Important User Information

Solid-state equipment has operational characteristics differing from those of electromechanical equipment. Safety Guidelines for the Application, Installation, and Maintenance of Solid State Controls (publication SGI-1.1 available from your local Rockwell Automation sales office or online at http://www.rockwellautomation.com/literature/) describes some important differences between solid-state equipment and hard-wired electromechanical devices. Because of this difference, and also because of the wide variety of uses for solid-state equipment, all persons responsible for applying this equipment must satisfy themselves that each intended application of this equipment is acceptable.

In no event will Rockwell Automation, Inc. be responsible or liable for indirect or consequential damages resulting from the use or application of this equipment.

The examples and diagrams in this manual are included solely for illustrative purposes. Because of the many variables and requirements associated with any particular installation, Rockwell Automation, Inc. cannot assume responsibility or liability for actual use based on the examples and diagrams.

No patent liability is assumed by Rockwell Automation, Inc. with respect to use of information, circuits, equipment, or software described in this manual.

Reproduction of the contents of this manual, in whole or in part, without written permission of Rockwell Automation, Inc., is prohibited.

Throughout this manual, when necessary, we use notes to make you aware of safety considerations.

**WARNING:** Identifies information about practices or circumstances that can cause an explosion in a hazardous environment, which may lead to personal injury or death, property damage, or economic loss.

**ATTENTION:** Identifies information about practices or circumstances that can lead to personal injury or death, property damage, or economic loss. Attentions help you identify a hazard, avoid a hazard, and recognize the consequence.

**SHOCK HAZARD:** Labels may be on or inside the equipment, for example, a drive or motor, to alert people that dangerous voltage may be present.

**BURN HAZARD:** Labels may be on or inside the equipment, for example, a drive or motor, to alert people that surfaces may reach dangerous temperatures.

**Important:** Identifies information that is critical for successful application and understanding of the product.

---

Allen-Bradley, Rockwell Software, and Rockwell Automation ControlLogix, eProcedure, FactoryTalk, RSiRsaWare, RSiRsaWare BatchHistorian, RSiRsaWare Historian, RSiRsaWare MaterialTrack, and RSLinx are trademarks of Rockwell Automation, Inc.

Trademarks not belonging to Rockwell Automation are property of their respective companies.
## Table of contents

### Welcome

Document organization ................................................................. 5  
Document conventions ................................................................. 5

### Chapter 2

#### FactoryTalk eProcedure introduction

What is eProcedure? ............................................................................... 8  
Benefits of eProcedure ........................................................................ 8  
FactoryTalk Batch Components .......................................................... 10  
  FactoryTalk Batch Server ................................................................. 10  
  FactoryTalk Batch View ................................................................. 10  
  FactoryTalk Batch Recipe Editor ...................................................... 11  
  FactoryTalk Batch Equipment Editor ............................................ 11  
  FactoryTalk Event Archiver .......................................................... 12  
  FactoryTalk Batch Network Editor ................................................ 12  
  FactoryTalk eProcedure Client ...................................................... 12  
  FactoryTalk eProcedure Server .................................................... 13  
  FactoryTalk Batch Material Manager ............................................. 13

### Chapter 3

#### The eProcedure Server

Set up sample demonstrations .............................................................. 16  
  Add sample FactoryTalk Security users ........................................... 16  
  Configure sample permissions for FactoryTalk Security users ........... 18  
  Configure the sample FactoryTalk Batch Server .............................. 21  
  Rebuild the recipe directory ........................................................... 23  
Start the Batch and eProcedure Servers ............................................. 24  
Start the sample FactoryTalk Batch Phase Simulator .......................... 26  
Open the sample demonstration in the FactoryTalk Batch Phase Simulator 27  
Verify PCD communications ............................................................. 28  
Effects of warm boot on control steps ............................................... 29  
Summary .......................................................................................... 30

### Chapter 4

#### The eProcedure Client

Run a recipe using eProcedure ............................................................ 32  
Check the event journal .................................................................... 36  
Summary .......................................................................................... 37
## Table of contents

**Chapter 5**

Introduction to instruction-based phases

Create instruction-based phases ................................................................. 39
  - Create an instruction file ................................................................. 39
  - Custom tags .................................................................................. 41
Assign an instruction file to a phase ...................................................... 42
  - Include a step verification signature template ............................. 44
Summary ............................................................................................... 44

Appendix A

eProcedure Glossary

Glossary ................................................................................................. 45

Legal Notices

Legal Notices ........................................................................................ 53

Index

Index ....................................................................................................... 55
Welcome

This guide was developed to explain the basics of FactoryTalk® eProcedure®.

The following subjects are presented in this document:

- eProcedure documentation
- eProcedure components
- eProcedure Server
- eProcedure Client
- Introduction to instruction based phases
- HTML-Based instruction files
- Glossary

See also

- Document conventions on page 5
- FactoryTalk Batch Components on page 10
- The eProcedure Server on page 15
- The eProcedure client on page 31
- Introduction to instruction-based phases on page 39

Text that appears in the eProcedure software interface, such as dialog box titles, buttons, and menu commands, is presented in bold type. Text typed in response to a prompt is presented in bold type. Windows security items are also in bold type, such as batchsvr_group.

File names, extensions, paths and directories are presented in italics, such as C:\Winnt\Win.ini.
Examples of source code, computer files or reports are presented in a mono-spaced font.

**Tip:** Tips provide additional information to help you effectively use the software.

---

**Important:** Important notes provides required configuration parameters or important information about the software.

---

See also

**Welcome** on page 5
Chapter 2

FactoryTalk eProcedure introduction

FactoryTalk® eProcedure® is an integral part of Rockwell’s FactoryTalk Batch suite of software components. As part of the FactoryTalk family, the FactoryTalk Batch components increase overall plant efficiency by delivering the visibility, control, and reporting needed to optimize manufacturing. Coordinated execution reduces rework and improves product quality and consistency. Real-time management of equipment utilization maximizes return on assets. Implementing optimized recipes and procedures, increases plant capacity. Using electronic, paperless operations improves productivity. Reduce compliance costs by using electronic batch record implementation, paperless manufacturing, and quality sign-offs. Lifting the compliance burden from manufacturing reduces inventory levels and cycle times, which greatly improves customer service.

The FactoryTalk Batch components ensure that plant floor operations are optimized, giving quick returns on net assets. New product definitions are deployed quickly into manufacturing. Production order information is accurate. Business and plant-level control systems are tightly coordinated and multiple sites operate as a team. Our completely open, configurable set of products helps you define, manage, monitor, and control manufacturing at local, remote, or contractor plants. Best of all, deploy the FactoryTalk Batch components wherever needed — one at a time or all at once — to improve productivity and plant control. The FactoryTalk Batch components include:

- FactoryTalk Batch
- FactoryTalk eProcedure
- FactoryTalk Batch Material Manager

See also

What is eProcedure? on page 8

Benefits of eProcedure on page 8
What is eProcedure?

As one of the FactoryTalk Batch components, FactoryTalk eProcedure manages, sequences and documents the execution of manual operations. Automating batch sheets and standard operating procedures (SOPs) through interactive web documents, eProcedure provides the control needed to rapidly deploy new products into manufacturing and the data collection necessary to achieve true plant floor to enterprise-wide integration. FactoryTalk eProcedure provides the benefits of procedure automation without the expense of equipment automation. The FactoryTalk Batch components incorporate the principles of batch and procedure automation, an approach defined by ISA’s S88.01 standard.

FactoryTalk eProcedure automation provides a means to automate the execution of procedural logic associated with recipes, product grade changes, computer setup, and computer shutdown procedures. Operators perform the actions on the equipment, but they are prompted and guided by eProcedure. The procedure specifies the sequence and timing of actions that can be manually performed or performed by automation equipment.

