GENERAL

This document describes the specifications of VP Batch, the Batch Management Packages.

A batch process is the multi-product variable production method where the recipe and/or production volume of a product is changed for each operation. It contains numerous variables such as recipes, operation or production methods. Furthermore, it requires a wide range of functions which are to be executed via communications with a supervisory computer such as scheduling function for production efficiency, result data acquisition and analysis for information management.

The VP Batch packages are created based on the batch operation know-how accumulated through Yokogawa's rich experiences over the years and are compliant with ANSI/ISA-88.01 (referred to as ISA-88.01), the standard on batch control. The VP Batch consists of the following packages.

• VP6H6660 Process Management Package
• VP6E5165 Batch Builder
• VP6E5166 Recipe Management Package

By using VP6E5170 Access Administrator Package (FDA: 21 CFR Part 11 compliant) together with the above packages enables CENTUM VP to comply with the requirement of FDA: 21 CFR Part 11 for pharmaceutical industry.

FUNCTION SPECIFICATIONS

• Structure

The packages consist of the three functions.

Recipe management

Creates master recipes on a computer or Engineering Station (ENG) of CENTUM VP configured on Ethernet. This function is included in the "VP6E5166 Recipe Management Package" which is independent from the Standard Engineering Function. This VP6E5166 package can also be used on a Human Interface Station (HIS).

Process management

Creates control recipes as well as manages operations. The function consists of a batch builder and a process management. VP6E5165 Batch Builder is used on an ENG and VP6H6660 Process Management Package is used on an HIS. The Process Management Package is divided into three types by the number of simultaneously-operated recipes (called ACTIVE recipes).

Unit supervision

Operates and manages unit instruments on a Field Control Station (FCS). The function consists of a builder and an FCS execution, which is included in the Standard Engineering Function and the FCS Control Function.
Features

Compliant to the typical model of ISA-88.01

The VP Batch packages conform to the ISA-88.01 batch control standardization guidelines.

* Features

- Compliant to the typical model of ISA-88.01

**Control Activity Model**

<table>
<thead>
<tr>
<th>Physical Model</th>
<th>Control Activity Model</th>
<th>Procedural Control Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Covers entire batch control and management)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*1: If a Field Control Unit is required, refer to "OPERATING ENVIRONMENTS".

*2: SFC stands for Sequential Function Chart.

Figure ISA-88.01 Batch Control Functions Model and VP Batch

Note: The VP Batch supports Master Recipe and Control Recipe among all the recipe models described in the ISA-88.01 (i.e. General Recipe, Site Recipe, Master Recipe, and Control Recipe).
Open packages
The VP Batch packages interact with the following interfaces:
• Schedule Management Interface (included in the Process Management Package)
• Information Management Interface (implemented by Exaopc OPC Interface Package)

Efficient engineering
The VP Batch packages are equipped with various utilities, online maintenance function, as well as tools to standardize programing that offers engineers comfortable environment for programing.

Supporting wide range of applications
In a batch process, there may be multiple production lines, many levels of units, and combinations of both have complicated configurations. Or, a unit may be used to produce multiple recipes using different data and procedures. The VP Batch yields to satisfy a wide range of users’ requirements.

Standardized operation and monitoring windows
Various operation windows are available such as Product Overview to select a production recipe, Batch Setup dialog, and operation windows. The Product Control View for recipe operation and the Graphic View are also available.

Hierarchy of production procedures using SFC
Production procedures are described in three levels of Sequential Function Charts (SFC). SFC Sequence steps are described by Sequence Batch Oriented Language (SEBOL), Sequence Tables, and Logic Charts. SFC sequences can also be launched directly from a Recipe Unit Procedure when the production procedure is less complicated. In such case the production procedure can be described in two levels of SFC without using the Recipe Operation Procedure.
PACKAGING FUNCTIONS

- Diagram of Function Overview

Recipe Management
- Master Recipe

Schedule Management Interface
- Schedule Management
- Information Management

Control Recipe
- Header
- Equipment Requirements

Formula (Common Block Data)
- Recipe Management Info.
- Recipe Setting Data
- Control Data

Procedure
- Recipe Procedure
  - Recipe Unit Procedure 1
  - Recipe Unit Procedure 2

Unit Instrument
- Common block
  - System-specific common block
  - User-defined common block

UNIT 1
- Initialization
- Charge Start
- Charge End

UNIT 2
- Initialization
- Charge Start
- Charge End

Figure VP Batch Function Overview

*1: Except for using Recipe operation procedure
Recipe Management
A recipe is a set of information necessary for making a product. Specifically it defines what equipment, procedures, methods, and parameters are to be used in producing the product.

