

PLANTSCAPE SERVER

NON-HYBRID CONTROLLER HARDWARE AND POINT BUILDING

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SESSION OBJECTIVES

At the completion of this section of the course the student will be able to:

- Start a project in Quick Builder and define the associated project parameters
- Define Points together with their associated parameters
- Delete Points from a project
- Down load a project into a PlantScape Server
- Up load a PlantScape Server point database into a project

REFERENCES

Knowledge Builder: Guides→Server and Client Configuration Guide

Quick Builder Online Help

Quick Builder

Introduction

All non-Hybrid Controller hardware and points in a PlantScape Server are defined using Quick Builder.

Quick Builder runs under either Windows NT or Windows'95. Thus it can run either on your server, on another computer connected to the server, or on a stand-alone computer. In all of these modes Quick Builder runs independently of the PlantScape Server. This enables changes to be made to a Quick Builder database offline at any location and then downloaded to the PlantScape Server realtime database when required.

Configuration Procedures

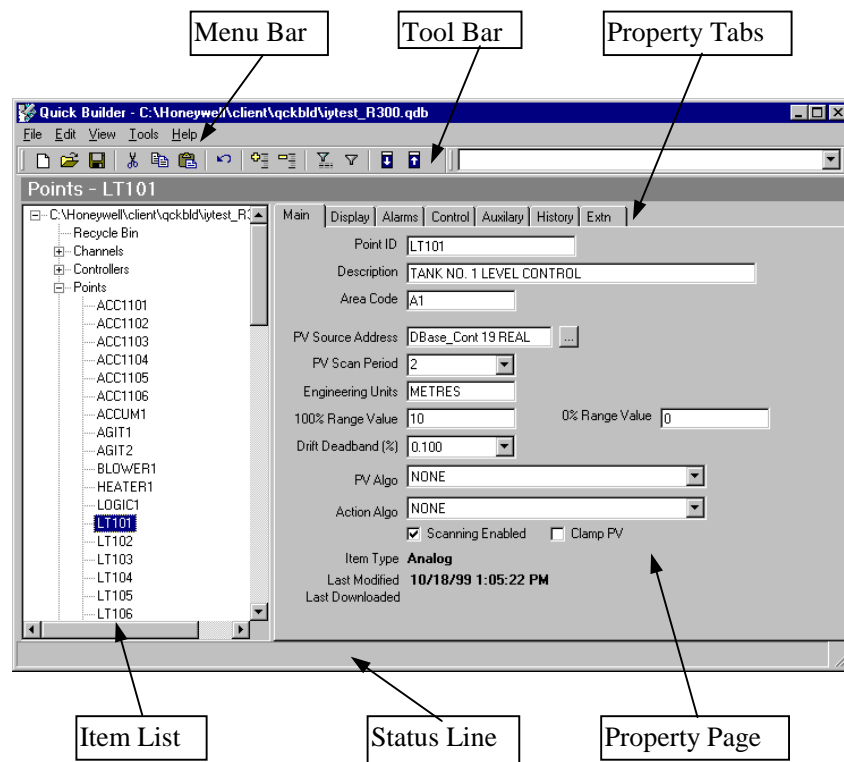
Non-Hybrid Controller items must be created in the following sequence:

- 1) Channel,
- 2) then Controllers on that Channel,
- 3) then Points in those Controllers.

A Controller cannot be deleted if it still has Points associated with it.

A Channel cannot be deleted if it still has Controllers associated with it.

Layout of Typical Window



Quick Builder.....continued

Quick Builder Terminology

Term	Meaning
Project File	<p>The database file (c:\honeywell\client\qckbld*.qdb) which holds all the database definitions for a specific PlantScape Server.</p> <p>Only one project file can be current at any one time.</p>
Item	<p>Any of the six different types of elements that can be defined in a project file. They are:</p> <ul style="list-style-type: none"> • Project • Stations (not covered in this section) • Printers (not covered in this section) • Channels (required for non-Hybrid... • Controllers ...Controllers only) • Points (non-Hybrid Controllers only) <p>In this section we will define only Channels, Controllers and Points.</p>
Property	Information that defines an item.
Download	To transfer all, or some, of the items defined in the current project file to a PlantScape Server realtime database.
Upload	<p>To transfer all, or some, of the non-Hybrid Controller points in a PlantScape Server realtime database to the current project file.</p> <div style="border: 1px solid black; padding: 10px; margin: 10px auto; width: fit-content;"> <p style="text-align: center;">Attention</p> <p style="text-align: center;">Hardware items cannot be uploaded.</p> </div>

Quick Builder.....continued

OnLine Help

Quick Builder has readily available online help.

