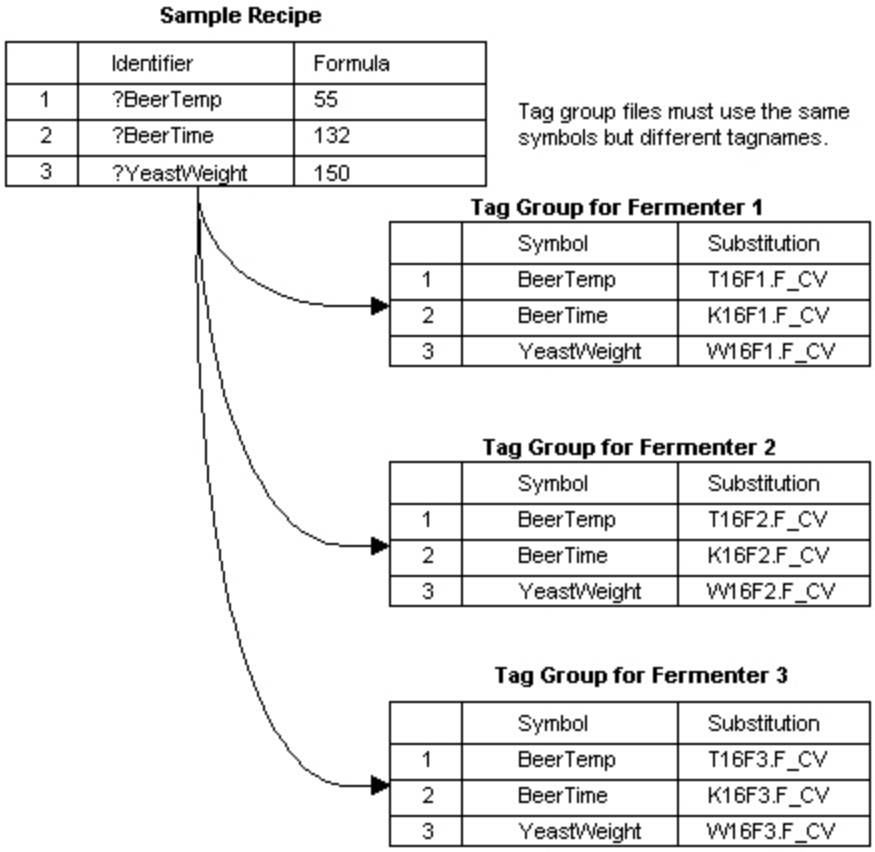
Fermenter 1 Tagnames	Fermenter 2 Tagnames	Fermenter 3 Tagnames
T16F1.F_CV	T16F2.F_CV	T16F3.F_CV
K16F1.F_CV	K16F2.F_CV	K16F3.F_CV
W16F1.F_CV	W16F2.F_CV	W16F3.F_CV

The sample recipe would then be modified replacing the specific tagnames with tag group symbols. Symbols can have a length of 32 characters and must have the following format:

```
?string
```

where *string* is a 31-character string. The string must begin with a single alphabetic character and can be followed by one or more alphanumeric characters. Each symbol must be unique. For more information about tag groups and symbols, refer to the chapter Using the Tag Group Editor.

One way you might use symbols in the sample recipe is to replace T16F1.F_CV, K16F1.F_CV, and W16F1.F_CV with the symbols ?BeerTemp, ?BeerTime, and ?YeastWeight respectively. The following figure shows the resulting sample recipe and the tag groups. Notice that each tag group uses the same symbol but associates a different tagname with it. For example, in the Fermenter 1 tag group the symbol ?BeerTemp is associated with the tagname T16F1.F_CV but in the Fermenter 3 tag group the same symbol is associated with the tagname T16F3.F_CV.



Using Tag Groups

To use a tag group in a recipe, do one of the following:

- Create a list of the symbols defined for the tag groups you want to use. Make sure the tag group symbols are identical across each tag group. After you create this list, enter the tag group symbols in the Identifier column of the recipe.
- Define the symbols in the recipe first and create the tag group with the Tag Group Editor.

After you enter the symbols into the recipe and create the tag group file, you can assign the tag group to the recipe using the Assign Tag Group command. This command is only available from the Recipe Development window. When you select the command the Assign Tag Group dialog box appears. This dialog box contains the Tag Group Filename field. This field allows you to enter the name of the tag group file you want to use for this recipe. Tag group files are stored in the Picture path and have the extension .TGE.

To assign a tag group to a recipe:

1. On the Options menu, click Assign Tag Group. The Assign Tag Group dialog box appears.
2. In the Tag Group Filename field, enter the tag group file you want to assign to the recipe, or select the browse (...) button to the right of the field and double-click the tag group file you want to assign to the recipe from the list that appears.

After you assign a tag group to a recipe, you can display the tagnames by selecting the Show Tagnames command. To display the symbol names again, select the Show Symbols command. For more information about these commands, refer to the section Displaying Tag Group Tagnames.

NOTE: If you download or upload a recipe with a symbol name defined, the Recipe Builder substitutes the tagname for the corresponding symbol prior to reading or writing a value.

Using the Tag Group Parameter

If you plan to download recipes from the Scheduler, a Program block, or operator displays, you may find using the Tag Group command line parameter helpful. This parameter overrides the tag group assigned to the recipe and uses the tag group specified in the command line. For more information about this parameter, refer to the section Tag Group Parameter.

Using an Advanced Option

The Recipe Builder includes a set of advanced options that enable you to do the following:

- Define the upload and download interlocks for the recipe.
- Define the tagname of an upload/download status indicator.
- Assign the recipe to a security area.
- Keep an audit trail of recipe activity.

You can complete each of these tasks using the Advanced Options command. When you select this command, the Advanced Options dialog box appears.

The following sections describe the dialog box controls and how to complete the dialog box.

Defining the Upload and Download Interlocks

Below is a summary of the fields you need to complete to define the upload and download interlocks.

Download field — defines the tagname or tag group symbol that acts as a download interlock for the recipe. When you download a recipe, the Recipe Builder verifies that the value of the block is zero. This means that the interlock is inactive. If the value of the block is non-zero, the interlock is active and the Recipe Builder aborts the download process.

Upload field — defines the tagname or tag group symbol that acts as an upload interlock for the recipe. When you upload a recipe, the Recipe Builder verifies that the value of the block is zero. This means the interlock is inactive. If the value of the block is non-zero, the interlock is active and the Recipe Builder aborts the upload process.

By default, the F_CV field is assigned to the interlock tagname when no field name is specified. However, you can enter any F_ field for the tagname (such as F_04 for a Digital Register block).

▶ To define the upload and download interlocks for the current recipe:

1. On the Options menu, click Advanced Options. The Advanced Options dialog box appears.
2. In the Download field, enter the tagname or tag group symbol of the block that acts as a download interlock for the recipe. In the Upload field, enter the tagname or symbol of the block that acts as

an upload interlock. If you prefer, you can select the browse (...) button to the right of either field and select the tagname from the dialog box that appears.

Defining the Completion Status Indicator

When you download or upload a recipe, the Recipe Package can monitor the recipe's progress and store this information in any analog block you specify. This block acts as a completion status indicator. The analog block you select must have an EGU range from zero to at least four and must be in Manual mode. To ensure future compatibility, it is recommended that you set the high EGU value to 100. Do not specify a negative number for the high or low EGU value. Negative numbers will cause the completion status indicator to display inaccurate information.

To define the completion status indicator, enter the tagname or tag group symbol of an analog block in the Completion Status group box. The Recipe Builder monitors the recipe's progress when you specify the block to use as the completion status indicator in the Completion Status group box.

By default, the F_CV field of the block is assigned to the tagname if you do not specify a field name. However, you can specify any F_ field for the tagname (such as F_02 for an Analog Register block).

Completing the group box is optional. When you leave it blank, the Recipe Package does not monitor the completion status of an upload or download.

To specify the completion status indicator:

1. On the Options menu, click Advanced Options. The Advanced Options dialog box appears.
2. In the Completion Status group box, enter the tagname of the block that acts as the completion status indicator for the recipe, or select the browse (...) button and select the tagname from the dialog box that appears.

   The tagname referenced is written to during an upload or download. The following table lists the possible values for the completion status indicator.

Completion Status Values

When the value is...	The download or upload...	And the Recipe Builder has...
0	Is in progress.	Started downloading or uploading the recipe and has not encountered any errors.
1	Aborted.	Been unable to read or write the recipe values to the database. An active interlock may have caused this error.
2	Completed with errors.	Attempted to read or write the recipe values to the database. However, a read or write error occurred.
3	Completed with no errors.	Successfully read or written all recipe values to the database. If any recipe items have verification enabled, then the Recipe Builder has also verified these items.
4	Completed with verification errors. (download only)	Successfully written all recipe values to the database and completed the verification process. However, one or more blocks could not be verified because the time-out interval expired.

Using the Completion Status Indicator

Once you define this indicator, you can use it to post messages on an operator display using Visual Basic for Applications. For example, when downloading a recipe from an operator display you could create a button labeled "Recipe Status." By selecting this button, operators could monitor the progress of a downloaded recipe by examining the value of the completion status indicator. The script for this button would include the following:

```
DIM Status As Double
Status = Fix32.FERMENT1.RCPSTAT.F_CV
Select Case Status
Case 0
    MsgBox "In progress"
Case 1
    MsgBox "Aborted. Verify interlock is inactive"
Case 2
MsgBox "Read/write errors occurred. Restart node."
Case 3
    MsgBox "Download/Upload Successful"
Case 4
    MsgBox "Verification errors occurred."
End Select
```

Selecting a Security Area

For security reasons, you may want to restrict access to the recipes you create. Once you assign a security area to a recipe, it can only be opened with the Recipe Builder if the logged in user has rights to that security area. For example, if you assign security area A to the sample recipe, an operator who wants to open it must have rights to that security area.

To select a security area for a recipe, complete the Security Area group box. This group box defines the security area for the recipe. By default, the security area is set to NONE.

To select a security area for the current recipe:

1. On the Options menu, click Advanced Options. The Advanced Options dialog box appears.
2. In the Security Area group box, enter the appropriate text as indicated below. You can enter up to 20 alphanumeric characters into the group box.
    - To assign the recipe to every security area, type **ALL**.
    - To assign the recipe to no security area, type **NONE**.
    - To assign the recipe to a specific security area, type the security area name in the group box.

      If you prefer, click the browse (...) button and select a security area from the dialog box that appears. Use the scroll bar or arrow keys to locate the security area you want. Press the OK button to complete the selection.

Using an Audit Trail

The Recipe Package can track recipe activity in an audit trail whenever a recipe is uploaded, downloaded, or saved. The Recipe Package provides two types of audit trails: a summary audit trail and a

detailed audit trail. The summary audit trail tracks recipe activity of the entire recipe, for example, when a recipe was saved and why. The detailed audit trail tracks recipe activity on individual recipe items, for example, which recipe items were downloaded.

Using the Audit Trail group box, you can select the type of audit you want. By selecting the audit trail type, you instruct the Recipe Package to send the recipe information you want tracked as a message to any alarm destination configured to receive it. Recipe messages are recorded along with any other message the alarm destination is configured to receive. The alarm files that store recipe messages reside in the Alarms path and are named *yymmdd*.ALM.

To set up an alarm destination to receive recipe messages, select the recipe message alarm areas you need from the Application Message Routing dialog box of the SCU. For more information about configuring alarm destinations, assigning alarm areas, or routing alarms, refer to the Implementing Alarms and Messages manual.

Below is a summary of the Audit Trail group box. By making a selection from this group box you control the type of audit trail the Recipe Builder keeps. Both types of audit trails enable the Recipe Package to track the information described below to the available alarm destinations.

Summary Audit Trail option button — tracks the following information:

- When changes to master or control recipes are saved and the name of the logged in user that saved the recipe.
- The text entered into the Recipe Mod Log dialog box.
- When a recipe is uploaded or downloaded and the name of the logged in user that uploaded or downloaded the recipe.
- When an upload or download fails and why.
- The Recipe Package records this information whenever a recipe is saved, uploaded, or downloaded. By default, the Summary Audit Trail radio button is selected.

Detail Audit Trail option button — tracks all the summary information listed above. In addition, the Recipe Package also tracks the following download information:

- The recipe item values that were downloaded.
- The variables that were present in the recipe.
- The recipe items that failed to download, if any, and why.

No Audit Trail option button — disables the audit trail for the open recipe.

Using the Recipe Builder, you can enable or disable the audit trail for the open recipe.

▶ To enable or disable the audit trail for the open recipe:

1. On the Options menu, click Advanced Options. The Advanced Options dialog box appears.
2. Select either the Summary Audit Trail radio button or the Detail Audit Trail radio button to select the type of audit trail you want. To disable the audit trail, select the No Audit Trail radio button.

The format of a summary message appears below.

```
date time activity recipe_filename tag_group_name batch_id description by node::user remarks
```

The following table describes each field in the message.

Summary Message Format

The field...	Contains ...
date	The date when a recipe was uploaded, downloaded, or saved. This field is included if the SCU is set up to include the date in recipe messages. Refer to the section Setting up the Alarm and Message Format in the Implementing Alarms and Messages manual for information on setting the format of these messages.
time	The time when a recipe was uploaded, downloaded, or saved. This field is included if the SCU is set up to include the time in recipe messages. Refer to the section Setting up the Alarm and Message Format in the Implementing Alarms and Messages manual for information on setting the format of these messages.
activity	One of the following descriptions: • SAV (when saving a recipe) • DWN (when downloading a recipe) • UPL (when uploading a recipe)
recipe_file-name	The name of the recipe file that was uploaded, downloaded, or saved.
tag_group_name	The file name of the tag group assigned to the recipe. This field is blank if no tag group is assigned to the recipe.
batch_id	One of the following: • FILE SAVED OK (if the recipe has been saved successfully) or FILE NOT SAVED (if the save failed). • The batch id the operator specifies when downloading a recipe. The batch id is included only when downloading a recipe and is used to identify the download. • A blank field, when uploading a recipe.
description	One of the following descriptions: • The text specified in the Mod Log field (when saving a recipe). • COMP (*x* ERR) (when a recipe uploads or downloads with *x* errors). • ABRT (*reason*) (when an upload or download fails. The text *reason* describes why the upload or download failed).
node	The name of the node the operator is using.
user	The name of the logged in user. If security is disabled, this field is left blank.
remarks	One of the following descriptions: • The reason the save failed. (The text reason describes why the save failed). • The text specified by the operator when downloading a recipe. The text is included only when downloading a recipe. If you try to re-verify a recipe, the following text appears in this field: `Verification retried` • A blank field, when uploading a recipe.