There are two types of recipes; one is a master recipe and the other is a control recipe. The Recipe Management function creates, edits and manages master recipes.

The Recipe Management function is independent from the Standard Engineering Function, which can be used on a computer without operation and monitoring and builder functions. However, the computer that runs recipe management needs to be connected to server stations via Ethernet.

Recipes managed by the recipe management functions are configured of the following items:

**Header**
Information such as recipe name, version, creator, etc. for management of recipes.

**Procedure**
Description of procedure to make a product
e.g.: Description of an order of use of equipment/units such as a reactor and a crystallization tank.
Description of an order of SFC sequences such as charging, heating, reacting, and cooling.

**Formula**
Parameters for making a product,
Import/export from/to in a CSV format file is available.

**Equipment Requirements**
Conditions of the equipment /units needed for making a product
Process Management

The Process Management, consisting of the following functions, manages batch operation:

Creation of Control Recipes

A control recipe, used in an actual batch operation, is created from a master recipe by adding a batch ID and assigning unit instruments. The master recipe is created using the Recipe Management package.

Reuse of control recipes

A user can duplicate a control recipe with a good production result and re-use. Either Duplicating Control Recipe command or Control Recipe Exporting Formula command to export the control recipe to a CSV format file can be applied.

Except for the batch ID and the recipe reservation time, the Duplicating Control Recipe command duplicates all the formula data values from the selected control recipe. Original recipe batch ID in the duplicated control recipe replaces the batch ID in the original control recipe.

![Flow of Control Recipe Copying Function](image)

Figure Flow of Control Recipe Copying Function

The Control Recipe Exporting Formula commands exporting the selected control recipe in a CSV format file (auto/manual export is selectable). An operator can import this CSV format file to a master recipe to reflect the data of the control recipe to the duplicated one.

Upon completion of the batch process, two types of file formats can be selected by the Builder function:

- **General-purpose export file:** Contains all the data used by a control recipe for the purpose of analyzing the control recipe. Automatic export setting upon completion of each batch is available.
- **Export file for recipe procedure builder:** Contains all the data needed for defining a master recipe in the Recipe Procedure Builder to help creating a new master recipe by importing the data.
**Batch Execution Management**
Performs operations such as downloading and starting of control recipes.

**Batch Operation and Monitoring**
Operation and monitoring of batch operation via standard or user-defined windows.

---

**Common block**
Common block stores recipe parameters defined by a recipe formula and batch result data. Data areas in Common blocks can be shared among the unit recipes within the same recipe. There are two types of common blocks: one is a user-defined common block and the other is a system-fixed common block.

**Batch Result Acquisition/Batch Report**
While a batch process in progress, its relevant data is kept in an FCS. Batch Result Acquisition is a function to acquire these data into an HIS as a result data.

The various acquired data can be retrieved searching by the batch ID for printing or to use in application programs. The following data are saved during the batch execution:

- Historical messages
- Common block data
- Historical trend data

These data can be printed as a batch report in an arbitrary format at the end or other timing during the batch operation together with "VP6H6530 Report Package" which contains the conventional batch journal function.

The Report Package acquires a tag’s current value, tag attributes and closing data in addition to the above data so that a user can generate detailed batch reports. Since the Report Package accumulates batch data via OPC communication, "VP6H2411 Exaopc OPC Interface Package" is required to be installed on an HIS.
Batch Related Trend Data Filing

This function extracts the data synchronized with the Batch ID and the start/end time from the binary trend data (*1) acquired by Trend Data Acquisition of HIS Standard Operation and Monitoring Function. It then saves the data in a CSV format file.

Two types of batch-related trend data files can be generated upon completion of each batch. The data file type is selectable, as well as whether to create batch-related trend data files or not from the appropriate Builder:

- **CSV format file**: For use in various systems.
- **Binary format file**: For visualizing batch-related trend data in the trend view at the end of the batch operation.

Note: For trend data acquisition, VP6H1100 Standard Operation and Monitoring Function is required.

*1: Complies with continuous type, batch type, and other station trend types, but not with reference pattern trend and long-term archive trend.

