

ZL7760A LONSPEC™

USER'S GUIDE

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INTRODUCTION

About the LonSpec™ User Guide

The LonSpec™ user guide is designed to provide brief information on each feature of LonSpec™. It assists you by providing a high level description of the feature followed by a pointer to the appropriate reference source.

It is assumed that you have a prior knowledge of control fundamentals, theory, and types of controls with respect to building management control system. It is also assumed that you have knowledge of the basics of building management systems and configurations. It is suggested that you also have access to engineering data such as equipment sizing, psychrometric charts, and conversion formulas.

Any control recommendations in this guide are general in nature and are not the basis for any specific job or installation. Control systems are to be furnished according to the plans and specifications prepared by the consulting engineer or other specifier. In many instances there may be more than one control solution for a given application. Professional expertise and judgment are required for the design of a control system.

NOTE: This guide is not a substitute for control engineering expertise and judgment. Always consult a licensed engineer for advice on designing control systems.

Document Conventions

The following are the conventions used:

- Buttons and field labels are represented in bold. For example, **Save**, **Close**, **Heating**, and **Cooling**.
- Field options are represented in single quotes. For example, 'Floating' and 'PWM'.
- Tabs are represented in bold followed by the word 'tab'. For example, **General Dialing Information** tab and **Analog Inputs** tab.
- Icons are represented in Italics followed by the word 'icon'. For example, *Point Group* icon and *Restore Project* icon.
- LonSpec™ drop-down menus and their options are separated by an angle bracket '>'. For example, **Project>New**.
- Topics that you need to refer to, for information are represented in blue text. For example, [Backing up a Project and Restoring Projects](#).
- Ver. means version of LonSpec™. For example, LonSpec™ ver. 04.06.05.
- The following mean the same and are used interchangeably:
 - Network and Site
 - Network Group and Point Group
 - Open Project and Current Project
 - Open and Current

GETTING STARTED

This section provides information about the following topics:

- About LonSpec™
- LonSpec™ Features
- Acronyms and Definitions
- Starting LonSpec™
- Understanding the LonSpec™ Interface
- Closing LonSpec™

About LonSpec™

LonSpec™ is used to configure, commission, calibrate, and monitor the entire family of Honeywell Excel 10 and Excel 15 controllers. The list includes the following:

- W7760A Excel 15 Building Manager
- W7750A and B Excel 10 Constant Volume Air Handling Unit (CVAHU) Controller
- W7753A Excel 10 Unit Ventilator (UV) Controller
- W7761 Excel 10 Remote Input/Output (RIO) Device
- T7300F/Q7300H Series 2000 Commercial Thermostat with Communicating Subbase
- T7350 Commercial Thermostat with Communicating Subbase
- S7760A Excel 15 Command Display (CD) Unit
- Q7752A Excel 10 Serial LonTalk Adapter (SLTA)
- Q7790A Wireless LonWorks® Receiver
- RapidLink
- CXS/CXL Honeywell Variable Frequency Drive (VFD)
- NX Honeywell Variable Frequency Drive (NX VFD)
- W7762A and B Excel 10 Hydronic Controller (HYD)
- W7763C Excel 10 Chilled Ceiling Controller (CHC)
- W7752D, E, F, G, and J Excel 10 Fan Coil Controller (FCU)
- W7751B, D, F, H Excel 10 Variable Air Volume controller (VAV II)

After the controllers are configured, use the site management tools like the blueprints, sitemaps, drawings, or even your own rough sketch of the site to create reports, monitor network groups, read alarms and logs, and build onto existing networks.

LonSpec™ Features

Following are the main features of LonSpec™:

- Configuring and managing projects
- Scheduling controllers
- Monitoring network groups
- Generating reports and logs
- Identifying the controller commission status
- Using SLTA/RapidLink/PCLTA/PCMCIA as the communication interface for direct connection and RapidLink/Modem/Excel 15B for remote connection.
- Mitigating risks
- Dragging and dropping controller icons onto workspace
- Revising updates
- Supporting multiple controllers
- Working in the Project Directory pane or the workspace.
- Backing up and restoring projects (LonSpec™ can also backup and restore projects in Excel 15B).
- Customizing engineering units

Acronyms and Definitions

Table 1. Acronyms and Definitions.

Acronyms	Definitions
RIO	Remote Input/Output Controller
CVAHU	Excel 10 Constant Volume Air Handling Unit
SLTA	Excel 10 Serial LonTalk Adapter
CD	Command Display
UV	Excel 10 Unit Ventilator
FCU	Excel 10 Fan Coil Unit
HYD	Excel 10 Hydronic Controller
CHC	Excel 10 Chilled Ceiling Controller
VFD	Variable Frequency Drive
NX VFD	NX Honeywell Variable Frequency Drive
VAV II	Excel 10 Variable Air Volume Unit
PID	Proportional Integral Derivative
RTN	Return to Normal
LCBS™	Light Commercial Building Solutions™
FTT	Transformer-coupled Free Topology Transceiver
AC	Alternating Current
DST	Daylight Savings Time
EPID	Enhanced Proportional-Integral-Derivative
CAV	Constant Air Volume System
PI	Proportional-integral control
RTC	Real Time Clock
NV	Network Variable

Starting LonSpec™

The following table describes the different methods of starting LonSpec™.

Table 2. Starting LonSpec™

Task	Steps
From the Desktop Icon	Double-click the <i>LonSpec™</i> icon on the Desktop.
From the Start Menu	Click Start on the task bar and point to Programs>LonSpec™ . Click LonSpec™ .