Examples: Using a Summary Audit Trail

Examples of summary messages appear below:

```
1/1/98 11:05:12.2 SAV BEER.RCM FERMENT1.TGE FILE SAVED OK CHANGED TEMP FORMULA FERMENT1::JOHN
1/1/98 11:06:23.4 DWN BEER.RCC FERMENT2.TGE LOT033093     COMP(NO ERRORS)         FERMENT2::MARY 3rd download
1/1/98 11:08:45.3 UPL BEER.RCC FERMENT3.TGE               ABRT(INTERLOCK ACTIVE) FERMENT3::JOE
```

The format of a detailed message follows.

```
date time batch_id item_number identifier description value uom result
```

The following table describes each field. Detailed messages are sent while downloading a recipe.

Detailed Message Format

The field...	Contains...
date	The date when a recipe downloaded. This field is included if the SCU is set up to include the date in recipe messages. Refer to the section Setting up the Alarm and Message Format in the Implementing Alarms and Messages manual for information on setting the format of these messages.
time	The time when a recipe downloaded. This field is included if the SCU is set up to include the time in recipe messages. Refer to the section Setting up the Alarm and Message Format in the Implementing Alarms and Messages manual for information on setting the format of these messages.
batch_id	The batch id the operator specifies when downloading a recipe. The batch id is included only when downloading a recipe and is used to identify the download of the recipe.
item_number	The item number of the recipe item.
identifier	The tagname or variable name of the item.
description	A description of the recipe item or variable. This description matches the text that appears in the Description cell for the downloaded item.
value	The downloaded value of the recipe item or variable.
uom	The unit of measure of the recipe item or variable.
result	One of the following: • OK (when the recipe item successfully downloads) • BAD *reason* (when the recipe item cannot be downloaded) • NOT DOWNLOADED (when variable is included in the recipe)

Recipe Security

If you plan on using recipes with iFIX, you may find it useful to restrict access to one or more aspects of the Recipe Package. iFIX security enables you to restrict access to the following items:

- Recipe Builder application features.
- Individual recipes.
- Database blocks you can download to.

For more information about securing Recipe Builder application features, refer to the Configuring Security Features manual.

You can protect a recipe by assigning a security area to it. For more information about assigning a security area to a recipe, refer to section Selecting a Security Area. Also make sure that each operator has rights to the security areas he or she needs. Without these rights, an operator cannot open a recipe once you assign a security area to it.

iFIX protects against writing to individual blocks by comparing the security areas assigned to a block with those assigned to the logged in user. Since recipes can be scheduled to download when no one is logged in, a special user account called RECIPE is used. When the Recipe Package attempts to write a value, the security system examines the rights assigned to the Recipe user account instead of those assigned to the currently logged in user. If the security area of the target block matches one security area defined in the Recipe user account, the recipe value downloads. Otherwise, the value is not written to the database.

NOTE: An unsigned write occurs when a database tag is configured for electronic signature, but you write a value directly to that tag during a recipe download without capturing a signature. If you are working in a secure environment with the Electronic Signature option enabled, you must be aware of the impact of unsigned writes to the process database. Unsigned writes can originate from recipe downloads. Refer to the Implications of Database Writes With Electronic Signature section of the Using Electronic Signatures manual for detailed information.

The security system also allows recipes to be uploaded regardless of who, if anyone, is logged in currently. Be aware that using "RECIPE" as a domain user account is not supported in the iFIX product. If you do attempt to use RECIPE as a domain user name, you will be able to download a recipe on a SCADA node, but not on a View node.

For more information on creating a Recipe user account, refer to the section Creating a Recipe User Account in the Configuring Security Features manual.

IMPORTANT: iFIX security loads the Recipe user account into memory the first time a recipe is downloaded from a node. If you modify this account, the node continues to use the account in memory. To force the node to re-read the new version of the Recipe user account, log out the current user, log in with the Recipe user account, and then log out again. Once you log out of the Recipe user account, the current user can log in again. Alternatively, you can force the node to re-read the Recipe user account by shutting down and restarting iFIX.

Command Line Parameters

The Recipe Package consists of the following programs:

- The Recipe Builder
- The Recipe Download system task
- The Recipe Upload system task

Each of these programs allows you to specify command line parameters that allow you to start each program with preset values.

You can specify command line parameters in the Task Configuration dialog box of the SCU. This dialog box enables you to configure which programs iFIX automatically starts. Refer to the Setting up the Environment manual for more information on this dialog box.

You can also specify command line parameters using the Program block's RUNTASK command in the iFIX Database Manager, using the Shell function in a Visual Basic for Applications (VBA) script.

When using command line parameters with the Program block or in the Command Language Editor, use the following general syntax:

```
RUNTASK app_nameparameter
```

For example, to download a control recipe, use this command:

```
RUNTASK RCPDOWN /ccontrol_recipe
```

When using VBA, use scripts similar to the following:

```
Private Sub FixEvent1_OnTrue()
Dim download As String
Dim return_value As Double

download = System.ProjectPath + "\RCPDOWN" + " /cRCPFILE /e"
return_value = Shell (download, 0)
End Sub
```

To create an upload script, define a variable called upload in place of the download variable and substitute the reference to RCPDOWN with RCPUP as follows:

```
upload = System.ProjectPath + "\RCPUP" + "/cRCPFILE /e"
```

Using Multiple Parameters in VBA

When using multiple command line parameters in VBA, separate each parameter with a space. For example, to specify the Error File parameters to the Recipe Download system task for a control recipe, use the following command line:

```
download = System.ProjectPath + "\RCPDOWN" + " /cBeer /e"
```

Under Windows, you can also specify a command line parameter using the operating system's Run command. To learn how to use this command, refer to your Windows documentation.

If you mistype the command line for the Recipe Download and Recipe Upload system tasks, the programs abort. On the other hand, if the command line for the Recipe Builder contains errors, a blank, untitled recipe opens.

The remainder of the chapter describes each command line parameter. Refer to these sections for more information.

Batch Size Parameter

Syntax

/b*batch_size*

Recognized by

The Recipe Download program.

Description

The Batch Size parameter allows you to specify the batch size for a master recipe. The Recipe Download program uses the value specified with the parameter to calculate the values that it downloads in place of the batch size stored in the recipe.

This parameter can only be used with master and master text recipes and cannot be used in a recipe that contains override values.

Control Recipe Parameter

Syntax

/c*control_recipe*

Recognized by

All recipe programs.

Description

The Control Recipe parameter allows you to specify the name of the control recipe you want to use with a recipe program. The exact function of the parameter depends on the recipe program.

When specified to the...	The program...
Recipe Builder	Automatically opens the specified control recipe and displays it in the spreadsheet.
Recipe Download program	Downloads the specified control recipe to the database.
Recipe Upload program	Uploads the specified control recipe from the database.

Error File Parameter

Syntax

/e

Recognized by

The Recipe Download and Recipe Upload programs.

Description

The Error File parameter enables the Recipe Download or Recipe Upload programs to record in an error file the tagname of any recipe item that does not upload or download. The error file is a text file and by convention is named *recipe*.RCE. The error file for master recipes resides in the Master Recipe path. The error file for control recipes resides in the Control Recipe path.

It is strongly recommended to use this parameter whenever you upload or download a recipe.

NOTE: Each upload or download of a recipe overwrites the error file when the Error File parameter is used.

Command Line File Parameter

Syntax

/f*filename*

Recognized by

All recipe programs.

Description

The Command Line File parameter enables you to specify a list of command line parameters in a text file called a command line parameter file. The parameters included in the file are treated as if you entered them on the command line. This allows you to enter very long command lines.

You can create parameter files using a text editor. The name of the parameter file can be any valid 8.3 file name; however, the Recipe Package assumes the parameter file you specify resides in the Local path. If the file resides in a different path, you must include the complete path along with the file name. The following examples illustrate this.

Examples: Command Line File Parameter

```
RCPDOWN /fBEER.TXT

RCPUP /fC:\BEER.TXT
```

Notice in the first example, the Recipe Download system task reads the file BEER.TXT from the Local path for its command line parameters. In the second example, the Recipe Upload task reads the same file from the root directory.

The Command Line File parameter cannot be used with any other parameters. Similarly, you cannot include the Command Line File parameter in the file specified.

Consider the following examples:

```
RCP.EXE /fBEER.TXT /cBeer
RCP.EXE /cBeer /fBEER.TXT
```

Both of these examples cause an error message box to appear. If the Recipe Upload or Recipe Download system tasks had been used instead, the error would appear in the audit trail as an aborted upload or download.

Tag Group Parameter

Syntax

/g*tag_group_filename*

Recognized by

The Recipe Download and Recipe Upload programs.

Description

The Tag Group parameter enables you to temporarily change the tag group assignment of a master recipe. When specified, the Recipe Download or Recipe Upload programs use the set of tags from the specified file instead of the tag group assigned to the recipe.

This parameter can only be used with master and master text recipes.

Batch ID Parameter

Syntax

/i*batch_id*

Recognized by

The Recipe Download program.

Description

The Batch ID parameter allows you to specify the batch ID to include in a recipe message when the audit trail is enabled. A batch ID can be up to 10 alphanumeric characters and is recorded in the recipe message when you download a recipe.

Master Recipe Parameter

Syntax

/m*master_recipe*

Recognized by

All recipe programs.

Description

The Master Recipe parameter allows you to specify the master recipe you want to use with a recipe program. The exact function of the parameter depends on the recipe program.

When specified to the...	The program...
Recipe Builder	Automatically opens the specified master recipe. If the Recipe Builder automatically starts up with the Recipe Operations window, the parameter is ignored. Instead, the Recipe Builder opens a blank, untitled recipe. **NOTE:** If the Recipe Builder is already running, this parameter is ignored.
Recipe Download program	Downloads the specified master recipe to the database.
Recipe Upload program	Uploads the specified master recipe from the database.

Download Remarks Parameter

Syntax

/r*remarks*

Recognized by

The Recipe Download program.

Description

The Download Remarks parameter enables you to include download remarks in a recipe message when the audit trail is enabled. The remarks you include can be up to 30 alphanumeric characters and are included in a recipe message when the recipe downloads.

Master Text Recipe Parameter

Syntax

/x*master_text_filename*

Recognized by

The Recipe Builder and Recipe Download program.

Description

The Master Text Recipe parameter allows you to specify the master text recipe you want to use with a recipe program. The exact function of the parameter depends on the recipe program.

When specified to the...	The program...
Recipe Builder	Automatically opens the specified master text recipe and displays it in the spreadsheet. If the program automatically starts up in the Recipe Operations window, this parameter is ignored. Instead, the Recipe Builder opens a blank, untitled recipe.
Recipe Download program	Downloads the specified master text recipe to the database.

Control Text Recipe Parameter

Syntax

/y*control_text_filename*

Recognized by

The Recipe Builder and Recipe Download program.

Description

The Control Text Recipe parameter allows you to specify the control text recipe you want to use with a recipe program. The exact function of the parameter depends on the recipe program.

When specified to the...	The program...
Recipe Builder	Automatically opens the specified control text recipe and displays it in the spreadsheet.
Recipe Download program	Downloads the specified control text recipe to the database.

Override Parameters

Syntax

variable = *value*

Recognized by

The Recipe Download program.

Description

An override parameter enables you to temporarily override a variable's formula. While the Recipe Download program does not limit you to the number of override parameters you can include, the command line can only be 128 characters. To use a command line longer than 128 characters, specify the override parameters in a text file and download these values with the Command Line File parameter.

Example: Override Parameters

To override the value of the variable #TEMP from 50 to 65 use the following text in the command line:

```
#TEMP=65
```

Command Line Parameter Summary

To help you keep track of which parameter can be used with which recipe programs, use the following table:

Recipe Command Line Parameters

Command Line Parameter	Recipe Builder	Recipe Download	Recipe Upload
Batch Size Parameter		x	
Control Recipe Parameter	x	x	x
Error File Parameter		x	x

Command Line File Parameter	x	x	x
Tag Group Parameter		x	x
Batch ID Parameter		x	
Master Recipe Parameter	x	x	x
Download Remarks Parameter		x	
Master Text Recipe Parameter	x	x	
Control Text Recipe Parameter	x	x	
Override Parameter		x	

Text Recipe Format

Using the Save As command, you can save master and control recipes as master text and control text recipes. The difference between these file formats is that master and control recipes are binary files. Master text and control text recipes are text files that can be edited with a text editor. To use the Save As command, refer to the section Using the Save As Command.

File Format

Master text and control text recipes share the same format and have the following general format:

- File header
- Recipe header template
- Recipe header
- Recipe item template
- List of recipe items

The following sections describe each portion of the recipe.

File Header

The first line of each master text or control text recipe is a file header. This header includes the date and time the recipe was created, node and logged in user that created the recipe, and the binary recipe that the text recipe was created from.

The general format of this line is shown below:

```
;CREATED FROM: recipe VERSION: xxxx DATE mm/dd/yy TIME: hh:mm:ss BY node::user
```

Recipe Header Template

Immediately following the file header is a template of the recipe header. This template is provided as a guide in case you plan on editing the recipe.

The format of the header template is shown below:

```
;HEADER TEMPLATE:
;Recipe Type
;Units
;Product
;Standard Batch Size
;Batch UOM
;Security Area
;Completion Status
;Download Interlock
;Upload Interlock
;Audit Trail Support
;Tag Group
;Batch Size
```

Recipe Header

Following the recipe header template is the recipe header section. This section begins with the following line:

```
[header]
```

Information from the Recipe header fields and certain dialog boxes immediately follows this line. These fields appear in the same order as the recipe header template shown above. Each field is on its own line and ends with a comma. If the field is blank, the line in the recipe contains only the comma.