Trend Data Filing is a function of VP Batch. This function can not be used in case CENTUM CS is used for the recipe server of VP6H4450 Multi-Project Connection Package.

---

![Diagram](image.png)

**Figure** Batch Related Trend data Filing
Unit Supervision

Plant control instruments and devices can be handled as a single unit being grouped by the Unit Supervision function. For example, an entire reactor process in a batch process can be regarded as a unit. The number of instruments and devices are given a faceplate as a unit, and by sending a command to the unit activates the entire equipment in the group. Operators do not have to operate devices by the tag numbers. It helps simplify the operation significantly.

A unit instrument consists of control algorithms and data for controlling the unit. Control algorithms are divided into the following three categories:

- Status Transition Matrix: Manages sequence operation by the relationships among modes, commands, and statuses.
- Recipe unit procedure and recipe operation procedure: Regulates the execution order of SFC sequences by SFC.
- SFC sequence and step: Regulates SFC sequence and step of equipment and devices in each process such as charging, heating and reacting.

Those data are called as unit instrument data. Recipe batch ID downloaded to a unit instrument as well as semi-fixed data that are not required to be modified by the batch specific to a device are saved as tuning parameters.

The VP Batch packages (VP6H6660, VP6E5165, and VP6E5166) are required for the use of non-resident type unit instruments. In other words, resident type unit instruments that implement fixed procedures can be used without the VP Batch packages. Unit operation instruments cannot be used independently and they always must be used under non-resident type unit instruments.

Status transition matrix

A Status Transition Matrix describes, in a matrix form, how a unit instrument’s mode and status are changed and how unit instrument, unit operation instrument and Operation react when a change mode or status command is received. The matrix is user-definable.

Recipe unit procedure

A recipe unit procedure determines the manufacturing procedures and control methods corresponding to a unit. When a part of the manufacturing methods vary by processes, a recipe unit procedure may be applied. Thus this part of manufacturing methods may be defined as a recipe unit procedure and downloaded to an FCS. Then this procedure can be executed by a unit instrument.

Recipe operation procedure

A recipe operation procedure determines manufacturing procedures and control methods by the unit in more detail. A part of manufacturing methods may also be defined as a recipe operation procedure and downloaded to an FCS. Then this procedure can be executed by a unit operation instrument.

SFC sequence

An SFC sequence is launched from the recipe unit procedure or the recipe operation procedure. An Operation contains control algorithms and data for controlling devices, and the SFC sequence describes control algorithms. The mode, status, alarm, number of steps in execution, and step names are some of the data items in the Operation fixed for the system.

Step

An SFC sequence step is described by SEBOL, sequence table or logic chart.

Unit instrument data

Unit instrument data is a library of data which shows the status of devices supervised by a unit instrument. Two types of data exist; one is a unit specific data and the other is a user-definable data. The fixed data items include mode, unit status, alarms, date and time of execution start and stop, batch ID, user codes 1 to 4, and recipe group numbers. The maximum 256 user-defined unit instrument data is available. Formulas are not downloaded to the unit instrument data, and those are saved in the common block data area.
## Operation and Monitoring Functions

The operation and monitoring windows are provided as human-machine interfaces. They are grouped as Product Overview and Product Control Views.

Windows that can be opened from the Product Overview are as shown below.

