

# HC900 Hybrid Controller

*When you need more than just discrete control*

## Vista SPP & Recipe Access in HC900 – Product Note

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## Overview

The HC900 SPP & Recipe Support is an application that enables PlantScape Vista to configure and control Set Point (SP) programmers and variables in one or more HC900 and/or UMC800 controllers. The application allows operators to easily configure set point profiles and variable recipes offline, before downloading to a specific controller. Set point programs are pre-plotted allowing operators to monitor the profile graphically.

### **In particular, the HC900 SPP & Recipe Support includes:**

- Configuration and maintenance of SP profiles through PlantScape Vista displays. Up to 1000 profiles may be stored.
- Upload and download of SP profiles between PlantScape Vista and HC900/UMC800 SP programmers. (In an HC900 controller, profiles may only be sent to the first four programmers).
- View and modify online the first four HC900/UMC800 SP programmers in a controller (configuration and “current segment”). View includes tabular programmer display showing programmer segments and a SP profile pre-plot trend display for both the primary and auxiliary (if used) output of the SP programmer. The assigned PV’s for primary and aux outputs are plotted against the pre-plot, with the PV pen stopped when the programmer is in Hold.
- Configuration and maintenance of Recipes (Variables only) in PlantScape Vista. Each recipe has up to 50 Variables. Up to 1000 Recipes may be stored.
- Downloading Recipes (up to 50 Variables) to HC900/UMC800 controllers.
- Configuration and maintenance of Combined Recipe definitions in PlantScape Vista. A Combined Recipe includes a Recipe (Variables only) and/or up to two SP profiles. Up to 1000 Combined Recipes may be stored.
- Download a Combined Recipe to a compatible HC900/UMC800 controller. (In an HC900 controller, profiles may only be sent to the first four programmers.)

# Planning

This section describes the planning and design-related issues concerned with configuring HC900 SPP & Recipe Support. After reading this section, you will be able to plan for the configuration process.

## Hardware/Software Requirements

The HC900/UMC800 application has the same hardware requirements as PlantScape Vista.

The software requirements are as follows:

- PlantScape Vista R400 (on Server)
- PlantScape Vista license with the Universal Modbus interface (standard)
- Station R1.1, Build 1358 or later (on Client)

## Resource Requirements

This section details the PlantScape Vista resource requirements and restrictions for the HC900/UMC800 application.

### Set Point Profile & Recipe Slots

PlantScape Vista offers the ability to configure and store up to 1000 SP profiles in the PlantScape Vista database. These profiles may then be downloaded to HC900/UMC800 SP programmers in the same manner as profiles stored locally in the controller.

The PlantScape Vista system will **overwrite** Profiles 1 to 4 in the HC900/UMC800's own database of stored profiles. Apart from these four profiles, it is possible – although strongly not recommended – to continue using the remaining profile slots in parallel with the 1000 PlantScape Vista profiles.

PlantScape Vista also offers the ability to configure and store up to 1000 recipes (variables only) in the PlantScape Vista database. These recipes may then be downloaded to HC900/UMC800 controllers in the same manner as recipes stored locally in the controller.

The PlantScape Vista system will overwrite Recipe 1 in the HC900/UMC800's own database of stored recipes. Apart from this recipe, it is possible – although strongly not recommended – to continue using the remaining recipe slots in parallel with the 1000 PlantScape Vista recipes.

### Set Point Program History

The history of a SP program can be viewed on a standard trend and compared to its ideal profile. To collect history, a PlantScape Vista point needs to be built for each programmer in an HC900/UMC800 controller. These points are used to monitor the primary and auxiliary PV outputs of the processes driven by the programmers, collecting the values and storing them in PlantScape Vista history.

Note that only the first four programmers in an HC900 can be monitored. The remaining 4 programmers in the HC900 are not accessible in PlantScape Vista R400.

This means that four PlantScape Vista points, one per programmer, are required for each HC900/UMC800 controller in the system.

## Display Locking

For safety reasons and data integrity, recipes and SP programmers may only be configured and maintained by one person at a time. Any users that try to access these pages while they are in use will be prevented. A message indicating the lockout will be displayed, informing the user of the station number that has currently locked out the pages. These pages will remain locked until the station either exits the pages or is disconnected.