Example: Reader Header

```
MASTER,
FERMENTER1,
BEER,
100,
BLS,
NONE,
,
FERMENT1:ILK1.F_CV
,
Summary Audit Trail,
BEER1.TGE,
50
```

If you edit a text recipe, you can omit any information you want but the commas must be included, as shown in the above example.

Recipe Item Template

Immediately following the recipe header section is a recipe item template. Like the recipe header template, the recipe item template is provided as a guide in case you plan on editing the recipe.

The format of the header template is shown below:

```
;ITEM TEMPLATE:
;Identifier
;Formula
;Calculated Value
;Override Value
;Description
;UOM
;Override Low Limit
;Override High Limit
;Verify
```

List of Recipe Items

Following the recipe item template is the list of recipe items. This list consists of one section for each recipe item and variable in the recipe. Each recipe item section starts with the following line:

```
[item #]
```

where # is row number of the item in the spreadsheet. Immediately following this line is the recipe item or recipe variable information. The order of this information matches the recipe item template shown above. Each field is on its own line and ends with a comma. If the field is blank, the line in the recipe contains only the comma.

Example: Recipe Item List

```
[ITEM 1]
FERMENT1:T16F1.F_CV,
55,
55.0,
,
Fermenter set point,
degF,
RESTRICTED,
RESTRICTED,
OFF

[ITEM 2]
#Yeast,
#Lbs_Per_Barrel*#STD_BATCH
150.0
,
,
,
RESTRICTED,
RESTRICTED,
OFF
```

If you edit the text recipe, you can omit any information you want but the commas must be included.

Editing a Text Recipe

If you plan to edit a master text or control text recipe, you can open it with a third-party text editor. The file must conform to the format described in the previous sections of this chapter, otherwise the Recipe Builder cannot open it after you finish editing the file.

To modify a master or control text recipe, use the following guidelines:

- Each line in the file can be up to 256 characters. The Recipe Builder ignores any extra characters beyond that limit.
- Specific characters have a special meaning when used in a master text or control text recipe. The following table lists these characters.

Guidelines for Editing a Text Recipe

The character ...	Allows you to...
, (comma)	Delimit a field.
; (semi-	Start a comment. The Recipe Builder ignores all characters following the

colon)	semicolon to the end of the line. Comments can appear anywhere in the text file.

\ (back slash)	Cancel the meaning of a special character. For example, the Recipe Builder treats the following text as a comma:
	`\,`
	For example, to have the value 9,999 appear in the Standard Batch Size field, enter the following in the text file:
	`9\,999`

Recipe Files

The following table lists the types of files available in the Recipe Package, the extension for each file type and the path each file resides in.

File Type	Extension	Path
Control recipe	RCC	Control Recipe path
Control text recipe	RCY	Control Recipe path
Display format files	RFT	Local path
Error file	RCE	Master Recipe path (when working with a master recipe) or Control Recipe path (when working with a control recipe)
Master recipe	RCM	Master Recipe path
Master text recipe	RCX	Master Recipe path
Note file	RCN	Control Recipe path
Recipe report	RCR	Master Recipe path (when working with a master recipe) or Control Recipe path (when working with a control recipe)

Troubleshooting

The following table lists the messages that the Recipe Builder displays. Along with the message, the response to the error or the message's meaning is included. When user action is required, be sure to select the OK button on the message box to acknowledge you have read the message before taking the recommended action.

Recipe Builder Messages

Message	Meaning and Action
Are you sure you want to clear all overrides?	The Recipe Builder is about to delete all the values in the Override Value column of the recipe. Select the Yes button to delete these values or the No button to abort the procedure.
Are you sure you want to delete recipe *recipe_name*?	The Recipe Builder is about to delete the recipe *recipe_name* and all the files associated with it. Select the Delete button to delete these files or select the Cancel button to abort the procedure.
Bad arccosine expression (operand < -1 or > 1?)	The Recipe Builder is attempting to calculate the arccosine of a number that is greater than one and less than negative one. Retype the formula using a value that is between 1 and -1.
Bad arcsine expression (operand < -1 or > 1?)	The Recipe Builder is attempting to calculate the arcsine of a number that is greater than one and less than negative one. Retype the formula using a value that is between 1 and -1.
Bad audit trail support option	You opened a text recipe with an invalid entry in the audit trail field. Valid entries are: No Audit Trail, Summary Audit Trail, and Detailed Audit Trail. Modify the text recipe using the guidelines in the section Editing a Text Recipe.
Bad base-10 log expression (operand <=0?)	The Recipe Builder is attempting to calculate the base 10 log of a number that is less than one. Retype the formula using a value that is greater than or equal to one.
Bad division expression (divide by zero?)	The Recipe Builder is attempting to divide two numbers. However, the divisor is invalid and may equal zero. Retype the formula using a value for the divisor that is non-zero.
Bad natural log expression (operand <= 0?)	The Recipe Builder is attempting to calculate the natural log of a number that is less than or equal to zero. Retype the formula using a value that is greater than zero.
Bad square root express (operand < 0?)	The Recipe Builder is attempting to calculate the square root of a negative number. Retype the formula using a value greater than or equal to zero.
Can't delete Recipe file *filename*. Do you want to continue deleting the files for this recipe?	The Recipe Builder cannot delete the recipe file, *filename*. The file may have one or more attributes set to prevent deletion or may be in use (for example, from a file server). Select the Yes button to continue deleting recipe files or select the No button to stop deleting files.
Can't open display format file	While starting, the Recipe Builder could not locate its display format file, DEFAULT.RFT. The file may not exist or may have been renamed. To create the file, customize the display format as needed and save it in the Local path.

Cannot display the Security Areas list	The Recipe Builder is unable to display the list of available security areas. Consult your system administrator before proceeding, or contact GE Support.
Cannot fetch data due to bad node:tag.field	The Recipe Builder cannot upload from the database because it cannot read from the requested tagname. The block in memory may be corrupt or there may be a communications problem. Try reloading the database and, if the block resides on a remote node, make sure network communications are functioning properly.
Cannot open a non-recipe file	The Recipe Builder cannot open the specified file because it is not a recipe or does not have a recognizable extension. For a list of recipe extensions, refer to the chapter Recipe Files.
Cannot open clipboard	The Recipe Builder is unable to locate or use the system clipboard file. The file may have been renamed or is corrupt.
Cannot read data from database	The Recipe Builder cannot upload data from the database. There may be a communications problem or the database in memory may be corrupt. Try reloading the database and, if the block resides on a remote node, make sure network communications are functioning properly.
Cannot read from clipboard	The Recipe Builder is unable to paste data from the system clipboard. Try copying a single row to the clipboard and pasting it back into the recipe.
Cannot save a backup recipe file	You attempted to save a master backup or a control backup recipe. Select a different recipe type and try saving the recipe again.
Cannot save a non-recipe file	The extension you specified does not have a recognizable extension. For a list of recipe extensions, refer to the chapter Recipe Files.
Cannot save an untitled recipe file	You attempted to save a new recipe from the Recipe Operations window. Switch to the Recipe Development window and try saving the recipe again.
Cannot set batch size (*reason*)	You entered a batch size in the Set Batch Size dialog box that: • Is greater than 9,999,999.0, • Is less than 0.0000001, • Contains a negative number, or • Contains non-numeric data. • Retype the batch size you want and try again.
Cannot set tag group (Cannot delete tag group assignment while substitutions are on)	You attempted to delete or re-assign a tag group while the Recipe Builder is substituting tagnames for symbol names. Click the Cancel button on the Assign Tag Group dialog box and then select Show Symbols from the Window menu. Once this command is selected, you can delete or re-assign the tag group assignment.
Cannot set the *interlock* (Only F_ fields are allowed)	You entered a field type for the upload or download interlock that the Recipe Builder does not allow. Use only F_ fields for interlock tagnames.
Cannot write to clipboard.	The Recipe Builder is unable to copy or cut any data to the system clipboard. Try copying a single row to the clipboard and pasting it back into the recipe.
Changing the formula or override	You are changing an override limit while an override value is in effect for the current recipe item or variable. Select the Yes button to clear the override value and change

limit will clear the override value. Continue?	the override limit or select the No button to abort the operation.
Circular reference detected.	You have a set of formulas that reference each other. Modify one of these formulas so that is contains a numeric or string constant or references a different variable.
Column is not modifiable.	The Recipe Builder was unable to replace any data in the selected column because it is not modifiable. Select a different column or modify the display format and make the selected column modifiable.
Do you want to save this recipe?	You selected the Exit command before saving any changes to the recipe. To save your changes and quit the Recipe Builder, select the Yes button. To quit without saving any changes, select the No button. To return to the Recipe Builder without quitting, select the Cancel button.
Editor spawn failed	The Recipe Builder was unable to start the text editor it uses to create and modify recipe note files. Close one or more applications and try again. If the problem persists, restart the computer.
Error *number* checking this item: Field cannot be modified	You attempted to enter data into the Calc Val column. This column displays the value of a recipe item's or variable's formula and cannot be modified directly.
Error *number* checking this item: Only F_ and A_ fields are allowed	You entered a field type that the Recipe Builder does not allow. Use only A_ and F_ fields for tagnames you add to the recipe.
Error *number* checking this item: Recipe is in TAGNAME MODE	You attempted to add or delete a recipe item or variable while the Recipe Builder is substituting tagnames for symbol names. Select Show Symbols from the Window menu and then add or delete the recipe items and variables you want.
Error reading display format file, check version	The Recipe Builder attempted to load a display format file that contains the wrong version number or has been corrupted. Recreate the file by customizing the display format and saving it to a file.
Error *number* setting this item: Bad verify option (on or off)	You entered a value in the Verify column that the Recipe Builder does not recognize. Type ON or OFF in any cell of this column.
Error *number* setting this item: Cannot add node.tag.field to recipe. Has maximum number been reached?	You attempted to add more than 850 recipe items. Only 850 recipe items can be added to one recipe. The message also appears when you search a recipe with 850 items because the Recipe Builder creates a temporary entry in the spreadsheet during the search. Since all rows are filled, the search generates the error. To avoid the message, remove one of the recipe items.
Error *number* setting this item: Cannot use a keyword for a vari-	You attempted to create a variable with a name that is reserved for a keyword. Enter a different name and try again. For a list of reserved keywords, refer to the Recipe Keywords table.

able name	
Error *number* setting this item: Identifier is already defined in the recipe	You attempted to create a variable or a recipe item with a name that is already in use. Enter a different name and try creating the item again.
Error *number* setting this item: Improperly formed formula	You entered a formula that does not conform to the syntax that the Recipe Builder recognizes. Retype the formula using the guidelines in the chapter Working with Formulas.
Error *number* setting this item: Improperly formed override limit	You entered an override limit that does not conform to the syntax the Recipe Builder recognizes. Refer to the section Entering Override Limits and retype the override limit.
Error *number* setting this item: Improperly formed override value	You entered an override value that does not conform to the syntax the Recipe Builder recognizes. Make sure any string you enter is enclosed in quotes and retype the override value. **NOTE:** Formulas, keyword, and variables cannot be entered into the Override Value column.
Error *number* setting this item: No calculated value to base override limit on	You entered a relative percentage or a relative difference override limit for a recipe item or variable. However, the Recipe Builder cannot calculate the range of acceptable values for this column because the formula of the current recipe item or variable is empty or invalid. Complete or correct the item's formula and then enter an override limit.
Error *number* setting this item: Override value cannot be modified	You attempted to enter an override value when both override limits are set to RESTRICTED. To change the value of the recipe item, either change an override limit and then enter an override value or change the item's formula.
Error *number* setting this item: Override value is above the override high limit	You entered an override value that is greater than the override high limit allows. Enter a lower override value to try again.
Error *number* setting this item: Override value is below the override low limit	You entered an override value that is less than the override low limit allows. Enter a higher override value to try again.
Error *number* setting this item: Variable name must start with # and contain only alphanumeric and underscore char-	You entered a mark of punctuation for a variable name that the Recipe Builder does not recognize. Retype the variable name starting it with a number sign (#) followed by no more than 14 alphanumeric or underscore (_) characters.

acters	
Error *number* setting this item: Variable name too long	You entered a variable name that is over 15 characters, including the number sign (#). Shorten and retype the variable name.
Error while reading tag group file	The tag group file assigned to the recipe is unreadable. Select a different tag group or recreate the tag group you want to use. To create a tag group, refer to the chapter Using the Tag Group Editor.
Expression is too deeply nested	You have a set of formulas that reference variables chained over 14 rows. Modify the formulas so that they reference few variables.
Invalid entry. Please enter the name of an item in the list box.	You selected a control recipe from the Open Control Recipe dialog box that does not exist or could not be found. Either copy the control recipe into the Control Recipe path or select a recipe from the list box.
Invalid item number	You entered a negative number or nonnumeric data in the Go To dialog box. Retype the row number you want to jump to and try again.
Keyword is not defined in recipe	The keyword in the formula does not have a value. Refer to the section Understanding Recipe Keywords to learn how to set the value of each keyword.
Mismatched datatype	Either you entered a string constant into the formula or override value column when the associated tagname references an F_ field or you attempted to set an absolute, percentage, or difference override limit for a string constant. To correct this, enter a formula or override value that evaluates to a numeric value and then enter the override limit.
No column selected	You selected a button on the Search and Replace dialog box without first selecting a column. Select the column you want to search and then click a button on the dialog box to search for or replace data in the recipe.
No formula to evaluate	You have a formula that references a variable with no value. Modify the formula of the appropriate variable so that the Recipe Builder can calculate it.
No item selected in error list	You selected the Go To Item button from an error list dialog box without first selecting an item in the list box. Select an error in the dialog box and then click the Go To Item button.
No tag group assignment or tag group file does not exist	You selected the Show Tagnames command before creating or assigning a tag group to the recipe. To create the tag group, refer to the chapter Using the Tag Group Editor. To assign the tag group, select Assign Tag Group from the Options menu and enter the name of the tag group in the dialog box that appears.
No value entered for override limit	You selected an absolute, a percentage, or a difference override limit from the Override dialog box without entering a value for the type of limit you selected. Complete the field associated with the type of limit you selected and try again.
Note file [*filename*] not found. Create it?	The Recipe Builder could not locate the note file for the current recipe. Select the Yes button to create the file and start Notepad. Select the No button to return to the recipe.
Out of range	You entered standard batch size that: • Is greater than 9,999,999.0, • Is less than 0.0000001, • Contains a negative number, or