### Product Overview

<table>
<thead>
<tr>
<th>Window</th>
<th>Sub-Window</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recipe List</td>
<td>Operator Guide View (&quot;1&quot;)</td>
</tr>
<tr>
<td></td>
<td>Recipe Procedure View</td>
</tr>
<tr>
<td></td>
<td>Recipe Header Dialog Box</td>
</tr>
<tr>
<td></td>
<td>Operator Memo Dialog Box</td>
</tr>
<tr>
<td></td>
<td>Product Control View</td>
</tr>
<tr>
<td>Recipe Unit List</td>
<td>Operator Guide View (&quot;1&quot;)</td>
</tr>
<tr>
<td></td>
<td>Recipe Unit Procedure View (or Unit Procedure-SFC View)</td>
</tr>
<tr>
<td></td>
<td>Recipe Operation Procedure View (or Unit Operation Procedure-SFC View)</td>
</tr>
<tr>
<td></td>
<td>Faceplate</td>
</tr>
<tr>
<td></td>
<td>Trend View</td>
</tr>
<tr>
<td></td>
<td>Trend Selection Dialog Box</td>
</tr>
<tr>
<td></td>
<td>Historical Message Report Window (*2)</td>
</tr>
<tr>
<td></td>
<td>Historical Message Report Window (*2)</td>
</tr>
<tr>
<td></td>
<td>SEBOL View (or Logic Chart/Sequence Table View)</td>
</tr>
<tr>
<td></td>
<td>SEBOL Detail Display</td>
</tr>
<tr>
<td>Unit Recipe List</td>
<td>Operator Guide View (&quot;1&quot;)</td>
</tr>
<tr>
<td></td>
<td>Recipe Procedure View</td>
</tr>
<tr>
<td></td>
<td>Recipe Header Dialog Box</td>
</tr>
<tr>
<td></td>
<td>Operator Memo Dialog Box</td>
</tr>
<tr>
<td></td>
<td>Product Control View</td>
</tr>
<tr>
<td>Operation List</td>
<td>Operator Guide View (&quot;1&quot;)</td>
</tr>
<tr>
<td></td>
<td>Recipe Unit Procedure View (or Unit Procedure-SFC View)</td>
</tr>
<tr>
<td></td>
<td>Operation-SFC View</td>
</tr>
<tr>
<td></td>
<td>Operation Formula Dialog Box</td>
</tr>
<tr>
<td></td>
<td>Faceplate</td>
</tr>
<tr>
<td></td>
<td>Trend View</td>
</tr>
<tr>
<td></td>
<td>Trend Selection Dialog Box</td>
</tr>
<tr>
<td></td>
<td>Recipe Operation Procedure View (or Unit Operation Procedure-SFC View)</td>
</tr>
<tr>
<td>Phase List</td>
<td>Operator Guide View (&quot;1&quot;)</td>
</tr>
<tr>
<td></td>
<td>Recipe Unit Procedure View (or Unit Procedure-SFC View)</td>
</tr>
<tr>
<td></td>
<td>Operation-SFC View</td>
</tr>
<tr>
<td></td>
<td>Operation Formula Dialog Box</td>
</tr>
<tr>
<td></td>
<td>Faceplate</td>
</tr>
<tr>
<td>Step List</td>
<td>Operator Guide View (&quot;1&quot;)</td>
</tr>
<tr>
<td></td>
<td>Recipe Unit Procedure View (or Unit Procedure-SFC View)</td>
</tr>
<tr>
<td></td>
<td>Operation-SFC View</td>
</tr>
<tr>
<td></td>
<td>Operation Formula Dialog Box</td>
</tr>
<tr>
<td></td>
<td>Faceplate</td>
</tr>
</tbody>
</table>

### Recipe List

- **Operator Guide View ("1")**
- **Recipe Procedure View**
- **Recipe Header Dialog Box**
- **Operator Memo Dialog Box**
- **Product Control View**

### Unit Recipe List

- **Operator Guide View ("1")**
- **Recipe Procedure View**
- **Recipe Header Dialog Box**
- **Operator Memo Dialog Box**
- **Product Control View**

### Operation List

- **Operator Guide View ("1")**
- **Recipe Unit Procedure View (or Unit Procedure-SFC View)**
- **Operation-SFC View**
- **Operation Formula Dialog Box**
- **Faceplate**
- **Trend View**
- **Trend Selection Dialog Box**
- **Recipe Operation Procedure View (or Unit Operation Procedure-SFC View)**

**Figure** Product Overview Windows (for Information Display)

### Product Overview

<table>
<thead>
<tr>
<th>Window</th>
<th>Sub-Window</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recipe List</td>
<td>Recipe Selection Dialog Box</td>
</tr>
<tr>
<td></td>
<td>Batch Setup Dialog Box</td>
</tr>
<tr>
<td></td>
<td>Dynamic Unit Assign Dialog Box</td>
</tr>
<tr>
<td></td>
<td>Control Recipe Copy Dialog Box</td>
</tr>
<tr>
<td></td>
<td>Server Switch Dialog Box</td>
</tr>
<tr>
<td></td>
<td>Formula Export Dialog Box</td>
</tr>
<tr>
<td></td>
<td>Train Selection Dialog Box</td>
</tr>
</tbody>
</table>

**Figure** Product Overview Windows (for Operations)
Windows that can be opened from the Product Control View are shown below.