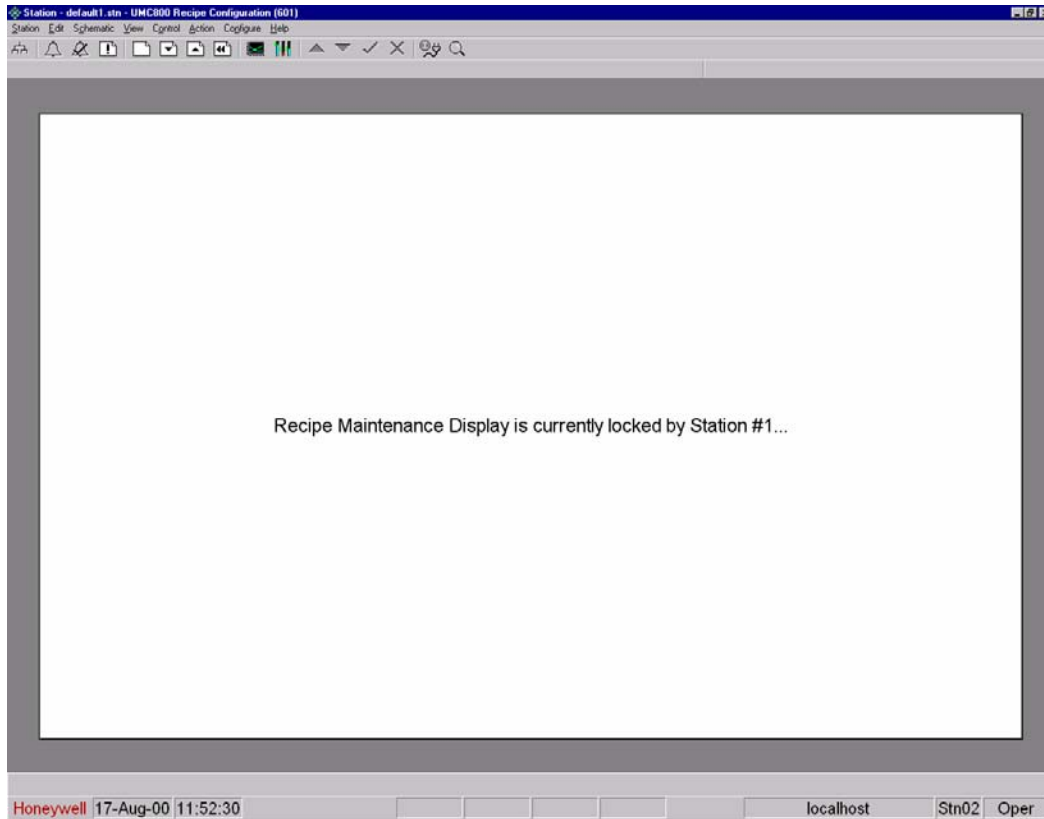


Figure 0-1. Locked Display.

## Migration/Conversion Requirements

The 1000 SP profiles and recipes stored in PlantScape Vista will supersede the HC900/UMC800's own set of stored profiles and recipes. This section details how to migrate the existing profiles and recipes into the PlantScape Vista database from a controller.

### Set Point Profiles

To migrate existing profiles from a controller, a utility is provided that will transfer the stored profiles to a block within the PlantScape Vista database of 1000 profiles.

The utility is named **umc800export**, and may be run from the command line:

```
C:> umc800export
```

```
**** UMC800 Profile Export Utility ****
```

```
Enter valid controller number: 1
```

```
Enter PlantScape Vista profile number to start from (1 to 931): 1
```

```
All profiles in Controller 1 will exported to PlantScape Vista profiles 1 to 70
```

Do you want to proceed (Y/N) ? y  
Profile 70 of 70  
Exported all profiles  
C:>

Note: Only the first 70 profiles can be exported to PlantScape Vista

## Recipes

Unfortunately, at present no utility exists to transfer existing recipes (variables only) from an HC900/UMC800 controller to the PlantScape Vista database of 1000 recipes. Any recipes will need to be recreated manually on the PlantScape Vista system.

## Configuration

In this section, you will learn how to configure HC900/UMC800 recipes, SP profiles, and combined recipes. Configuration requirements for setting up the set point programmer monitoring displays will also be presented.

## Prerequisites

**Before configuring the HC900/UMC800 SPP & Recipe Support, ensure that you have:**

- Access to the MNGR account in Station
- PlantScape Vista license with Fast and Extended history
- SPP function blocks configured in each HC900 or UMC800 controller. You will need one block for each SP programmer (see the *HC900 HC Designer* or *UMC800 Control Builder User's Guide* for information on function blocks)

## Considerations

**Each recipe, SP profile, and combined recipe stored in the PlantScape Vista database must have a unique name (respectively).**

SP profiles must have zero length/rate segments only at the end of the profile.

## Configuring a Recipe

A recipe is a collection of 50 variable signal tags and their values or states. Each variable is either a digital or analog element in a control configuration, acting as an input to any connected function blocks. When a recipe is loaded, the values or states of the signal tags in the recipe replace the values of those signals in the controller's configuration.

Up to 1000 recipes may be created and maintained using the PlantScape Vista HC900/UMC800 Recipe Configuration pages.

To configure a recipe, perform the following steps:

Load the Recipe Selection page to display a list of stored recipes. This can be done in Station from the PlantScape Vista menu as follows:

***Configure -> Applications -> HC900 -> Recipes (Variables Only)***

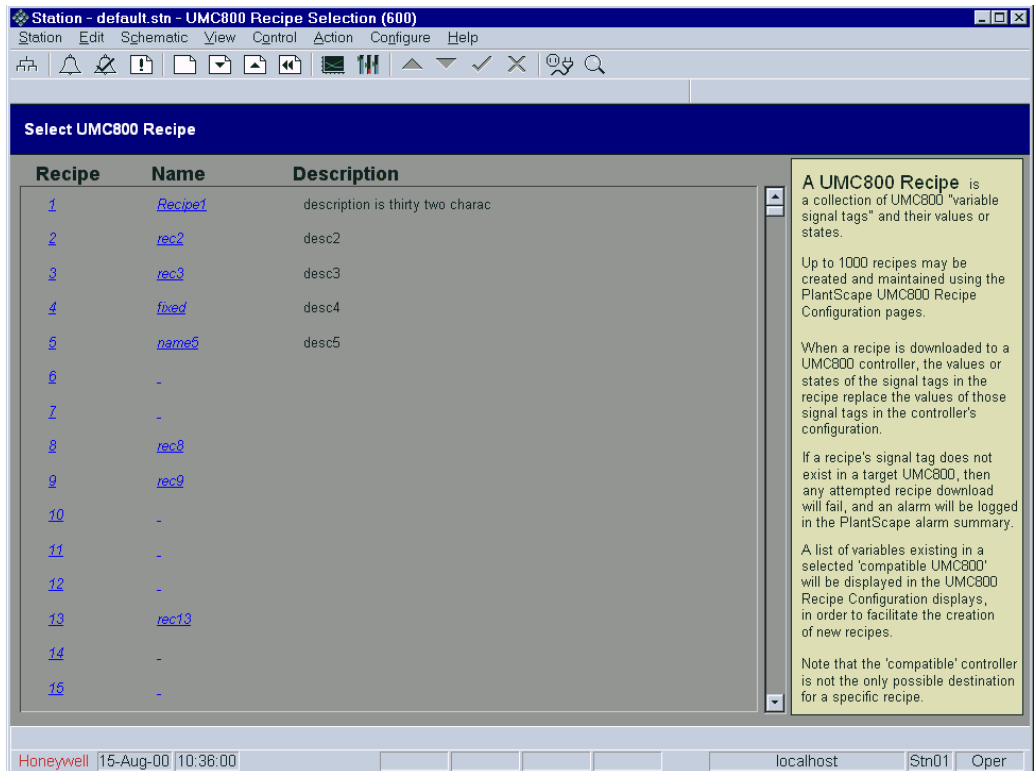


Figure 0-1. HC900 / UMC800 Recipe Selection.

