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Honeywell Series 9000 Integration Reference

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Planning considerations for installing and configuring Honeywell Series 9000 controllers

This reference provides the information you need to set up, configure, and test Series 9000 controller communications with the server. If you are using the Series 9000 Configuration Software, you will need to read the *Series 9000 Configuration Software Manual*.

Revision history

Revision	Date	Description
A	February 2015	Initial release of document.

How to use this guide

These are the steps for connecting and configuring a Series 9000 controller. Complete each step before commencing the next.

Steps	Go to
Set the IP Address in the ELPM	Setting the ELPM IP address
Connect the cables from the server to the Series 9000 controller	Architectures for Honeywell Series 9000
Select a Series 9000 configuration method	Choosing a configuration method for Honeywell Series 9000
Use Quick Builder to define channels	<ul style="list-style-type: none">Honeywell Series 9000 channel and controller reference"Build channels" topic in the <i>Quick Builder User's Guide</i>
Define channels with Configuration Software	<i>Series 9000 Configuration Software Manual</i>
Use Quick Builder to define controllers	<ul style="list-style-type: none">Honeywell Series 9000 channel and controller reference"Build controllers" topic in the <i>Quick Builder User's Guide</i>
Define controllers with Configuration Software	<i>Series 9000 Configuration Software Manual</i>
Download channel and controller definitions to the server	"Downloading items" topic in the <i>Quick Builder User's Guide</i>
Test communications	Testing Honeywell Series 9000 communications with the server
Troubleshoot communication errors	Troubleshooting Honeywell Series 9000 communication errors

Related topics

"Devices supported by the Honeywell Series 9000 interface" on page 7

"Other documentation for Honeywell Series 9000" on page 8

"Honeywell Series 9000-specific terms" on page 9

“Setting the ELPM IP address” on page 10

“Architectures for Honeywell Series 9000” on page 11

“Choosing a configuration method for Honeywell Series 9000” on page 12

“Honeywell Series 9000 channel and controller reference” on page 13

“Testing Honeywell Series 9000 communications with the server” on page 40

“Troubleshooting Honeywell Series 9000 communication errors” on page 42

Devices supported by the Honeywell Series 9000 interface

The server supports the following Series 9000 controller models:

- 9000e
- 9100e
- 9200e

Other documentation for Honeywell Series 9000

- *Series 9000 Communications Reference Manual* 71-SE-18-01
- *Series 9000 Loop and Logic Block Configuration* 51-51-10-16

Related topics

“Honeywell Series 9000-specific terms” on page 9

Honeywell Series 9000-specific terms

It is assumed that the reader is familiar with the components, operation, and configuration of the Series 9000 equipment. A clear understanding of these terms is necessary for accurate configuration of the server database and fault diagnosis. See the topic titled "Other documentation for Honeywell Series 9000" for complete information on the Series 9000.

ELPM Ethernet Loop Processor Module. The ELPM is part of the Series 9000. It provides the Ethernet connection to the Series 9000. It also performs the loop processing functions of the Series 9000.

LPM Loop Processor Module.

Related topics

"Other documentation for Honeywell Series 9000" on page 8

Setting the ELPM IP address

Set the IP address using the DIP switches on the ELPM installed in the Series 9000. The IP address must be unique for all devices on the LAN.

Example

ELPM DIP switches S5 set to Internet address 200.0.0.16

bit	76543210	76543210	76543210	76543210
off(=0)	00110111	11111111	11111111	11101111

For more information about installing the ELPM, see the *S9000 Controller Installation Manual*.

To the server, each Series 9000 controller is treated as three controllers:

- One for PLC data (logic processor data)
- One for LPM control block configuration
- One for LPM control block I/O

The IP address you set for the Series 9000 must be defined for each controller you configure in the server. There are three different ways to do this:

- Use the Series 9000 Configuration software to create controllers. The Configuration Software adds the necessary entries to the hosts file.
- Define the IP address for a controller on the Main property page for the controller in Quick Builder. See the topic titled "Main properties for a Honeywell Series 9000 controller" for more information.
- Define the IP address for a controller in the TCP/IP database of the server.

The server uses the controller name assigned in Quick Builder to look up the IP address. As each controller uses the same IP address, when adding the address to the TCP/IP database of the server, use the controller names as aliases so that the server can determine their IP address.

Example

TCP/IP host file entry for a Series 9000 controller:

```
200.0.0.16 plcio cbcfg cbio
```

where 200.0.0.16 is the IP address and *plcio*, *cbcfg*, and *cbio* correspond to the names of the three server controllers used to access the different types of data in the Series 9000.

Related topics

"Main properties for a Honeywell Series 9000 controller" on page 17

Architectures for Honeywell Series 9000

The Series 9000 is connected to the server by way of thin Ethernet LAN or Cat 5 twisted pair and an AUI transceiver.

Communication is by way of the ELPM.

Ethernet connections to Honeywell Series 9000 using ELPM

An Ethernet connection to an Series 9000 using ELPM.

