Honeywell

Configuration Data Collection Guide

SW12-500

Total Plant

Honeywell

Implementation
Startup & Reconfiguration - 2

Configuration Data Collection Guide

SW12-500
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The following standard document conventions may be used in this document. Check Section 1 for conventions unique to this document.

Item	Convention	Meaning
<KEYCAPS>	Pointed brackets around a term	A key on a computer keyboard
[TARGET]	Square brackets around a term	For touchscreen monitors, an area that can be touched to invoke a system action
`entry data`	Courier bold text	Data you enter into the system
`screen/program data`	Courier text	Screen or program data

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Configuration Data Collection Guide
Section 1—Introduction

1.1 About This Document

Basics

Purpose	Summarizes the configuration data collection process, suggests an order for the collection and entry of configuration data, provides a summary description of each configuration activity, and provides references to the related forms, instructions, and reference documents.
Intended audience	System Engineers and Process Engineers
For product release	TPS R500

Document overview

The first section of this document defines configuration data collection, describes how paper forms relate to screen forms, and provides references to the documents and forms needed for configuration data collection.

The second section of this document provides data collection information for each of the major configuration activities. Supporting documents for each of these activities are listed with the information for each activity.

1.2 Configuration Data Collection

Definition

Configuration data is the data that is entered into the **TotalPlant** Solution (TPS) system to define to the system a user's plant and process, and to define how the system is to relate to that plant and process.

Methods used for recording data

You can record your configuration data:

- On copies of the paper configuration forms provided in the TPS bookset.
- On the screen forms in Honeywell's LCN WORKBOOK package. LCN WORKBOOK is a purchased product that allows you to prebuild data points on an IBM personal computer or other compatible PC.
- On the screen forms on a TPS Universal Station (US) running the Engineering Personality or the engineering portion of the Universal Personality.

Collecting configuration data

Customer engineers often begin the collection of configuration data long before the TPS system is in place.

To do so, you will need the TPS bookset and the documentation that defines the specific equipment on the Local Control Network and the process network (Universal Control Network or Data Hiway) and the addresses of the nodes and boxes on those networks.

You will also need documentation, such as piping and instrumentation diagrams, that defines the process(s) to be managed by the system.

While the LCN WORKBOOK package can eliminate the need for paper forms for all point-building, you still will need paper forms to collect network configuration data, picture-building, free format logs, and button configuration data, unless you elect to enter that data directly into a Universal Station.

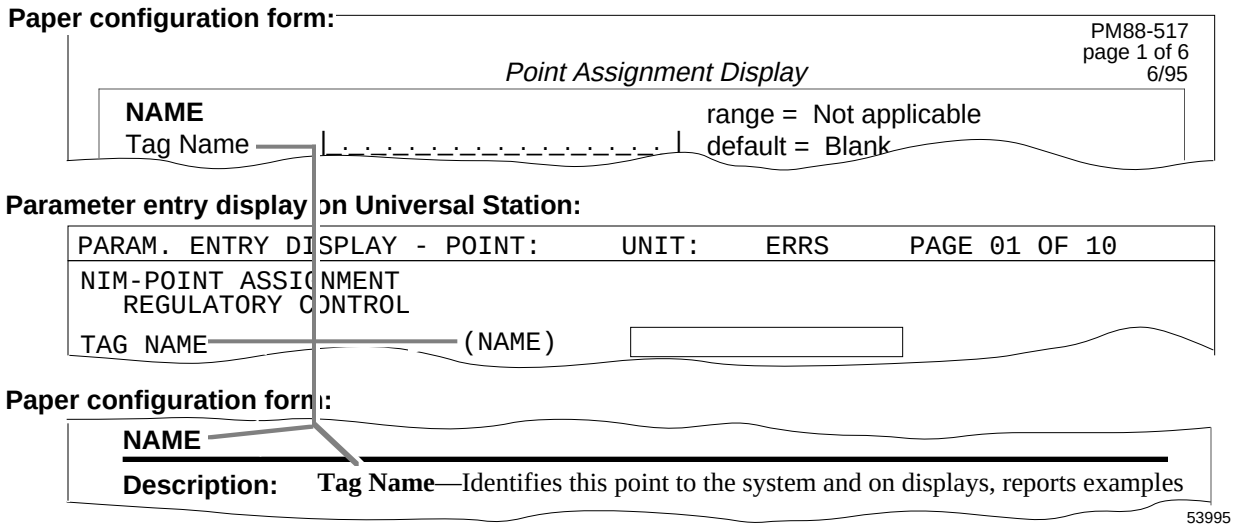
1.3 Paper Forms, Screen Forms, and Reference Information

Basics

The following example shows:

- a portion of a paper configuration form
- the corresponding portion of the US screen form
- the reference information for one of the parameters on both the paper form and the screen form.