Select the recipe that you would like to configure/modify, or select a blank slot to create a new recipe. Click on the recipe name to load its configuration.

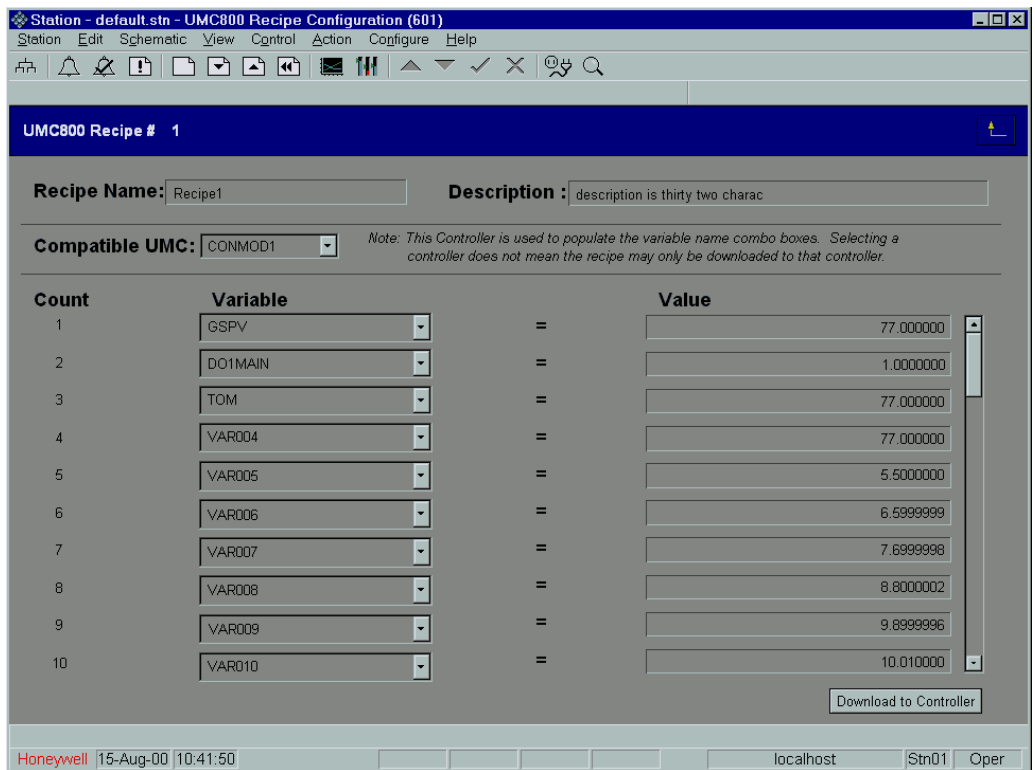


Figure 0-2. HC900 / UMC800 Recipe Configuration.

When the Recipe Configuration page loads, PlantScape Vista will attempt to read a list of variables (up to 150) from the currently selected “Compatible” controller. If the controller is

not a valid HC900 or UMC800 controller or the upload fails, a PlantScape Vista alarm will be raised.

The variable list does not overwrite any of the variables configured in the current recipe, nor do variables in the recipe need to be members of the list. Instead, the list is used to provide default selections in the “Variable” comboboxes to help when configuring a recipe.

By changing the controller selection in the “Compatible controller” combobox, PlantScape Vista will attempt to read a new list of all variables from the controller. If the controller is not a valid HC900 or UMC800 controller or the upload fails, a PlantScape Vista alarm will be raised.

### **Download to Controller**

Allows the user to download the current recipe to an HC900/UMC800 controller. Note that a recipe may be downloaded to any controller, not just the “Compatible controller”. See Section 0 for information on downloading a recipe.

Refer to Section 0 for information on how to configure a recipe for use in a combined recipe.

## **Configuring a SP Profile**

A SP profile is a time-based program typically used as the set point of a control loop. Each program may be from 2 to 50 segments in length, where each segment of the program may be a ramp or soak except the last segment that must be a soak.

In addition to the main output value, a second analog value is available for each step of the program. This output is a fixed soak value, which may be used as an input to another function or to provide a set point for a secondary control loop in the process.

A set point guarantee function is provided that holds the program if a process variable exceeds a predefined deviation from the set point. The set point guarantee can be selected to be active for the entire program, for soaks only, or for user specified segments. It applies to inputs connected to the top 3 pins of the SP Programmer block. Independently, the GHOLD pin of the SP programmer may also be used for guaranteed soak application.

Up to 1000 profiles may be created and maintained using the PlantScape Vista HC900/UMC800 Profile Configuration pages.

To configure a SP profile, perform the following steps:

Load the Profile Selection page to display a list of stored profiles. This can be done in Station from the PlantScape Vista menu as follows:

***Configure-> Applications-> HC900->Set Point Programs->Profiles***

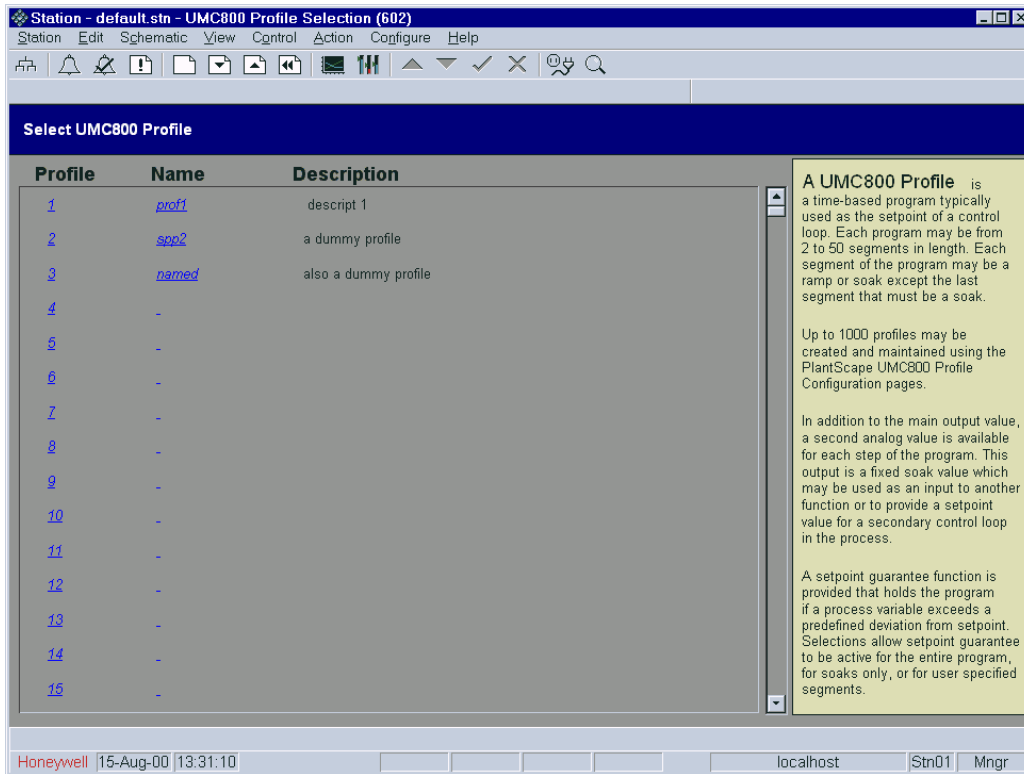


Figure 0-1. HC900 or UMC800 Profile Selection.

Select the profile that you would like to configure/modify, or select a blank slot to create a new profile. Click on the profile name to load its configuration.

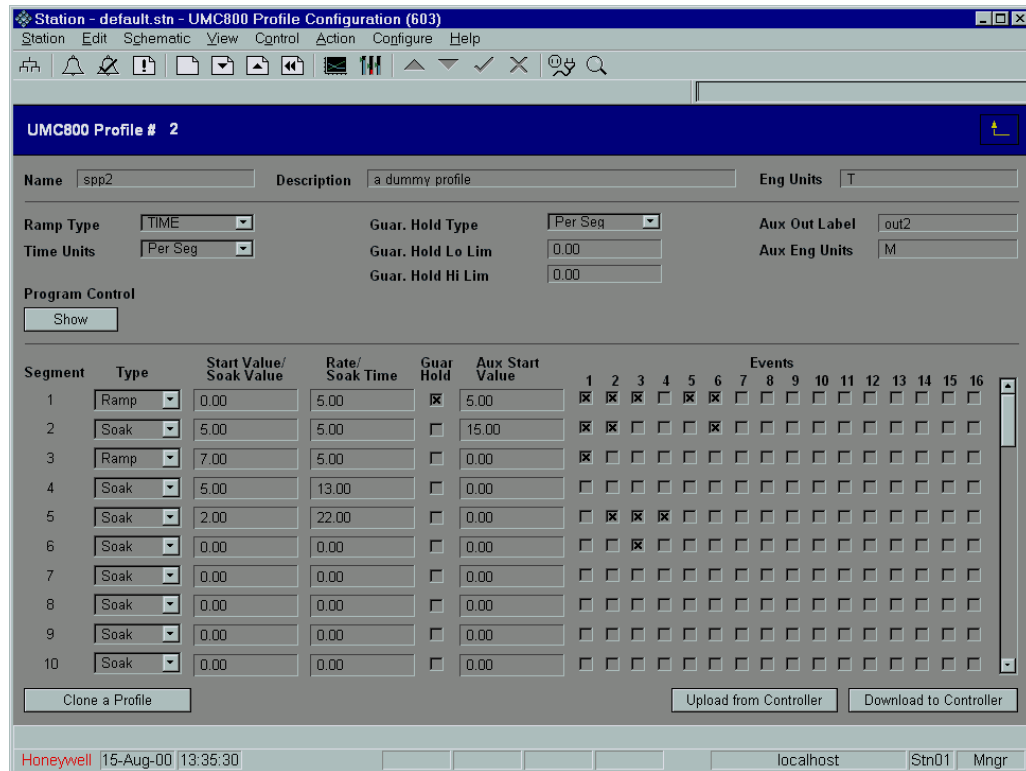


Figure 0-2. HC900 or UMC800 Profile Configuration.

The Profile Configuration page allows all the details of a SP profile to be edited from a single display. Changes made to configuration are applied immediately to the stored profile, but will not have any effect on profiles that are currently loaded into HC900/UMC800 controllers.

### Program Control

Values such as “Restart Rate” and “Loop Segment” control the dynamic execution of a program. These values may be toggled in and out of visibility using the “Show/Hide” button.

### Clone a Profile

Allows the user to copy all the details of another of the 1000 stored profiles to the current profile slot. The “Name” field is not copied and made blank.

### Upload from Controller

Allows the user to upload the profile currently loaded in an HC900 or UMC800 SP programmer into the profile slot currently being edited.

### Download to Controller

Allows the user to download the current profile to an HC900 or UMC800 SP programmer. Note that this action will cause the selected programmer to be cleared and reset before the profile is downloaded. Any pre-existing program will be aborted and overwritten. See Section 0 for information on downloading a profile.

## Configuring a Combined Recipe

A combined recipe is a combination of a recipe, up to two set point profiles and a list of “Compatible Destinations”.

Each combined recipe can be associated with a number of destinations, any one of which may be selected by the operator as a target for the combined recipe. Each destination includes an HC900 or UMC800 controller, a set point programmer for each profile in the combined recipe, and an optional ‘variable suffix’. This suffix will be appended to every variable in the recipe component of a combined recipe, before it is sent to a controller. This functionality allows the same recipe to be used for more than one set of variables in a single HC900 or UMC800 controller.