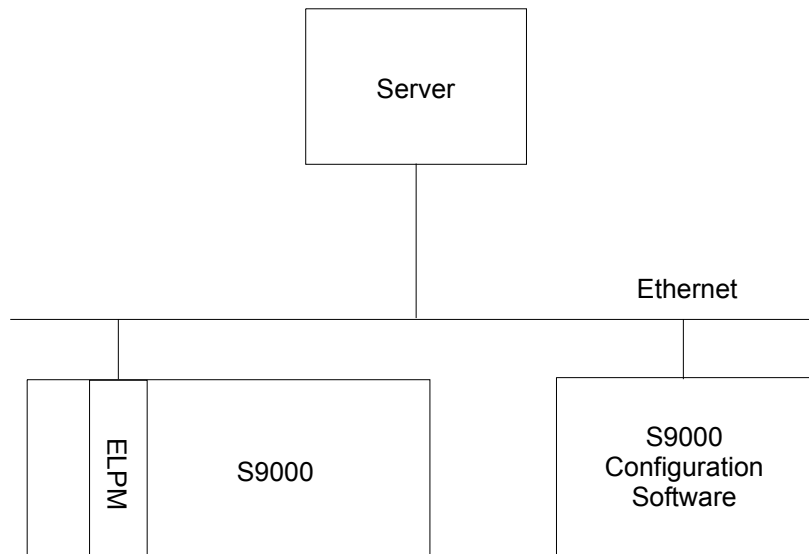


Figure 1: Ethernet connection to Series 9000 using ELPM

! Attention

- The ELPM does not support IP routing.
 - Release 200.3 of the Series 9000 Configuration Software is only supported on Windows 95 and Windows NT 4.
-

Choosing a configuration method for Honeywell Series 9000

There are two ways in which you can configure connections and points in the server for Series 9000 controllers: using the Series 9000 Configuration Software, or using Quick Builder. The method you select will depend on whether or not you want to make use of database integration features. Make sure you read and understand the restrictions that apply if you want to use Quick Builder to configure points after you use the Configuration Software.

Considerations

- During an upgrade from a previous release you are required to upload your converted server database to Quick Builder, regardless of whether you used *server connected mode* or Quick Builder to configure controllers.

If you make changes after the upgrade to the Series 9000 configuration using the *server connected mode*, these changes are not included in Quick Builder until you upload the Quick Builder database.

Alternatively, if you are not going to configure the Series 9000 using Quick Builder you can delete the Series 9000 channels, controllers, and points from Quick Builder.

Method	Tool	Description
Server connected mode	Series 9000 Controller Configuration Software R200.3	Provides server and controller database integration. As well as configuring the controller, it can also configure the server database for the Series 9000 including channel, controller, and point definitions.
Server unconnected mode	Quick Builder	Can be used to configure the server when not using the integrated database features of the Series 9000 Configuration Software. Quick Builder can be used to configure Series 9000 channel, controller, and point definitions in the server database. You must use Quick Builder if you want to enhance point functionality with algorithms or if there are other controller types.



Attention

- The Series 9000 Configuration Software is needed for the initial setup and programming of the controller. It is not needed for server configuration in unconnected mode.

Honeywell Series 9000 channel and controller reference

This section describes the configuration and addressing information specific to Honeywell Series 9000 channels and controllers.

In addition to the information contained in this reference, and for help to build channels and controllers, see the section titled "Building controllers or channels" in the *Quick Builder User's Guide*.

Related topics

"Main properties for a Honeywell Series 9000 channel" on page 14

"Port properties for a Honeywell Series 9000 channel" on page 16

"Main properties for a Honeywell Series 9000 controller" on page 17

"Optimizing Honeywell Series 9000 scanning performance" on page 19

"Planning considerations for installing and configuring Honeywell Series 9000 controllers" on page 5

Main properties for a Honeywell Series 9000 channel

The Main tab defines the basic properties for a Honeywell Series 9000 channel.

For information about how to create a channel, see the topic titled "Building controllers and channels" in the *Quick Builder User's Guide*.

Property	Description
Name	The unique name of the channel. A maximum of <i>10</i> alphanumeric characters (no spaces or double quotes). Note: In Station displays, underscore characters (<i>_</i>) appear as spaces.
Description	(Optional) A description of the channel. A maximum of <i>132</i> alphanumeric characters, including spaces.
Marginal Alarm Limit	<p>The communications alarm marginal limit at which the channel is declared to be marginal. When this limit is reached, a high priority alarm is generated. To change the priority of the alarm system wide, see the topic titled "Configuring system alarm priorities" in the <i>Server and Client Configuration Guide</i>. To change the priority of the alarm for one channel, see the topic titled "About configuring custom system alarm priorities for an individual channel or controller" in the <i>Server and Client Configuration Guide</i>.</p> <p>A channel barometer monitors the total number of requests and the number of times the controller did not respond or response was incorrect. The barometer increments by two or more, depending on the error, and decrements for each good call.</p> <p>To calculate an acceptable marginal alarm limit, use the formula: Square root of the number of controllers on the channel \times Marginal Alarm Limit defined on those controllers (Normally, you specify the same value for all controllers on a channel).</p> <p>For example, if there are 9 controllers on the channel and their Marginal Alarm Limit is set to 25, the value would be 3 (which is the square root of 9) \times 25 = 75.</p>
Fail Alarm Limit	<p>The communications alarm fail limit at which the channel is declared to have failed. When this barometer limit is reached, an urgent alarm is generated. To change the priority of the alarm system wide, see the topic titled "Configuring system alarm priorities" in the <i>Server and Client Configuration Guide</i>. To change the priority of the alarm for one channel, see the topic titled "About configuring custom system alarm priorities for an individual channel or controller" in the <i>Server and Client Configuration Guide</i>.</p> <p>Set this to double the value specified for the channel Marginal Alarm Limit.</p>
Connect Timeout	<p>The length of time that the server attempts to connect to the controller. The server will stop trying to connect to the controller once the timeout period passes. The default value <i>10</i> seconds.</p> <p>Use the default value unless the communications line has a high error rate, or unless you are using modems.</p>
Read Timeout	<p>The length of time that the server will wait for a reply from the controller. The server will stop waiting once the timeout period passes. The default value is 2 seconds.</p> <p>Use the default value unless the communications line has a high error rate, or unless you are using modems.</p>
Item Type	The type of channel specified when this item was created.
Last Modified	The date and time the channel properties were modified.
Last Downloaded	The date and time the channel was last downloaded to the server.