Example

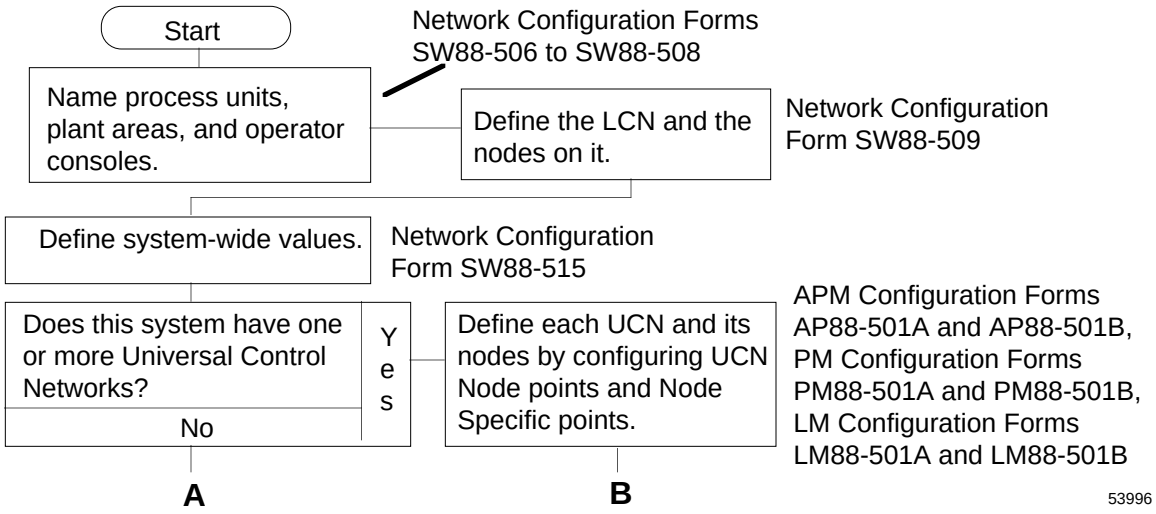


Selecting and filling out forms

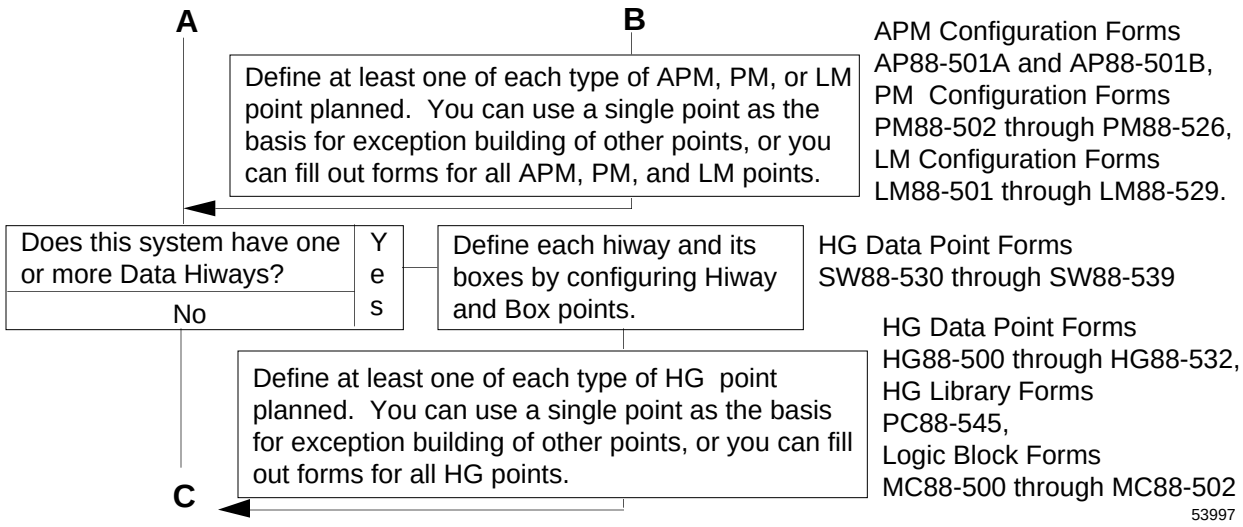
A suggested order for selecting and filling out paper configuration forms is provided by the flow chart on the following figure.

The forms that apply to each step are listed by the block that defines each step.