When a combined recipe is loaded to a controller, the SPP profiles are loaded into the specified programmers and the recipe is loaded to the controller’s configuration.

Up to 1000 combined recipes may be created and maintained using the PlantScape Vista HC900/UMC800 Combined Recipe Configuration pages.

To configure a combined recipe, perform the following steps:

Load the Combined Recipe Selection page to display a list of stored combined recipes. This can be done in Station from the PlantScape Vista menu as follows:

Configure -> Applications -> HC900 -> Combined Recipes

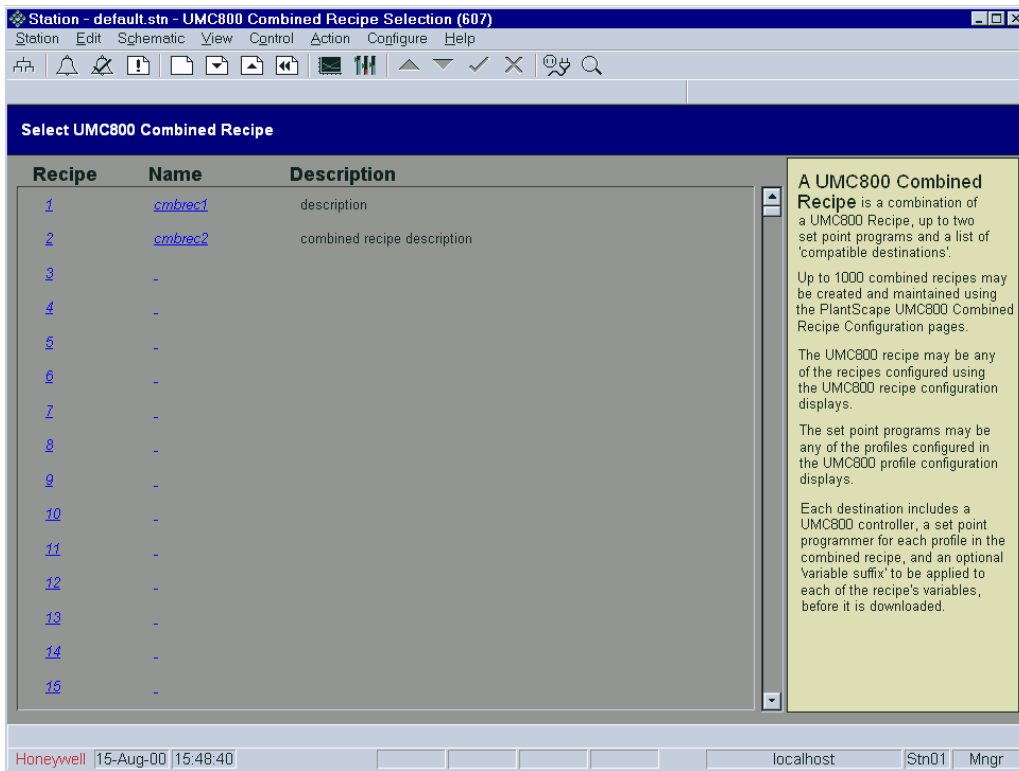


Figure 0-1. HC900 or UMC800 Combined Recipe Selection.

Select the combined recipe that you would like to configure/modify, or select a blank slot to create a new combined recipe. Click on its name to load the combined recipe.

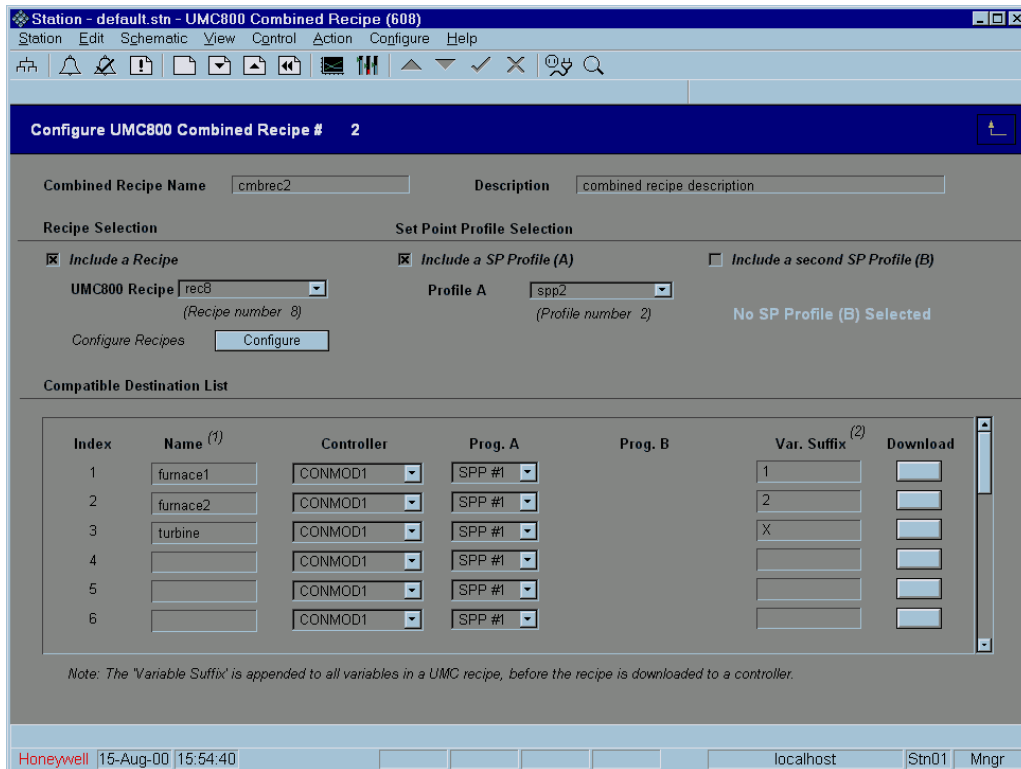


Figure 0-2. HC900 or UMC800 Combined Recipe Configuration.