	• Contains nonnumeric data. Retype the standard batch size you want and try again.
Paste error for `*tagname*': *text* Keep this item, discard it or undo the paste?	You are pasting a recipe item or variable into the recipe that may already exist, does not have a valid formula, or contains text in the Verify column other than YES or NO. Select the Keep Item button to retain the valid parts of the recipe item being pasted or select the Discard Item button to prevent the entire recipe item from being pasted into the recipe. To cancel the entire operation, select the Undo Paste button.
Precheck did not complete (*reason*)	The Recipe Builder could not complete its examination for errors during an upload or download. Restart your computer and try again.
RCP.INI contains a bad verification time-out value; using default	The Recipe Builder's startup file, RCP.INI, contains a verification time-out value that: • Is greater than 65535, • Is less than 1, • Contains a negative number, or • Contains non-numeric data. Because the time-out value is invalid, the Recipe Builder uses its default value of 30 seconds. To change the time-out value, edit RCP.INI using the instructions in the section Changing the Verification Time-out Interval.
Recalculation failed at Item #*row_number*. Error *number*: *text*	The Recipe Builder cannot calculate the value of the formula in row *row_number*. Examine this formula and make sure it conforms to formula syntax. For more information about formulas, refer to the chapter Working with Formulas.
Recipe has no items	You attempted to upload or download while the spreadsheet was empty. Either open a recipe or enter the tagnames you want to upload from or download to.
Replace text?	The Recipe Builder is about to replace the specified search string with the specified replacement string. Select the Yes button to replace each occurrence of the search string in the selected cell. Select the All button to replace each occurrence of the search string in the selected column. Select the No button to stop replacing data.
Row is beyond end of recipe	You entered a row number in the Go To dialog box that was greater than the last row in the spreadsheet. Retype the row number you want to jump to and try again.
Search string was found *x* times. Replace each one?	The Recipe Builder is about to replace the specified search string with the specified replacement string. However, it located multiple occurrences of the search string. Select the Yes button to replace each occurrence of the search string in the selected cell. Select the All button to replace each occurrence of the search string in the selected column. Select the No button to stop replacing data.
Tag group file does not exist	The Recipe Builder cannot locate the specified tag group file. Either the tag group does not exist or does not reside in the Picture path. Try copying the file to this path or create it with the Tag Group Editor.
Tagname does not exist. Continue?	The Recipe Builder cannot locate the tagname you want to add to the recipe in the specified database. Select the No button to abort the operation or select the Yes button to add the tagname. If you add the tagname, make sure you add the block to the database or you will be unable to download or upload the recipe.

Text not found	The Recipe Builder could not find the specified search string in the selected column.
The column width must be between 1 and 100.	You entered a report column width that: • Is greater than 100, • Is less than 1, • Contains a negative number, or • Contains nonnumeric data. Retype the column width you want and try again.
The editor is already running	You selected the Notes command while the text editor used to create and modify recipe note files was already in use. Select the OK button on the message box; the Recipe Builder automatically switches you back to the text editor. Modify your recipe note files as needed. To quit the text editor and return to the Recipe Builder, select the Exit command from the File menu.
There are recipe items with OVERRIDE VALUES.	You are attempting to scale the batch size while one or more override values are in use. Select the Continue button to proceed or select the Cancel button to abort the operation. To clear all overrides and scale the batch size, select the Clear All button.
This change will destroy this recipe item. Continue?	You are deleting the current recipe identifier. This results in the deletion of the entire recipe item or variable. Select the Yes button to delete the recipe item or variable. Select the No button to abort the operation.
This column can't be modified. Check the display format.	You attempted to enter data into a column that is non-modifiable. To make the column modifiable, refer to the section Modifying a Column. After making the column modifiable, try entering data into the column again.
Unauthorized access attempted	You attempted to start the Recipe Builder without the security rights to the Recipe Development or the Recipe Operations windows. Consult your system administrator before proceeding.
Using internal display format	The Recipe Builder is using the default display format because it could not find the file DEFAULT.RFT. To load this file on startup, make sure the file resides in the Local path and restart the Recipe Builder.
Variable is not defined in recipe	You entered a variable name in the formula column that is not in the Identifier column. Create the variable by entering its name in a blank cell of the Identifier column.
You can only switch to the Operations window with a CONTROL recipe	You attempted to display the Recipe Operations window with an untitled recipe, a master recipe, a master text recipe, or a backup recipe open in the spreadsheet. Either open a control recipe or save the current recipe as a control recipe before switching to the Recipe Operations window.
You can open only Control Recipes in the Operations window	You specified a command line parameter to open a master recipe or a master text recipe when the Recipe Builder starts. However, the Recipe Builder is set up to automatically display the Recipe Operations window. To display the specified recipe, select the OK button to open the Recipe Operations window and switch to the Recipe Development window and open the recipe. To set up the Recipe Builder to automatically display the Recipe Development window, switch to the Devel-

	opment window and select the Start in DEV Window from the Window menu.
You do not have Security Privileges to run RECIPE DEVELOPMENT feature	The Recipe Builder attempted to display the Recipe Development window. However, your user account does not contain the necessary privileges to display this window. Consult your system administrator before proceeding.
You do not have Security Privileges to run RECIPE DOWNLOAD feature	You attempted to download a recipe without the necessary security rights to do so. Consult your system administrator before proceeding.
You do not have Security Privileges to run RECIPE OPERATIONS feature	The Recipe Builder attempted to display the Recipe Operations window. However, your user account does not contain the necessary privileges to display this window. Consult your system administrator before proceeding.
You do not have Security Privileges to run RECIPE SAVE feature	You attempted to save a recipe without the necessary security rights to do so. Consult your system administrator before proceeding.
You do not have Security Privileges to run RECIPE TEXT OUTPUT feature	You attempted to create a report or save a master text or control text recipe without the necessary security rights to do so. Consult your system administrator before proceeding.
You do not have Security Privileges to run RECIPE UPLOAD feature	You attempted to upload a recipe without the necessary security rights to do so. Consult your system administrator before proceeding.
You do not have Security Privileges to run this RECIPE feature	The Recipe Builder cannot complete the operation you selected because you do not have the necessary application feature in your user account. Consult your system administrator before proceeding.
You must have at least one column displayed	You attempted to remove all the columns from the display format or from a report. The Recipe Builder requires at least one column for display formats and reports.
Your untitled recipe report will be saved to "untitled.rcr". Continue?	You are creating a report for an untitled recipe. To save the report with the name UNTITLED, select the Yes button. To abort the process select the No or Cancel buttons. **NOTE:** If you subsequently name the recipe, the Recipe Builder will not be able to locate the report you created. To enable the Recipe Builder to locate the report, create a new report or rename the existing one so that the recipe name and the report

	name match.

Understanding Audit Trail and Error File Messages

Whenever you upload or download a recipe from the Recipe Builder, the program examines the recipe to see if it is complete and can be uploaded or downloaded. If the recipe is complete, the Recipe Builder examines the recipe for errors, as described in the chapter Downloading and Uploading Recipes.

If the recipe is not complete, it displays an error message box with one of the following lines of text:

```
Download of recipe recipe aborted text
Upload of recipe recipe aborted text
```

where *text* is the reason that the upload or download aborted. These messages also appear in the error file when uploading or downloading a recipe with a Program block or a VBA script.

Text in the Audit Trail

The reason for aborting the upload or download also appears in each recipe message saved in the audit trail, if the audit trail is enabled for uploaded or downloaded recipe. For more information about the audit trail, refer to the section Using an Audit Trail.

The following table lists the reasons for the aborted upload or download and the response to the error.

Audit Trail and Error File Messages

Message	Action
bad completion status flag	The analog block defined as the completion status indicator is undefined or cannot be read from or written to. Make sure the block exists in the database and that the block is in a mode that allows it to be read from and written to (for example, Analog Input blocks should be in Manual mode).
bad error file name	One of the following command line parameters was not specified: • Control Recipe parameter • Master Recipe parameter • Master Text Recipe parameter • Control Text Recipe parameter Include the appropriate command line parameter and try again.
bad or active interlock	The upload or download interlock specified for the recipe is active or does not exist. Make sure the interlock is inactive before you try again. If the specified tagname does not exist, create the necessary block in the database or specify a different tagname.
bad override parameter	The Recipe Builder does not recognize the command line parameter specified in a script or a Program block. Refer to the chapter Command Line Parameters for a list of recognized command line parameters and modify the script or Program block as needed.
bad override parameter vari-	The variable name specified in the command line does not exist

able name	in the recipe. Re-type the command line and try again.
cannot change batch size in control recipe	The Batch Size parameter was specified in the command line while downloading a control or control text recipe. This command line parameter can only be used with master and master text recipes. Either download a master recipe or omit the Batch Size parameter from the command line and try again.
cannot change tag group in control recipe	The Tag Group parameter was specified in the command line while uploading or downloading a control or control text recipe. This command line parameter can only be used with master and master text recipes. Either upload or download a master recipe or omit the Tag Group parameter from the command line and try again.
cannot open parameter file	The parameter file specified in the command line does not exist or could be opened. By default, the Recipe Package assumes the file resides in the Local path. Either create a parameter file and save it in the Local path or copy the parameter file to this path.
cannot open recipe file	The Recipe Builder cannot open the specified recipe. Make sure you specified the name of the recipe in the command line and try again. Also make sure the recipe exists in the correct recipe path. If it does not, create it.
cannot read recipe file	The Recipe Builder cannot read the specified recipe. Try specifying the backup version of the recipe.
cannot recalculate recipe	The Recipe Download or Recipe Upload system task cannot recalculate the formula of each recipe item. Make sure the syntax of each formula is valid. Refer to the chapter Working with Formulas for information on formulas.
cannot set batch ID	The Recipe Package attempted to set the Batch ID. However, it encountered a memory or internal error. Exit from any applications not in use and restart the Recipe Builder.
cannot set batch ID on upload	The Batch ID parameter was specified to the Recipe Upload system task. This task does not recognize this command line parameter. Omit the parameter and try again.
cannot set batch size	The Recipe Download system task cannot set the current recipe's batch size because the batch size: • Is greater than 9,999,999.0, • Is less than 0.0000001, • Contains a negative number, or • Contains non-numeric data. Retype the batch size you want and try again.
cannot set batch size on upload	The Batch Size parameter was specified to the Recipe Upload system task. This task does not recognize this command line parameter. Omit the parameter and try again.
cannot set batch size with overrides	The Recipe Download system task cannot scale the recipe with override values in effect. Click the Clear Overrides button to remove all overrides and try downloading the recipe again.
cannot set override value	The Recipe Download system task cannot set one or more over-

	ride parameters. The values specified are out of range, do not conform to a syntax that the Recipe Download task recognizes, or are the wrong data type (for example, entering string data for a F_ field). Verify all the values specified and try to download the recipe again.
cannot set overrides on upload	One or more override parameters were specified to the Recipe Upload system task. This task does not recognize these command line parameters. Omit the parameters and try again.
cannot set remarks	The Recipe Package attempted to set the download remarks for the specified recipe. However, it encountered a memory or internal error. Exit from any application not in use and restart the Recipe Builder.
cannot set remarks on upload	The Download Remarks parameter was specified to the Recipe Upload system task. This task does not recognize this command line parameter. Omit the parameter and try again.
cannot set tag group	The Recipe Download system task cannot locate the tag group assigned to the recipe or specified by the Tag Group parameter. Make sure the tag group exists in the directory defined by the Picture path.
cannot upload to a text file	The Master Text Recipe or Control Text Recipe parameter was specified to the Recipe Upload system task. Master and Control Text recipes cannot be uploaded using this task. Upload the recipe from the Recipe Builder instead.
cannot use parameter file with other parameters	The Command Line File parameter was included in the command line with other command line parameters. Delete the Command Line File parameter or remove the other command file parameters from the command line.
cannot write recipe file	The specified recipe was uploaded but cannot be saved. Make sure there is enough space on the disk to save the recipe and try again.
missing batch ID	The Batch ID parameter was specified without an identifier. Include a batch ID and try again.
missing batch size	The Batch Size parameter was specified without including a batch size. Include the batch size and try again.
missing parameter file name	The Command Line File parameter was specified without an accompanying file name. Include the name of the parameter file and try again.
missing recipe file name	One of the following command line parameters was specified without an accompanying recipe name: • Control Recipe parameter • Master Recipe parameter • Master Text Recipe parameter • Control Text Recipe parameter Include the name of the recipe you want to upload or download and try again.
missing remarks	The Download Remarks parameter was specified without any accompanying text. Include the appropriate text and try again.

missing tag group file name	The Tag Group parameter was specified without a tag group file. Include the name of the tag group file to use and try again.
No RECIPE user found. Run the Security Configuration program and add a user called `RECIPE' to this node and all referenced SCADA nodes	The Recipe user account does not exist on the node you are downloading from. Consult your system administrator before proceeding.
not a recipe file type	The file specified is not a recipe. Re-enter the name of the recipe to upload or download and try again. If you are using the Recipe Upload system task, make sure it is a master or control recipe. The Upload task cannot upload master text or control text recipes.
recipe path not found	The Recipe Package cannot locate the recipe path specified in the SCU. Make sure the master and control recipe paths exist or change the recipe paths to point to the directories where your master and control recipes reside.
undefined recipe item	The formula for one or more recipe items cannot be evaluated or the identifier has not been entered. Complete the identifier and formula of each item and try uploading or downloading the recipe again.
unknown parameter	The Recipe Package does not recognize the command line parameter specified in a script or a Program block. Refer to the chapter Command Line Parameters for a list of recognized command line parameters and modify the script or Program block as needed.