To display context sensitive help select the required field on a property page and press <F1>.

Help for any dialogue box can be displayed by pressing **Help** in the dialogue box.

The **Help** pull-down menu provides more general access to the online help with Contents, Index and Find facilities.

Saving Project Files

Every time a different item is displayed in a project view any changes that have been made will be saved automatically to the project file.

Even though you do not have to manually save a project file the normal **File**→**Save** and **File**→**Save As** functions are available.

Selecting Item(s)

Click (Left Click) to the left of an item in the item list selects that item.

<Ctrl>+Click to the left of additional item(s) creates multiple selections.

<Ctrl>+Click to the left of a selected item cancels the selection of that item

Modifying Properties of a Multiple Selection

The property page will only display properties and property values common to all selected items.

Any change made to a property value will update all the selected items.

Attention

Item Names cannot be changed in this way since they must be unique.

Quick Builder.....continued

Copying and Pasting Items and Properties

Edit→Copy or **Edit→Cut** copies (cuts) the properties of selected item(s) to the clipboard.

Edit→Paste pastes the properties of item(s) on the clipboard to create new items or update selected item(s).

These functions can be used to:

- Create a copy of an existing item
- Update an existing item with the properties of another existing item
- Copy item properties to/from a Microsoft Excel spreadsheet where they can be edited using Excel's functions.

Attention

Care should be taken to preserve the column order within the spreadsheet and to include ALL the columns and column headings when selecting the range to copy back to the Quick Builder project.

Deleting Items

Edit→Delete or **Edit→Cut** puts selected Item into the Recycle Bin.

If the selected item is already in the Recycle Bin then Quick Builder releases the item's internal reference number making it available for use by another item.

Caution

Deleting items from the Recycle Bin that still exist in the Server's database will create discrepancies between the two databases.

To avoid this situation use the **Automatically Download Deletions** option when downloading other item(s) (described later in this section).

Edit→Undelete restores selected item from the Recycle Bin to original item grouping.

Pop-Up Menu

Right Click displays a pop-up menu appropriate to the selected item(s). This menu provides various editing and sorting options.

Quick Builder.....continued

Downloading Options

Server Name	<p>The hostname of the PlantScape Server holding the realtime database to which the selected items will be downloaded.</p> <p>Defined under the Project→Server tab.</p>	
Scope	All Items in Project	Downloads all the items in the project.
	Selected Items Only	Downloads only the item(s) that has (have) been selected from the item list.
Automatically Download Deletions	Includes all of the items in the Recycle Bin so that they will be deleted from the PlantScape Server database.	
Rebuild Scan Tables	When downloading only Stations and/or Printers this option is ignored, the scan tables will <u>not</u> be rebuilt.	
Summary	Displays a detailed list of the items to be downloaded based on the above selection(s).	

Quick Builder.....continued

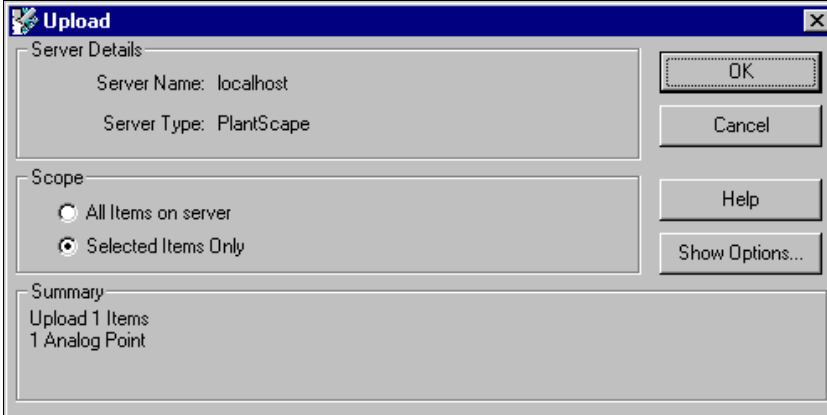
Item Name after Downloading

Once an item has been downloaded the item Name cannot be changed. If an item's Name needs to be changed, the item must be deleted and re-created.