The Combined Recipe Configuration page allows combined recipes to be configured and stored in the PlantScape Vista database. Changes made to configuration are applied immediately to the stored combined recipe, but will not have any immediate effect on profiles or variable values currently loaded in HC900 or UMC800 controllers.

There are three optional components to a combined recipe. The first is a recipe selected from the 1000 recipes stored in the PlantScape Vista database (see Section 0 for information on recipes). The remaining components are up to two SP profiles, selected from the 1000 profiles stored in the PlantScape Vista database (see Section 0 for information on SP profiles). A combined recipe may include any, some, or none, of these components.

### Destination List

Each combined recipe may be configured with up to twenty “Compatible Destinations”. This allows a single combined recipe to drive a number of processes in a given plant. For example, the same combined recipe may be used to operate three furnaces – where a different SP programmer in a controller, and a different set of variables, control each furnace.

### Name

Each destination may be given a name to more easily identify the process it drives.

### Controller

Each destination has a controller to which each component of the combined recipe is downloaded.

### Prog A & B

These identify the SP programmers in the destination controller to which profiles A and B will be downloaded.

## Var. Suffix

Identifies a short string that will be appended to every variable name in the recipe component of a combined recipe before it is downloaded. This allows the same recipe to be loaded to a number of subsets of variables within the same controller.

For example, assume the recipe contains the variables TEMP, VOLUME and PRESS. If destination “FURNACE1” has a variable suffix of “1” and destination “FURNACE2” has a variable suffix of “2”, then when the combined recipe is downloaded to “FURNACE2”, the variables updated will be TEMP2, VOLUME2 and PRESS2. If the destination had been “FURNACE1”, then TEMP1, VOLUME1 and PRESS1 would have been updated.

## Download

See Section 0 for information on downloading a combined recipe.

## Configuring SPP Monitoring

The user may view and control the current state of set point programs in the HC900/UMC800 controllers from one of three monitoring pages. The SPP Summary page allows the user to monitor the first four programmers in a given HC900 or UMC800 controller. This page provides information about the SP programmers, including their current state and segment number, the segment time remaining, and a history of the current program.

The SPP Program page allows the user to display the program configuration of a specific programmer. This page is very similar to the Profile Configuration page (Figure 0-2), in that it displays a time-based program of 2 to 50 segments in length, where each segment of the program can be a ramp or soak except the last segment that must be a soak. The difference is that the SPP Program page reads and writes a set point program from a SP programmer, and does not store the program in the PlantScape Vista database.

The SPP Trend page allows the user to view the history of a SP programmer and compare it to the ideal profile (the profile pre-plot). To collect history, a PlantScape Vista point needs to be built for each SP programmer in a controller. These points are used to monitor the process PVs driven by the primary and auxiliary outputs of the programmers, collecting the values and storing them in PlantScape Vista history.

### Building Points for SPP Monitoring

Quick Builder can be used to build the points for monitoring the SP programmers. The points must be of “Analog” type, and a unique point must be created for each programmer. The source addresses used to monitor SP Programmer 1 in an HC900 controller are described below.

Parameter	Source Address
PV (Main tab)	<i>Address the PV being driven by the <u>primary</u> output of SPP 1 in your process. See below for an example.</i>
AL1 (Alarm tab)	<i>PV high value of primary</i>
AL2 (Alarm tab)	<i>PV low value of primary</i>
SP (Control tab)	<i>SPP 1 OUT</i>
A1 (Auxiliary tab)	<i>Address the PV being driven by the <u>auxiliary</u> output of SPP 1 in your process. See below for an example.</i>

Parameter	Source Address
AL3 (Alarm tab)	A1 high value
AL4 (Alarm tab)	A1 low value
A2 (Auxiliary tab)	SPP_ADD 1 AUX_OUT
A3 (Auxiliary tab)	SPP 1 STATUS_HOLD
A4 (Auxiliary tab)	SPP 1 STATUS_END

Table 1. SP Programmer 1 Parameter Definition.

The point should also be configured with:

- 2 second scan periods for each parameter
- ‘Disable Alarming’ set (ie. alarms are disabled)
- Fast, Normal, and Extended history collection for **each** parameter (PV, SP, A1 (if used), A2, A3, A4)
- PV range sufficient to cover the output of the programmer

The following diagram illustrates a typical HC900/UMC800 configuration. In this example, when configuring a point in PlantScape Vista to track programmer SPP3, you should configure the point’s PV parameter to read the PV of loop PID2, and it’s A1 parameter to read the calculated PV from CARB5 (in this case a signal tag).

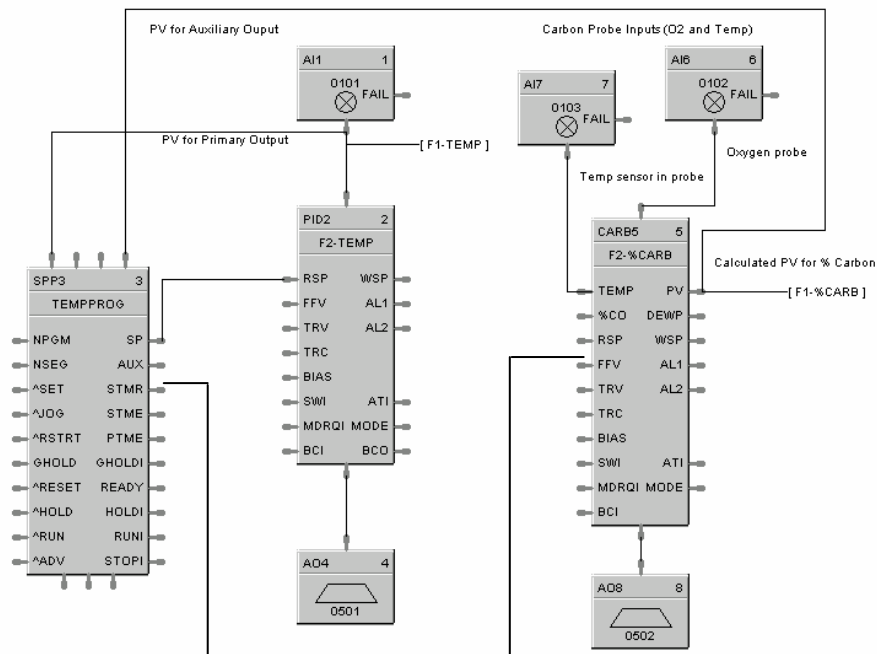


Figure 0-1 . Example of SPP Implementation.