Property	Description
Item Number	<p>The unique item number currently assigned to this channel, in the format <i>CHNCC</i>, where <i>cc</i> is the channel number.</p> <p>You can change the item number if you need to match your current server database configuration. The number must be between <i>01</i> and the maximum number of channels allowed for your system. For more information about setting the maximum value, see the topic titled "Adjusting sizing of non-licensed items" in the <i>Supplementary Installation Tasks Guide</i>.</p>

Port properties for a Honeywell Series 9000 channel

The Port tab defines the communication-related properties for a channel. The only **Port Type** you can define for Honeywell Series 9000 is **LANVendor**.

LANVendor port properties

Enter the following descriptions for the Honeywell Series 9000 channel:

Property	Description
Port Name	Leave this field blank.

Main properties for a Honeywell Series 9000 controller

Each Honeywell Series 9000 connected with ELPM requires a different controller definition to access each one of the three data tables.

The **Main** tab defines the basic properties for a Honeywell Series 9000 controller.

For information about how to create a controller, see the topic titled "Building controllers and channels" in the *Quick Builder User's Guide*.

Property	Description
Name	The unique name of the controller. A maximum of 10 alphanumeric characters (no spaces or double quotes). Note: In Station displays, underscore characters (_) appear as spaces. For LAN-connected controllers, the name is used to look up the IP address in the TCP/IP database if you do not specify an IP Address property.
Description	(Optional) A description of the controller. A maximum of 132 alphanumeric characters, including spaces.
Channel Name	The name of the channel on which the controller communicates with the server. (You must have already defined a channel for it to appear in this list.)
Marginal Alarm Limit	The communications alarm marginal limit at which the controller is declared to be marginal. When this limit is reached, a high priority alarm is generated. To change the priority of the alarm system wide, see the topic titled "Configuring system alarm priorities" in the <i>Server and Client Configuration Guide</i> . To change the priority of the alarm for one controller, see the topic titled "About configuring custom system alarm priorities for an individual channel or controller" in the <i>Server and Client Configuration Guide</i> . A controller barometer monitors the total number of requests and the number of times the controller did not respond or response was incorrect. The barometer increments by two or more, depending on the error, and decrements for each good call. The default value is 25.
Fail Alarm Limit	The communications alarm fail limit at which the controller is declared to have failed. When this barometer limit is reached, an urgent alarm is generated. To change the priority of the alarm system wide, see the topic titled "Configuring system alarm priorities" in the <i>Server and Client Configuration Guide</i> . To change the priority of the alarm for one controller, see the topic titled "About configuring custom system alarm priorities for an individual channel or controller" in the <i>Server and Client Configuration Guide</i> . Set this to double the value specified for the controller Marginal Alarm Limit. The default is 50.
IP Address	(Optional) The IP address must match that set for the Series 9000 ELPM. Do not enter the IP address here if you have entered it in the server TCP/IP database. See the topic titled "Setting the ELPM IP address" for more information.
Data Table	Select one of: <ul style="list-style-type: none"> • <i>LPM Control Block Config</i> • <i>LPM Control Block I/O</i> • <i>PLC Registers & Digital</i>
Item Type	The type of controller specified when this item was created.
Last Modified	The date and time the controller properties were modified.
Last Downloaded	The date and time the controller was last downloaded to the server.

Property	Description
Item Number	<p>The unique item number currently assigned to this controller, in the format <i>RTUnnnnn</i>.</p> <p>You can change the item number if you need to match your current server database configuration. The number must be between <i>01</i> and the maximum number of controllers allowed for your system. For more information about setting the maximum value, see the topic titled "Adjusting sizing of non-licensed items" in the <i>Supplementary Installation Tasks Guide</i>.</p>

Related topics

“Setting the ELPM IP address” on page 10

Optimizing Honeywell Series 9000 scanning performance

The maximum amount of data that can be acquired from a controller is influenced by the rate of sending scan packets to the controller. An understanding of the Series 9000 scan packets will help you configure points so that optimal data acquisition performance can be achieved by maximizing the amount of data acquired with each scan packet.

The scan packets that have been built can be listed by using the utility **lisscn** (list scan). Listing scan packets helps verify the scanning strategy.

For more information about **lisscn**, see the section titled "Command Reference" in the *Server and Client Configuration Guide*.

Honeywell Series 9000 scan packets

For PLC digital memory, the values for up to 1,920 consecutive addresses can be acquired in one scan packet.

Starting Address (a multiple of 16)
Number of Addresses (maximum of 1920)

Figure 2: Scan packet format for digital values

For PLC Registers and LPM data, the values for up to 60 scattered addresses can be acquired in one scan packet.

Address 1
Address 2
...
...
...
...
Address 60

Figure 3: Scan packet format for PLC registers or LPM values

Two types of scan packet are built for a Honeywell Series 9000:

- **Hardware diagnostic scan.** One scan per controller every 60 seconds is initiated automatically by the server to verify communications integrity with the controller. One hardware diagnostic scan is automatically created per scan packet.
- **Periodic data acquisition scan.** On demand, the server acquires a value from a controller and processes the value as a point parameter.

For each source address scanned, a scan period can be specified. The period specified depends on the nature of the parameter. A fast changing or critical parameter uses a fast rate; an infrequent or non-critical parameter (for example, SP) should use a slower rate.

Honeywell Series 9000 points reference

This section describes how to configure points for a Honeywell Series 9000 controller using Quick Builder. In addition to the information contained in this reference, and for help to build points, see the section titled "Building and configuring points" in the *Quick Builder User's Guide*.