Attention

When a point is deleted and later downloaded, there is no guarantee that the new point will keep the same internal reference number in the PlantScape Server realtime database. All references to this point, for example History files, custom graphic animations, and remote Server access, will require updating.

Uploading Options



Server Name	The hostname of the PlantScape Server holding the realtime database from which the selected points will be uploaded. Defined under the Default Server → Server tab.	
Items to Upload	All Items on Server	All the points in the database of the defined Server, even if they don't exist in the current project.
	Selected Items Only	All the points in the database of the defined Server that have been selected in the item list.
Summary	Displays a detailed list of the points to be uploaded based on the above selection(s).	

Server Connections

Hardware Connection Summary

Prior to adding a new Channel to a Server it is advisable to review the existing Server connections to ensure that the new Channel is not configured on a port already being used by another Channel (or serial Station).

To view the Hardware Connection Summary choose:

System Menu→System Configuration →Connections

or:

Configure→Hardware→Connections

Connections							
The following communications connections can only be modified in QuickBuilder							
	Device	Connection Type	Port	Baud Rate	Data Bits	Stop Bits	Parity
1	CHN01	Term Srv	TS1:3011		Not Applicable		
2	CHN02	Virtual	NUL		Not Applicable		
3	CHN08	Serial	COM1	9600	8	1	None
4	STN01	LAN Static	STN01		Not Applicable		
5	STN02	LAN Static	STN02		Not Applicable		
6	STN03	LAN Static	STN03		Not Applicable		
7	STN04	LAN Static	STN04		Not Applicable		
8	STN05	LAN Static	STN05		Not Applicable		
9	STN06	LAN Static	STN06		Not Applicable		
10	STN07	LAN Static	STN07		Not Applicable		
11	STN08	LAN Static	STN08		Not Applicable		
12	STN09	LAN Static	STN09		Not Applicable		
13	STN10	LAN Static	STN10		Not Applicable		
14	STN11	LAN Static	STN11		Not Applicable		
15	STN12	LAN Static	STN12		Not Applicable		
16	STN13	LAN Static	STN13		Not Applicable		
17	STN14	LAN Static	STN14		Not Applicable		
18	STN15	LAN Static	STN15		Not Applicable		
19	STN16	LAN Static	STN16		Not Applicable		
20	STN17	LAN Static	STN17		Not Applicable		

Hardware Item Name

Hardware Item Type

Hardware Item Connection Port

Serial Port Details (if applicable)

Scanning

Scanning

Scanning is the process by which the PlantScape Server reads values from locations in non-Hybrid Controllers and stores them in point parameters in the realtime database.

The location from which a value is read is defined by the source address of each parameter.

There are various different types of scanning available:

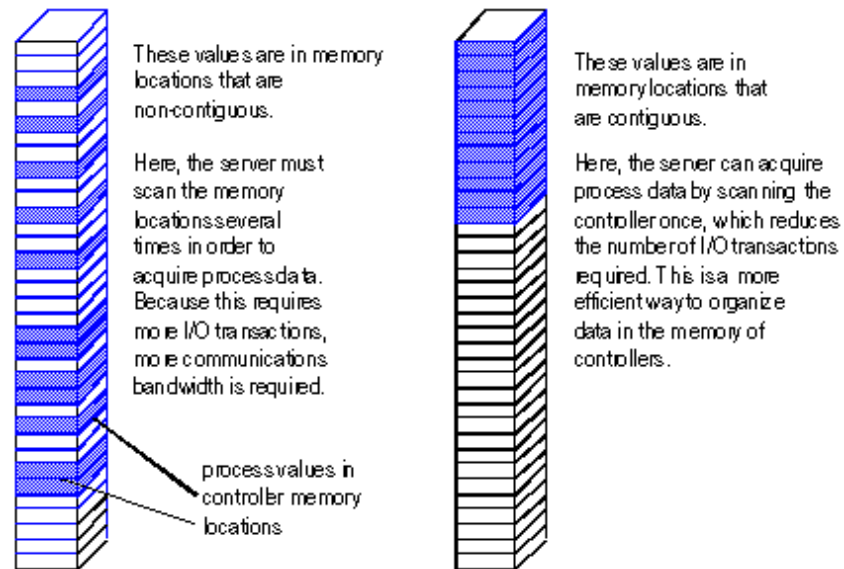
Periodic Scanning	Periodic Scanning is the regular scanning of a point parameter. Scan Periods available are 2, 5, 10, 15, 30, 60, 120, 300, 900, 1800, 3600 (sec)	
Exception Reporting	The server scans the controller (typically every 2 seconds) to request whether it has any changes to report. If there are any the values are updated in the server database. This technique is only supported by a few controllers, for example the TDC3000 Data Hiway interface.	
Unsolicited Message	The controller reports any changes to the server as they occur. The controller controls this form of point updating rather than the server. This technique is only supported by a few controllers, for example the Allen-Bradley PLC5, Square-D and Excel 5000 interfaces.	
Demand Scanning	Demand Scanning defines scanning has been requested on a one-shot basis. There are several instances where demand scanning is performed:	
	Scan point special	Free-Format Reports and application programs may be configured to request a special scan to allow reporting of the current value of a point parameter, especially if the scan period is long.
	Control confirmation	Operator control actions invoke a demand scan if a source address has been defined for the parameter being controlled. If the value scanned does not match the value that was output then a Parameter Control Fail alarm is raised (see the Operations section of this Student Guide).
	Initialisation	When a Channel, Controller or Point is enabled an initialisation scan of all the associated parameters is performed.

Scanning.....continued

Scan Packets

Most controllers' communication protocols enable multiple controller addresses to be scanned in a single request. To make the most of this feature the PlantScape Server collates the addresses that require scanning in an individual controller into "scan packets". In order to reduce the load on both the server and the communications medium the number of scan packets should be kept to a minimum. Techniques to do this are:

- Minimise the number of different periods configured for each controller. Each scan period created requires a new scan packet, increasing system overhead.
- Use contiguous blocks of memory addresses in controllers. Since each scan packet has a maximum size (for example, 122 addresses for A-B PLC5), the PlantScape Server implementation engineer should define to the controller implementation engineer the desired data layout in the controller. The diagram below shows how organising data efficiently can optimise scanning performance.



Obtaining scanning performance details

The utility **lisscn** produces a report of the scan packets in the Server realtime database that shows:

- scan packets in each scan period
- number of scan packets in each scan period
- number of scan packets per scan period per second

Scanning performance can be checked by displaying Page 10 on Station.

Status Summary

Channel Status Summary

The status of a Channel can be checked by choosing:

System Menu→System Status

or **View→System Status→Channels**

or Click **Controller Comms Status** in the Status Line

System Status							
Channels		Controllers	Stations	Printers	Server Redundancy		
Enable	A	B	Channel	Type	Hiway	Link A	Link B
1	<input type="checkbox"/>	<input type="checkbox"/>	LCS TS1	IPC PLC	A	● Disabled	
2	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Database	Database	A	● OK	
3	<input type="checkbox"/>	<input type="checkbox"/>	-		A		
4	<input type="checkbox"/>	<input type="checkbox"/>	-		A		
5	<input type="checkbox"/>	<input type="checkbox"/>	-		A		
6	<input type="checkbox"/>	<input type="checkbox"/>	-		A		
7	<input type="checkbox"/>	<input type="checkbox"/>	-		A		
8	<input type="checkbox"/>	<input type="checkbox"/>	LCS620 Chn	IPC PLC	A	● Disabled	
9	<input type="checkbox"/>	<input type="checkbox"/>	-		A		
10	<input type="checkbox"/>	<input type="checkbox"/>	-		A		
11	<input type="checkbox"/>	<input type="checkbox"/>	-		A		
12	<input type="checkbox"/>	<input type="checkbox"/>	-		A		
13	<input type="checkbox"/>	<input type="checkbox"/>	-		A		
14	<input type="checkbox"/>	<input type="checkbox"/>	-		A		
15	<input type="checkbox"/>	<input type="checkbox"/>	-		A		
16	<input type="checkbox"/>	<input type="checkbox"/>	-		A		
17	<input type="checkbox"/>	<input type="checkbox"/>	-		A		
18	<input type="checkbox"/>	<input type="checkbox"/>	-		A		
19	<input type="checkbox"/>	<input type="checkbox"/>	-		A		
20	<input type="checkbox"/>	<input type="checkbox"/>	-		A		