To monitor the other SP programmers, create a new point for each programmer and replace the ‘1’ in the Source Address with the given programmer number (valid 1 to 4). Each point must have a unique name. Repeat this process until you have created points for each programmer. When all points have been built, download them to PlantScape Vista. See *PlantScape Server and Configuration Guide* for information on point building.

To configure SPP monitoring in PlantScape Vista, perform the following steps:

Load the SPP Summary page to display a list of programmers in a controller. This can be done in Station from the PlantScape Vista menu as follows:

*Configure -> Applications -> HC900 -> Set Point Programs -> Programmers*

Note: You may wish to customize your toolbar to access this page directly

Figure 0-2. HC900 SPP Summary.

The summary page requires the defined Point name for the SP programmer to be entered for each programmer to activate the programmer access.

To do this, first:

Put the HC900 & UMC800 channel(s) out of service

For each HC900 and UMC800 controller, enter the Point name for each SP programmer point configured for this controller in the appropriate programmer position (Programmer 1, 2, 3, or 4).

Put the channel(s) back in service

You can verify the SPP monitoring by checking that the primary and auxiliary SP follow that of the programmers (displayed in the monitor mode within HC Designer or Control Builder, or on the Operator Interface, if available).

## Operation

This section describes how to use the HC900/UMC800 SPP & Recipe Support on a routine basis.

Standard tasks include downloading recipes and SP profiles, and issuing commands to the SP programmers. After reading this section, you will be able to control HC900 and UMC800 controllers from PlantScape Vista.

## Prerequisites

It is assumed that you have successfully completed the configuration procedure detailed in the previous section and that all prerequisites have been met.

## Procedure

The HC900/UMC800 application allows you to easily perform routine control tasks from PlantScape Vista, including:

- Downloading recipes
- Downloading SP profiles
- Downloading combined recipes
- Controlling a SP programmer

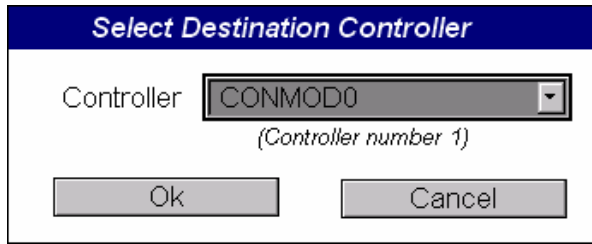
## Downloading a Recipe

1. Load the Recipe Selection page to display a list of stored recipes. This can be done in Station from the PlantScape Vista menu as follows:

*Configure -> Applications -> HC900 -> Recipes (Variables Only)*

2. Select the recipe that you would like to configure/modify, or select a blank slot to create a new recipe. Click on the recipe name to load its configuration.
3. Once configured, the recipe may be downloaded to a controller using the “Download to Controller” button. Click the button and select a controller destination from the dialog

box. Note that a recipe may be downloaded to any controller, not just the “Compatible controller”.



4. Click Ok to accept the current controller selection. A confirmation dialog box appears. Click Download to accept the recipe destination or Cancel to remove the dialog box.

**Warning!** When you download a recipe, you are in effect writing new values to the variables. Be aware that by changing the variable values, you can affect running programs if they use the variables as inputs.

Upon starting a download, the message “Downloading recipe...” is displayed to the operator.

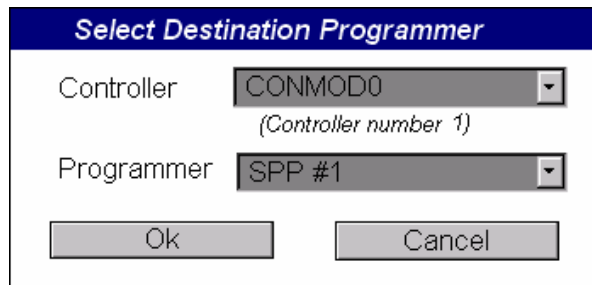
If successful, the message “Recipe download complete.” will be displayed. Otherwise “Recipe download failed.” is displayed and a PlantScape Vista alarm raised. See Section Note: on troubleshooting for possible fail reasons.

## Downloading a SP Profile

1. Load the Profile Selection page to display a list of stored profiles. This can be done in Station from the PlantScape Vista menu as follows:

*Configure->Configuration ->HC900 ->Set Point Programs->Profiles*

2. Select the profile that you would like to configure/modify, or select a blank slot to create a new profile. Click on the profile name to load its configuration.
3. Once configured, the profile may be downloaded to an HC900/UMC800 controller using the “Download to Controller” button. Click the button and select a controller and programmer destination from the dialog box.



4. Click Ok to accept the current controller and programmer selection. A confirmation dialog box appears. Click Download to accept the profile destination or Cancel to remove the dialog box.

**Warning!** Downloading a profile will cause the selected programmer to be cleared and reset before the profile is downloaded. Any pre-existing program will be aborted and overwritten.

Upon starting a download, the message “Downloading profile...” is displayed to the operator.