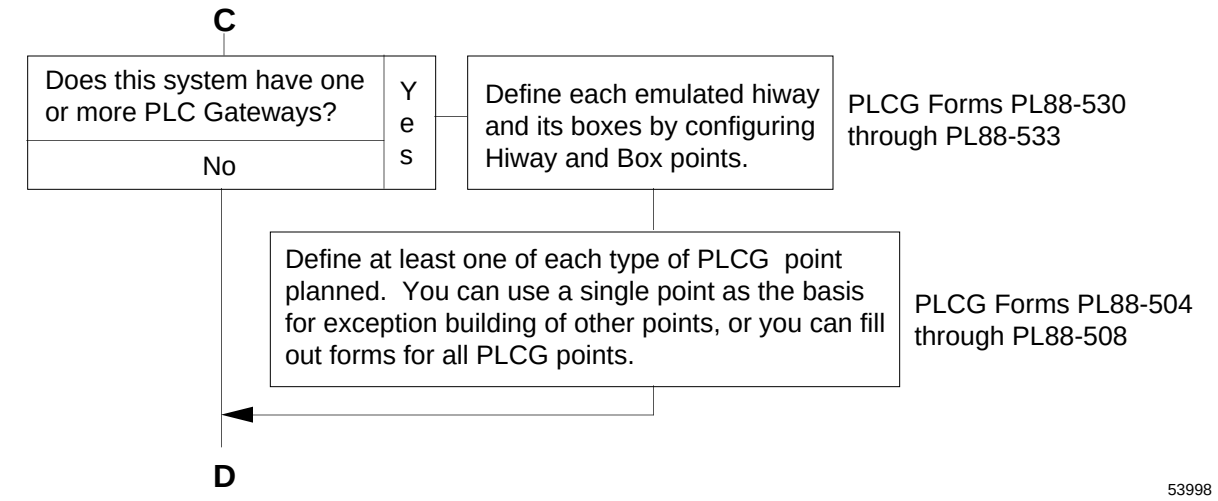
Configuration data collection flow chart, part 1



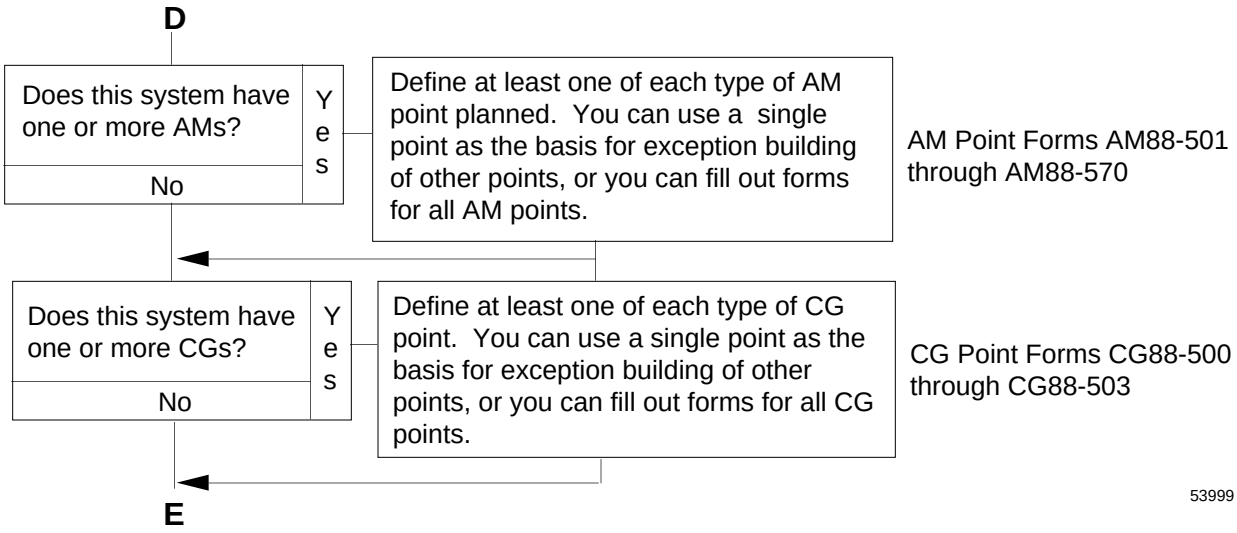
Configuration data collection flow chart, part 2



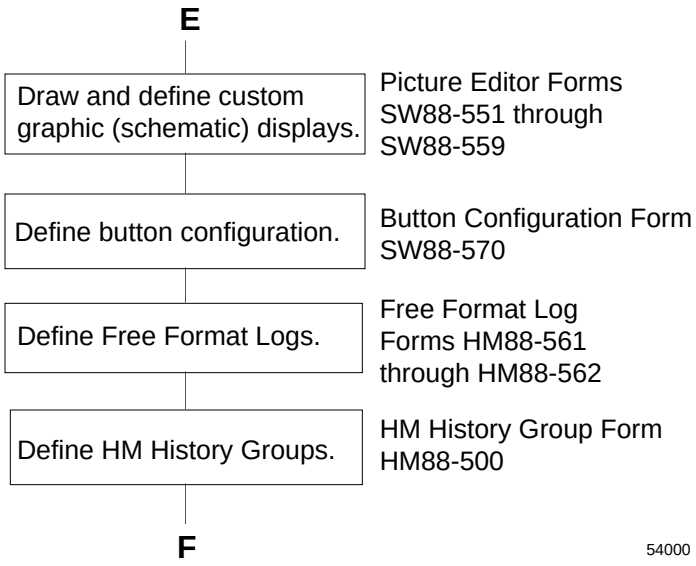
Configuration data collection flow chart, part 3