Related topics


"Defining a Honeywell Series 9000 address for a point parameter" on page 22

Defining a Honeywell Series 9000 address for a point parameter

For source and destination addresses the format for a Honeywell Series 9000 controller address is:

ControllerName Address

Part	Description
<i>ControllerName</i>	The name of the Series 9000 controller.
<i>Address</i>	The address in the controller where the value is recorded. Address syntax can be entered as either: <ul style="list-style-type: none"> PLC register and digital addressing. See the section below titled "PLC register and digital addressing" for more information. LPM I/O and configuration data addressing. See the section below titled "LPM I/O and configuration data addressing" for more information.

If you would like help with the address, you can use the Address Builder. To display the Address Builder, click  next to **Address**.

PLC register and digital addressing

Address [Format | BitNumber]

Part	Description
<i>Address</i>	The server addressable memory address within the PLC data table. See the section below titled "Point parameter source/destination address ranges" for more information.
<i>Format</i>	(Optional) Select an appropriate format to read raw values: <i>0</i> = Reads 16-bit integers from 0 to 65,536. <i>IEEEFP</i> = Reads IEEE floating point numbers. IEEEFP numbers use two data addresses, address and (address-1). Notes <ul style="list-style-type: none"> Be careful not to overlap two IEEEFP data addresses. Do not set an IEEEFP address to 4096.
<i>BitNumber</i>	(Optional) For parameter values with addresses greater than 4,095, enter the starting bit number. The valid range is 0 (default) to 15, where 0 is the least significant bit. The number of bits read is implied by the point type. Analog point parameters read up to 16 bits; status point parameters read 1, 2, or 3 consecutive bits.

Example

For analog point:

- PV Source: *5051 IEEEFP*
- SP Source: *5054 U999*
- SP Destination: *5054 U999*

For accumulator point:

- PV Source: *5070*

For status point:

- PV Source: *322 (bit 0)*
- PV Source: *5001 3 (register 5001, bit 3)*

Point parameter source/destination address ranges

The address range varies according to the table type.



Attention

Some models of Series 9000 have smaller address ranges than those listed. Consult the Series 9000 documentation for the precise address range of your particular model.

Table Type	Address Range	Point Parameter		
		Status	Analog	Accumulator
Real DI/DO	0 to 2047	PV, OP, MD	MD	
Internal DI/DO	2048 to 4095	PV, OP, MD	MD	
Register	4096 to 8191	PV, OP, MD	PV, OP, SP, MD, A1 to A4	PV

Address restrictions

Restriction	Solution
Real analog Input/Output (0–2047) is not directly addressable.	Use relay ladder logic to move the analog value to and from a register. Analog input cards are 12 bit; use data format <i>U4095</i> .
System status information, including redundancy status, is not directly addressable.	Use relay ladder logic to move this to internal I/O or registers for access. Series 9000 memory maps vary according to the model. See the Series 9000 documentation for details.

Data format for scaling

Data formats for scaling are valid for analog points only. The default format is **U4095**.

Data Format	Counts
U4095	0 to 4095
U9999	0 to 9999
U999	0 to 999

Data format for reading floating point values

Select format *IEEEFP* to read two consecutive registers as a single precision floating point number.



Attention

- IEEEFP numbers use two data addresses, address and address–1. Do not specify address–1 (the lower address) as the point parameter address.
- When configuring controller data tables, do not assign overlapping data addresses if floating point values are used and do not set an IEEEFP address to any value less than 4,097.

Data format for reading raw values without scaling

Enter **0** to read all 16 bits in the register without scaling. To read less than 16 bits without scaling, enter the starting bit number (1 to 15).

LPM I/O and configuration data addressing

The address syntax for an LPM I/O address is:

ControlBlockNumber [*ControlBlockType*] *ParameterNumber* [*Format*]

Part	Description
<i>ControlBlockNumber</i>	A number from 1 to 250. To access operator tags, use block number 251 on an LPM I/O type controller (data table type 2).
<i>ControlBlockType</i>	(Optional) The LPM block type. There is no default. A block number needs to be associated with a block type in order to access the Series 9000 Block Configuration pages.
<i>ParameterNumber</i>	Within the LPM control block, a number from 0 to 31. Parameter numbers for each block type can be found in the <i>S9000 Communications Reference Manual</i> . Different block types can use a different number for the same parameter. For example, the parameter number for the Input PV parameter of the PID1 block is 11 but for the PID3 block it is 15. Data table type 1 has configuration parameters; data table type 2 has input/output parameters. If accessing operator tag information, the parameter number is from 0 to 149. Note: If the data format is MODE, the parameter number is ignored.
<i>Format</i>	(Optional) To read the raw values, select the appropriate format. <ul style="list-style-type: none"> • <i>IEEEFP</i> = Reads IEEE floating point data (the default). • <i>INT4</i> = Reads 32-bit integer data (not usually used). • <i>MODE</i> = PID type block mode parameter. When this format is used, the parameter number is ignored to enable composite mode support in PID blocks. See the section "Composite mode support in PID blocks" in the topic titled "Scaling with data formats" for more information. • <i>REVERSE</i> = Reverses a digital value (0 becomes 1, 1 becomes 0).



Attention

- There are still some PID parameters that require the controller to go into PROGRAM mode before a change can be made, for example the PID type A or B. These configuration parameters must be set by using the Series 9000 Configuration software.

Example

For analog point:

- PV Source, *5/PID2 15*
- MD Source, *5/PID2 31 MODE*
- OP Source, *5 13* (no block type)

For status point:

- PV Source, *251 88* (operator tag example)

Operator tag support

To access information in an operator tag, use block number 251 and an index number between 0 and 149.

The index number corresponding to an operator tag is found in the Series 9000 Configuration Software Continuous Control chart.