Link B only used when redundant links have been configured

List of names of configured Channels

List of available Channel numbers

This column only relevant for TDC Hiway channels

Interpretation of Status Indications		
LED Colour	Status Text	Description
Green	OK	Channel enabled and at least 1 Controller communicating
Yellow	Marg	Communication statistics indicate a problem. Communications still being attempted.
Red	Failed	Communication statistics indicate a serious problem. Point scanning has ceased on ALL Controllers on the Channel. A diagnostic scan of each Controller on the Channel is being attempted every 60 seconds.
Black	Disabled	Channel disabled
Black		Channel not defined

continued on next page

Status Summary.....continued

Controller Status Summary

The Controller Status Summary is displayed by choosing:

System Menu→System Status→Controllers tab

or

View→System Status→Controllers

Enable	A	B	Controller	Channel	ControllerID	Hiway	ErrorCode	Link A	Link B
1	<input checked="" type="checkbox"/>	<input type="checkbox"/>	LCS TS1 Ct	1	1	A		OK	
2	<input type="checkbox"/>	<input type="checkbox"/>		0	0	A			
3	<input type="checkbox"/>	<input type="checkbox"/>		0	0	A			
4	<input type="checkbox"/>	<input type="checkbox"/>		0	0	A			
5	<input checked="" type="checkbox"/>	<input type="checkbox"/>	DBase Cont	2	350	A		OK	
6	<input type="checkbox"/>	<input type="checkbox"/>		0	0	A			
7	<input type="checkbox"/>	<input type="checkbox"/>		0	0	A			
8	<input checked="" type="checkbox"/>	<input type="checkbox"/>	LCSB20 Con	8	1	A			
9	<input type="checkbox"/>	<input type="checkbox"/>		0	0	A			
10	<input type="checkbox"/>	<input type="checkbox"/>		0	0	A			
11	<input type="checkbox"/>	<input type="checkbox"/>		0	0	A			
12	<input type="checkbox"/>	<input type="checkbox"/>		0	0	A			
13	<input type="checkbox"/>	<input type="checkbox"/>		0	0	A			
14	<input type="checkbox"/>	<input type="checkbox"/>		0	0	A			
15	<input type="checkbox"/>	<input type="checkbox"/>		0	0	A			
16	<input type="checkbox"/>	<input type="checkbox"/>		0	0	A			
17	<input type="checkbox"/>	<input type="checkbox"/>		0	0	A			
18	<input type="checkbox"/>	<input type="checkbox"/>		0	0	A			
19	<input type="checkbox"/>	<input type="checkbox"/>		0	0	A			
20	<input type="checkbox"/>	<input type="checkbox"/>		0	0	A			

Interpretation of Status Indications		
LED Colour	Status Text	Description
Green	OK	Controller and Channel enabled and Controller communicating.
Yellow	Marg	Communication statistics indicate a problem. Communications still being attempted.
Red	Failed	Communication statistics indicate a serious problem. Point scanning has ceased on for points in this Controller. A diagnostic scan of the Controller is being attempted every 60 seconds.
Black	Disabled	Controller disabled
Black		Controller not defined

continued on next page

Status Summary.....continued

Channel and Controller Status Details

Detailed communication statistics for an individual Channel (or Controller) are displayed by choosing the required Channel (or Controller) on the Channel (or Controller) Status Summary.

Controller **5** DBase Cont Type 0 ID 350

Status

☒ Enable ● OK

Error Statistics

Total requests 189519

Total errors 0

% Errors .00000

Barometer

Current value 0

Marginal limit

Fail limit

Click to display Controller Status Summary

Enabling and Disabling a Channel or Controller

A Channel or Controller can be enabled or disabled by clicking the **Enable** checkbox on the Channel or Controller Status Summary, or the Channel or Controller Status page.

The security access level required to enable or disable a Channel or Controller (or a Printer) is configured on the **Server Wide Station Configuration** page under **Enable/Disable Toggling**.

Channel or Controller Initialisation scan

When a Channel is enabled an initialisation scan occurs of all the points in all the Controllers on the Channel.

Similarly when a Controller is enabled an initialisation scan occurs of all the points in the Controller.