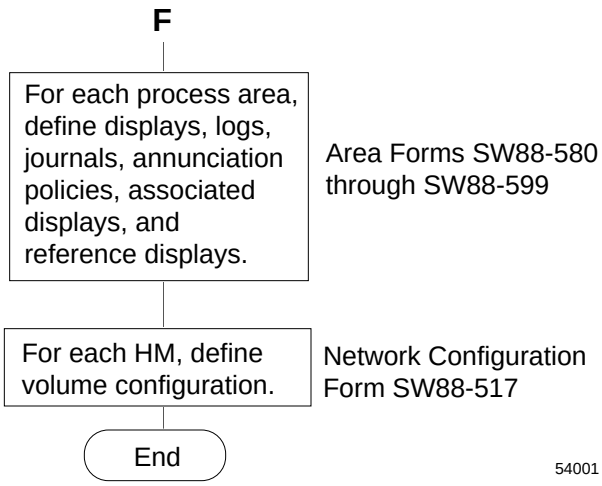
Configuration data collection flow chart, part 4



Configuration data collection flow chart, part 5



Configuration data collection flow chart, part 6



1.4 Reference

Additional information

Paper configuration forms for configuration activities that apply to most systems are in the *Implementation/Configuration Forms* binder.

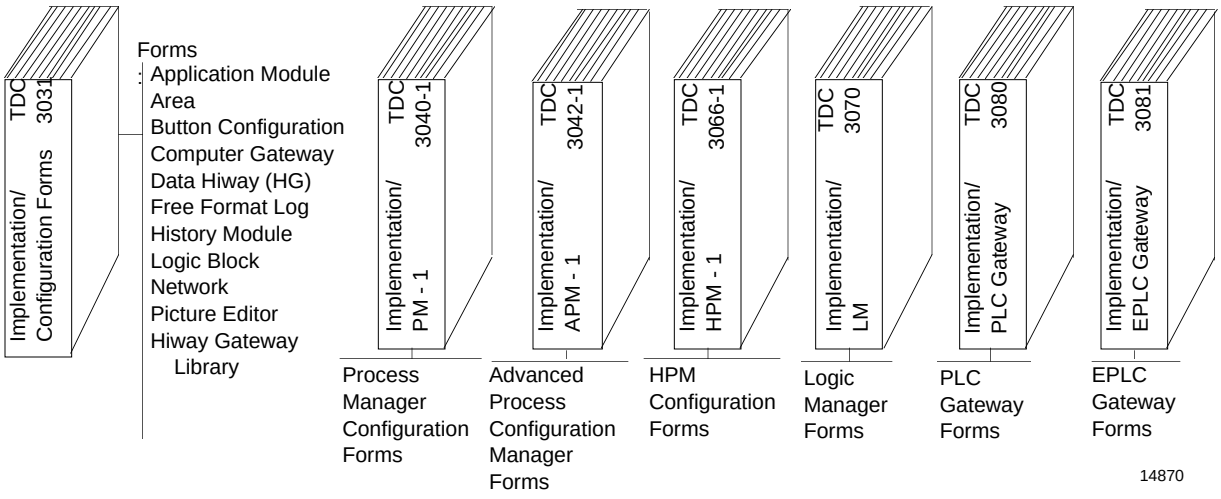
Forms for Process Manager points, Logic Manager points, and PLC Gateway points are in the *Implementation* binders for those products.

For all data point building, information necessary to make selections and enter data on the forms is provided in Parameter Reference Dictionaries.

Reference information for filling in the *Network Configuration Forms* is provided in *Network Form Instructions*.

The following figure shows which binders contain the paper configuration forms.