Typical procedures that can be automated using FactoryTalk eProcedure include:

- Batch execution
- Equipment startup and shutdown
- Product changeover
- Abnormal condition handling

See also

Benefits of eProcedure on page 8

Benefits of eProcedure

FactoryTalk eProcedure reduces the amount of effort required to create and maintain recipes, as well as minimizes the time required to collect and report Batch data.

The following describes a typical recipe execution process, with and without eProcedure:

<table>
<thead>
<tr>
<th>Without eProcedure</th>
<th>With eProcedure</th>
</tr>
</thead>
<tbody>
<tr>
<td>A master recipe (a collection of SOPs) is maintained in written form. The master recipe includes instructions for the operator, places to enter data, and places for any required signatures.</td>
<td>A master recipe is created and maintained electronically with the FactoryTalk Batch Recipe Editor. The master recipe includes operator instructions, report data, and prompts for required approvals.</td>
</tr>
<tr>
<td>When a batch needs to be run, the recipe is printed and given to the operator, who reads the instructions, manually sequences the process and enters the required information on the printout.</td>
<td>When a batch needs to be run, the operator adds a batch using the eProcedure Client, steps through the instructions, and enters the required data into the system.</td>
</tr>
</tbody>
</table>
When the batch is complete, the completed recipe document is filed. When the batch is complete, the electronic batch record contains a complete record of the entire batch process.

The data can be manually entered into a database for recording and reporting purposes. The electronic batch record can be automatically transferred to any ODBC-compliant database using the FactoryTalk Event Archiver.

FactoryTalk eProcedure can be implemented in a completely manual manufacturing facility or in a partially automated facility. With eProcedure, use all manual phases or a combination of manual and automated phases within a single recipe. Regardless of the state of automation, the implementation process is the same.

The FactoryTalk Batch Equipment Editor is used to define the process equipment, both manual and automated. The modular approach in defining equipment is as appropriate with manual facilities as it is in automated facilities. As part of the configuration process, attach instruction files to each of the manual equipment modules.

Instruction files are HTML files that include all of the required control steps for a phase. Each control step can include textual instructions, embedded parameter values, report fields for operator input, and submit buttons. Control steps may also include any valid HTML component.

Once the equipment is defined, and the instruction files are created, create recipes in the same fashion as a completely automated facility.

FactoryTalk eProcedure allows the operator to create and command batches from remote computers using Microsoft Internet Explorer. With eProcedure, the operator no longer needs to write processing information on a piece of paper for submission. The operator enters the data directly into the computer where the data is stored in an electronic batch record, which can later be downloaded into your ODBC-compliant database.

See also

What is eProcedure? on page 8
FactoryTalk Batch Components

FactoryTalk Batch comes with several components that interact with each other to design, create, configure and run batch recipes.

See also

- FactoryTalk Batch Server on page 10
- FactoryTalk Batch View on page 10
- FactoryTalk Batch Recipe Editor on page 11
- FactoryTalk Batch Equipment Editor on page 11
- FactoryTalk Event Archiver on page 12

FactoryTalk Batch Server

The FactoryTalk Batch Server is the engine that runs FactoryTalk Batch. It is the component that controls system information, phases and recipes. The server allows integration with process-connected devices (PCDs) and third-party software packages. Prior to opening FactoryTalk Batch View, the FactoryTalk Batch Server must be running and remain active during all batch functions.

The FactoryTalk Batch Server operates as a Windows service, which means that the FactoryTalk Batch Server can be configured to start automatically and that control of the FactoryTalk Batch Server can be given to the Windows Service Manager. Because the FactoryTalk Batch Server runs as a service, it does not require an operator to log on to run. Therefore, logging on or off Windows during operation does not disrupt the performance of the FactoryTalk Batch Server.

See also

- FactoryTalk Batch Components on page 10

FactoryTalk Batch View

The FactoryTalk Batch View is the batch recipe initiation and execution program used by the operator of the FactoryTalk Batch automation solution system. It is used to initiate and control the batch process. It also displays a graphical representation of a running batch and its associated data. The FactoryTalk Batch View is intended to be used in conjunction with an HMI.

Each FactoryTalk Batch View window can be customized to suit the needs of a specific station.

- Specify the columns to display as well as the size of columns and rows.
- Sort and filter on one field in certain windows, and set the font for each FactoryTalk Batch View window.
• Use the password protection option to limit the information that is displayed, as well as specify the commands allowed at a particular station (If the security is enabled for the View).

• Respond to electronic signature requests that have been generated by report and recipe parameter deviations or by a command execute request.

**FactoryTalk Batch Recipe Editor**

The FactoryTalk Batch Recipe Editor is used to graphically create and configure recipes.

• The interface is based on IEC 61131-3 sequential function charts (SFC) that graphically organizes recipes into procedures, unit procedures, operations and phases along with any applicable comments.

• In addition to the SFC view, the FactoryTalk Batch Recipe Editor offers a table view. Table-based recipes provide a mechanism for creating simple recipes that do not require a complex recipe structure or elaborate transition expressions. Additionally, you can view table-based recipes and edit all recipe parameters without having to navigate between steps.

• The FactoryTalk Batch Recipe Editor allows you to specify sequences of phases. The actual phase logic must be configured in the process-connected device (PCD) while the interface to the PCD must be configured in the FactoryTalk Batch Equipment Editor.

• Recipe reports can be generated in SFC and/or descriptive format.

• If Recipe Approvals are enabled in the underlying area model, approval signoffs are executed in the FactoryTalk Batch Recipe Editor.

• When Recipe Version Control is enabled, a version of a recipe (a read-only, numbered snapshot of a recipe) can be saved and protected from further editing. New work-in-progress (WIP) copies of a version allow the recipe author to continue to make changes and updates to a recipe. When a versioned recipe no longer matches the underlying area model, or references a deleted or non-existent sub-recipe, it is marked as obsolete.

**See also**

[FactoryTalk Batch Components on page 10](#)

**FactoryTalk Batch Equipment Editor**

The FactoryTalk Batch Equipment Editor is a graphical interface through which a database of process equipment is defined and maintained. The components defined in the Equipment Editor are used to interface with the process-connected devices (PCDs) in the facility. During recipe configuration, the area model provides a list of available units and phases. You can also configure phases and commands to trigger an electronic signature request when a report or recipe parameter is out of range (parameter deviation), or when specific commands are executed on a batch (i.e. Abort Batch, Active Step Change, etc.). Later, during recipe verification, it ensures that the designated equipment is capable of executing...
the procedures. During recipe execution, resource arbitration functions use this database to allocate equipment based on recipe and operator requests. The area model is available to all other FactoryTalk Batch applications.

In addition to the area model, the FactoryTalk Batch Equipment Editor allows configuration of communication functions, equipment phases, enumeration sets, data servers, and Batch Archiver functions.

See also

FactoryTalk Batch Components on page 10

**FactoryTalk Event Archiver**

The FactoryTalk Event Archiver’s purpose is to translate the FactoryTalk Batch tab-delimited ASCII electronic batch record files to a user-specified file type. These electronic batch record files are maintained separately for each batch created and viewed with a word processor or spreadsheet. Many plants have standardized on one of the many commercially available Relational Database Management System (RDBMS) software packages. We recommend using a high-performance database, such as SQL Server, due to their superior robustness and performance. The Archiver collects data from each electronic batch record file and stores it in the specified RDBMS database format.

See also

FactoryTalk Batch Components on page 10

**FactoryTalk Batch Network Editor**

The FactoryTalk Batch Network Editor is a utility that indicates where other FactoryTalk Batch and FactoryTalk Batch Material servers are located on the network. This network configuration allows for ease of integration with other FactoryTalk Batch components and simplifies the process of reconfiguring a multi-computer system. If FactoryTalk Batch Material Manager is also installed the FactoryTalk Batch Network Editor is also used to indicate the location of the material database.