Understanding Upload and Download Messages

When you upload or download a recipe from the Recipe Builder, the program examines the recipe for errors. If the Recipe Builder encounters an error, it displays an error dialog box.

The following table lists the common messages that appear in this dialog box. Along with the message, the response to the error or the message's meaning is included.

Uploading and Downloading Messages

Message	Action
Bad value	You are downloading a value to a field that cannot be written to or the value being written is invalid. Make sure the field can be written to and that the field exists.
Cannot write to this field	You are downloading a value to a field that cannot be written to. Try downloading to a different field.
Current block mode does not allow writes	You are downloading to a database block that is in Automatic mode. Put the block in Manual mode and download the recipe again.
Field name returns wrong data type	You are uploading or downloading a recipe with one or more symbols defined and no tag group assignment. Assign the appropriate tag group and try uploading or downloading the recipe again.
Field's value not	The Recipe Builder cannot upload the recipe or verify the specified recipe item

known	because it cannot read a value from the specified block. Make sure SAC and your I/O driver are running. Also make sure the block is on scan.
Illegal option, Please re-enter	The data type of the formula does not match the specified field. For example, you may have specified a string constant for a F_ field. Either change the formula or the field you are downloading to.
Tagname is not defined	Either the specified tagname cannot be written to or it may not exist. Verify that the tagname exists and can be written to.
Undefined recipe item	One or more recipe items have: • A calculated or override value but no identifier, or • An identifier but no formula or override value Complete the identifier column and either formula or the override value column for the specified recipe items.
The field cannot be written due to security or field access restrictions.	You are downloading to a field that cannot be written to or the necessary security area rights are not assigned to the Recipe user account on the target SCADA server. Consult with your system administrator and add the security areas of the block you are downloading to the Recipe user account.
Value out of range	You are downloading a value that is greater than the block accepts. Change the formula or override value of the specified recipe item and try downloading the recipe again.

Recipes and the Tag Group Editor (TGE.exe)

This chapter provides instructions on creating, modifying, and deleting tag group files for use with recipes. The chapter focuses on functions that are specific to the Tag Group Editor (TGE.exe). It includes information on:

- Creating a New Tag Group File
- Understanding Tag Group Editor Layout
- Exiting the Tag Group Editor
- Opening and Closing Existing Tag Group Files
- Defining a Tag Group
- Editing a Tag Group File
- Deleting a Row
- Searching and Replacing Substitutions
- Saving a Tag Group File
- Deleting a Tag Group File
- Importing and Exporting Tag Group Reports

NOTE: The Recipe Builder requires the .TGE file format when using tag group files. As such, the Recipe Builder uses the FIX32 Tag Group Editor (TGE.EXE). Be aware there is another Tag Group Editor (TagGroupEditor.exe) for creating tag groups in iFIX pictures in .TGD file format. The Recipe Builder cannot use these newer .TGD files.

Creating a New Tag Group File

The Tag Group Editor provides two methods for creating new tag group files. You can start the Tag Group Editor by clicking the Start button, clicking Run, and entering the following text into the dialog box that appears:

```
fixpath\TGE.EXE
```

For example, if the Tag Group Editor resides in the default Base path, C:\Program Files (x86)\Proficy\iFIX, you could start the program by entering the following text in the Run dialog box:

```
C:\Program Files (x86)\Proficy\iFIX\TGE.EXE
```

When the program starts, the Tag Group Editor displays a blank, untitled spreadsheet.

Alternatively, when a tag group file is already open, you can create a new tag group file by selecting the New command. When you select this command, the Tag Group Editor closes the active tag group file, prompts you to save any unsaved changes, and then displays a blank spreadsheet.

Understanding Tag Group Editor Layout

The layout of the Tag Group Editor follows the standard iFIX spreadsheet format, and functions like most spreadsheets. The layout can be separated into the following items:

Menu Bar — contains menus that control the file input, output, and editing commands for the spreadsheet. These menus include the File menu, the Edit menu, the Font! menu, and the Help menu. The Font! menu lets you set the font used to display text in the Tag Group Editor.

Menu Bar Commands — contains the commands necessary for creating, managing, and formatting your tag group files. The following table summarizes these commands.

Menu	Option	Function
File	New	Opens a new tag group file.
	Open...	Opens an existing tag group file or report.
	Save	Saves the active tag group file.
	Save as...	Saves a tag group file to a new name or file type.
	Delete...	Deletes a tag group file or report.
	Exit	Exits the Tag Group Editor.
Edit	Delete Row	Delete a selected row of the spreadsheet.
	Search and Replace	Searches substitution column for specific text and optionally replaces it with another.

Spreadsheet — contains your tag group definitions.

Understanding the Tag Group Spreadsheet

The Tag Group Editor spreadsheet has the following columns:

Symbol — specifies the text that is replaced by a substitution string. Each symbol can be alphanumeric text up to 31 characters long.

Substitution — specifies the text that replaces a symbol. This field can be up to 95 characters long and is usually a tagname. It is recommended that you use the fully qualified name of any tag for substitution in a spreadsheet.

Description — describes the function of the tag group. The description field is optional and can contain up to 71 characters, including special characters, such as -(*)&+% and spaces.

Exiting the Tag Group Editor

To exit the Tag Group Editor, select Exit from the File menu. If you made changes since your last save, the Tag Group Editor displays the Save Changes dialog box. If you want to save changes, select Yes. If you do not want to save changes, select No. If you want to continue working on your tag group file, select Cancel.

Opening and Closing Existing Tag Group Files

To open an existing tag group file in the Tag Group Editor, select Open from the File menu. All previously-saved tag group files have an extension of .TGE and are stored in the Picture path. When you select this command, the Open dialog box appears.

To specify the tag group file to open, enter the name of the tag group file you want to open in the File Name field and click OK. The Tag Group Editor opens the specified tag group file.

If you prefer, you can double-click the tag group file you want to open from the File Name list box. The Tag Group Editor opens the specified tag group file. The File Open command can also be useful as a tool that lists all available tag group files.

NOTE: You can also import a tag group report (*.CSV file) into a tag group spreadsheet using the Open command. Refer to the section Importing and Exporting Tag Group Reports for more information on working with tag group reports.

Closing Tag Group Files

Once the Tag Group Editor opens a tag group file, it cannot open another until the active file is closed. To close a tag group file, simply select Open again. The Tag Group Editor closes the active tag group file and opens the file you select.

If you made changes to the old tag group file and have not saved them, the Tag Group Editor prompts you with the standard "Save Changes?" dialog box. Select Yes to save your changes to disk. If you do not want to save your changes, select No. To continue working with the tag group file, select Cancel.

NOTE: The Tag Group Editor does not automatically create back-up files. If you need back-up files, you must create them manually.

Defining a Tag Group

The Tag Group Editor displays its data in a spreadsheet. All valid cell entries in the Symbol and Substitution columns must be alphanumeric and start with a letter. When you have finished entering data into the spreadsheet, select Save from the File menu to save your changes to disk.

NOTE: When you enter tagnames into the substitution column, iFIX does not check the format or validity of the tagnames. Be sure to double-check the format and spelling of all tagnames entered into the substitution column.

When creating a second tag group file, you do not have to list the symbols in the exact order as the first tag group file. However, they must have identical symbol names for the correct substitutions to take place. For example, if one file represents the digital limit switch for the fuel intake valve of furnace A as FIVLIMITSWITCH, then the symbol FIVLIMITSWITCH of furnace B's tag group file must represent the same type of digital limit switch.

The following sections describe how to enter data into the Symbol, Substitution, and Description columns of the spreadsheet.

Defining Symbols

Symbols are place holders for tagnames in recipes. When you enter a symbol into any of these applications, you must type a question mark prior to the symbol name. This allows iFIX to differentiate tag group symbols from ordinary text. However, when defining symbols in the symbol column of the Tag Group Editor, you only type the symbol name.

For example, to use a place holder called "TEMPERATURE" to represent the tagnames of three similar temperature output blocks, type the following into the symbol column:

```
TEMPERATURE
```

If you want to implement this symbol into a recipe, type the following into the Identifier column of a recipe spreadsheet:

```
?TEMPERATURE
```

When iFIX reads text in this format, it identifies the text as a tag group symbol and replaces each occurrence of the symbol with the correct substitution.

To define a symbol in the Tag Group Editor spreadsheet:

1. In the Symbol column, select the desired cell by clicking it.
2. Type a symbol name. The symbol name can be a maximum of 31 alphanumeric characters. As you type, the text appears in the text editing box of the spreadsheet.
3. Press ENTER to enter the data into the desired cell.
4. Repeat step 3 until you have entered all of the symbol names that you need for this tag group file.

NOTE: You do not have to define a symbol's substitution before entering another symbol, but you cannot enter data into a substitution cell without first defining its symbol. For example, you can enter all of your symbols into the spreadsheet as a first step, and then enter their substitutions as another step.

If you plan to import or export comma separated files, you should not use the word SYMBOL as a tag group symbol name. Refer to the section Importing and Exporting Tag Group Reports for more information on working with tag group reports and comma separated files.

Defining Substitutions

Substitutions are tagnames that replace symbols in recipes. When typing a substitution, it is important to keep in mind that the Tag Group Editor simply replaces the exact data it finds in the symbol column with the exact data it finds in the substitution column. Double-check to be sure that the data you enter in all cells is typed correctly and the tagname is properly formatted.

To define a substitution in the Tag Group Editor spreadsheet:

1. In the Substitution column, select the desired cell by clicking it.
2. Type the tagname that you want to replace for the symbol on the left. The substitution data can be a maximum of 95 alphanumeric characters. As you type, the tagname appears in the text editing box of the spreadsheet.

   NOTE: It is strongly recommended that you use the fully qualified names for substitutions in a spreadsheet.
3. Press ENTER to enter the data into the desired cell. If you have not defined the adjacent Symbol cell, an error message appears and instructs you to do so first.

Defining Descriptions

The description cell offers a way to describe the function of a specific tagname substitution. The description field is optional, and is not involved in the functionality of the Tag Group Editor. However, it can be a powerful tool to help you organize and keep a record of tag groups that you create. It can also be a useful visual aid when printing a report. Each description cell can contain up to 71 alphanumeric characters.

To define a description in the Tag Group Editor spreadsheet:

1. In the Description column, select the desired cell by clicking it.
2. Type the description into the desired cell. The data you enter can be a maximum of 71 alphanumeric characters. As you type, the text appears in the text editing box of the spreadsheet.
3. Press ENTER to enter the data into the desired cell. If you have not defined that row's Symbol cell, an error message appears and instructs you to do so first.

Editing a Tag Group File

While creating or customizing iFIX, you may find it necessary to modify the symbols, substitutions, or descriptions that you have previously entered into a tag group file.

To edit a cell in the Tag Group Editor spreadsheet:

1. Double-click the cell you want to modify. The Edit Cell Data dialog box appears.
2. Type the correct text into the edit field of the dialog box.
3. Click OK to incorporate the new changes. If you make a mistake, click Cancel to revert to the original cell data.

NOTE: You can also use the Edit Cell Data dialog box to delete an entire row from the spreadsheet by double-clicking any cell in the row you want to delete, deleting all text from the edit field, and clicking OK.

Deleting a Row

You can delete an entire row from a tag group file by selecting the Delete Row command from the Edit menu. When you select Delete Row, the symbols, substitutions, and descriptions you delete are irretrievable.

To delete an entire row of the Tag Group Editor spreadsheet:

1. Highlight any cell in the row you want to delete.
2. On the Edit menu, click Delete Row. The Tag Group Editor removes the selected cell's row from the spreadsheet.

   NOTE: You can also delete a row of the spreadsheet by highlighting any cell in the desired row and pressing <Delete>.

Searching and Replacing Substitutions

Sometimes it is necessary to change a particular symbol's tagname substitution. For example, if a tagname has changed within a database, you need to update all applicable substitution columns. You could locate specific tagname substitutions by simply scrolling through the spreadsheet using the scroll bars or arrow keys. However, as the spreadsheet becomes larger, this can become a very time-consuming task.

For this reason, the Tag Group Editor provides a search and replace function that allows you to locate tagname substitutions quickly by searching the spreadsheet for a specified tagname and replacing it.

To search for and replace a tagname substitution:

1. On the Edit menu, click Search and Replace Substitutions. The Search and Replace Tagnames dialog box appears.
2. In the Search For field, enter the tagname you want to search for. If you choose, you can use asterisk wildcard characters (*) to represent one or more characters in the node name or tag name you are searching for.
3. In the Replace With field, enter the tagname you want to use as a replacement for the tagname in the Search For field. If you choose, you can use asterisk wildcard characters (*) to represent one or more characters in the new node name or tag name you want to use.
4. Click Replace to begin the search and replace procedure. A message appears inside the Search and Replace Tagnames dialog box and reports the number of occurrences that changed. For example, the following text appears when occurrence is replaced.

```
1 occurrence(s) changed
```

When you finish searching for and replacing a tagname substitution, you can return to the spreadsheet by selecting a cell. The Search and Replace Tagnames dialog box remains on the display until you deselect Search and Replace Substitutions from the Edit menu or until you close it.

NOTE: The Search and Replace Substitutions command only functions with Node:Tag substitutions. If you enter text into either of the Search and Replace fields that is not in Node:Tag format, it prompts you to enter a valid tagname.

IMPORTANT: iFIX includes two Tag Group Editors: one is for use with pictures and the other is for use with recipes. The Tag Group Editor discussed in this manual is intended for use with recipes. To use the Tag Group Editor with pictures, select the Tag Group Editor button from the WorkSpace.

Saving a Tag Group File

When you finish making changes to a tag group file, you need to save the tag group file to disk in order to make your changes permanent.

To save an existing tag group file, select Save from the File menu. The updated file writes over any previously-saved tag group file.

If you are saving a new tag group file, the Tag Group Editor prompts you to enter a name for the tag group file by displaying the Save As dialog box. Enter a new file name into the File Name field and select Save. The Save As command can also be used to save a tag group file under a different name or to create a backup tag group file.