Binders that contain paper configuration forms



Section 2—Configuration Activities

2.1 Network Configuration

Definition

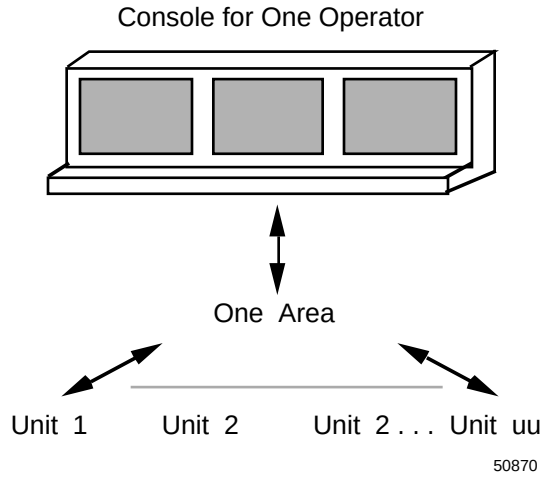
Network Configuration is the definition of the nodes on the Local Control Network (LCN) and the definition of other information that must be known by each of the LCN nodes.

Activity overview

The targets in the left-most column of the Engineering Main Menu select the following Network Configuration activities:

- UNIT NAMES—In this activity, you name each of the process units defined for your system (for example, “Reactor Unit 1”). A process or plant is typically partitioned into a number of process units that are assigned to specific operators. To support such unit partitioning, the **TotalPlant** Solution (TPS) system provides several unit-related functions such as alarm and event reporting, alarm suppression, and message handling. Messages and alarm reports are thus directed to the responsible operator, based on unit assignments. Each data point is assigned to only one unit.
- AREA NAMES—In this activity, you name each of the process areas defined for your system (for example, “West Area”). A process area typically includes several process units. Often, an area is assigned to an Operator’s Console, which consists of from one to ten Universal Stations. The typical relationships of Operator Consoles, areas, and units are presented in the following figure.
- CONSOLE NAMES—In this activity, you name each of the Operator Consoles defined for your system (for example, “West Area Console”). A console consists of from one to ten USs. Often, an area is assigned to an Operator’s Console. The typical relationships of Operator Consoles, areas, and units are presented in the following figure.

Typical console, area, and units



- LCN NODES—In this activity, you define each of the nodes on the LCN by defining such things as the node type, the LCN address, and a redundant-partner node.
- SYSTEM WIDE VALUES—In this activity, you establish several values that are used throughout the system; for example, the source of the system clock, the number of shifts-per-week, and the number of lines per printer page.
- VOLUME CONFIGURATION—In this activity, you define the volumes to reside on each History Module and the size of those volumes. More information about HM volume configuration is presented in 2.10 History Module Volume Configuration, page 25.

Forms, instructions, and references

Network Configuration forms, instructions, and references are in the following documents:

Table 2-1 Network Configuration

Document Title	Binder Number	Binder Name
Network Forms	3031	Implementation/Configuration Forms
Network Form Instructions	3030-1	Implementation/Startup & Reconfiguration - 1

Table 2-1 Network Configuration

Document Title	Binder Number	Binder Name
HM Volume Configuration information is provided in the *Engineer's Reference Manual*, HM Configuration and Use.	3030-2	Implementation/Startup & Reconfiguration - 2
Network Data Entry	3030-1	Implementation/Startup & Reconfiguration - 1

2.2 Process Network Configuration

Types of process networks

LCN-based TPS systems offer two types of process networks: the Universal Control Network (UCN) and the Data Hiway.

Information about the process networks on your system and the devices on those networks is in the system procurement documentation.

To define your process networks, you use the Data Entity Builder to build reserved entities. Select the [NETWORK INTERFACE MODULE] target on the Engineering Main Menu to access the displays to build UCN entities.

To access the displays used to build Data Hiway entities, use the [HIWAY GATEWAY] target.

UCN configuration forms, guidelines, and references

UCN and Node-Specific information, configuration forms, guidelines, and references are in the following documents:

Table 2-2 UCN

Document Title	Binder Number	Binder Name
Advanced Process Manager Configuration Forms	3042-1	Implementation/Advanced Process Manager - 1
Advanced Process Manager Implementation Guidelines	3042-1	Implementation/Advanced Process Manager - 1
Process Manager Configuration Forms	3040-1	Implementation/Process Manager - 1
Process Manager Implementation Guidelines, PM Operational Considerations	3040-1	Implementation/Process Manager - 1
Advanced Process Manager Parameter Reference Dictionary	3042-2	Implementation/Advanced Process Manager - 2
Process Manager Parameter Reference Dictionary	3040-2	Implementation/Process Manager - 2
Data Entity Builder Manual	3032-1	Implementation/Engineering Operations - 1

Data Hiway configuration forms, guidelines, and references

Data Hiway configuration forms, guidelines, and references are in the following documents:

Table 2-3 Data Hiway

Document Title	Binder Number	Binder Name
Data Hiway, Box/Slot, and Data Point Forms	3031	Implementation/Configuration Forms
Data Hiway, Box/Slot, and Data Point Instructions	3034-1	Implementation/Hiway Gateway - 1
Hiway Gateway Implementation Guidelines, Introduction	3034-1	Implementation/Hiway Gateway - 1
Hiway Gateway Parameter Reference Dictionary	3034-1	Implementation/Hiway Gateway - 1
Data Entity Builder Manual	3032-1	Implementation/Engineering Operations - 1

2.3 Data Point Building

Definition

Data points are the basis for process data acquisition and control. A data point is a named collection of data values called parameters. The parameters contain data related to the process and to the data acquisition and control functions.