See also

FactoryTalk Batch Components on page 10

**FactoryTalk eProcedure Client**

The FactoryTalk eProcedure Client computer uses Internet Explorer to enable operators to run batch recipes.

See also

FactoryTalk Batch Components on page 10
The FactoryTalk eProcedure Server provides the services to the FactoryTalk Batch Server to enable the use of HTML instruction files. Prior to opening FactoryTalk eProcedure Client, FactoryTalk eProcedure Server must be running and remain active during all batch functions.

See also

FactoryTalk Batch Components on page 10

FactoryTalk Batch Material Manager

FactoryTalk Batch Material Manager is used to track material consumption in batch recipes. It consists of two components: Material Server and Material Editor.

The Material Editor provides an interface to help you create the material database, which consists of material, lot, sublot, container, and storage location data. The Material Server provides the communication between the material database and the FactoryTalk Batch Server. During a batch run, information about available containers is presented to the operator for binding decisions. Binding is the process of mapping steps within a control recipe to actual equipment in a plant. After a batch is run, quantities consumed or distributed are updated in the material database for use in inventory tracking.

The Material Server consists of a group of components that work together to service various applications. The primary applications that the Material Server services are the Material Editor, FactoryTalk Batch Server, FactoryTalk Batch Recipe Editor, FactoryTalk Batch Equipment Editor, and the Storage Container ActiveX control. Any third-party application can also use custom solutions based on the exposed Material Object Model (MOM).

See also

FactoryTalk Batch Components on page 10
Chapter 3

The eProcedure Server

For ease of understanding, and for tutorial purposes, this guide refers to configuring and using the sample files installed with FactoryTalk Batch. The SampleDemo folders contain complete area models and recipes for a simulated plant. Before running the demonstrations, you must add a FactoryTalk Security user, configure the FactoryTalk Batch Server to recognize the required project directories, select the initialization path and file name, and then start the FactoryTalk Batch Server, the FactoryTalk eProcedure Server, and the FactoryTalk Batch Phase Simulator.

Tip: This guide outlines the configuration and use of the SampleDemo demonstration files. It is recommended that you follow the directions for using this demonstration step by step.

The FactoryTalk eProcedure Server provides the services to the FactoryTalk Batch Server to enable the use of HTML instruction files. Communication from the eProcedure Client to the eProcedure Server is HTTP for web content. FactoryTalk eProcedure uses OLE for Process Control (OPC) for communications between the eProcedure Server and the FactoryTalk Batch Server.

The eProcedure Server coordinates the following functions:

- Provides the services to the FactoryTalk Batch Server to enable the use of HTML instruction files.
- Formats parameters and report parameters from material-based recipes into instruction files.

This section assumes that the FactoryTalk eProcedure Client and Server have been installed and configured. (See the FactoryTalk Batch Components Upgrade and Installation Guide for more information.)

See also

- Set up sample demonstrations on page 16
- Start the Batch and eProcedure Servers on page 24
- Start the sample FactoryTalk Batch Phase Simulator on page 26
Set up sample demonstrations

The installation process placed the SampleDemo1 and SampleDemo2 folders in the BATCHCTL share on your hard drive. Within each of these SampleDemo folders are four subfolders that contain the files for the area model.

To set up sample demonstrations:

1. Add a FactoryTalk Security user.
2. Configure the FactoryTalk Batch Server to locate the area model.
3. Verify the recipes in the area model.

See also

Add FactoryTalk Security users on page 16
Configure permissions for FactoryTalk Security users on page 18
Rebuild the recipe directory on page 23

Add sample FactoryTalk Security users

For the sample demonstrations file, create FactoryTalk user accounts for an operator and an engineer. Create these user accounts in the FactoryTalk Directory.

To add sample FactoryTalk Security users:

1. Select Start, point to All Programs > Rockwell Software, and then select FactoryTalk Administration Console. The Select FactoryTalk Directory dialog box opens.

   Important:  On Windows 7 and Windows Server 2008, right-click FactoryTalk Administration Console and select Run as administrator.

2. Select Network to add this user account to the FactoryTalk Network Directory, and select OK.
3. If not already logged on to the FactoryTalk Network Directory, the Log On to FactoryTalk dialog box opens. In User name, type the user name for the
Administrator that was configured when the FactoryTalk Services Platform was installed.

4. In **Password**, type the password for the Administrator.

5. Verify the **Directory** and select **OK**. The **FactoryTalk Administration Console** window opens and displays the specified FactoryTalk Directory.

6. Expand **Users and Groups**.

7. Right-click the **Users** folder, and select **New > User** to create a new FactoryTalk Security user account in FactoryTalk Directory.
8. The **New User** dialog box opens and displays the **General** tab. In the **User name** box, type **OPER**.

![New User dialog box](image)

9. In **Full name**, type **Operator**.

10. In **Password**, type **password**, and confirm it by re-entering **password** in the **Confirm Password** box.

11. Select **Create**.

12. Repeat steps 7-11, but this time in the **User Name** field, enter **ENG** and in the **Full Name** field, enter **Engineer**.

13. Keep the FactoryTalk Administration Console open to configure permissions for these FactoryTalk Security users in the next exercise.

See also

Configure sample permissions for FactoryTalk Security users on page 18

After creating the FactoryTalk security users, set up access modes for each FactoryTalk Batch component to specify which users are permitted to view or perform actions. Configure security settings in the FactoryTalk Administration Console. To tighten security in the eProcedure Client, remove the **All Users** group from the **Full Edit** policy setting.

**To configure sample permissions for FactoryTalk Security users:**

1. In the FactoryTalk Administration Console Explorer pane, navigate to **System > Policies > Product Policies > Batch > Equipment Editor > Access Modes**.
2. Right-click Access Modes, and then select Properties. The Access Modes Properties dialog box opens.

![Access Modes Properties dialog box](image1)

3. In the Full Edit row, select the Configure Security browse button. The Configure Securable Action dialog box opens.

![Configure Securable Action dialog box](image2)


![Select User and Computer dialog box](image3)

5. In the Filter Users box, select Show All.

6. In Users, select ENG.
7. Select OK. The **Configure Securable Action** dialog box is updated, showing ENG in the list of **Users** with the **Allow** check box selected.

8. Select OK to close the **Configure Securable Action** dialog box.

9. In the **Access Modes Properties** dialog box, select **View Only**.

10. In the **View Only** row, select the **Configure Security** browse button. The **Configure Securable Action** dialog box opens.

11. Select **Add**. The **Select User and Computer** dialog box opens.

12. In the **Filter Users** box, select **Show All**.

13. In **Users**, select **OPER**.

14. Select OK. The **Configure Securable Action** dialog box is updated, showing OPER in the list of **Users** with the **Allow** check box selected.

15. Select OK to close the **Configure Securable Action** dialog box.

16. Select OK to close the **Access Modes Properties** dialog box.

See the *FactoryTalk Batch Administrator Guide* for more information on security.

**See also**

[Configure the sample Batch Server](#) on page 21
Configure the sample FactoryTalk Batch Server

To set up the sample demonstrations, configure the FactoryTalk Batch Server to locate the folders that contain the demonstration files and to the \Restart and bin folders where the FactoryTalk Batch Server writes data upon system failure. Configure the FactoryTalk Batch Server in the FactoryTalk Batch Equipment Editor.

To configure the sample FactoryTalk Batch Server:

1. Select Start, point to All Programs > Rockwell Software > FactoryTalk Batch Suite > FactoryTalk Batch, and then select Equipment Editor. The FactoryTalk Batch Equipment Editor opens (log on to FactoryTalk if prompted).

   **Important:** If running on Windows 7 or Windows Server 2008, right-click Equipment Editor and select Run as administrator.