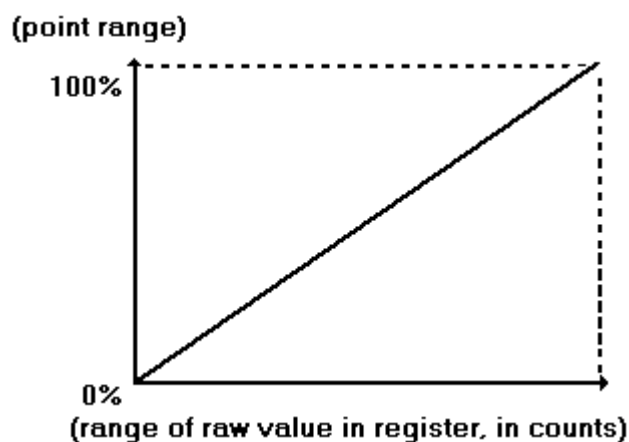
Scaling with data formats

Point parameter values that have addresses in the registers can be scaled with a data format. Select the format that corresponds to the counts that have been set in the PLC register.

Data Format	Counts in PLC Register
U4095 (default)	0 to 4095
U9999	0 to 9999
U999	0 to 999

The data format tells the server how to interpret the register value. Raw values in the PLC register tables can be scaled by the 0% and 100% point range values.

To select a format for scaling, select the format that corresponds to the counts that have been set in the register where the point parameter value is sourced.



Composite mode support in PID blocks

The mode (MD) point parameter can be used to monitor and control both the remote set point and the manual modes of a PID block.

When monitoring and controlling, the server reads and writes both the PID block manual output mode request (parameter number 2) and remote set point mode request (parameter number 3) I/O parameters.

To enter the controller address for the mode point that will read and write to both control block parameter addresses, enter:

- PID Control Block number
- Any parameter number
- MODE for the data format

Whichever I/O parameter number you enter, it is ignored if the data format is MODE.

The server and the Series 9000 use different acronyms for the same modes.

Server Mode Acronym	Series 9000 PID Block Mode
MAN	LSP-MAN or RSP-MAN
AUTO	LSP-AUTO
CASC	RSP-AUTO

These acronyms are stored in the server system acronym table and can be changed either at installation time or after installation using a Station display. See the *Server and Client Configuration Guide* for information about modifying acronyms.

Configuring Honeywell Series 9000 set point programs and recipes

If you are using Series 9000 controllers, you can use Station displays to view or edit set point programs or recipes.



Attention

Note that set point programs and recipe management are not available from Console Stations.

Related topics

“Configuring Honeywell Series 9000 set point programs (SPP)” on page 28

“Viewing Honeywell Series 9000 set point program trends” on page 33

“Configuring Honeywell Series 9000 recipes” on page 35

Configuring Honeywell Series 9000 set point programs (SPP)

A Series 9000 controller can contain up to 99 set point programs.

Related topics

- “Viewing summary details of a controller's set point programs” on page 28
- “Viewing, editing, or creating set point programs” on page 29
- “Releasing the Honeywell Series 9000 as the configuration node” on page 30
- “Editing segments in a Honeywell Series 9000 set point program” on page 30
- “Creating new segments” on page 30
- “Deleting segments” on page 31
- “Editing the program name or engineering units” on page 31
- “Restoring configuration settings” on page 31
- “Saving changes” on page 31
- “Returning to the Summary display” on page 31
- “Creating a new set point program” on page 32
- “Deleting a set point program” on page 32
- “Resetting the Series 9000 Software as the Configuration Node” on page 32

Viewing summary details of a controller's set point programs

When you select a controller, all the Series 9000 set point programs are read from the selected controller, and the details are called up in the Series 9000 Set Point Program Summary display.

The display shows the following details for the selected controller:

- Program name(s)
- Engineering units
- The number of segments that are being used by the program
- When the program was last modified



Attention

- The segments of a set point program are stored in blocks of ten, so the number of segments actually used is rounded up to the nearest ten. The Series 9000 can store a maximum of 100 10-segment blocks (that is, 1,000 segments).

To view summary details of a controller's set point programs

- 1 Select **Configure > S9000 > Set Point Programs**.

This calls up the Series 9000 Set Point Program Summary display.

Program Number	Description	Engineering Units	Number of Segments	Modified Date	Modified Time
1	SPP123	deg F	10	21-Nov-00	7:31:24
2	DemoSPP	°C	10	06-Feb-01	9:29:46
3	-		0		0:00:00
4	-		0		0:00:00
5	-		0		0:00:00
6	-		0		0:00:00
7	-		0		0:00:00
8	-		0		0:00:00
9	-		0		0:00:00
10	-		0		0:00:00
11	-		0		0:00:00
12	-		0		0:00:00
13	-		0		0:00:00
14	-		0		0:00:00
15	-		0		0:00:00
16	-		0		0:00:00
17	-		0		0:00:00
18	-		0		0:00:00
19	-		0		0:00:00
20	-		0		0:00:00

Figure 4: Series 9000 set point program summary display

- From the **Series 9000 Controller** list, select the controller whose set point programs you want to view. The lists contains all the controllers on Series 9000 channels that address LPM Control Block I/O data tables.

Viewing, editing, or creating set point programs

To view details of set point programs

- Click the **Edit** button for a selected program on the set point program Summary display. This calls up the Set Point Program Configuration display for that program.

Segment	Type	Ramp (EU/min)	Setpoint (EU)	Soak Time (min)	Guaranteed Soak Band	Events
1	RAMP	4.10	22.50	2:25:00	1.00	1 2 3 4 5 6 7 8 9 10 11 12
2	SOAK					
3	N/A	0.00	0.00	0:00:00	0.00	
4	N/A	0.00	0.00	0:00:00	0.00	
5	N/A	0.00	0.00	0:00:00	0.00	
6	N/A	0.00	0.00	0:00:00	0.00	
7	N/A	0.00	0.00	0:00:00	0.00	
8	N/A	0.00	0.00	0:00:00	0.00	
9	N/A	0.00	0.00	0:00:00	0.00	
10	N/A	0.00	0.00	0:00:00	0.00	

Setting the ramp and soak times to 0.0 will clear remaining segments

Download Restore

Figure 5: Set point program configuration display

The Series 9000 Set Point Program Configuration display shows all the segments in a Series 9000 set point program. You can edit these segments or create new segments if you wish, but please note the following caution.