These actions ensure that the Plantscape Server database is updated with all the point values, even if they have a long scan period or no period at all; for example, the Controller might be using unsolicited messaging (refer to the section in this *Student Guide* on point building).

continued on next page

Status Summary.....continued

Error Statistics

Total Requests	Total Number of requests to on this Channel (or Controller)
Total Errors	Number of requests that were not acknowledged by a Controller
% Errors	$\frac{(\text{Total Errors}) \times 100\%}{(\text{Total Requests})}$

Barometer

Current Value	<p>Indicates the health of the communications.</p> <p>The Current Value (which cannot be negative): increments by 2 for every error, increments by 6 for every timeout, decrements by 1 for each good communication.</p>
Marginal Limit	<p>This is an empirical value. Set initially to:</p> $25 \times (\text{Number of Controllers})^{1/2}$ <p>When the Current Value \Rightarrow Marginal Limit, the Channel (or Controller) will generate a high priority alarm. Scanning will continue to be attempted.</p>
Fail Limit	<p>This is an empirical value. Set initially to:</p> $2 \times \text{Marginal Limit}$ <p>When the Current Value = Fail Limit the Channel (or Controller) will generate an urgent priority alarm and all point scanning on the Channel (or Controller) will cease.</p> <p>A diagnostic scan will be attempted once every 60 seconds. When a reply is received from a Controller the Current Value will reduce, the alarm status will revert to Marginal, and point scanning will resume.</p> <div style="border: 1px solid black; padding: 10px; margin: 10px auto; width: 80%;"> <p style="text-align: center;">Attention</p> <p>In order to have only one alarm generated on a communications failure it is advisable to set the Channel Marginal and Fail Limits to a large number.</p> <p style="text-align: center;">This ensures that only Controller communications alarms will be generated.</p> </div>

Lab Exercise – Channel and Controller Definition

Define a Channel and Controller

This exercise will demonstrate the procedures necessary to define the properties associated with Channels and Controllers.

Step	Action		
1	Start Quick Builder by choosing: Start→Programs→PlantScape Server→Quick Builder or: Start→Programs→PlantScape Client Software→Quick Builder		
2	Open the file team#.qdb		
3	Define a Channel using the information below or that provided by your instructor:		
	Item Type	LCS620 Channel	
	Name	Channel_1#	
	Item Number	CHN1#	Attention It is not normally necessary to change the item number from the default supplied by Quick Builder. It is done on this training system only for system administration purposes
	Port Type	LAN Vendor	

continued on next page

Lab Exercise - Channel and Controller Definition continued

4	Define a Controller using the information below or that provided by your instructor:		
	Item Type	LCS620 Controller	
	Name	lcs620-#	Attention Ensure that this name is defined in the Server's hosts file.
	Channel Name	Channel_1#	
	Controller Number	RTU01#	Attention It is not normally necessary to change the item number from the default supplied by Quick Builder. It is done on this training system only for system administration purposes
	Node Address	1	

5	When your definitions are complete select your Channel and Controller and choose: Tools→Download Select: Selected Items Only Uncheck: Automatically Download Deletions, and Rebuild Scan Tables, and then choose OK . <div style="border: 1px solid black; padding: 10px; margin: 10px auto; width: 80%; text-align: center;"> Attention Ensure that no other students are currently downloading as multiple concurrent downloads are not allowed. </div>
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6	If your Download produces any warnings or errors examine the cause and repeat any steps as necessary.
7	When you have downloaded with no errors repeat the download with the Rebuild Scan Tables option checked.
8	Confirm that your Channel and Controller function correctly by enabling the Channel and reviewing the Status Summary pages. Show your Course Manager.

Lab Exercise - Point Definition

Introduction

Proceed with the lab exercise listed below.
Ask your Course Manager for any assistance if you are not sure what you are expected to do.

Define Points

This exercise will demonstrate the procedures necessary to define the properties associated with non-Hybrid Controller Points.