*1: CAMS for HIS Message Monitor is displayed in case Consolidated Alarm Management Software (CAMS for HIS) is enabled with integrating operator guide messages.

*2: CAMS for HIS Message Monitor is displayed in case Consolidated Alarm Management Software (CAMS for HIS) is enabled.

*3: CAMS for HIS Historical Viewer is displayed in case Consolidated Alarm Management Software (CAMS for HIS) is enabled.

**Figure  Product Control View Windows**
• **Product Overview**
  Displays batch status for each recipe group/train.

• **Product Control view**
  Displays status of each recipe. The operation of all the batches or individual unit recipes can be carried out. The window can be customized by the Graphic Builder.

• **Recipe Procedure view**
  Displays the recipe unit procedure (SFC) and the recipe operation procedure (SFC) of the specified control recipe.

• **Recipe Unit Procedure view**
  Displays the recipe unit procedures of a selected control recipe.

• **Recipe Operation Procedure View**
  Displays the recipe operation procedures of a selected control recipe.

• **Operation Formula dialog box**
  Displays/sets the formula applied to a selected Operation.

• **Unit Formula dialog box**
  Displays/sets the formula commonly applied to a selected unit.

• **Formula dialog box**
  Displays/sets the formula of the specified control recipe.

• **Recipe Header dialog box**
  Displays the recipe header of the specified control recipe.

• **Recipe Selection dialog box**
  Displays a list of master recipes for each recipe group.

• **Batch Setup dialog box**
  Generates a control recipe by converting the master recipe selected from the Recipe Selection dialog box by adding a batch ID, assigning a unit and setting actual volumes.

• **Control Recipe Copy dialog box**
  Duplicates a selected control recipe to create a new control recipe.

• **Server Switch dialog box**
  Give commands to switch server stations by the recipe group.

• **Formula Export dialog box**
  Exports formula data of a selected control recipe to a CSV format file.

• **Train Selection dialog box**
  Switch trains within the recipe group.

• **Operator Memo dialog box**
  Inputs descriptions of the specified control recipe for operators.

• **Equipment Requirement dialog box**
  Displays/sets the equipment requirement of the specified control recipe.
The operation and monitoring of the unit status can be carried out by the graphic view.

**Figure Example of a view**
● External Interface

External interfaces can be used to exchange information with external packages or programs, as shown below.

• Schedule Management Interface (*1)
• Information Management Interface

These interfaces are positioned in between the application programs in a supervisory computer and recipe management/production planning and scheduling/production information management, as shown below.

**Schedule Management Interface ("1")**
A schedule information file (containing a batch ID, recipe name, formula, and equipment specifications for each batch except for the procedure and header information) generated by the schedule management in a supervisory system can be downloaded to the process management.

**Information Management Interface**
Batch information (parameters, result data, historical messages, and others) can be supplied to other systems by the OPC interface, not by a batch-dedicated interface. To use this interface, the Process Management Package and VP6H2411 Exaopc OPC Interface Package (for HIS) must be installed in a single HIS (server or client).

*2: The Unit Supervision is included in the Standard FCS Control Functions.
CENTUM VP/CENTUM CS 3000/CENTUM CS Connection

In CENTUM series production control systems engineering data for FCS and HIS generated by using Standard Engineering Function is called as a "project." With VP6H4450 Multi Project Connection Package (for CENTUM VP), integration of operation and monitoring of multiple projects can be performed among VP Batch, CS Batch 3000, and CS Batch can be performed when CENTUM VP/CENTUM CS 3000 projects are defined in upper-level. For details, refer to GS 33J05K20-01EN Multi Project Connection Package.

Available Functions

An HIS in an upper-level project can perform functions of client stations in a lower-level project. It means CENTUM VP HIS in the upper-level can reserve and load recipes in the lower-level project. However, the HIS in the upper-level cannot take up the server station function for the lower-level project.

<table>
<thead>
<tr>
<th>Lower-level project</th>
<th>Upper-level project</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>XL Batch</td>
</tr>
<tr>
<td>XL Batch</td>
<td>—</td>
</tr>
<tr>
<td>CS Batch</td>
<td>—</td>
</tr>
<tr>
<td>CS Batch 3000</td>
<td>—</td>
</tr>
<tr>
<td>VP Batch</td>
<td>—</td>
</tr>
</tbody>
</table>

X: Supported. —: Not supported

Recipe Group Configuration

The direction of the arrow means that group “A” can control and monitor group “B”. But group “B” cannot control and monitor group “A.”