CAUTION

Before editing or creating set point programs, make sure that the Series 9000 software is not running. Editing set point programs while the Series 9000 software is running can cause errors in the Series 9000 software.

Before editing or creating set point programs, you must also ensure that the Series 9000 Configuration Software is not currently set as the Configuration Node. See “Releasing the Honeywell Series 9000 as the configuration node” for more information.

Related topics

“Releasing the Honeywell Series 9000 as the configuration node” on page 30

Releasing the Honeywell Series 9000 as the configuration node

To release the Series 9000 configuration software as the Configuration Node

- 1 Go to the Series 9000 software and select the controller from the list of **Configured Controllers**.
- 2 Click **Setup**.
- 3 Click **Release this PC as Configuration Node**.

Related topics

“Editing the program name or engineering units” on page 31

“Viewing, editing, or creating set point programs” on page 29

Editing segments in a Honeywell Series 9000 set point program

Prerequisites



Attention

To edit segments (or create new segments) in a set point program, you must be logged on to Station at ENGR security level (or higher).

To edit the segments of the Series 9000

- Change the appropriate fields as necessary:
 - a Ramp Rate (in EU/min)
 - b Soak Time (*hours : minutes : seconds*)
 - c Set Point (EU)
 - d Guaranteed Soak Band (EU)
 - e Events

Creating new segments

To create a new pair of RAMP/SOAK segments

- Enter a ramp rate or soak time for the next segment.
You must create segments in the correct order: you cannot create a segment if the preceding segments have not yet been created. You can create a maximum of 100 segments (50 RAMP/SOAK pairs) for a Series 9000 set point program.

Deleting segments



CAUTION

Deleting a RAMP/SOAK segment will delete all subsequent segments in the program.

To delete a pair of RAMP/SOAK segments

- Set the ramp rate and soak time to zero.

Editing the program name or engineering units

To edit the Program Name or Engineering Units

- 1 Log on to Station at MNGR security level.
- 2 Ensure that the Series 9000 software has been released as the Configuration Node. (See the topic titled "Releasing the Honeywell Series 9000 as the configuration node.")
- 3 Under the **Series 9000** heading in the top right of the Set Point Program Configuration display:
 - a Set the server as the Configuration Node of the Series 9000. (Click the **Server is the Configuration Node** button to enable it.)
 - b Set the **Mode** button to **Program**.



Attention

If a redundant failover occurs, once the new primary server is up and running ensure that the Configuration Node is set for the new primary server. (For more information about redundant systems and failover, see the *Server and Client Configuration Guide*.)

Related topics

"Releasing the Honeywell Series 9000 as the configuration node" on page 30

"Using a set point program trend" on page 33

Restoring configuration settings


If you want to discard the changes that you have made in a set point program in the current editing session, you can use the **Restore** button on the Set Point Program Configuration display to restore the program configuration settings that were last downloaded.

Saving changes

If you want to save the changes that you have made in a set point program to the Series 9000, click the **Download** button on the Set Point Program Configuration display.

Returning to the Summary display

To return to the Series 9000 Summary display

- Click the  button on the top right of the title bar.

Creating a new set point program



CAUTION

If you leave a Set Point Program Configuration display without downloading the changes, any changes you have made will be lost.

Prerequisites

- You are logged on to Station as MNGR.

To create a new set point program

- 1 Click an unused line on the Series 9000 Set Point Program Summary display.
This displays the Set Point Program Configuration display.
- 2 In the **Program Name** field type a descriptive name for the new program.
- 3 Use the **Engineering Units** field to specify the engineering units to be used in the program.
- 4 Add segment data for the new set point program.
- 5 Click the **Download** button to write the new set point program to the controller.

Deleting a set point program

To delete a set point program, delete all data (segments, engineering units, and program name) from a set point program and then download it.

Resetting the Series 9000 Software as the Configuration Node

After editing (or creating new) set point programs and downloading the changes to the controller, you need to release the server as the Configuration Node and reset the Series 9000 configuration software as the Configuration Node.

To release the server as the Configuration Node

- Disable the **Server is the Configuration Node** check box in the Series 9000 group box on the Set Point Program Configuration display.

To reset the Series 9000 configuration software as the Configuration Node

- 1 Go to the Series 9000 software.
- 2 Select the controller from the list of **Configured Controllers**.
- 3 Click **Setup**.
- 4 If the server is still the Configuration Node, select the **Force Release** option. Ensure there is no currently active Configuration Node before using the Force Release option.
- 5 Select **Set this PC to Configuration Node**.

Viewing Honeywell Series 9000 set point program trends

Series 9000 set point programs can be viewed on a trend display, showing the set point program and highlighting the current segment when the program is running.

! Attention

- The same set point program trend should not be called up simultaneously on two Stations.



Figure 6: Set point program trend display

Related topics

“Using a set point program trend” on page 33

Using a set point program trend

The SPP or SPP2 block contains a set point program number. The SPP or SPP2 block also contains parameters for the execution of the program. The state, current segment, soak set point, and soak duration can all be changed from this display if the security level of the Station is *SUPV* or higher and you have set the Series 9000 to RUN mode. (See the topic titled "Editing the program name or engineering units.")