Data points in your system are defined as you design the control strategy for your plant or process.

Data points are built with the Data Entity Builder (DEB).

Where data points reside

Data points are built for and reside in the following products:

Table 2-4 Data Point Residence and Targets for Access

Product	Target on Engineering Main Menu
Application Module	[APPLICATION MODULE]
Computer Gateway	[COMPUTER MODULE]
Advanced Process Manager	[NETWORK INTERFACE MODULE]
Process Manager	[NETWORK INTERFACE MODULE]
Logic Manager	[NETWORK INTERFACE MODULE]
Hiway Gateway and process-connected boxes on a Data Hiway	[HIWAY GATEWAY]
PLC Gateway	[HIWAY GATEWAY]

Forms, form instructions, and references

Forms, form instructions, and reference documents are shown in the following tables:

Table 2-5 Application Module

Document Title	Binder Number	Binder Name
Application Module Forms	3031	Implementation/Configuration Forms
Application Module Form Instructions	3035-1	Implementation/Application Module - 1
Application Module Implementation Guidelines	3035-2	Implementation/Application Module - 2
Application Module Parameter Reference Dictionary	3035-2	Implementation/Application Module - 2
System Control Functions	3030-2	Implementation/Startup & Reconfiguration - 2
Application Module Control Functions	3035-1	Implementation/Application Module - 1

Table 2-6 Computer Gateway

Document Title	Binder Number	Binder Name
Computer Gateway Forms	3031	Implementation/Configuration Forms
Computer Gateway Form Instructions	3037 3039 3038	Implementation/Computer Gateway Implementation/CM50S Implementation/Processor Gateway
Computer Gateway Parameter Reference Dictionary	3037 3039 3038	Implementation/Computer Gateway Implementation/CM50S Implementation/Processor Gateway
Computer Gateway User Manual	3037	Implementation/Computer Gateway
CM50S User Manual	3039	Implementation/CM50S Rel. 5.0
Processor Gateway User Manual	3038	Implementation/Processor Gateway

Table 2-7 Advanced Process Manager

Document Title	Binder Number	Binder Name
Advanced Process Manager Configuration Forms	3042-1	Implementation/Advanced Process Manager - 1
Advanced Process Manager Implementation Guidelines	3042-1	Implementation/Advanced Process Manager - 1
Advanced Process Manager Parameter Reference Dictionary	3042-2	Implementation/Advanced Process Manager - 2
System Control Functions	3030-2	Implementation/Startup & Reconfiguration - 2
Advanced Process Manager Control Functions and Algorithms	3042-1	Implementation/Advanced Process Manager - 1

Table 2-8 Process Manager

Document Title	Binder Number	Binder Name
Process Manager Configuration Forms	3040-1	Implementation/Process Manager - 1
Process Manager Implementation Guidelines	3040-1	Implementation/Process Manager - 1
Process Manager Parameter Reference Dictionary	3040-2	Implementation/Process Manager - 2
System Control Functions	3030-2	Implementation/Startup & Reconfiguration - 2
Process Manager Control Functions and Algorithms	3040-1	Implementation/Process Manager - 1

Table 2-9 Logic Manager

Document Title	Binder Number	Binder Name
Logic Manager Forms	3070	Implementation/Logic Manager
Logic Manager Implementation Guidelines	3070	Implementation/Logic Manager
Logic Manager Parameter Reference Dictionary	3070	Implementation/Logic Manager
Logic Manager Control Functions	3070	Implementation/Logic Manager

Table 2-10 Hiway Gateway and Process Connected Boxes on a Data Hiway

Document Title	Binder Number	Binder Name
Data Hiway, Box/Slot, & Data Point Forms	3031	Implementation/Configuration Forms
Hiway Gateway Library Forms	3031	Implementation/Configuration Forms
Data Hiway, Box/Slot, & Data Point Form Instructions	3034-1	Implementation/Hiway Gateway - 1
Hiway Gateway Parameter Reference Dictionary	3034-1	Implementation/Hiway Gateway - 1
System Control Functions	3030-2	Implementation/Startup & Reconfiguration - 2
Hiway Gateway Control Functions	3034-1	Implementation/Hiway Gateway - 1

Table 2-11 Programmable Logic Controller Gateway

Document Title	Binder Number	Binder Name
Programmable Logic Controller Gateway Forms	3080	Implementation//PLC Gateway
Programmable Logic Controller Implementation Guidelines	3080	Implementation//PLC Gateway
Programmable Logic Controller Parameter Reference Dictionary	3080	Implementation//PLC Gateway
System Control Functions	3030-2	Implementation/Startup & Reconfiguration - 2
Programmable Logic Controller Gateway Control Functions	3080	Implementation//PLC Gateway

2.4 Preparation of User Programs in Control Language

Definition

Control Language (CL) is a process engineer's language that you can use to write your own programs for continuous control and sequence control operations.