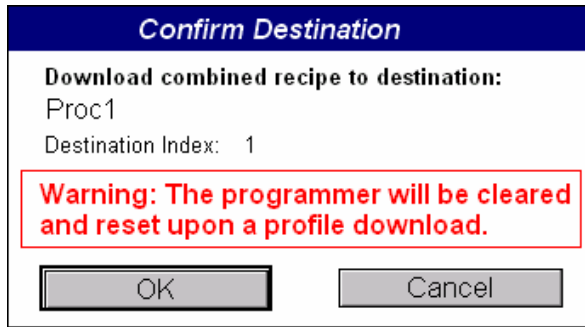
If successful, the message “Profile download complete.” will be displayed. Otherwise “Profile download failed.” is displayed and a PlantScape Vista alarm raised. See Section Note: on troubleshooting for possible fail reasons.

## Downloading a Combined Recipe

1. Load the Combined Recipe Selection page to display a list of stored combined recipes. This can be done in Station from the PlantScape Vista menu as follows:

Configure -> Applications -> HC900 -> Combined Recipes

2. Select the combined recipe that you would like to configure/modify, or select a blank slot to create a new combined recipe. Click on the combined recipe name to load its configuration.
3. Once configured, the combined recipe may be downloaded to a controller using the “Download” buttons. Select the desired destination and click on its “Download” button.



4. A confirmation dialog box appears. Click Ok to accept the combined recipe destination or Cancel to remove the dialog box.

**Warning!** If the download includes a recipe, then running programs can be affected by changing the variable values. If the download includes a profile, then the selected programmer(s) will be cleared and reset before the profile is downloaded. Any pre-existing program(s) will be aborted and overwritten.

Upon starting a download, the message “Downloading combined recipe...” is displayed to the operator.

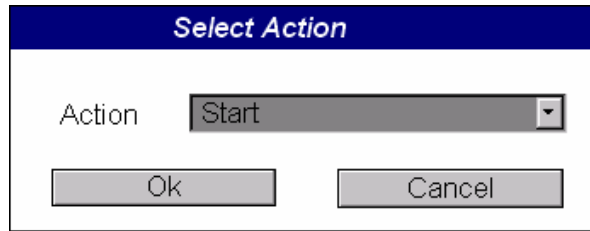
If successful, the message “Combined recipe download complete.” will be displayed. Otherwise “Combined recipe download failed.” is displayed and a PlantScape Vista alarm raised. See Section Note: on troubleshooting for possible fail reasons.

## Controlling a SP Programmer

1. Load the SPP Summary page to display a list of programmers in a controller. This can be done in Station from the PlantScape Vista menu as follows:

Configure -> Applications -> HC900 -> Set Point Programs -> Programmers

2. Select a controller in the combobox. The page should update with the current state of the SP programmers.
3. Select the programmer that you would like to control. Click on programmer’s number to load the SPP Program page with its configuration.
4. Click “Command Programmer” to display the Action dialog box. Select the desired action and click Ok.



5. A confirmation dialog box appears. Click Ok to accept the action or Cancel to remove the dialog box.

If the command was successful, the message “Command sent.” will be displayed and the SP programmer status will change to reflect the command. Otherwise “Failed to send command.” is displayed. See Section Note: for information on troubleshooting and possible fail reasons.

**Note:** Commands can also be issued from the SPP Trend page. Not all commands are valid in all programmer states eg. ‘Clear’ when the programmer is in ‘Run’ and you must be in Hold prior to Reset or to use Advance to go to a next segment. You must also be in Hold to modify the current segment. You must Reset to return to Ready mode.

## Troubleshooting

This section describes cross-checks and remedies to perform if HC900/UMC800 SPP & Recipe Support does not respond as anticipated.

Behaviour	Things to try or confirm
Cannot use PlantScape Vista to control an HC900 or UMC800. The commands appear to have no effect.	Ensure that the application has been installed correctly and that all prerequisites have been met. Make sure the UMC800SP.EXE task is running. Check that Station R1.1, Build 1358 or later is installed.
Display elements acting erratically	Check that Station R1.1, Build 1358 or later is installed.
Downloading/uploading a stored recipe or SP profile fails and causes a PlantScape Vista alarm to be raised.	Ensure the selected controller is a valid HC900/UMC800 Check that PlantScape Vista can communicate with the controller eg. the controller status is OK. If performing a download, ensure the target programmer has a SPP function block. Ensure the controller is in ‘Run’ mode (set on the controller hardware). Check the PlantScape Vista log for error messages.
The “Clone a Profile” dialog box does not let me select the correct profile.	Check that each profile has a unique name. If this is not the case, then the dialog box will only select the first profile and clone this one.
Cannot enter a point name on the SPP Summary page.	Ensure that the HC900 and UMC800 channel(s) are out of service when entering the point names.

Behaviour	Things to try or confirm
<p>Downloading a program from the SPP Program page fails and causes a PlantScape Vista alarm to be raised.</p>	<p>As per “Download profile” (above).  The SP programmer must be in ‘Ready’ state to edit segments.  Ensure all parameter have valid values eg. restart rate and jog segment not zero.  Check the PlantScape Vista log for error messages.</p>
<p>The command issued to a SPP programmer appears to have no effect.</p>	<p>Some actions require the SP programmer to be in a certain state eg. ‘Clear’ is not valid when the programmer is in ‘Run’. See Note above in Section 4.6.</p>
<p>The trend does not display the program history or the ideal profile.</p>	<p>Check that a point has been built and specified for the SP programmer. Ensure that HC900 and UMC800 channel(s) are enabled and the point has “Scanning and Control enabled” set.  Ensure the PlantScape Vista license includes Fast and Extended history collection.  Check that the point parameters have been configured properly and are collecting history.  Make sure the point is not in alarm.  The point range should be large enough to cover the output of the programmer.</p>
<p>The program history does not look like the ideal profile.</p>	<p>An ‘Advance’ command causes the programmer to advance to the next segment. This causes a ‘gap’ in the history values and results in the running program to be ‘distorted’.</p>
<p>The trend draws fewer segments than in the SP program.</p>	<p>The end of the program is taken as the first segment with a length/rate of zero Ensure that your program only contains these types of segments at the end of the program. To check this, you can upload the program in the SPP Program page.  Check the PlantScape Vista log for error messages.</p>

Table 2. Problems and Possible Causes.