The following restrictions apply:

- The program number can only be changed when the state is **RESET**.
- The current segment and soak duration cannot be changed when the state is **RESET**.

! Attention

- When these parameters are changed at execution time, the change is not permanent and the actual set point program is not changed, only the SPP block processing the current segment of the set point program.

To use a set point program trend

- 1 Call up the Trend Summary display (click **Trend** on the System Menu display).
- 2 Click an unassigned Trend number to call up the Trend Configuration display.
- 3 Select *S9000 SPP* from **Trend Type**, and enter a point which has its PV scanning a Series 9000 SPP or SPP2 type block.

Related topics

“Editing the program name or engineering units” on page 31

Configuring Honeywell Series 9000 recipes

Recipes in a Series 9000 controller can be viewed and modified from the Series 9000 Recipe Summary display on Station.

To call up this display, select **Configure > Applications > S9000 > Recipes**.

Recipe	Description	Time	Date
1	OVENSTUP	8:22:28	05-May-01
2	LOOPINIT	8:37:28	05-May-01
3	-	0:00:00	
4	-	0:00:00	
5	-	0:00:00	
6	-	0:00:00	
7	-	0:00:00	
8	-	0:00:00	
9	-	0:00:00	
10	-	0:00:00	
11	-	0:00:00	
12	-	0:00:00	
13	-	0:00:00	
14	-	0:00:00	
15	-	0:00:00	
16	-	0:00:00	
17	-	0:00:00	
18	-	0:00:00	
19	-	0:00:00	
20	-	0:00:00	

Figure 7: Series 9000 recipe summary

The Series 9000 Recipe Summary shows a selected controller's recipe name and the time that the recipe was last modified. You can configure up to 50 recipes for a single Series 9000.

Use the **Controller** list to select the Series 9000 whose recipes you want to view or edit. The list contains all the controllers on Series 9000 channels, which look at LPM Control Block I/O data tables. When you select a controller, all the Series 9000 recipes are read from that controller. This may take a few seconds.

Related topics

- “Creating a new recipe” on page 35
- “Returning to the Summary display” on page 31
- “Configuring a recipe” on page 36
- “Deleting a recipe” on page 36
- “Creating new recipe items” on page 36
- “Editing recipe items” on page 37
- “Restoring recipe settings” on page 37
- “Deleting recipe items” on page 37


Creating a new recipe

To create a new recipe

- 1 Go to an unused Recipe entry on the Series 9000 Recipe Summary display, and click the number or description area of an unassigned recipe number.
This calls up the Series 9000 Recipe Configuration display.

- 2 In the **Recipe Name** field, enter a descriptive name for the new recipe.
- 3 Add items as described in the topic titled “Creating new recipe items.”
- 4 Click **Download** to write the recipe to the controller.

Returning to the Summary display

- To return to the Series 9000 Summary display
- Click the  button on the top right of the title bar.

Configuring a recipe

- To configure a recipe
- 1 Use the **Date** and **Time** fields to specify when the process is to run.
 - 2 Use the Recipe Configuration display to view, edit, or create Series 9000 recipes.
To call up this display, click the **recipe number or description** on the Recipe Summary display.

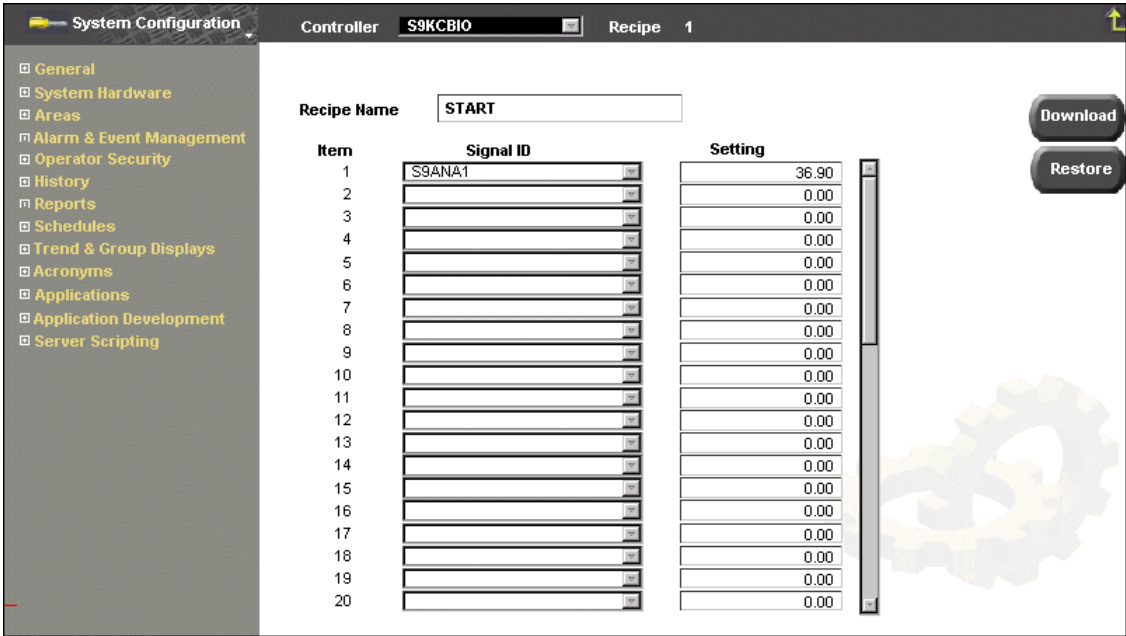


Figure 8: Series 9000 recipe configuration display

The Series 9000 Recipe Configuration display shows details of a Series 9000 Recipe. You can edit these details as necessary, if the security level of your Station is *SUPV* or higher.

Deleting a recipe

- To delete a recipe
- Clear all **Point ID** selections on the Series 9000 Recipe Configuration display for that recipe, and then download it.