2. Select Options > Server Options. The Server Options dialog box opens to the Project Settings tab.

3. In the Project Directories area, select the Primary Journal browse button. The Select Directory dialog box opens.

4. From the Look in list, select the SampleDemo1\Journals folder, and then select Open.

5. Select the Error Logging browse button. The Select Directory dialog box opens.

6. From the Look in list, select the SampleDemo1\Logs folder, and then select Open.
7. Click the **Instructions** browse button. The **Select Directory** dialog box opens.

**Important:** In order for the eProcedure Server to start, you must define the instruction path and an instruction file for each instruction-based phase in the area model. (See the *FactoryTalk Batch Equipment Editor User Guide* for instructions on defining instruction-based phases.)

8. Select the **Equipment Database** browse button. The **Select Equipment Database** dialog box opens.

9. From the **Look in** list, open the **SampleDemo1\Recipes** folder, select the **ice_cream1.cfg** file, and then select **Open**.

10. In the **Store Recipes Using** area, select **Binary Files**, and then select the **Recipe Directory** browse button. The **Select Directory** dialog box opens.

11. From the **Look in** list, select the **SampleDemo1\Recipes** folder, and then select **Open**.

12. Select the **Restart Control** tab.

13. Select the **Primary Path** browse button. The **Select Directory** dialog box opens.

14. From the **Look in** list, select the **SampleDemo1\Restart** folder, and then select **Open**.

15. Select the **Secondary Path** browse button. The **Select Directory** dialog box opens.

16. From the **Look in** list, select the **Bin** folder.
17. Select the **Batch Reporting** tab. Leave **Never (No Queue)** as the default reporting application.

![Server Options dialog box](image)

18. Select **OK** to close the **Server Options** dialog box.

19. From the **File** menu, select **Exit** to exit the FactoryTalk Batch Equipment Editor.

**Tip:** These steps set up the FactoryTalk Batch Server to run the tutorial steps in this manual. There are many other settings to consider when setting up the FactoryTalk Batch system. (See the *FactoryTalk Batch Administrator Guide* for more information on the **Server Options** dialog box.)

**See also**

Rebuild the recipe directory on page 23

To run the demonstration recipes, rebuild the recipe directory and verify the recipes in the area model using the FactoryTalk Batch Recipe Editor.

**Rebuild the recipe directory**

To **rebuild the recipe directory**:

1. Select **Start**, point to **All Programs > Rockwell Software > FactoryTalk Batch Suite > FactoryTalk Batch**, and then select **Recipe Editor**. The Recipe Editor reads the area model. Log on to FactoryTalk if prompted.

   **Important:** If running on Windows 7 or Windows Server 2008, right-click **Recipe Editor** and select **Run as administrator**.

   If a message to verify the recipes displays, select **Cancel**.

2. Select **File > Rebuild Recipe Directory**. When the rebuild is complete, select **OK**, and then select **Yes** to verify the recipes.
3. When the recipe verification is complete, select **Accept** to save the recipes, and then select **Close**.

4. Select **File > Exit** to exit the FactoryTalk Batch Recipe Editor.

**See also**

*Set up sample demonstrations* on page 16

---

**Start the Batch and eProcedure Servers**

The FactoryTalk Batch and FactoryTalk eProcedure Servers may start automatically when the computer starts. By default the FactoryTalk Batch Server starts in production mode. If FactoryTalk Batch is not activated, run the tutorial in demo mode. While in demo mode, the FactoryTalk Batch Server runs for a two-hour period and then stops.

**Tip:** The FactoryTalk Batch Server does not start in production mode without activation. (See the *Activate Rockwell Software Products* insert included with the software CD.)

**To start the Batch and eProcedure Servers:**

1. Select **Start**, point to **All Programs > Rockwell Software > FactoryTalk Batch Suite > FactoryTalk Batch**, and then select **Batch Service Manager**. The **FactoryTalk Batch Service Manager** opens.

   **Important:** If running on Windows 7 or Windows Server 2008, right-click **Batch Service Manager** and select **Run as administrator**.

2. If the FactoryTalk Batch Server is not already listed in the **Service** box, select it from the list.

3. If the FactoryTalk Batch Server is running, select **Stop**.

4. If the name of the computer where the FactoryTalk Batch Server is installed does not display in the **Computer** box, select the **Select Computer** button. The **Select Computer** dialog box opens.
5. In the **Enter the object name to select** area, type the name of the computer where the Batch Server is installed (or select **Advanced** to search for a computer). Select **OK**.

**Tip:** The FactoryTalk Batch Service Manager must communicate with the Windows Service Manager of the selected computer to determine what services are available. There may be a noticeable delay as communications are established. If the Service Manager cannot communicate with the Windows Service Manager of the selected computer, a message displays.

6. From the **Service** list, select **FactoryTalk Batch Server**.

**Tip:** If **No Batch Services** displays in the list, the FactoryTalk Batch Server is not installed on the selected computer. (See the *FactoryTalk Batch Components Upgrade and Installation Guide* for instructions.)

7. To start the FactoryTalk Batch Server in Demo mode, select **Allow Demo Mode**.

8. Select the method to use for booting the server.

   - **Cold Boot**  
     Restarts the FactoryTalk Batch Server in a cold state. All journal data or recipe content is erased upon startup.

   - **Warm Boot**  
     Restarts the FactoryTalk Batch Server, restoring the set of batches that were on the batch list when the server previously terminated.

   - **Warm All Boot**  
     Restarts the FactoryTalk Batch Server only if it is able to restore all of the batches to the batch list.

9. Select **Start/Continue**. The Service State area changes from **STOPPED** to **START PENDING**. After a few moments, **RUNNING** displays and the light changes to green.

   The FactoryTalk Batch Phase Simulator may start automatically and open a window. If so, minimize the window.
10. Select the eProcedure Server from the Service list.

11. Select the method to use for booting the server.

   **Cold Boot - checked**
   
   Restarts the FactoryTalk eProcedure Server in a cold state. All control steps, plus all signatures and previously-entered values associated with the control step due to parameter deviation or cancelled step verification signatures, are removed.

   **Cold Boot - unchecked**
   
   Restarts the FactoryTalk eProcedure Server, restoring the control steps that were active when the server previously terminated (the control step is restarted with a new reactivation number).
   
   (See **Effects of warm boot on control steps** for more information.)

12. Select **Start/Continue**. The eProcedure Server starts running.

13. Click **Close** to close the FactoryTalk Batch Service Manager.

   **Tip:** If conversation becomes LOST while running in Demo mode, make sure that the Simulator is running and try starting the server(s) again. (See **Start the FactoryTalk Batch Phase Simulator** for more information.)

See also

- **Effects of warm boot on control step** on page 29
- **Start the FactoryTalk Batch Phase Simulator** on page 26

**Start the sample FactoryTalk Batch Phase Simulator**

FactoryTalk Batch comes with a phase logic simulation program, referred to as the FactoryTalk Batch Phase Simulator used to simulate the batch process without connecting to a PCD. The Phase Simulator imitates the functionality of a data server and can communicate with the FactoryTalk Batch Server using OPC communication protocol. The Phase Simulator is a powerful tool for testing, experimentation and demonstration purposes. In this guide, run the sample demonstration using the Phase Simulator.
Tip: If the Phase Simulator is required and OPC protocol is used for communications, the FactoryTalk Batch Server automatically starts the Phase Simulator. Check the Windows taskbar to see if the Phase Simulator is started.

To run the sample demonstration correctly, open the ice_cream1.sim file in the Phase Simulator.

To start the sample FactoryTalk Batch Phase Simulator:

1. If the Phase Simulator is already running, maximize it from the Windows taskbar. If the Phase Simulator is not running, select the Start button, point to All Programs > Rockwell Software > FactoryTalk Batch Suite > FactoryTalk Batch, and then select Simulator. The FactoryTalk Batch Phase Simulator opens.

   Important: If running on Windows 7 or Windows Server 2008, right-click Simulator and select Run as administrator.