NOTE: You can also report a tag group file using the Save and Save As commands. Refer to the section Importing and Exporting Tag Group Reports for more information on working with tag group reports.

Deleting a Tag Group File

As you customize iFIX, you may find that certain tag group files have become obsolete. You can delete them by using the Delete command from the File menu.

To delete a tag group file:

1. On the File menu, click Delete. The File Delete dialog box appears.
2. In the File Name field, type the name of the tag group file you want to delete, and click OK. If you prefer, in the Tag Group list box, you double-click the tag group file to select it. A confirm deletion message box appears.
3. Click Delete. The Tag Group Editor deletes the specified tag group file.

NOTE: You can also delete tag group reports (*.CSV files) using the Delete command. Refer to the section Importing and Exporting Tag Group Reports for more information on working with tag group reports.

Importing and Exporting Tag Group Reports

The Tag Group Editor can import and export tag group information that is formatted as a comma separated variable (CSV) file. Comma separated files are useful if you want to exchange tag group information between a third-party text editor, spreadsheet, or word processor and the Tag Group Editor. The Tag Group Editor recognizes files with a .CSV file extension as tag group reports.

Tag group reports have several benefits. A large tag group file can be saved as a tag group report, opened in a text editor or word processor, and printed as a text file. The printout provides an on-paper list of all symbols, substitutions, and descriptions defined in the Tag Group Editor spreadsheet. This list can help you verify your tag groups *before* you implement them into your SCADA strategy. Tag group reports

also allow you to enter tag group information into an application you are more familiar with, such as Microsoft Excel or a text editor, and then import this information into the Tag Group Editor.

Understanding the Tag Group Report Format

The Tag Group Editor provides an easy-to-use spreadsheet interface. However, you may feel more comfortable entering tag group information in your favorite spreadsheet application or text editor rather than the Tag Group Editor spreadsheet. Some spreadsheet applications, such as Microsoft Excel, provide a CSV format option within their Save As dialog box. If you use this method, the application does all the required formatting for the file you want to import.

If you prefer to use a text editor, you must follow some simple formatting rules to make sure that the text file is successfully imported into the Tag Group Editor. In general, each line of the text file should be typed similarly to the following:

```
OVENTEMP,OVEN1:TOV01.F_CV,OVEN1 CURRENT TEMPERATURE
```

In this example, OVENTEMP is the name of a tag group symbol, OVEN1:TOV01.F_CV is the substitution, and OVEN1 CURRENT TEMPERATURE is the description.

If you are using a text editor, and the name of a symbol, substitution, or description contains a quotation mark (") or the same list separator defined in the Regional Settings control panel, you must enclose that item in quotation marks. Also, you must type an extra quotation mark before each quotation mark within that item. For example, if you are entering a symbol named OVEN"TEMP into your text editor, you must type "OVEN""TEMP" as your symbol name.

Each line in your text file represents one row when imported into the Tag Group Editor. The information should always be typed in the same order as it appears in the Tag Group Editor spreadsheet (symbol, substitution, description). A list separator must be used to separate each component of the tag group. You must use the same list separator defined in the Number tab of the Regional Settings control panel. In most cases, this will be a comma (,). If you do not want to include a description, type a list separator after the substitution and leave the rest of the line blank.

The symbols, substitutions, and descriptions that you type into your text file have the same length limitations as the corresponding component in the Tag Group Editor spreadsheet. Be careful not to exceed this length; otherwise, when you import a component into the Tag Group Editor that exceeds its maximum length, a blank space is displayed in the corresponding cell and an error message is generated.

The Tag Group provides a text file in the Picture path, TGEIMP.ERR, that contains a list of errors that occurred during the import of a comma separated file. After you import a comma separated file, be sure to open this file and verify any errors. Note that if that no errors occurred during the import, this file will not exist.

NOTE: If a row in a comma separated file does not contain at least a symbol, The Tag Group Editor does not import the entire row of the file.

If you want to include comment statements in your text file, you must enclose each line of the comment in brackets ([ ]). Information in brackets is not imported into the Tag Group Editor, but remains in the file to be displayed or printed by a text editor. For example, you may want to include comments in the text file that display the name of the tag group file, the date the file was created, and each date that the file is modified.

NOTE: Including comments in your CSV file is optional. Comments and blank lines can be embedded anywhere within the file. If you save the CSV file from a spreadsheet, such as Microsoft Excel, comments must start in the first column.

As long as these simple formatting rules are followed, any text file saved with a .CSV extension can be read into the Tag Group Editor.

Importing Tag Group Reports

The steps that follow explain how to import a tag group report.

To import a tag group report:

1. On the File menu, click Open. Select the directory that contains the tag group report you want to import from the Directories list box.
2. Select the List Files of Type drop-down box and click the Tag Group Reports (*.CSV) option.
3. From the File Name list box, double-click the name of the report that you want to read in. The Tag Group Editor imports the specified tag group report into the active spreadsheet.

If you import a tag group report into an existing tag group file, the new information is inserted after the last row of data in the spreadsheet.

If you open a file and no entries appear in the spreadsheet, the list separator used by the file may be different from the list separator defined by the computer's Regional Settings control panel. To resolve this conflict, change the separator in the control panel and open the .CSV file again.

Exporting a Tag Group File

When you export a tag group file, the Tag Group Editor applies all formatting rules described in previous sections. Each line in the resulting report file represents a row in the Tag Group Editor spreadsheet, with the exception of bracketed information. The information in brackets are comments; they are ignored when the Tag Group Editor imports the report file. A tag group report automatically provides three comments at the top of the report. These comments include a title, the path of the reported tag group file, and the report date. A sample tag group report is shown in the following figure.

```
[The iFIX Tag Group Report]
[File:  C:\Program Files\GE Fanuc\Proficy iFIX\PIC\GROUP1.CSV]
[09/17/05]

SYMBOL, SUBSTITUTION, DESCRIPTION
"OVENTEMP", "OVEN1:TOV01.F_CV", "OVEN1 CURRENT TEMPERATURE"
"OVENALARM", "OVEN1:TOV01.A_CUALM", "OVEN1 CURRENT ALARM STATUS"
"OVENSETPOINT", "OVEN1:OVSP01.F_CV", "OVEN1 TEMPERATURE SETPOINT"
```

Sample Tag Group Report

As the previous figure shows, all data is separated with a list separator and enclosed in quotation marks. The Tag Group Editor does this as a safeguard even though the only items that require quotation marks are list separators and other quotation marks. In fact, you can delete the quotations around any component that does not contain a defined list separator or quotation mark if you want.

NOTE: The tag group report also provides a line with the text SYMBOL, SUBSTITUTION, and DESCRIPTION. This line is provided for readability only. When importing a report, the Tag Group Editor ignores any line that begins with the word SYMBOL. If you plan to use reports, do not name any of your symbols with the word SYMBOL.

Creating a Tag Group Report

The steps that follow explain how to create a tag group report.

To create a tag group report:

1. Open the tag group file (*.TGE) that you want to export.
2. On the File menu, click Save As.
3. Select the Save File as Type drop-down box and click the Tag Group Reports (*.CSV) option.
4. In the File Name field, type a report name and click OK.

Recipe Dialog Boxes

The Recipe application includes the following dialog boxes:

- Advanced Options Dialog Box
- Assign Tag Group Dialog Box
- Column Details Dialog Box
- Download Dialog Box
- Download/Upload Error List Dialog Box
- Field Select Dialog Box
- Go To Dialog Box
- Open Control Recipe Dialog Box
- Override Low/High Limit Dialog Box
- Precheck Error List Dialog Box
- Recipe Mod Log Dialog Box
- Report Column Details Dialog Box
- Report Format Dialog Box
- Set Batch Size Dialog Box
- Window Display Format Dialog Box

Advanced Options Dialog Box

The Advanced Options dialog box lets you:

- Define the upload and download interlocks for the recipe.
- Define the tagname of an upload/download completion status indicator.
- Assign the recipe to a security area.
- Keep an audit trail of recipe activity.

The Advanced Options dialog box displays the following items:

Download

The Download field lets you define the tagname or symbol that acts as a download interlock for the current recipe. When you download a recipe, the Recipe Builder verifies that the interlock is inactive. If the interlock is active, the download process aborts.

Upload

The Upload field lets you define the tagname or symbol that acts as an upload interlock for the current recipe. When you upload a recipe, the Recipe Builder verifies that the interlock is inactive. If the interlock is active, the upload process aborts.

Completion Status

The Completion Status field lets you enter the tagname of an analog block. This block acts as a completion status indicator. During an upload or download, the Recipe Builder stores a number (from zero to four) in the block. The meaning of these values is as follows:

When the value is...	The download or upload...
0	Is in progress.
1	Aborted.
2	Completed with errors.
3	Completed with no errors.
4	Completed with verification errors (download only).

Audit Trail Support

Item	Description
Summary Audit Trail	The Summary Audit Trail button tracks when: • Changes to master recipes and control recipes

	are saved and the name of the logged in user that saved the recipe. • A recipe is uploaded or downloaded and the name of the logged in user that uploaded or downloaded the recipe. • An upload or download fails and why. The Summary Audit Trail button also tracks the text entered into the Mod Log field on the Recipe Mod Log dialog box. The Recipe Builder records this information whenever a recipe is saved, uploaded, or downloaded.
Detail Audit Trail	The Detail Audit Trail button tracks the same summary information that the Summary Audit Trail button does. The Detail Audit Trail button also tracks the following additional information: • The recipe item values that were downloaded. • The variables that were present in the recipe. • The recipe items that failed to download and why.
No Audit Trail	The No Audit Trail button disables the audit trail for the current recipe.

Security Area

The Security Area field lets you assign a security area to a recipe. You can enter up to 20 alphanumeric characters into this field. Once you assign a security area to a recipe, it can be opened only if the logged in user has rights to that security area.

Assign Tag Group Dialog Box

The Assign Tag Group dialog box displays the following item:

Tag Group Filename

The Assign Tag Group dialog box lets you define the specific tag group you want to assign to the current recipe. You can enter the name of the tag group file in the Tag Group Filename field or select the tag group file from a list by clicking the browse (...) button.

Column Details Dialog Box

The Column Details dialog box lets you modify a column in the spreadsheet. The Column Details dialog box displays the following items:

Column Heading

The Column Heading field lets you change the column heading of any column in the spreadsheet or in a recipe report. You can enter up to 39 characters into this field.

Modifiable

The Modifiable check box controls whether the text in the selected column is modifiable. When you select the check box, the text is modifiable. When you clear the check box, the text is not modifiable.

Download Dialog Box

The Download dialog box lets you enter text (or remarks) about the download of the current recipe. This dialog box only appears if the audit trail is enabled.

The Download dialog box displays the following items:

Batch ID

The Batch ID field lets you enter an identifier for the download of the current recipe. This identifier can be up to 10 characters. The text you enter is added to the audit trail, uniquely identifies the download, and is added to the keyword #BATCH_ID. Entering data into the field is optional.

Download Remarks

The Download Remarks field lets you enter up to 20 characters explaining why the current recipe is being downloaded. The text you enter is added to the audit trail and is assigned to the keyword #REMARKS. Entering data into the field is optional.

Download/Upload Error List Dialog Box

The Download/Upload Error List dialog box lets you list the errors that the Recipe Builder encountered during the last upload or download. The dialog box also includes the:

- Recipe that was uploaded or download
- Number of errors encountered
- Date and time of the last upload or download

The Download/Upload Error List dialog box displays the following items:

Error List

The Error list box displays the upload, download, or verification errors that the Recipe Builder encountered during an upload or download. Each error is identified by tagname and row number.

To correct an error, use the buttons directly beneath the Error list box.

Go To Item Button

Use this button to move the cell selector to the highlighted tagname in the recipe.

Save Errors Button

Use this button to store contents of the list box to the file *recipe*.RCE. This file resides in either the master recipe path or control recipe path, depending on the type of recipe you are working with.

Field Select Dialog Box

The Field Select dialog box lets you to select a node, tag, and field combination. To select a node and tag, you can use one of three methods:

- Select a node from the Node Selection list box, a tag from the Tag Selection list box, a field from the Field Selection list box, and click OK.
- Type a node, tag, and field combination in the Selection field using the node:tag.field format.
- Use the asterisk wildcard character to filter through the network for a specific node, tag, and field combination.

NOTE: Only nodes configured in the System Configuration Utility (SCU) appear in the Node Selection list box.

The Field Select dialog box displays the following items:

Filter Fields

The Filter field lets you search for a specific selection in the Node Select, Tag Select, and Field Select dialog boxes.

Use the asterisk wildcard character in combination with the Filter button to search for a specific selection quickly and easily. To search for a tagname, type the search specification in the Filter field and select the Filter button.

Node Selection List

The Node Selection list box displays the names of all nodes configured in the System Configuration Utility (SCU). If you filter the list, the list box displays all the nodes that match the specified filter.

Tag Selection List

The Tag Selection list box displays the names of all tags configured on the selected node. If you filter the list, the list box displays all the tags that match the specified filter.

Field Selection List

The Field Selection list box displays the names of all valid fields for the selected node and tag. If you filter the list, the list box displays all the fields that match the specified filter.

Selection Edit Box

The Selection field displays the name of the selected tagname in the Node Select, Tag Select, and Field Select dialog boxes. To select a specific tagname without using the Filter field or Filter button, type the tagname in the Selection field and click OK.

Filter Button

The Filter button lets you search for a specific tagname in the Node Select, Tag Select, and Field Select dialog boxes.

Use the asterisk wildcard character in combination with the Filter field to search for a specific tagname quickly and easily. To search for a tagname, type the search specification in the Filter field and select the Filter button.

Go To Dialog Box

The Go To dialog box lets you jump to a specific row. The Go To dialog box displays the following item:

Item Number

The row number that you want to jump to. After entering a row number, select the Go button to jump to the specified row.

Open Recipe Dialog Box

The Open Recipe dialog box only opens control recipes located in the control recipe path. The Open Recipe dialog box displays the following items:

Recipe Name Field

The Recipe Name field lets you to enter the name of the recipe you want to open.