Creating new recipe items

You configure up to 50 items in a Series 9000 recipe.

To create a new recipe item

- 1 Go to an unused **Item** field on the Series 9000 Recipe Configuration display and make a selection from the **Point ID** list.
- 2 Enter a value in the **Setting** field.
You cannot assign a value unless you made a selection for the **Point ID**.
- 3 To write the changes that you have made in the recipe to the Series 9000, click the **Download** button on the Series 9000 Recipe Configuration display.

Editing recipe items**Attention**

If you leave a Series 9000 Recipe Configuration display without first downloading the changes, any changes you have made will be lost.

To edit an existing Series 9000 recipe item

- 1 Go to the Series 9000 Recipe Configuration display for the recipe you want to change.
- 2 Do one or both of the following:
 - Change the current selection in the **Point ID** list.
 - Change the value in the **Setting** field for that item.
- 3 To write the changes that you have made in the recipe to the Series 9000, click the **Download** button on the Series 9000 Recipe Configuration display.

Restoring recipe settings

If you change your mind about changes that you have made in a Recipe in the current editing session, you can restore to the recipe configuration settings that were last downloaded.

To restore recipe settings

- Click the **Restore** button on the Series 9000 Recipe Configuration.

Deleting recipe items**To delete a recipe item**

- Set the **Point ID** list to be blank (that is, the first element in the list). This also sets the corresponding **Setting** value to zero.

Troubleshooting Honeywell Series 9000 issues

This section describes troubleshooting tasks for Honeywell Series 9000 that you can perform either on the server or from any Station.

Related topics

“Testing Honeywell Series 9000 communications with the server” on page 40

“Troubleshooting Honeywell Series 9000 communication errors” on page 42

“Viewing and modifying Honeywell Series 9000 block parameters” on page 43

Testing Honeywell Series 9000 communications with the server

A Series 9000 diagnostic utility, **s90tst**, is included as part of the server software. You can test communications between the server and the Series 9000 after channel and controller definitions are downloaded to the server.

Before testing:

- Set up Series 9000
- Connect cables
- Download channel and controller definitions without errors

If there is a Loader Terminal with the system, it should be used to ensure that the Series 9000 is operating correctly.



Attention

- The utility can be used with the server either on- or off-line.

To run the s90tst utility

- 1 In a Command Prompt window, type **s90tst** and then press Enter.
- 2 Follow the screen prompts and type and enter the values relevant to the data you are testing.
To display help when running **s90tst**, type **?** and then press Enter.

Examples

This example of PLC data reads a status (digital) value from address 1 of the logic processor.

```
Enter LRN or device name of channel: chn07
Enter the controller number (item number in Quick Builder): 50

SERIES 9000 PLC Input/Output

Enter function to be performed
0 - QUIT      S90TST communications utility
1 - READ      data
2 - WRITE     data
3 - SELECT    a new controller

Enter function: 1
Status or Registers ? s
Enter number of I/O addresses to read (1 to 4096): 1
Enter start address: 1

address  Data
1:       0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
```

This example of LPM data reads an I/O parameter number 5 from control block number 3 in the LPM.

```
Enter LRN or device name of channel: chn50
Enter controller number(controller ID?) (required for Series
9000): 52

SERIES 9000 Control Block Input/Output

Enter function to be performed
0 - QUIT      S90TST communications utility
1 - READ      data
2 - WRITE     data
3 - SELECT    a new controller

Enter function: 1
Enter number of addresses to read (1 to 999): 1
Enter address[ 1] - block, index: 3,5

block  index  status list  data list
3      5      0x0000      60.00000
```


Related topics

“Planning considerations for installing and configuring Honeywell Series 9000 controllers” on page 5

Troubleshooting Honeywell Series 9000 communication errors

Related topics

“0106 status I/O read error” on page 42

“010C no such file or directory” on page 42

“Planning considerations for installing and configuring Honeywell Series 9000 controllers” on page 5

0106 status I/O read error

Error name

0106 status I/O read error

Timeout for LRN_{xx}, connection refused, where *xx* is the LRN number.

Solution

- Check Series 9000 connection to the network.
- Check server connection to the network.

010C no such file or directory

Error name

010C no such file or directory

Cause

No Internet address configured.

Solution

- Check the TCP/ IP hosts file for correct Internet address configuration.
- Check that the controller name matches the name in the TCP/ IP hosts database.
- Check the ELPM dip switch settings.
- Check the IP address definition for the controller in Quick Builder.
- Try using the TCP **ping** command to verify communication with the Series 9000, for example, *ping plcio* (using the TCP host name) or *ping 200.0.0.16* (using the IP address).

Viewing and modifying Honeywell Series 9000 block parameters

You can view or modify Series 9000 block parameters after you have established communications with the server.

Make sure the channel and controller are enabled. On Station, use the System Status display for Channels and System Status display for Controllers. For information about calling up Station displays, see the *Configuration Guide* for your server.

To view a Series 9000 block parameter configuration

- Call up one of the following displays:
 - On the System Configuration display for Controllers, either double-click the name of the Series 9000 LPM, or select the LPM and go to the Station toolbar and click the Detail tool. The SCADA Controllers display appears with the block configuration for the Series 9000. You can view any block with this display by typing **rec** *block_number*, where *block_number* is the number of the block you want displayed.
 - On the Point Detail display on Station for a point parameter associated with the Series 9000 LPM parameter block, double-click the point name. Controller Slot Configuration displays appears with the block configuration for the Series 9000 LPM the point is associated with.

Use either display to modify editable parameter block values. You need to change your security level to ENGR or higher.

To modify a block parameter

- Select the current value and enter a new value. The value is changed in both the server and the Series 9000 LPM.

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