Number of Clients

<table>
<thead>
<tr>
<th>Lower-level project</th>
<th>Upper-level project</th>
</tr>
</thead>
<tbody>
<tr>
<td>CS Batch</td>
<td>Up to 8 clients per recipe group for the sum of lower- and upper-level projects</td>
</tr>
<tr>
<td>CS Batch 3000</td>
<td>Up to 14 clients per recipe group for the sum of lower- and upper-level projects</td>
</tr>
<tr>
<td>VP Batch</td>
<td>Up to 14 clients per recipe group for the sum of lower- and upper-level projects</td>
</tr>
</tbody>
</table>

Note: For operation and monitoring multiple lower-level projects from an upper-level project, all the recipe group numbers must appear to be unique for the upper-level project.
Software Packages required for Multiple Project Connections

In order to perform the aforesaid “Available Functions,” ensure that each CENTUM system is equipped with the following packages.

**VP Batch**
- VP6H6660, LHS6660 Process Management Package
- VP6E5165, LHS5165 Batch Builder
- VP6E5166, LHS5166 Recipe Management Package

**CS Batch 3000**
- LHS6600 CS Batch 3000 Process Management Package
- LHS5160 CS Batch 3000 Builder
- LHS5161 CS Batch 3000 Recipe Management Package

**CS Batch**
- SIH6610/SIU6610 CS Batch Process Management Package
- SIH6600/SIU6600 CS Batch Recipe Management Package
- SHW5160 CS Batch Recipe Management Builder
- SHW5161 CS Batch Process Management Builder

Note: The following packages are not applicable for multiple project connection.
- SIH6662/SIU6662 CS Batch Production Planning and Scheduling Interface
- SIH6663/SIU6663 CS Batch Production Information Management Interface
- SIH6690/SIU6690 Standard Batch Report Package
- SHW5170 CS Batch Self-Documentation
- SHW6661 CS Batch Recipe Management Interface

**21 CFR Part11 Compliant**

Using VP6E5170 Access Administrator Package to the computer with VP6E5166 Recipe Management Package, the CENTUM system is made to support FDA: 21 CFR Part 11 regulations. Access Control Function and Audit Trail Management Function for complying with FDA: 21 CFR Part 11 compliant are provided as a management tool for recipe engineers (Recipe Management Function).

## APPLICATION CAPACITY

<table>
<thead>
<tr>
<th>Item</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Recipe Management</strong></td>
<td></td>
</tr>
<tr>
<td>Recipe groups/project</td>
<td>16</td>
</tr>
<tr>
<td>Number of recipe operation/project</td>
<td>1000</td>
</tr>
<tr>
<td>Number of master recipes/recipe group</td>
<td>1000</td>
</tr>
<tr>
<td>Number of unit recipes/master recipe</td>
<td>32</td>
</tr>
<tr>
<td>Number of trains/recipe group</td>
<td>16</td>
</tr>
<tr>
<td>Number of paths/trains</td>
<td>64</td>
</tr>
<tr>
<td>Number of recipe unit procedure steps</td>
<td></td>
</tr>
<tr>
<td>Number of recipe operation procedure steps</td>
<td></td>
</tr>
<tr>
<td><strong>Process Management</strong></td>
<td></td>
</tr>
<tr>
<td>Number of server stations/recipe group</td>
<td>2</td>
</tr>
<tr>
<td>Number of client stations/recipe group</td>
<td>14</td>
</tr>
<tr>
<td>Number of client stations/server station</td>
<td>48</td>
</tr>
<tr>
<td>Number of control recipes/recipe group</td>
<td>999</td>
</tr>
<tr>
<td>Number of control recipes/project</td>
<td>999</td>
</tr>
<tr>
<td>Number of control unit recipes/project</td>
<td>4000</td>
</tr>
<tr>
<td>Number of common blocks/project</td>
<td>3000</td>
</tr>
<tr>
<td>Number of common blocks/master recipe</td>
<td>256</td>
</tr>
<tr>
<td>Number of common block data items/common block</td>
<td>256 (*1)</td>
</tr>
<tr>
<td>Data check pattern/common block</td>
<td>255</td>
</tr>
</tbody>
</table>

*1: An entire array is counted as 1. Data area size must be smaller than 32KB. Up to two-dimension (999, 999) array up to 10000 of array elements are available.