Recipe List Box

The Recipe list box displays the recipes you can open.

List Files of Type

The List Files of Type list box displays the types of files you can enter in the File Name field.

Drives

The Drives list box shows the name of the drive you have selected.

Network

The Network button allows you to connect to a shared network folder.

Override Low/High Limit Dialog Box

The Override Low/High Limit dialog box lets you define the high and low override limit for a recipe item or variable. The Override Low/High Limit dialog box displays the following items:

Unrestricted Limit

When either override limit is unrestricted, the operator can enter any override value that is less than or equal to the high limit and greater than or equal to the low limit. If both override limits are unrestricted, any override value can be entered.

Restricted Limit

When the high override limit is restricted, the operator can enter an override value that is less than or equal to the recipe item's calculated value. When the low override limit is restricted, the operator can enter an override value for the high limit that is greater or equal to the calculated value. If both override limits are restricted, no override value can be entered.

Absolute Limit

The Absolute Limit field lets you enter a numeric constant as the high or low override limit. When an absolute limit is used, the operator can enter an override value less than or equal to the high limit and greater than or equal to the low limit.

Percentage Limit

The Percentage Limit field lets you enter a percentage as the high or low override limit. When a percentage limit is used, the operator can enter an override value equal to the recipe item's calculated value plus or minus the specified percentage.

Difference Limit

The Difference Limit field lets you enter a relative difference as the high or low override limit. When a difference limit is used, the operator can enter an override value equal to the recipe item's calculated value plus or minus the specified difference.

Precheck Error List Dialog Box

The Precheck Error List dialog box lists the errors the Recipe Builder encountered prior to uploading or downloading a recipe. Common precheck errors include an active interlock or uploading from or downloading to a tagname that does not exist.

The Precheck Error List dialog box displays the following items:

Precheck Error List

The Precheck Error list box displays the errors that the Recipe Builder encountered prior to uploading or downloading a recipe. Each error is identified by tagname and row number.

Available Buttons

Use the buttons directly beneath the Error list box to proceed with or cancel the upload or download:

Use the...	To...
Continue Download button	Proceed with the download despite the errors.
Continue Upload button	Proceed with the upload despite the errors.
Cancel Download button	Abort the download.
Cancel Upload button	Abort the upload.
Save Errors button	Store the contents of the list box to the file *recipe*.RCE. This file resides in either the master recipe path or control recipe path, depending on the type of recipe you are working with.

Recipe Mod Log Dialog Box

The Recipe Mod Log dialog box lets you enter a description of why the current recipe is being saved. The Recipe Mod Log dialog box only appears if the audit trail is enabled.

The Recipe Mod Log dialog box displays the following items:

Mod Log Field

The Mod Log field lets you enter up to 30 characters of text explaining any changes made to the current recipe. Entering data into the field is optional. The text you enter is incorporated into the audit trail.

Save As

The Save As button provides you with access to the Save Recipe As dialog box. Enter the name you want to save the recipe as.

Report Column Details Dialog Box

The Report Column Details dialog box lets you modify a column in a recipe report. The Report Column Details dialog box displays the following items:

Column Heading

The Column Heading field lets you change the column heading of any column in the spreadsheet or in a recipe report. You can enter up to 39 characters into this field.

Column Width

The Column Width field lets you define the length of a column in a recipe report. You can enter any value between 1 and 100 into this field.

Report Format Dialog Box

The Report Format dialog box lets you:

- Add a column to a recipe report.
- Remove a column to a recipe report.
- Arrange the columns in a report.
- Modify a report column heading.
- Change the column width in a report.

The Report Format dialog box displays the following items:

Available Columns List Box

The Available Columns list box displays the columns you can add to the spreadsheet or a recipe report. If the list box is empty, all columns are in use.

Column Layout List Box

The Columns Layout list box displays all the columns that appear in the spreadsheet or that will appear in the recipe report. The list box also shows the order in which the columns appear, each column heading, and one of the following items:

- If the column can be modifiable (when editing a display format)
- The column width (when editing a report layout)

Column Layout List Buttons

The Column Layout List Box buttons let you modify the display format as follows:

Use the...	To...
Up Arrow and Down Arrow buttons	Move the selected column up or down in the Column Layout list box.
Add button	Move the selected column from the Available Columns list box to the Column Layout list box.
Modify button	Change the column heading and either the column width (when modifying the format of a report) or whether the column is modifiable (when modifying the format of the spreadsheet).
Delete button	Remove a column from the Column Layout list box.
Switch To button	Toggle between the display format of the Recipe Development window and Recipe Operations window.

Search and Replace Dialog Box

The Search and Replace dialog box lets you search and replace data in a recipe. The dialog box provides the following options:

- Performing a case-sensitive search.
- Searching forward or backward in the recipe.
- Starting a search in the middle of a column and wrapping to the column's beginning or end.

The Search and Replace dialog box displays the following items:

Search for

The Search for field lets you enter a search string of up to 100 characters. Wildcard characters (such as * and ?) are treated as text.

After entering a search string, select the Search Next button to search forward for the next occurrence of the search string in the selected column. Select the Search Previous button to search backward for the next occurrence of the search string.

Replace with

The Replace with field lets you enter a replacement string of up to 100 characters. Wildcard characters (such as * or ?) are treated as text.

After entering a replacement string, select the Replace Next button to search forward for the next occurrence of the search string and replace it. Select the Replace Previous button to search backward for the next occurrence of the search string and replace it.

Case Sensitive

The Case Sensitive check box lets you control whether the search for the search string is case sensitive. Select the check box for a case sensitive search. Clear the check box for a non-case sensitive search.

Wrap Around

The Wrap Around check box lets you search an entire column, either forward or backward, no matter where you start in the column. When you select this check box, the Recipe Builder automatically wraps and continues searching the selected column when it reaches the spreadsheet's beginning or end.

When the check box is cleared, the Recipe Builder searches the selected column until it reaches the spreadsheet's end or the beginning.

Set Batch Size Dialog Box

The Set Batch Size dialog box lets you specify the current batch size. The Set Batch Size dialog box displays the following item:

Batch Size

Enter any batch size from 0.000001 to 9,999,999.0 into the Batch Size field.

Window Display Format Dialog Box

The Window Display Format dialog box lets you:

- Add a column to the spreadsheet
- Remove a column to the spreadsheet
- Arrange the columns in the spreadsheet
- Modify a spreadsheet column heading
- Make a column modifiable
- Display the current display format of the Recipe Development window or the Recipe Operations window

The Window Display Format dialog box displays the following items:

Available Columns List Box

The Available Columns list box displays the columns you can add to the spreadsheet or a recipe report. If the list box is empty, all columns are in use.

Column Layout List Box

The Columns Layout list box displays all the columns that appear in the spreadsheet or that will appear in the recipe report. The list box also shows the order in which the columns appear, each column heading, and one of the following items:

- If the column can be modifiable (when editing a display format)
- The column width (when editing a report layout)

Column Layout List Buttons

The Column Layout List Box buttons let you modify the display format as follows:

Use the...	To...
Up Arrow and Down Arrow buttons	Move the selected column up or down in the Column Layout list box.
Add button	Move the selected column from the Available Columns list box to the Column Layout list box.
Modify button	Change the column heading and either the column width (when modifying the format of a report) or whether the column is modifiable (when modifying the format of the spreadsheet).
Delete button	Remove a column from the Column Layout list box.
Switch To button	Toggle between the display format of the Recipe Development window and Recipe Operations window.

How Do I...

Click any of the following links for more information about Recipe's step-by-step procedures:

- Using Basic Functions
- Working with Recipes
- Locating and Displaying Data
- Working with Formulas

- Using Advanced Features
- Using Keyboard Accelerators

Using Basic Functions

You can perform the following basic functions in the Recipe Builder:

- Downloading Recipes
- Uploading Recipes
- Scheduling Recipes for Automatic Upload and Download
- Uploading and Downloading from an Operator Display

Downloading Recipes

To download a recipe from the Recipe Builder:

1. In the iFIX WorkSpace system tree, in the FIX Recipes folder, double-click New Recipe. The Recipe Operations or Recipe Development window appears.
2. On the File menu, click Open. If you are in the Recipe Operations window, the Open Control Recipe dialog box appears. If you are in the Recipe Development window, the Open Recipe dialog box appears.

   TIP: To change the type of recipes that appear in the Open Recipe dialog box from the Recipe Development window, in the List Files of Type drop-down list, select Master Recipe (*.rcm) or Control Recipe (*.rcc). Be aware that the Open Control Recipe dialog box from the Recipe Operations dialog box only displays control recipes.
3. Select the recipe you want to download. The recipe displays in the spreadsheet.
4. Click the Download button from the recipe header. The Download dialog box appears.
5. Enter the necessary information in the Download dialog box.
6. Click OK.

   NOTE: Prior to downloading a recipe, the Recipe Builder performs error checking. If the Recipe Builder detects an error, the download aborts and the Precheck Error List dialog box appears. If the Recipe Builder detects no errors, the download begins. When the Recipe Builder completes the download, it displays the results in a message or the Download Error List dialog box.

Uploading Recipes

To upload a recipe from the Recipe Builder:

1. In the iFIX WorkSpace system tree, in the FIX Recipes folder, double-click New Recipe. The Recipe Operations or Recipe Development window appears.

2. On the File menu, click Open. If you are in the Recipe Operations window, the Open Control Recipe dialog box appears. If you are in the Recipe Development window, the Open Recipe dialog box appears.

   TIP: To change the type of recipes that appear in the Open Recipe dialog box from the Recipe Development window, in the List Files of Type drop-down list, select Master Recipe (*.rcm) or Control Recipe (*.rcc). Be aware that the Open Control Recipe dialog box from the Recipe Operations dialog box only displays control recipes.

3. Select the recipe you want to upload. The recipe displays in the spreadsheet.
4. Select the Upload button from the recipe header. The Recipe Builder starts the uploading process.

   NOTE: Prior to uploading a recipe, the Recipe Builder performs error checking. If the Recipe Builder detects an error, the upload aborts and the Precheck Error List dialog box appears. If the Recipe Builder detects no errors, the upload begins. When the Recipe Builder completes the upload, it displays the results in a message or the Upload Error List dialog box.

Scheduling Recipes for Automatic Upload and Download

To schedule a recipe for automatic uploading or downloading:

1. In Classic view, on the iFIX WorkSpace application toolbar, click the Database Manager button.

   -Or-

   In Ribbon view, on the Application tab, in the Process Database group, click Database Manager.
2. Select the SCADA server you want to connect to.
3. Click OK. Once Database Manager connects to the selected SCADA server, the program opens the server's current database and the Database Manager window appears.
4. In Classic view, in Database Manager, on the Blocks menu, click Add.

   -Or-

   In Ribbon view, in Database Manager, on the Home tab, in the Blocks group, click Add.
5. Select the PG Program Block and click OK. The Program dialog box appears.
6. Enter a Tag Name and Description, and add a RUNTASK command in the Programming Statements area. The syntax for this command is:

   ```
   RUNTASK task_parameters
   ```

   For example, this command would perform a recipe download for the control recipe named BEER, and include an error file:

   ```
   RUNTASK RCPDOWN /cBEER /e
   ```

7. You can also combine the RUNTASK statement with other Program block statements (such as WAITFOR) to schedule an upload or download automatically.

   For example, if you add the first line to the Programming Statements area, the recipe would also wait for the TIME variable to equal 12 hours, before recipe download occurs:

   ```
   WAITFOR TIME = 12:00:00
   RUNTASK RCPDOWN /cBEER /e
   ```

Uploading and Downloading from an Operator Display

To upload or download a recipe from an operator display:

1. In the iFIX WorkSpace, create a picture with the necessary objects (such as a Push Button link) or modify an existing picture by adding objects.
2. Include a command script with the RUNTASK command for each object that will trigger an upload or download. The syntax for this command is:

   ```
   RUNTASK task parameters.
   ```

   For example, this command would perform a recipe download for the control recipe named BEER, and include an error file:

   ```
   RUNTASK RCPDOWN /cBEER /e
   ```

   This command would perform a recipe upload for the control recipe named BEER, and include an error file:

   ```
   RUNTASK RCPUP /cBEER /e
   ```
3. When in run mode, select the appropriate object to start the upload or download process. When selected, the associated command script executes and uploads or downloads the specified recipe.

Working with Recipes

In the Recipe Builder, you can perform the following tasks when working with recipes:

- Creating a Recipe Item or Variable
- Inserting a Recipe Item or Variable
- Deleting a Recipe Item or Variable
- Creating a Recipe Report
- Creating and Modifying a Recipe Note File
- Enabling and Disabling Recipe Verification
- Importing and Exporting Data to a Third-Party Application
- Modifying a Report Column

Creating a Recipe Item or Variable

To create a new recipe item or variable for the current recipe:

1. Select a cell in the Recipe window's Identifier column and type a tagname, variable name, or a symbol name.

   NOTE: If you prefer, you can double-click a cell in the Identifier column to display the Field Select dialog box.

2. Select the corresponding cell in the Formula column and enter a formula for the recipe item. When you complete your entry, the text in the Calc Val column changes to reflect the formula's value.
3. Modify the text in the Description and UOM columns as needed. Notice that if you enter a tagname the text from the specified block's Description and EGU Tag fields are automatically inserted for you.
4. Modify the override limits as needed. By default, the override limits are sent to UNRESTRICTED.
5. Modify the Verify column as needed. By default, recipe verification is disabled for each recipe item you add to the recipe. To enable it, select a cell in the Verify column and type ON in the text editing box. It is recommended that you only verify Analog Register, Digital Register, and Text blocks.

Inserting a Recipe Item or Variable

To insert a recipe item or variable to a recipe:

1. In the Recipe window's spreadsheet, select a cell from the row where you want to insert a recipe item or variable.
2. On the Edit menu, click Insert Item. The Recipe Builder inserts a blank row above the row you selected and renumbers the spreadsheet.

   NOTE: You can add up to 3500 recipe items to a recipe.