2. Select File > Open. The Open Simulator Configuration File dialog box opens.

3. From the Look in list, open the Program Files > Rockwell Software > Batch > SampleDemo1 > Recipes folder. Select the ice_cream1.sim file, and then select Open.


See also

Verify PCD communications on page 28

To open the sample demonstration, you must open the ice_cream1.sim file in the Phase Simulator.

To open the sample demonstration in the FactoryTalk Batch Phase Simulator:

1. From the File menu, select Open. The Open Simulator Configuration File dialog box opens.

2. From the Look in list, open the Program Files (x86)\Rockwell Software\Batch\SampleDemo1\Recipes folder. Select the ice_cream1.sim file, and then select Open.
3. Minimize the Phase Simulator window.

See also

Start the FactoryTalk Batch Phase Simulator on page 26

Verify PCD communications

Use the following instructions to verify PCD communications.

To verify PCD communications:

1. Select Start, point to All Programs > Rockwell Software > FactoryTalk Batch Suite > FactoryTalk Batch, and then select Batch Service Manager. The FactoryTalk Batch Service Manager opens.

   **Important:** If running on Windows 7 or Windows Server 2008, right-click Batch Service Manager and select Run as administrator.

2. Make sure FactoryTalk Batch Server is selected in the Service box.


4. Select the PCD Communications tab. The Data Server Status area displays the status of the conversation with the OPC_SIM data server (Phase Simulator), which should be PHASES GOOD, and the INSTRUCTIONBASEDSERVER, which should be INSTRUCTIONS GOOD.

5. In the Tag Verify area, select Start to begin the verify process. The tag verification process takes several minutes.

6. When the Status box shows COMPLETED, select OK to close the FactoryTalk Batch Server Statistics dialog box.

See also

Effects of warm boot on control steps on page 29
Effects of warm boot on control steps

A warm restart (boot) of the eProcedure Server has the following effects on control steps:

- **Reactivated steps** are not active after a warm boot. Instead, the previously active control step is active. The left column in Past instructions contains the usual information (the reactivation number is remembered). The middle column displays **Reactivated Control Step Terminated by eProcedure Server shutting down** and the right column has a check mark. An InstructionComplete event record containing the step’s HTML is created. In addition, a ControlStepStop event record is added. These control steps are not eligible for reactivation.

- **Control steps** that were active during a warm boot of the eProcedure Server are still active when the server starts again, but the control step is restarted with a new reactivation number. All signatures and previously-entered values associated with the control step due to parameter deviation or canceled step verification signatures are removed. A Past control step is added, which states **Control Step Terminated by eProcedure Server shutting down**.

The example below shows a reactivated control step (first of the Past instructions below) that was active when the eProcedure Client was shut down and the eProcedure Server was then warm booted. The reactivated control step was a reactivation of the first control step, as indicated by the arrow.

It also shows a control step (the second of the Past instructions in the example below) that was active when the warm boot occurred.

See also

[Set up sample demonstrations on page 16](#)
Summary

In this chapter, you:

- Set up the FactoryTalk Batch Server to run the sample demonstration
- Started the FactoryTalk Batch and eProcedure Servers in demo mode
- Opened the .sim file in the Phase Simulator to run the sample demonstration
- Verified PCD communications status

This chapter provided a brief overview of the capabilities of the FactoryTalk Batch and eProcedure Servers. (See the FactoryTalk Batch Administrator Guide for more information about the FactoryTalk Batch Server. See the FactoryTalk eProcedure Administrator Guide for more information about the eProcedure Server.)

**Tip:** The rest of this document is designed to give you a tour through eProcedure using the sample demonstration. Follow the step-by-step instructions to learn how to run instruction-based recipes using eProcedure.
Chapter 4

The eProcedure Client

The eProcedure Client is a web-based application used to create and command batches. A batch is composed of a combination of process-connected phase logic and instruction files that step you, the operator, through the manual process of producing a batch of product.

The eProcedure Client makes use of Microsoft’s Internet Explorer along with Active Server Pages (ASPs). The eProcedure Server acts as the process-connected device and provides the information to the web pages seen in Internet Explorer. The eProcedure Client has five views that you can access by selecting their respective buttons.

- **Equipment view**
  The Equipment view provides a graphical view of your facility’s equipment, and displays run-time information that is relevant to the type of equipment displayed. You can use the predefined hyperlinks to access custom web pages, documents, or applications.

- **Instructions view**
  The Instructions view provides the ordered list of control steps for the selected filter. You can view current, past, and/or future control steps, as well as add a comment to a particular control step.

- **Batch List view**
  The Batch List view is used to create and command a batch. A batch remains on the batch list until the operator removes it or until the FactoryTalk Batch Server is re-started with a cold boot command.

- **Procedure view**
  The Procedure view provides SFC and table views of the selected batch, unit procedure, or operation. You can command any portion of the batch, from the procedure level down to the phase level.

- **Signature List view**
  The Signature List view displays a list of pending signatures and their related commands, report parameters, etc., which are maintained on the FactoryTalk Batch Server.
Run a recipe using eProcedure

The eProcedure Client works much the same as the FactoryTalk Batch View client except that the operator interacts with the instruction files associated with the phases in the area model. You will create an instruction file in the next chapter.

**Tip:** When you run eProcedure for the first time, the Microsoft Installer may also start. You can either follow the prompts on the installer or press **Cancel** until it closes. This does not affect eProcedure’s performance in any way.

**To run a recipe using eProcedure:**

1. Open the **FactoryTalk Batch Service Manager** and make sure the FactoryTalk Batch and eProcedure Servers are running.

2. Open Internet Explorer. The eProcedure client opens to the FactoryTalk Batch List view. (If prompted, select **OK**.) The authenticated user’s name, the default user name, or **<No authenticated user>** displays as the Current User.

3. Select the **Log In** button. The **Log on to FactoryTalk** dialog box opens.

   **Tip:** When Single-SignOn is enabled and there is no Single-SignOn user established, the eProcedure Client also logs the user onto the FactoryTalk Directory.

4. Type your user name in the **Name** box and your password in the **Password** box.

5. Select **OK** to log on. Otherwise, select **Cancel** to return to the eProcedure Client. The name of the logged on user is displayed as the Current User. If the logon is not successful, or if you log off without logging on a new user, the default user is logged on or **<No authenticated user>** displays.

![Image of eProcedure client interface](image-url)
6. Select the **Add** button. The **Master Recipe List** dialog box opens.

![Master Recipe List dialog box](image1)

7. Select the **CLS_FRENCHVANILLA** recipe, and then select **OK**. The **Batch Creation** dialog box opens.

![Batch Creation dialog box](image2)

8. In the **Batch ID** box, type **BATCH_200**.

9. In the **Formula Values** area, enter the following amounts in the **Values** column:

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>CREAM_AMOUNT</td>
<td>1800</td>
</tr>
<tr>
<td>EGG_AMOUNT</td>
<td>180</td>
</tr>
<tr>
<td>FLAVOR_AMOUNT</td>
<td>48</td>
</tr>
<tr>
<td>MILK_AMOUNT</td>
<td>1500</td>
</tr>
<tr>
<td>SUGAR_AMOUNT</td>
<td>700</td>
</tr>
</tbody>
</table>
10. In the Unit Binding area, select `SP_FREEZER1` for the Freezer and `SP_MIXER1` for the Mixer, and then select Create. The batch is added to the FactoryTalk Batch List view.

![Image of the eProcedure Client interface](image1)

11. Select the batch, and then select the Start button. The batch enters the RUNNING state.

12. Select the Procedure button. The Procedure view displays the recipe in an SFC. The phases change color as they activate. Use the side scroll bar to move up and down through the SFC.

![Image of the Procedure view](image2)

When the operator is required to interact with the instruction files, the INSTRUCTIONS button starts flashing.