As for the number of ACTIVE control recipes/project is categorized into three types depending on the process scales and their complications.

<table>
<thead>
<tr>
<th>Item</th>
<th>Project Scale</th>
<th>Type - A</th>
<th>Type - B</th>
<th>Type - C</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Process Management</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of ACTIVE control recipes/project</td>
<td>Large Scale Project</td>
<td>10</td>
<td>50</td>
<td>999</td>
</tr>
<tr>
<td></td>
<td>Small/Middle Scale Project</td>
<td>4</td>
<td>10</td>
<td>999</td>
</tr>
</tbody>
</table>
OPERATING ENVIRONMENTS

- **VP6H6660 Process Management Package**
  
  **Hardware Requirement**
  Conforms to the operating environment of VP6H1100 Standard Operation and Monitoring Function
  
  **Software Requirements**
  Conforms to the operating environment of VP6H1100 Standard Operation and Monitoring Function
  Required Software:
  VP6H1100 Standard Operation and Monitoring Function

- **VP6E5165 Batch Builder**
  
  **Hardware Requirement**
  Conforms to the operating environment of VP6E5100 Standard Engineering Function
  
  **Software Requirements**
  Conforms to the operating environment of VP6E5100 Standard Engineering Function
  Required Software:
  VP6E5100 Standard Engineering Function

- **VP6E5166 Recipe Management Package**
  
  **Hardware Requirements**
  Conforms to the operating environment of VP6E5100 Standard Engineering Function
  
  **Software Requirements**
  Conforms to the operating environment of VP6E5100 Standard Engineering Function.
  When a recipe view refers to engineering data, VP6E5100 is required.

- **Control Function**
  Unit Operation Instrument and Recipe Operation Procedure work on the following control functions.
  
  - VP6F1700 Control Function for Field Control Station (for AFV30□/AFV40□)
  - VP6F1800 Control Function for Field Control Station (for A2FV50□)
  - VP6F1900 Control Function for Field Control Station (for A2FV70□)

MODELS AND SUFFIX CODES

Process Management Package

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>VP6H6660</td>
<td>Process Management Package</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Suffix Codes</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>-V</td>
<td>Software license</td>
</tr>
<tr>
<td>-E</td>
<td>For Expansion</td>
</tr>
<tr>
<td>1</td>
<td>Type-A (Software license)</td>
</tr>
<tr>
<td>2</td>
<td>Type-B (Software license)</td>
</tr>
<tr>
<td>3</td>
<td>Type-C (Software license)</td>
</tr>
<tr>
<td>1</td>
<td>English version</td>
</tr>
<tr>
<td>N01</td>
<td>For Small/Middle Scale Project (Logical I/O points are 4000 or less)</td>
</tr>
<tr>
<td>N03</td>
<td>For Large Scale Project (Logical I/O points are 4001 or more)</td>
</tr>
<tr>
<td>N13</td>
<td>For Project Scale Expansion</td>
</tr>
</tbody>
</table>

Note: When ordering this license newly, be sure to select `-V`, and `N01` or `N03` as a project scale in the suffix codes.

Note: When expanding the project scale, select `-E` and `N13` in the suffix codes.

Note: As for the suffix code (1, 2, 3), there is a limit in the number of ACTIVE recipes.
## Batch Builder

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>VP6E5165</td>
<td>Batch Builder</td>
</tr>
</tbody>
</table>

**Suffix Codes**

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>-V</td>
<td>Software license</td>
</tr>
<tr>
<td>1</td>
<td>Always 1</td>
</tr>
<tr>
<td>1</td>
<td>English version</td>
</tr>
</tbody>
</table>

Note: VP6E5100 Standard Builder Function is required.

## Recipe Management Package

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>VP6E5166</td>
<td>Recipe Management Package</td>
</tr>
</tbody>
</table>

**Suffix Codes**

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>-V</td>
<td>Software license</td>
</tr>
<tr>
<td>1</td>
<td>Always 1</td>
</tr>
<tr>
<td>1</td>
<td>English version</td>
</tr>
</tbody>
</table>

Note: This package runs without other software.

**ORDERING INFORMATION**

Specify model and suffix codes.

**TRADEMARKS**

- CENTUM and Exaopc are registered trademarks of Yokogawa Electric Corporation.
- Other company and product names appearing in this document are trademarks or registered trademarks of their respective holders.