Deleting a Recipe Item or Variable

To delete a recipe item or variable from a recipe:

1. In the Recipe window's spreadsheet, select a cell from a row that you want to delete.
2. On the Edit menu, click Delete Item. The Recipe Builder removes the selected item from the recipe and renumbers each row in the spreadsheet.

   You can also delete a recipe item or variable by selecting Cut from the Edit menu. The main difference between these commands is that when you delete a recipe item or variable with Cut, you can paste it back into the recipe if you accidentally remove the wrong item or if you change your mind. When you select Delete Item, the recipe item or variable is irretrievable.

Creating a Recipe Report

To create a report from the current recipe:

1. With a recipe loaded in the Recipe window's spreadsheet, on the File menu, select Report. The Report Format dialog box appears.
2. Use the Column Layout List Box buttons to add or delete report columns. Also use these buttons to arrange the columns in the report and modify the column widths and headings.
3. Click OK. The Recipe Builder creates a report from the current recipe and stores it in the appropriate recipe path.

Creating and Modifying a Recipe Note File

To create or modify a recipe note file:

1. In the Recipe window, on the File menu, select Notes. The Recipe Builder starts Notepad.

   If a note file does not already exist for the current recipe or if the Recipe Builder cannot locate the note file in the control recipe path, the Recipe Builder prompts you to create a new one. Select the No button to create an untitled note file. To create a note file with a name that matches the current recipe, select the Yes button.
2. Enter the information you want after the program starts.
3. When you are ready to save the note file, on the File menu, click Save. If you are working with a new, untitled recipe, save the file in the control recipe path with the extension .RCN. The name of the note file should also match the name of the recipe; otherwise, the Recipe Builder will not be able to locate the note file subsequently.

Enabling and Disabling Recipe Verification

To enable recipe verification for each recipe item:

In the Recipe window's spreadsheet, enter ON in the Verify column.

To disable recipe verification:

In the Recipe window's spreadsheet, enter OFF in the Verify column. By default, recipe verification is disabled.

Importing from and Exporting Data to a Third-Party Application

To import data from a third-party application:

1. Save the data you want to import in a text file and copy it into the master recipe path or control recipe path.

2. If you are not already in development mode in the Recipe window, on the Window menu, select Switch to DEV. The Recipe Development window appears.
3. In the Recipe Development window, on the File menu, click Open. The standard Open dialog box appears.
4. From the List Files of Type drop-down list, select either master text recipes or control text recipes.
5. Select the text file you want to open. The Recipe Builder imports the data.

To export data to a third-party application:

1. If you are not already in development mode in the Recipe window, on the Window menu, select Switch to DEV. The Recipe Development window appears.
2. From the File menu, click Save As. If the audit trail is enabled, the Recipe Mod Log dialog box appears.

   If the audit trail is disabled, the standard Save As dialog box appears. Go to step 4.
3. Enter the reason for exporting the recipe, and click Save As. The standard Save As dialog box appears.
4. Select either master text recipes or control text recipes from the List Files of Type drop-down box.
5. Type the name for the exported recipe in the File Name field, and select the OK button. The Recipe Builder exports the recipe to a text file.
6. Start your third-party application and open the text file with it.

Modifying a Report Column

To modify a report column:

1. In the Recipe window, on the File menu, click Report. The Report Format dialog box appears.
2. Select the column you want to modify from the Column Format list box.
3. Click Modify. The Report Column Details dialog box appears.
4. In the Column Heading field, edit the text as needed.
5. In the Column Width field, edit the text as needed.
6. From the Report Column Details dialog box, click OK. The Recipe Builder updates the Column Layout list box to reflect the changes you made.
7. Repeat steps 4 through 6 until you have modified each report column.
8. From the Report Format dialog box, click OK. The Recipe Builder updates the report format.

Locating and Displaying Data

In the Recipe Builder, you can perform the following tasks when locating and displaying data:

- Changing a Display Format
- Modifying a Column
- Searching and Replacing Data

Changing a Display Format

To change the current display format:

1. In the Recipe window, on the Window menu, click Edit Display Format. The Window Display Format dialog box appears.
2. Use the Column Layout List Box buttons to add or delete spreadsheet columns. Also use these buttons to modify the column heading, make a column modifiable, arrange the columns in the spreadsheet, and toggle between the display format of the Recipe Development window and the Recipe Operations window
3. Select the OK button. The Recipe Builder saves the display format in memory.

Modifying a Column

To modify a column for a display format:

1. In the Recipe window, on the Window menu, click Edit Display Format. The Window Display Format dialog box appears.
2. From the Column Format list box, select the column you want to modify.
3. Click Modify, or double-click the column name in the Column Layout list box. The Column Details dialog box appears.
4. In the Column Heading field, edit the text as needed.
5. Select the Modifiable check box to make the column modifiable. To make the column non-modifiable, clear the check box.
6. Select the OK button from the Column Details dialog box. The Recipe Builder updates the Column Layout list box to reflect the changes you made.
7. From the Window Display Format dialog box, click OK. The Recipe Builder updates the spreadsheet.

Searching and Replacing Data

To search for data in a column (or search and replace data):

1. In the Recipe window's spreadsheet, select the column you want searched.
2. Select the Search button. The Search and Replace dialog box appears.

3. In the Search for field, enter the text you want to locate. If you want to search and replace data, enter the replacement data in the Replace with field.
4. Use the Search Next and Search Previous buttons to search forward and backward in the column. Use the Replace Next and Replace Previous buttons to search and replace data in the column.
5. When you finish searching the selected column, you can return to the spreadsheet by selecting a cell. The Search and Replace dialog box remains on the screen. To close the dialog box, select the Exit button.

Working with Formulas

In the Recipe Builder, you can perform the following tasks when working with formulas:

- Entering an Override Limit
- Entering and Clearing Overrides
- Entering and Modifying a Formula

Entering an Override Limit

When you add or insert a recipe item or variable, the Recipe Builder automatically sets the high and low override limits to Unrestricted. This allows anyone to enter any override value needed. If you want to restrict the possible value of the override value, change the override limits.

To change the override limits:

1. In the Recipe window's spreadsheet, double-click a cell in the Override Lo Lim column or the Override Hi Lim column that is in the row you want to update. The Override Low Limit or Override High Limit dialog box appears.

   TIP: For Restricted and Unrestricted Limits, you can also select the cell, type R for Restricted or U for Unrestricted, and press Enter. This assigns the Restricted or Unrestricted Limit without opening the Override Low Limit or Override High Limit dialog box.
2. Select the override limit that you want to use.
3. For the Absolute, Percentage, and Difference Limit, enter a value. The following table provides a guidelines for entering values.

To set an override limit to...	Type...
An absolute value	The value you want to use.
A relative percentage of the calculated value	The percentage of the calculated value you want to use. Be sure to include the percent sign (%).
A relative difference from the calculated value	The difference from the calculated value you want to use followed by a minus sign (-).

4. Click OK.

Entering and Clearing Overrides

To enter an override value:

1. In the Recipe window's spreadsheet, select the appropriate cell in the Override Val column.
2. Type a value in the text editing box. The range of values you can enter into the Override Val column depends on the high and low override limits defined for a specific recipe item or variable.

To clear an override value:

In the Recipe window's spreadsheet, select the appropriate cell and press <Delete>.

NOTE: To delete all the override values in use, select the Clear Overrides button.

Entering and Modifying a Formula

To enter a formula for a recipe item or variable:

1. In the Recipe window's spreadsheet, select the appropriate cell in the Formula column.
2. Type the formula you want into the text editing box. When typing the formula, you can combine one or more of the following items:

Formula Type	Examples
Numeric or string constant	5 or “John”
Mathematical operators	+, -, *, /,= =, >, <, <=, !=, ^,
Function	Log(234) or Lookup (#COLOR;1;2;3;4;5)
Variable	#COLOR
Keyword	#BATCH or #NAME

To modify a formula:

1. In the Recipe window's Formula column, select the appropriate cell, and press INSERT. The Recipe Builder highlights the text in the text editing box.
2. Type the new text you want. The Recipe Builder replaces the original text with the text you enter.

Using Advanced Features

In the Recipe Builder, you can perform the following tasks when using advanced features:

- Assigning a Tag Group
- Changing the Verification Timeout Interval
- Defining the Completion Status Indicator
- Defining the Upload and Download Interlocks
- Enabling and Disabling the Audit Trail

- Selecting a Security Area
- Setting and Scaling the Batch Size
- Setting the Standard Batch Size

Assigning a Tag Group

To assign a tag group to the current recipe:

1. In the Recipe window, on the Options menu, click Assign Tag Group. The Assign Tag Group dialog box appears.
2. In the Tag Group Filename field, enter the tag group file that you want to assign to the recipe.

   - Or -

   To the right of the Tag Group Filename field, select the browse (...) button and double-click the tag group file you want to assign to the recipe from the list that appears.

   After you assign a tag group to a recipe, you can display the tagnames by selecting Show Tagnames from the Window menu. To display the symbol names again, select Show Symbols from the Window menu.

NOTE: The Recipe Builder requires the .TGE file format when using tag group files. As such, the Recipe Builder uses the FIX32 Tag Group Editor (TGE.EXE). Be aware there is another Tag Group Editor (TagGroupEditor.exe) for creating tag groups in iFIX pictures in .TGD file format. The Recipe Builder cannot use these newer .TGD files.

Changing the Verification Timeout Interval

To modify the timeout interval:

1. In the Recipe window, on the File menu, click Exit. If necessary, save any changes you have made to the current recipe.
2. With a text editor such as Notepad, open the RCP.INI file. This file resides in the directory pointed to by the local path.

   When you open the file, you should see the following text:

   ```
   [startup]
   startup.mode=2
   verification.timeout=30
   ```

3. Modify the timeout interval by changing it from 30 to some other value. Possible values for the timeout interval are from 1 to 65535 seconds.
4. After modifying the timeout interval, save the RCP.INI file and restart the Recipe Builder.

Defining the Completion Status Indicator

To define the completion status indicator:

1. In the Recipe window, on the Options menu, click Advanced Options. The Advanced Options dialog box appears.
2. In the Completion Status field, enter the tagname of the block that acts as the completion status indicator for the recipe, or click the browse (...) button and select the tagname from the dialog box that appears.

   By default, the F_CV field of the block is assigned to the tagname if you do not specify a field name. However, you can specify any F_ field for the tagname (such as F_02 for an Analog Register block).

Defining the Upload and Download Interlocks

To define the upload and download interlocks for the current recipe:

1. In the Recipe window, on the Options menu, click Advanced Options. The Advanced Options dialog box appears.
2. In the Download field, enter the tagname or symbol of the block that acts as a download interlock for the recipe. In the Upload field enter the tagname or symbol of the block that acts as an upload interlock. If you prefer, you can select the browse (...) button to the right of either field and select the tagname from the dialog box that appears.

   By default, the F_CV field is assigned to the tagname when no field name is specified. However, you can enter any F_ field for the tagname (such as F_04 for a Digital Register block).

Enabling and Disabling the Audit Trail

To enable the audit trail for the current recipe:

1. In the Recipe window, on the Options menu, click Advanced Options. The Advanced Options dialog box appears.
2. Select either the Summary Audit Trail button or the Detail Audit Trail button to select the type of audit trail you want.

To disable the audit trail:

1. In the Recipe window, on the Options menu, click Advanced Options. The Advanced Options dialog box appears.
2. Select the No Audit Trail button.

Selecing a Security Area

To select a security area for the current recipe:

1. In the Recipe window, on the Options menu, click Advanced Options. The Advanced Options dialog box appears.
2. In the Security Area field, enter the appropriate text. To assign the recipe to:
   - Every security area, type ALL.
   - No security area, type NONE.
   - A specific security area, type the security area name in the Security Area field.

   If you prefer, click the browse (...) button and select a security area from the dialog box that appears. Use the scroll bar or arrow keys to locate the security area you want. Press the OK button to complete the selection.

Setting and Scaling the Batch Size

To set the batch size for the current recipe:

1. In the Recipe window, on the Options menu, click Set Batch Size. The Set Batch Size dialog box appears.
2. In the Batch Size field, enter the amount of the product you want to make.
3. From the Set Batch Size dialog box, click OK. The Recipe Builder assigns the value you enter to the #BATCH keyword. The Recipe Builder also divides #BATCH by #STD_BATCH to compute the scaling factor. The result of this calculation is stored in the #SCALE keyword.

To scale a batch size for the current recipe:

Multiply the formula of each recipe item you want to scale by #SCALE. Once this is done, you can scale a batch by changing the current batch size.

Setting the Standard Batch Size

To set the standard batch size for the current recipe:

In the Recipe window, in the Standard Batch Size field, type the standard amount of the product that this recipe produces. The Recipe Builder assigns the value you enter to the #STD_BATCH keyword.

Using Keyboard Accelerators

The following keys and keyboard accelerators are available in the Recipe Operations or Recipe Development window to help you move through the menu bar and dialog boxes.

Movement Keys

- The ALT key activates the menu bar.
- The left and right arrow keys move between menus.
- The up and down arrow keys move through menu commands.
- The ENTER key selects a command or dialog box button and records field entries.
- The TAB key moves the selection box or cursor through all dialog box fields, list boxes, check boxes, and buttons.
- The PAGE UP and PAGE DOWN keys shift the spreadsheet up or down to display additional rows.

Keyboard Accelerators

Task	Accelerator
Access help for dialog boxes and commands	F1
Access help for fields and controls	ALT+F1
Apply a font	CTRL+F
Assign a tag group to a recipe	CTRL+G
Copy a recipe item or variable	CTRL+C
Copy all recipe items and variables	CTRL+A
Create a new recipe	CTRL+N
Create a recipe report	CTRL+R
Cut a recipe item or variable	CTRL+X
Delete a recipe item	CTRL+D
Display symbols in a recipe	CTRL+Y
Exit the Recipe Builder	ALT+F4
Insert a recipe item	CTRL+E
Open a recipe	CTRL+O
Paste a recipe item or variable	CTRL+V
Save a recipe	CTRL+S
Set the current batch size	CTRL+B
Substitute tagnames for symbols	CTRL+T
Switch to the Recipe Development or Recipe Operations window	CTRL+W

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