![Image of the INSTRUCTIONS button flashing](image3)
13. Select the **Instructions** button. The first instruction steps display.

14. Select **OK** to acknowledge the prompts. When asked for the amount of each item to add, use the same amounts you entered when you created the batch.

15. One of the prompts asks you to supply the agitation speed for the mixer.

16. In the **SP_MIXER1** box, type **25**, and then select **OK**. The information uploads to the FactoryTalk Batch Server.
17. Select the **Show Future** button to see all of the instructions. As a phase activates, the instruction changes from gray to white and the **OK** button activates.

18. Respond to the remaining prompts until the recipe completes.

19. Select the **BATCHES** button. Select the batch in the batch list, and then select the **Remove** button. The batch is removed from the list.

**See also**

[Check the event journal](#) on page 36

### Check the event journal

The operator actions[^1] in eProcedure are captured in the Batch Event Journal, which can be viewed from the FactoryTalk Batch View.

**To check the event journal:**

1. Open the FactoryTalk Batch View.

2. Select the **Event Journal** button. The Event Journal view opens.

   **Tip:** If the Filtering area does not display, select the left split bar and drag to the right.

3. Select the **Journal** button. The **Event Data Files** dialog box opens.

4. In the **Event Data Files** list, select the **BATCH_200** batch, and then select **OK**. The event data displays on the right side of the window.

---

[^1]: action. An organized activity performed on a resource in order to accomplish an objective. Actions are grouped into categories, with some actions common to multiple products.
5. From the Column 1 list, select Time.

6. From the Column 2 list, select Event Type.

7. In the Filter 2 box, type Report.

8. From the Column 3 list, select (None).

9. Select the Refresh button. The data is filtered to show the entries the operator made in the BATCH_200 batch. You may need to adjust the column headings to view the entire message as shown in this figure.

10. Exit the FactoryTalk Batch View.

See also

Summary on page 37

Summary

In this chapter you,

- Configured the eProcedure Client
- Ran a recipe using eProcedure
- Filtered the event journal to see the operator input

This chapter provided a brief overview of the capabilities of the eProcedure Client. (See the FactoryTalk eProcedure Client User Guide for more information on the eProcedure Client. See the FactoryTalk Batch View User Guide for more information on the Event Journal.)
Introduction to instruction-based phases

An instruction-based phase is a phase that is linked to an instruction file — when the phase executes, the contents of the instruction file display in a browser window.

See also

Create instruction-based phases on page 39

Create instruction-based phases

An instruction-based phase consists of an instruction file that is assigned to the phase.

To create instruction-based phases:

1. Create the instruction file.
2. Assign the instruction file to a phase

See also

Create an instruction file on page 39
Assign an instruction file to a phase on page 42

Create an instruction file

An instruction file contains the series of steps, such as operation instructions and operator feedback entries that present to the operator though Internet Explorer. All the actions performed are recorded in the Event Journal for a permanent record of the process. For example, you can add a step in the instruction file that prompts the operator to verify a temperature; the temperature value and the approval indication appears in the Event Journal.

For this exercise you will use Microsoft® Notepad to view an existing HTML-based web page that uses standard HTML tags and custom HTML tags designed for use with the eProcedure Server. To understand how the instructions are written, see Custom tags.
To create an instruction file:

1. Open Notepad.

2. From the File menu, select Open. Navigate to C:\Program Files\Rockwell Software\Batch\SampleDemo1\instructions (if you did not use the default install path, navigate to the correct location).

3. Select add_egg_1.htm and select Open.

4. Select File > Save As, and save the htm file with the name add_egg_demo.htm.

The file consists of several short forms, designated by the <form> and </form> HTML tags.

5. Locate the text highlighted in the first form in the following illustration:

6. The highlighted line tells the eProcedure client to:

   Prepare <sop>UNIT</sop> for delivery of <sop>ADD_AMOUNT</sop> KG of Egg.

   This line appears as the first step in the manual phase and at run time replaces <sop>ADD_AMOUNT</sop> with the actual amount to add to the recipe.

7. The code and text in the second form tells the eProcedure client to:

   Begin charging <sop>ADD_AMOUNT</sop> KG of Egg into <sop>UNIT</sop>.

   Press OK when complete.
8. Locate the third form in the file. Change the word Egg to **Egg_Demo**, as shown here:

![Image of Notepad with HTML code]

Note that this form also contains a text box (`<INPUT TYPE="TEXT" SIZE="20" NAME="AMOUNT_ADDED">`). At run time the operator enters the amount of Egg that was added to the recipe.

9. Select **File > Save**. Be sure to save the file in the `SampleDemo1/Instructions` folder for the project.

The full path is

```
c:\Program Files\Rockwell Software\Batch\SampleDemo1\Instructions or \\computername\BATCHCTL\SampleDemo1\Instructions if you are developing on a remote computer.
```

10. Close the file and exit Notepad.

**See also**

[Custom tags on page 41](#)

**Custom tags**

The instructions are written using plain text. To obtain specific server-related information, use the custom tags shown in this table.

<table>
<thead>
<tr>
<th>Data Type</th>
<th>HTML Code</th>
<th>Display Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Batch Data</td>
<td><code>&lt;sop&gt;BatchID&lt;/sop&gt;</code></td>
<td>Batch ID of the running recipe</td>
</tr>
<tr>
<td></td>
<td><code>&lt;sop&gt;Unit&lt;/sop&gt;</code></td>
<td>Unit name for the current phase</td>
</tr>
<tr>
<td></td>
<td><code>&lt;sop&gt;Cell&lt;/sop&gt;</code></td>
<td>Process cell</td>
</tr>
<tr>
<td></td>
<td><code>&lt;sop&gt;Phase&lt;/sop&gt;</code></td>
<td>Current phase name</td>
</tr>
<tr>
<td>Parameter Data</td>
<td><code>&lt;sop&gt;parameter.Name&lt;/sop&gt;</code></td>
<td>Parameter name</td>
</tr>
<tr>
<td></td>
<td><code>&lt;sop&gt;parameter.EU&lt;/sop&gt;</code></td>
<td>Parameter engineering units</td>
</tr>
<tr>
<td></td>
<td><code>&lt;sop&gt;parameter.Min&lt;/sop&gt;</code></td>
<td>Parameter minimum allowed value</td>
</tr>
</tbody>
</table>
Assign an instruction file to a phase

After you create the instruction file you must assign it to a phase in the FactoryTalk Batch Equipment Editor. When the phase is activated in the recipe, the FactoryTalk Batch Server runs the instruction file.

To assign an instruction file to a phase:

1. Start the FactoryTalk Batch Equipment Editor and open the ice_cream1ep.cfg area model.
2. Double-click the South Parlor process cell.
3. Double-click SP_MIXER1.
4. Double-click **SP_ADD_EGG_M1**. The **Edit Equipment Module** dialog box opens to the **General** tab.

The **Instruction File** box indicates that an instruction file is already assigned to this phase. You will replace it with the instruction file that you just created.

5. Select the **Browse** button next to the **Instruction File** box. The **Instruction Selection** box opens to display the HTML code within the file.

6. Select **add_egg_demo.htm**, and then select **OK** twice.

7. Save the area model and exit the FactoryTalk Batch Equipment Editor.

**Tip:** Since you made changes to the area model, you need to stop and restart the FactoryTalk Batch and eProcedure Servers at this point if you want to run any batches.

**See also**

Include a step verification signature template on page 44
Include a step verification signature template

You can require a step verification signature using a specific signature template for a control step. You can add a step verification signature to any control step that must be signed off before recipe execution can continue. The verification signature template is defined in the FactoryTalk Batch Equipment Editor. The signature must be completed before recipe execution can continue.