Step	Action
1	If it is not already running start Quick Builder by choosing: Start→Programs→PlantScape Server→Quick Builder or: Start→Programs→PlantScape Client Software→Quick Builder
2	Choose File→Open and select the file name team#.qdb then click OK .
3	Define the points specified on page 21.
4	When your definitions are complete select your Points and choose: Tools→Download Select: Selected Items Only Uncheck: Automatically Download Deletions, and Rebuild Scan Tables, and then choose OK . <div style="border: 1px solid black; padding: 10px; margin: 10px auto; width: fit-content;"><p style="text-align: center;">Attention</p><p style="text-align: center;">Ensure that no other students are currently downloading as multiple concurrent downloads are not allowed.</p></div>
5	If your Download produces any warnings or errors examine the cause and repeat any steps as necessary.
6	When you have downloaded with no errors repeat the download with the Rebuild Scan Tables option checked.
6	Maximise Station and test the operation of your points to check that they have been installed correctly.

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Lab Exercise - Point Definition continued

Status Point Configuration

PARAMETER	SPECIFICATION	
Point Name	PMP120#	
Description	Supply Pump Control	
Area Code	B# (You will create this Area in a later Lab Exercise)	
PV Source Address	Address Type	Controller
	Controller	lcs620-#
	Location	(#-1)*2
OP Source and Destination Address	Address Type	Controller
	Controller	lcs620-#
	Location	PV+16
State Descriptors	State 0	STOP
	State 1	RUN
Scan Period	2 seconds (for all parameters)	
Alarms	None	
Displays	Associated Display	35# (You will build this page later)
	Group	1#
	Position in Group	4
	Trend	#8
	Position in Trend	7

Analog Point Configuration

PARAMETER	SPECIFICATION		
Point Name	FT10#		
Description	Tank Feed Flow Control		
Area Code	B# (You will create this Area in a later Lab exercise)		
PV Source Address	Address Type	Controller	
	Controller	lcs620-#	
	Location	4#03	
SP Source and Destination Address	Address Type	Controller	
	Controller	lcs620-#	
	Location	4#02	
Range	0%	0	KL/Sec
	100%	10	
Clamp PV	NO		
Scan Period	2 Seconds (for all Parameters)		
Alarms	No External Change Alarms		
	PV HIGH HIGH	9.6	URGENT
	PV HIGH	8.8	LOW
	PV LOW	1.5	JOURNAL
	PV LOW LOW	0.7	JOURNAL
Drift Deadband	1%		
Alarm Deadband	5%		
History Collection	Fast (5 seconds) and Standard, Gated by PMP120#, PV=RUN (what state is this?)		
Displays	Associated Display	35# (You will build this page later)	
	Group	1#	
	Position in Group	5	
	Trend	#8	
	Position in Trend	8	

Algorithms - Overview

What Are Algorithms? Algorithms perform additional point processing or initiate actions when point values change. They are used to extend the functionality of non-Hybrid Controller points. A number of standard algorithms are provided, each performing a different function.

Algorithms are available for alarm processing, data analysis and computation, value transportation, action requests, downtime analysis and application task requests.

Two Classes of Algorithms

Two classes of algorithm are available:

- PV algorithms
- Action algorithms

PV algorithms perform data gathering or data manipulation. The result of the algorithm operation is usually stored in the PV of the point to which it is attached. PV algorithms are processed whenever the Point is processed.

Attention

Point processing occurs:

- when the raw PV (from a “real” controller) changes from the previously scanned value
- when a Free Format Report executes an X command
- every PVPERIOD for points with no hardware addressed under PV Source address, but with a PV algo attached

An action algorithm is processed, and some action initiated, when the value of the PV of the point to which the algorithm is attached changes to a specified value.

Example of a PV Algorithm

Assume a requirement to determine the number of hours that a pump has been running and to store the run hours value in a point's PV. The “Run Hours” algorithm would be attached to an analog point and be gated by the pump status point PV. The analog PV would then display the number of hours that the pump has been running since the last reset.

continued on next page

Algorithms - Overview.....continued

Example of an Action Algorithm

Assume a requirement to run a report when a status point changes to a certain state.

The Status Change Report Request algorithm would be attached to the status point so that the report would be requested when the status point changed to a nominated state.

How Algorithms Are Configured

Algorithms are configured using Quick Builder, or from the Detail page of the point to which they are attached (see below).

A maximum of one PV algorithm and one Action algorithm can be configured for each point.

Algorithm Numbers

Each type of algorithm is referred to by a different number.

This number is specified when the algorithm is configured for a point.

For example, the Value Transportation algorithm is number 68.