Categories of CL programs

The TPS system offers these categories of CL programs:

- CL/AM programs are continuous-control programs that are attached to Application Module data points.
- CL/APM programs are sequence programs attached to Advanced Process Module data points in Advanced Process Managers.
- CL/PM programs are sequence programs attached to Process Module data points in Process Managers.
- CL/MC programs are sequence programs attached to Process Module data points in Advanced Multifunction Controllers and Multifunction Controllers.

CL reference and data entry documents

No forms are required for the writing of CL source code—plain paper can be used or you can enter the code directly through the Engineering Personality's Text Editor.

Instructions for use of the Text Editor are in the following document:

Table 2-12 Text Editor

Document Title	Binder Number	Binder Name
Text Editor Operation	3032-3	Implementation/Engineering Operations - 3

The following documents support the development of CL programs:

Table 2-13 CL/AM

Document Title	Binder Number	Binder Name
Control Language/Application Module Overview	3035-3	Implementation/Application Module - 3
System Control Functions, Detailed Functional Description	3030-2	Implementation/Startup & Reconfiguration - 2
Control Language/Application Module Reference Manual	3035-3	Implementation/Application Module - 3
Control Language/Application Module Data Entry	3035-3	Implementation/Application Module - 3

Table 2-14 CL/APM

Document Title	Binder Number	Binder Name
Control Language/Advanced Process Manager Reference Manual	3042-2	Implementation/Advanced Process Manager - 2
Control Language/Advanced Process Manager Data Entry	3042-2	Implementation/Advanced Process Manager - 2

Table 2-15 CL/PM

Document Title	Binder Number	Binder Name
Control Language/Process Manager Reference Manual	3040-2	Implementation/Process Manager - 2
Control Language/Process Manager Data Entry	3040-2	Implementation/Process Manager - 2

Table 2-16 CL/MC

Document Title	Binder Number	Binder Name
Control Language/Multifunction Controller Reference Manual	3034-2	Implementation/Hiway Gateway-2
Control Language/Multifunction Controller Data Entry	3034-2	Implementation/Hiway Gateway-2

2.5 Picture Building

Definition

Picture building is the use of the Picture Editor to build schematic or custom-graphic displays.

User-built displays can be devised for many uses, but one of the most common is to provide schematics of the process to be used by operators to monitor and control the process.

To access the Picture Editor, select the [PICTURE EDITOR] target on the Engineering Main Menu.

Forms, instructions, and references

The Picture Editor forms, instructions, and references are in the following documents:

Table 2-17 Picture Editor

Document Title	Binder Number	Binder Name
Picture Editor Forms	3031	Implementation/Configuration Forms
Picture Editor Form Instructions	3032-3	Implementation/Engineering Operations - 3
Picture Editor Reference Manual	3032-2	Implementation/Engineering Operations - 2
Picture Editor Data Entry	3032-3	Implementation/Engineering Operations - 3

Pathname Catalog

The History Module location of the object files created as you build schematics and other custom displays must be entered in the Area Database's Pathname Catalog.

The following document contains more information about the Pathname Catalog:

Table 2-18 Pathname Catalog

Document Title	Binder Number	Binder Name
Area Form Instructions, >>Pathname Catalog Form, SW88-582	3032-1	Implementation/Engineering Operations - 1

2.6 Free Format Log Building

Definition

Free format logs are user-defined printed logs. You define both the form and content of these logs through the Free Format Log Builder.

To access the Free Format Log Builder, select the [FREE FORMAT LOG] target on the Engineering Main Menu.

Forms, instructions, and references

The forms, instructions, and references for Free Format Log building are in the following documents:

Table 2-19 Free Format Log

Document Title	Binder Number	Binder Name
Free Format Log Forms	3031	Implementation/Configuration Forms
Free Format Log Form Instructions	3032-1	Implementation/Engineering Operations - 1
Free Format Log Data Entry	3032-1	Implementation/Engineering Operations - 1

Pathname Catalog

The History Module location of the object files created as you build free format logs must be entered in the Area Database's Pathname Catalog.

The following document contains more information about the Pathname Catalog:

Table 2-20 Pathname Catalog

Document Title	Binder Number	Binder Name
Area Form Instructions, Pathname Catalog Form, SW88-482	3032-1	Implementation/Engineering Operations - 1

2.7 Button Configuration

Basics

Certain buttons on the Universal Station and Universal Work Station Operator's Keyboards can be configured to perform user-defined actions when the button is pressed. For example, you could configure a button to call a specific display to the screen.