To include a step verification signature template:

1. Open or create a blank instruction file. (See Create an instruction file for more information.)

2. Place your cursor at the beginning of the first cell.

3. Using the correct naming conventions, enter the tagged data item.

   Example:

   `<sop>VERIFICATIONSIG=SignatureTemplate</sop>
   where SignatureTemplate is the name of the desired template.

See also

Create an instruction file on page 39

Summary

In this chapter, you:

- Created an instruction file using Microsoft Word and FrontPage.
- Assigned the instruction file to a phase using the FactoryTalk Batch Equipment Editor.

This chapter provided a brief overview of instruction-based phases. (See the FactoryTalk Batch Equipment Editor User Guide for more information on instruction-based phases.)
Appendix A

eProcedure Glossary

Acquiring

Acquiring is a possible state of the Firing attribute of a transition. When the transition is in the Acquiring state, it has made non-binding related arbitration requests for resources needed by one or more steps following the transition.

Activation file

A text file that contains all of the activation information that is required to license a software product and allow it to properly function. While the file is simply plain text, the contents of the file are protected by a signature.

Binding

Binding is the process of mapping steps within a control recipe to actual equipment in a plant.

Binding (in transitions)

Binding is a possible state of the Firing attribute of a transition. When the transition is in the Binding state, it is in the process of attempting to bind one or more of the steps following the transition. The binding process may involve the generation of binding prompts and/or the generation of arbitration requests.

Comm Err

Comm Err is a possible state of the Firing attribute of a transition. When the transition is in the Comm Err state, a communications error with phase logic has been detected while the transition was in the Stopping/Resetting/Pending states of the firing process. The transition has rolled back to the beginning of the Stopping/Resetting/Pending process and is awaiting good communications and a RESTART command before re-initiating the firing process.

Comment descriptor

In a signature dialog, the text in parentheses that indicates if the comment field is optional, required, or not allowed.
Committed

Committed is a possible state of the Firing attribute of a transition. When the transition is in the Committed state, it has committed to the firing process, but is not in the process of firing because either the transition is in the HELD state or the parent procedure is in MANUAL mode.

Control step

One instruction in an eProcedure phase. An eProcedure phase consists of one or more control steps. Also referred to as step, eProcedure step, or instruction step.

Control step reactivation

Making a completed control step in an eProcedure phase active again so that mistakenly entered values can be re-entered.

Dedicated resource

A resource used by only one step at a time inside a recipe structure.

Deviation event

A deviation event is a probable new event type for the event journals that records the deviation information.

Diagnostics client

System components that retrieve diagnostic information from FactoryTalk Diagnostics. Clients can be FactoryTalk system elements or applications.

Diagnostics destinations

Storage or destinations of diagnostics messages such as the FactoryTalk Diagnostics native store, RSMACC, etc. The FactoryTalk Diagnostics framework was designed to be extensible to allow additional message destinations to be defined and added to the system.

Diagnostics native store

Persistent storage of data logged by the FactoryTalk Diagnostics subsystem. In a distributed system, these logs can reside local to the machine. When diagnostic data is retrieved, all information from diagnostic logs within a system can be merged. There is no implied implementation or format of diagnostic logs in this specification.
Diagnostics message

Diagnostics information furnished by a diagnostic client with self-describing internal structure and content.

Dynamic unit allocation

The process of binding a specific unit to a class-based unit procedure or operation. Dynamic unit allocation can be defined only at the procedural level.

Dynamic HTML elements

Elements, such as text areas, buttons, etc., that are used for user interaction, or elements in which one or more event handlers are defined. For example:

```html
<IMG src=./images/Earl.JPG>
```

would not be a dynamic element, but

```html
<IMG src=./images/Earl.JPG onclick='msgbox "Kaboooooom!"'>
```

would be a dynamic element. Clicking on it displays a message box containing the text "Kaboooooom!".

Electronic signature

An electronic representation of a signature, including all associated data. Can consist of one or two signoffs. Associated data includes meanings for the signoffs, comments, security requirements, and timestamps.

Equipment phase

An equipment phase is the S88 terminology for the equipment phase and equipment phase interface. In FactoryTalk Batch, equipment phases are configured in the FactoryTalk Batch Equipment Editor as instances of the recipe phases. Equipment phases are bound to the recipe at runtime.

FactoryTalk Asset Centre

Formerly RSMACC (Rockwell Software Maintenance Automation Control Center).

Firing attribute

The Firing Attribute (formerly the Acquiring attribute) has nine legal states, defined as follows:

"0": Not Firing - The transition is not in the firing process.
"1": Acquiring - The transition is in the process of acquiring resources for the following steps.

"2": Binding - The transition is in the process of binding one or more of the following steps.

"3": Committed - The transition is committed to the firing process, but is not proceeding due to either a HELD state, or the parent procedure being in MANUAL mode.

"4": Stopping - The transition is waiting for one or more prior steps to achieve a terminal state after having been issued STOP commands.

"5": Resetting - The transition is waiting for one or more prior steps to transition to IDLE after having been issued RESET commands.

"6": Pending - The transition is waiting for one or more prior steps to transition into a legal state for a Transfer of Control operation.

"7": Paused - The transition is waiting for a RESUME command or a return of the parent procedure to AUTO mode.

First Available binding

This is one of the ways that units are selected for binding. This is called late unit binding or dynamic unit allocation. When automatically selecting a unit for binding, the FactoryTalk Batch Server tries to use the unit that the recipe can acquire first. The unit selected must meet two criteria:

- The acquired unit must belong to the unit class of the unit procedure step.
- Recipes can configure upstream and/or downstream dependencies defining a series of unit classes that a recipe requires as a recipe executes. The acquired unit supports the flow path to other units.

Formula

A category of recipe information that includes process inputs, process parameters and process outputs.

Formula value

A value that is assigned to a parameter defined for a specific step of a phase, operation or unit procedure. A formula value may have a literal value assigned to it or it may receive a value from the next higher recipe level when the batch is run.
Initial step

The logical start of a sequential function chart (SFC).

Late binding

This is a binding method where a step is bound to equipment just before it is used.

- For unit procedure steps, this is also called dynamic unit allocation. Two types of late unit binding are supported: First Available and Prompt binding.

Manual binding

Manual binding is the process an operator can use to select steps in a control recipe and interactively bind them to equipment. This can be performed before or during a recipe’s execution.

Mode

The manner in which the transition of sequential functions are carried out within a procedural element and the accessibility for manipulating the states (manually or by other control functions) of equipment.

Not Firing

Not Firing is a possible state of the Firing attribute of a transition. When the transition is in the Not Firing state, it is not in the process of firing and not committed to the firing process.

Parameter deviation

A parameter deviation exists when a parameter value is not within the limits defined in the recipe.

Paused

Paused is a possible state of the Firing attribute of a transition. When the transition is in the Paused state, its expression has evaluated to TRUE and it is ready to fire. It is suspended the firing process due to the parent procedure being in SEMI-AUTO mode. It is awaiting either a RESUME command or a transition of the parent procedure to AUTO mode before continuing with the firing process.

Pending

Pending is a possible state of the Firing attribute of a transition. When the transition is in the Pending state, it is waiting for one or more prior steps to transition into a legal state for a Transfer of Control operation.
Providers

System components that provide diagnostic information to the FactoryTalk Diagnostics system. Providers can be FactoryTalk system elements or applications such as the FactoryTalk Batch Equipment Editor and FactoryTalk Batch Recipe Editor.

Reactivation number

Every active eProcedure control step is given a Reactivation Number. If the step has never been reactivated, the value is 0. If the step has been reactivated once, the value is 1, etc. The recipe path, step index, and reactivation number form a unique identifier for a control step.

Recipe path

Every active eProcedure control step has a recipe path. It describes, to the phase level, what part of the recipe the step is from.

Resetting

Resetting is a possible state of the Firing attribute of a transition. When the transition is in the Resetting state, it has issued RESET commands to the preceding steps and is waiting for them to transition to IDLE states in response to the command.