Algorithm Blocks

Algorithm blocks are used to store the algorithm configuration as well as working values required by the algorithm.

The number of algorithm blocks available is 6000.

Algorithm blocks are generally not shared between algorithms so each algorithm attached to each point should be assigned a unique block number.

Exceptions are the Composite Alarm algorithms 11 and 12.

The Value Transportation algorithm 68 uses no algorithm blocks.

Caution

If an algorithm block number that is already in use is specified a warning message will be issued during the download process but the existing block will be overwritten with the new configuration.

Two methods of Finding Free Algorithm Blocks

1. Use the **alglst** utility to list the free algorithm blocks in the database.

2. The Point Cross Reference report creates the file

c:\honeywell\server\report\algmap

which lists the free and used algorithm blocks.

Refer to the *Knowledge Builder: Server and Client Configuration Guide* for more details about the Point Cross Reference report.

Algorithms - Overview.....continued

Viewing Algorithm Configuration from a Point Detail

After an algorithm has been configured for a point, the algorithm details can be displayed at a Station using the Point Detail.

To display the Algorithm Detail page:

1	Click on Algorithms on the first page of the Point Detail page.
2	On the Point Detail Algorithms page double click on the algorithm number or block number of the PV or Action Algorithm.

Attention

Changes made to the online database using the Algorithm Detail page will not be reflected in the Quick Builder database (as with any other online changes made to points).

Recall the use of Upload for updating the Quick Builder database.

Lab Exercises - Algorithms

Introduction

Proceed with the lab exercise listed below.
Ask your Course Manager for any assistance if you are not sure what you are expected to do.

Configuring an Algorithm to Request a Report

This exercise adds the Report Requesting algorithm to an existing point.

Step	Action
1	Use the alglst utility to confirm which Algorithm Block Numbers are unused. What other method could be used for this purpose?
2	With Quick Builder open file team#.qdb and attach Algo 70 to the point PMP120#. Use block numbers in the range #00 to #99 as required. <div>Attention What precaution should you take before modifying an existing point configuration using either of these methods?</div>
3	Configure Algo 70 to request report number 2# when the point PV goes to the RUN state.
4	Download the modified point, PMP120#.
5	Change the PV of PMP120# and observe that the report number 2# runs. How do you know the report has run? Does it print to your Station? Explain to your Course Manager.

Lab Exercises - Algorithms.....continued

Configuring an Algorithm to perform Arithmetic

This exercise creates a new Point with the General Arithmetic algorithm (Algo 4) attached.

Step	Action
1	Use the alglst utility to confirm which Algorithm Block Numbers are unused.
2	<p>With Quick Builder open file team#.qdb and create the point CALC10# using Algo 4 to calculate the formula:</p> $\text{CALC10\#} = (\text{LT10\#} * \text{FT10\#}) / 100 \text{ Units}$ <p>What Type of point will you use? What Range is required for this point?</p> <p>Include this point in Area B# and in the Fast and Standard History Assignments.</p>
3	Download the new point and add to Group 1#.
4	Observe the values of LT10# and FT10# and verify that the value of CALC10# is correct.

Configuring an Algorithm to perform Integration

This exercise creates a new Point with the Integration algorithm (Algo 15) attached.

Step	Action										
1	Use the alglst utility to confirm which Algorithm Block Numbers are unused.										
2	<p>With Quick Builder open file team#.qdb and create the point FIQ10# in Area B# with Algo 15 attached using the following specifications:</p> <table> <tr> <td>Engineering Units:</td><td>KI</td></tr> <tr> <td>Point to be integrated:</td><td>FT10#</td></tr> <tr> <td>Store shift value:</td><td>in PV of FIQ10#</td></tr> <tr> <td>Reset:</td><td>shift and day values</td></tr> <tr> <td>Scale factor:</td><td>What should this be?</td></tr> </table>	Engineering Units:	KI	Point to be integrated:	FT10#	Store shift value:	in PV of FIQ10#	Reset:	shift and day values	Scale factor:	What should this be?
Engineering Units:	KI										
Point to be integrated:	FT10#										
Store shift value:	in PV of FIQ10#										
Reset:	shift and day values										
Scale factor:	What should this be?										
3	Download the new point and add to Group 1#.										
4	Observe the value of the PV of FIQ10# at the next shift boundary.										