Forms, instructions, and references

The forms, instructions, and references for Button Configuration are in the following documents:

Table 2-21 Button Configuration

Document Title	Binder Number	Binder Name
Button Configuration Forms	3031	Implementation/Configuration Forms
Button Configuration Form Instructions	3032-1	Implementation/Engineering Operations - 1
Button Configuration Data Entry	3032-1	Implementation/Engineering Operations - 1

Pathname Catalog

The History Module location of the object files created as you configure buttons must be entered in the Area Database's Pathname Catalog.

The following document contains more information about the Pathname Catalog:

Table 2-22 Pathname Catalog

Document Title	Binder Number	Binder Name
Area Form Instructions, >>Pathname Catalog Form, SW88-582	3032-1	Implementation/Engineering Operations - 1

2.8 Area Configuration

Definition

Area Configuration is actually the building of Universal Station databases. As each US is started up with the Operator Personality or the Universal Personality, it is loaded with the personality image (.PI) file and an area database.

You can define up to ten areas, and therefore, up to ten area databases.

Database entities

In area configuration, you use the Data Entity Builder (DEB) to build the area database as reserved entities.

These entities define things such as the process units assigned to the area; the specific content of standard, Honeywell-provided displays, logs, and printed reports; and a catalog of pathnames that point to user-defined schematic displays and button configurations.

Select the [AREA DATA BASE] target on the Engineering Main Menu to access the displays used to build area database entities.

Forms and instructions

The forms and instructions for Area Configuration are in the following documents:

Table 2-23 Area

Document Title	Binder Number	Binder Name
Area Forms	3031	Implementation/Configuration Forms
Area Form Instructions	3032-1	Implementation/Engineering Operations - 1
Data Entity Builder Manual	3032-1	Implementation/Engineering Operations - 1

2.9 HM History Groups

Definition

Continuous history is collected in up to 120 groups, each of which consists of the data for up to 20 data points.

Before you configure history volumes on each HM that is to store continuous history, you should define and assign points to each history group.

The following document contains guidelines for doing this:

Table 2-24 History Group

Document Title	Binder Number	Binder Name
Engineer's Reference Manual: >>HM Configuration and Use >>Guidelines for Use of HM Resources	3030-2	Implementation/Startup & Reconfiguration - 2

Forms and instructions

The forms and instructions for HM History Group are in the following documents:

Table 2-25 HM History Group

Document Title	Binder Number	Binder Name
HM History Group Forms	3031	Implementation/Configuration Forms
HM History Group Form Instructions	3032-1	Implementation/Engineering Operations - 1

2.10 History Module Volume Configuration

Basics

The last aspect of configuration data collection is to define the data that will be stored in History Modules.

While it is possible to make preliminary estimates of HM volumes and the space they require, and to configure those volumes in order to get the system running, finalization of HM volume configuration can be accomplished only after all other system configuration is complete, because you will need virtually all of your other configuration data to use your HM space efficiently and effectively.

To make your HM volume configuration for a given HM effective, you must initialize the HM. This initialization deletes any information stored on the HM, so to preserve that data, it must be stored on removable media (cartridges or floppy diskettes) before you initialize an HM.

Types of data stored

History Modules can store these types of data:

- Continuous process history—Continuous history is data for continuous data points, points whose process variable (PV) is a real (floating point) analog value, or a digital value.
- System-related data—System-related data is the system software and related files.
- Area-related data—Area-related data is the user-configured process and operational data for a process area.

Saving and restoring continuous history requires a special procedure, which is provided in the following document:

Table 2-26 History Module Saving and Restoring

Document Title	Binder Number	Binder Name
Engineer's Reference Manual, How to Save and Restore Continuous History	3030-2	Implementation/Startup & Reconfiguration - 2

Storage space guidelines

Guidelines for the use of HM storage space and for estimating the space that will be occupied are provided in the following document:

Table 2-27 History Module Storage

Document Title	Binder Number	Binder Name
Engineer's Reference Manual, HM Configuration and Use	3030-2	Implementation/Startup & Reconfiguration - 2

You should become familiar with this section before proceeding with HM volume configuration.

Forms, instructions, and references

The forms and instructions for HM Volume Configuration are in the following documents:

Table 2-28 HM Volume

Document Title	Binder Number	Binder Name
Network Forms	3031	Implementation/Configuration Forms
Network Data Entry	3030-1	Implementation/Startup & Reconfiguration - 1
Engineer's Reference Manual, HM Configuration and Use.	3030-2	Implementation/Startup & Reconfiguration - 2

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