SFC Validation

A function of the FactoryTalk Batch Recipe Editor, this error check looks for "logic" errors in the SFC structure defined within a recipe.

Shared resource

A resource used in parallel by an unlimited number of steps at a time inside a recipe structure.

Signature event

A probable new event type for the event journals that records the signatures and the comment entered for the verification signature.

Signature ID

A 32-bit unsigned integer that uniquely identifies a Signature Request within the FactoryTalk Batch system.

Signature list

A list of pending signatures and their related commands, report parameters, etc. maintained on the FactoryTalk Batch Server.
Signature list UI

User interface for accessing all types of signatures not associated with eProcedure phases.

Signature template

A collection of all the data needed to define a signature - number of signoffs, signoff meanings, signoff security requirements, and signoff comment requirements. Signature templates will be defined centrally, and are referred to whenever defining signature requirements.

Signature states

A signature can be in one of the following states: Incomplete (the signature is still pending one or two signoffs), Complete (all signature signoffs have been completed), Cancelled (a user has cancelled the signature), or System Cancelled (the FactoryTalk Batch Server has cancelled the signature).

Signoff

A component of an electronic signature in which a user enters his username and password and optionally a comment. An electronic signature can require one, two, or three signoffs.

Signoff meaning

A short phrase describing the meaning attached to a given signoff. For example, “Done By” or “Checked By”.

Static binding

A binding method where a step or set of steps is bound to equipment when the recipe is built in the FactoryTalk Batch Recipe Editor (equipment bindings are specified in the master recipe). Material phase steps are never statically bound.

Step index

Every active eProcedure control step has a step index. The step index represents the position of the step within the phase, e.g. the first step has a step index of 1, the second step has a step index of 2, etc.

Stopping

Stopping is a possible state of the Firing attribute of a transition. When the transition is in the Stopping state, it has issued STOP commands to one or more of the preceding steps and is waiting for them to transition to terminal states.
System cancelled

A Signature is considered to be System Cancelled when the signature is cancelled by FactoryTalk Batch Server logic instead of through operator action.

Target Parameter

The target parameter is the recipe parameter used in calculating the limit when the limit type is percent or value.

Terminal signature state

All signature states except Incomplete are terminal states - once the signature is in any of those states it cannot change to any other state.

Viewing context

eProcedure users can define a viewing context for the instructions they view. The viewing context defines the set of equipment or recipes for which they are shown instructions. For example, a user can view instructions for a given unit, for an entire area, or for a specific operation.
Legal Notices

Copyright notice

© 2017 Rockwell Automation Technologies, Inc. All rights reserved. Printed in USA.

This document and any accompanying Rockwell Software products are copyrighted by Rockwell Automation Technologies, Inc. Any reproduction and/or distribution without prior written consent from Rockwell Automation Technologies, Inc. is strictly prohibited. Please refer to the license agreement for details.

End User License Agreement (EULA)

You can view the Rockwell Automation End-User License Agreement ("EULA") by opening the License.rtf file located in your product's install folder on your hard drive.

Trademark Notices

Allen-Bradley, CompactLogix, ControlLogix, Connected Components Workbench, eProcedure, FactoryTalk, GuardLogix, GuardPLC, Micro800, MicroLogix, MobileView, MobileView Guard, PanelBuilder, PanelView, PhaseManager, PlantLink, PlantPAx, PLC-2, PLC-3, PLC-5, PowerMonitor, RSBizWare, RSBizWare BatchHistorian, RSBizWare Historian, RSBizWare MaterialTrack, RSLinx, Rockwell Automation, Rockwell Software, SLC, SoftLogix, Studio 5000, and X Mare trademarks of Rockwell Automation, Inc.

Any Rockwell Automation software or hardware not mentioned here is also a trademark, registered or otherwise, of Rockwell Automation, Inc.

For a complete list of products and their respective trademarks, go to: http://www.rockwellautomation.com/rockwellautomation/legal-notices/overview.page?#tab4

Warranty

This product is warranted in accordance with the product license. The product’s performance may be affected by system configuration, the application being performed, operator control, maintenance, and other related factors. Rockwell Automation is not responsible for these intervening factors. The instructions in this document do not cover all the details or variations in the equipment,
procedure, or process described, nor do they provide directions for meeting every possible contingency during installation, operation, or maintenance. This product’s implementation may vary among users.

This document is current as of the time of release of the product; however, the accompanying software may have changed since the release. Rockwell Automation, Inc. reserves the right to change any information contained in this document or the software at any time without prior notice. It is your responsibility to obtain the most current information available from Rockwell when installing or using this product.

Environmental compliance


Contact Rockwell Automation

Customer Support Telephone — 1.440.646.3434

Online Support — http://www.rockwellautomation.com/support/
Index

A
Archiver 11

B
Batch Server 10
  starting in demo mode 24
  stopping 24
Batch View 10
BATCHCTL 16
boot
  cold 24
  warm 24
  warm-all 24

C
cold boot 24
  eProcedure Server 24
configuring
  sample demonstrations 16

D
demo mode
  starting the Batch Server 24
document conventions 5

E
eProcedure
  introduction 7
eProcedure Client 12, 31
eProcedure Server 12
Equipment Editor 11

F
FactoryTalk Batch components 8

G
glossary 45

I
instruction files
  step verification template 44

M
MS Word
  step verification 44

O
OPC (OLE for Process Control)
  communication protocol 26
  opening
    simulator demonstration file 26

P
phase logic simulation 26
  Phase Simulator 26
    starting 26

R
rebuilding
  recipe directory 23
  recipe
    execution 8
    maintenance 8
  recipe directory
    rebuilding 23
  recipe maintenance and execution
    simplify 8

S
sample demonstrations 16
  servers
    Batch Server 10
    eProcedure 12
  signature list 31
  signature template 44
Index

simulator 26
  opening sample demonstration files 26
starting
  Phase Simulator 26
stopping
  Batch Server 24

V
View 10

W
warm all boot 24
warm boot 24
  eProcedure Server 24
    removes reactivated steps 28
  Windows Service Manager 24
Rockwell Automation support

Rockwell Automation provides technical information on the web to assist you in using its products. At http://www.rockwellautomation.com/support you can find technical and application notes, sample code, and links to software service packs. You can also visit our Support Center at https://rockwellautomation.custhelp.com for software updates, support chats and forums, technical information, FAQs, and to sign up for product notification updates.

In addition, we offer multiple support programs for installation, configuration, and troubleshooting. For more information, contact your local distributor or Rockwell Automation representative, or visit http://www.rockwellautomation.com/services/online-phone.

Installation assistance

If you experience a problem within the first 24 hours of installation, review the information that is contained in this manual. You can contact Customer Support for initial help in getting your product up and running.

<table>
<thead>
<tr>
<th>United States or Canada</th>
<th>1.440.646.3434</th>
</tr>
</thead>
<tbody>
<tr>
<td>Outside United States or Canada</td>
<td>Use the Worldwide Locator available at <a href="http://www.rockwellautomation.com/locations">http://www.rockwellautomation.com/locations</a>, or contact your local Rockwell Automation representative.</td>
</tr>
</tbody>
</table>

New product satisfaction return

Rockwell Automation tests all of its products to ensure that they are fully operational when shipped from the manufacturing facility. However, if your product is not functioning and needs to be returned, follow these procedures.

<table>
<thead>
<tr>
<th>United States</th>
<th>Contact your distributor. You must provide a Customer Support case number (call the phone number above to obtain one) to your distributor to complete the return process.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Outside United States</td>
<td>Please contact your local Rockwell Automation representative for the return procedure.</td>
</tr>
</tbody>
</table>

Documentation feedback

Your comments will help us serve your documentation needs better. If you have any suggestions on how to improve this document, complete the feedback form, publication RA-DU002.