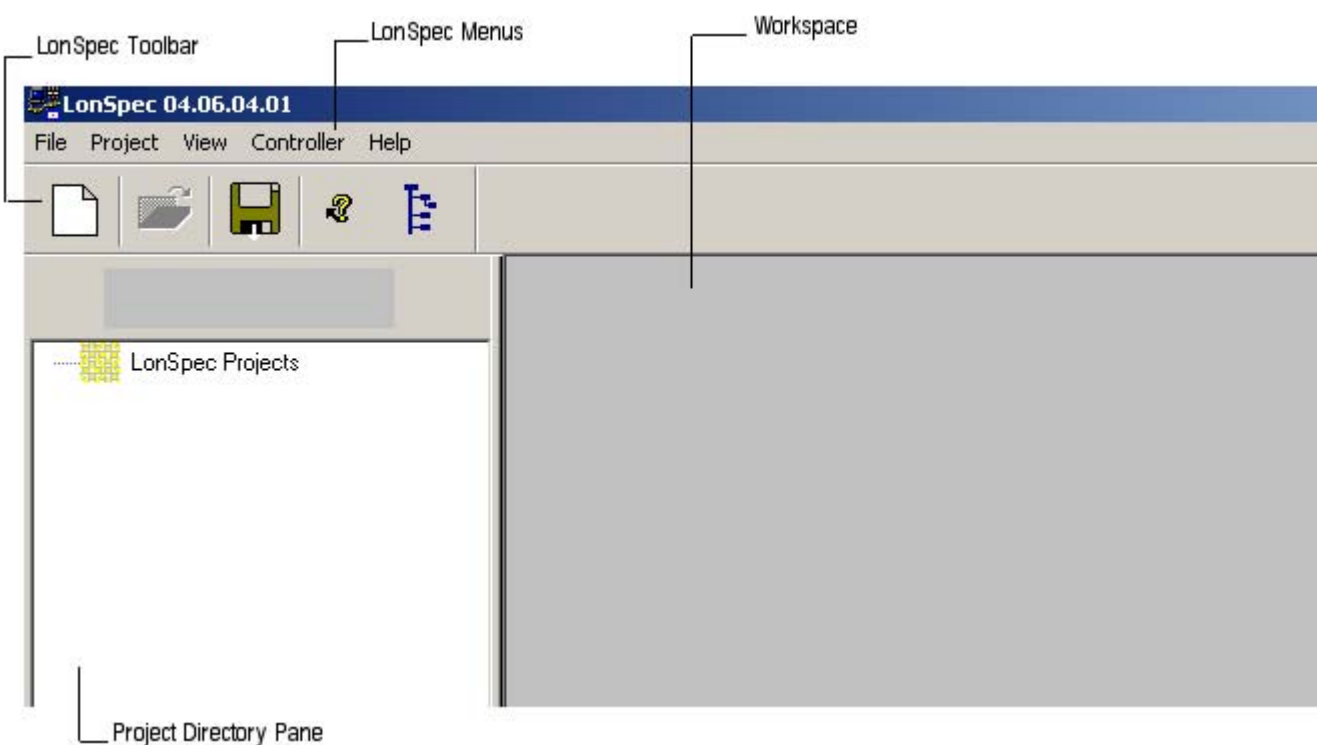
NOTE: If you receive an error message while attempting to open LonSpec™, uninstall and re-install LonSpec™.

Understanding the LonSpec™ Interface

The following screen is displayed when you open LonSpec™.

NOTE: The following screen is displayed only when there are no projects in LonSpec™.

Fig. 1. LonSpec™ Interface



The LonSpec™ screen comprises the following elements:

- Project Directory pane
- Workspace
- Menus and toolbar

Project Directory Pane

The Project Directory pane is a tree structure, which displays all the projects that you create, open, or restore as directories and the corresponding networks, subnets, and controllers as subdirectories.

Workspace

Workspace is the area where you perform all the LonSpec™ controller configuration activities. At any point in time, the workspace displays the sites of only the active project.

You can use the workspace to:

- **Manage Networks**

All the networks associated with an open project are displayed as tabs in the workspace (refer to Fig 2: **LonSpec™ Window Displaying Project Details**). Click on a network or site tab to view its details. This will open the selected network and automatically close any previously opened network. After creating a network, you can right-click anywhere in the workspace, except on the subnet and controllers to view the network related shortcut menu options. For example, after creating a network, you can right-click in the workspace to edit the network or add a new subnet.

- **Manage Controllers**

You can drag and drop controllers only on to the workspace (refer to Fig 2: **LonSpec™ Window Displaying Project Details**). The activities performed in the workspace are automatically updated in the Project Directory pane and vice versa. For example, when you add controller icons to the workspace from the LonSpec™ toolbar, you also see them being added to the subnet directory in the Project Directory pane.

LonSpec™ Menus and Toolbar

The following are the LonSpec™ menus:

- **File**
- **Project**
- **View**
- **Controller**
- **Network**
- **Report**
- **Help**

Initially, when you open LonSpec™, only the **File**, **Project**, **View**, **Controller**, and **Help** menus are displayed (refer to Fig. 1). The **Network** and **Report** menus are displayed once you add a project and network or restore a complete project in to LonSpec™. Apart from **Help**, all the LonSpec™ menus display additional menu options when LonSpec™ is online. These LonSpec™ menu options are also displayed as shortcut menu options when you right-click in the Project Directory pane or in the workspace.

NOTE: The right-click option is enabled only after you add a project.

The toolbar provides icon-based shortcuts to different menus. Refer to Table 4: **Controllers and Other Icons on the Toolbar**.

Tasks that you can perform When You Initially Open LonSpec™

When you first open LonSpec™ (typical scenario - when LonSpec™ is newly installed on the pc), you can do any of the following tasks:

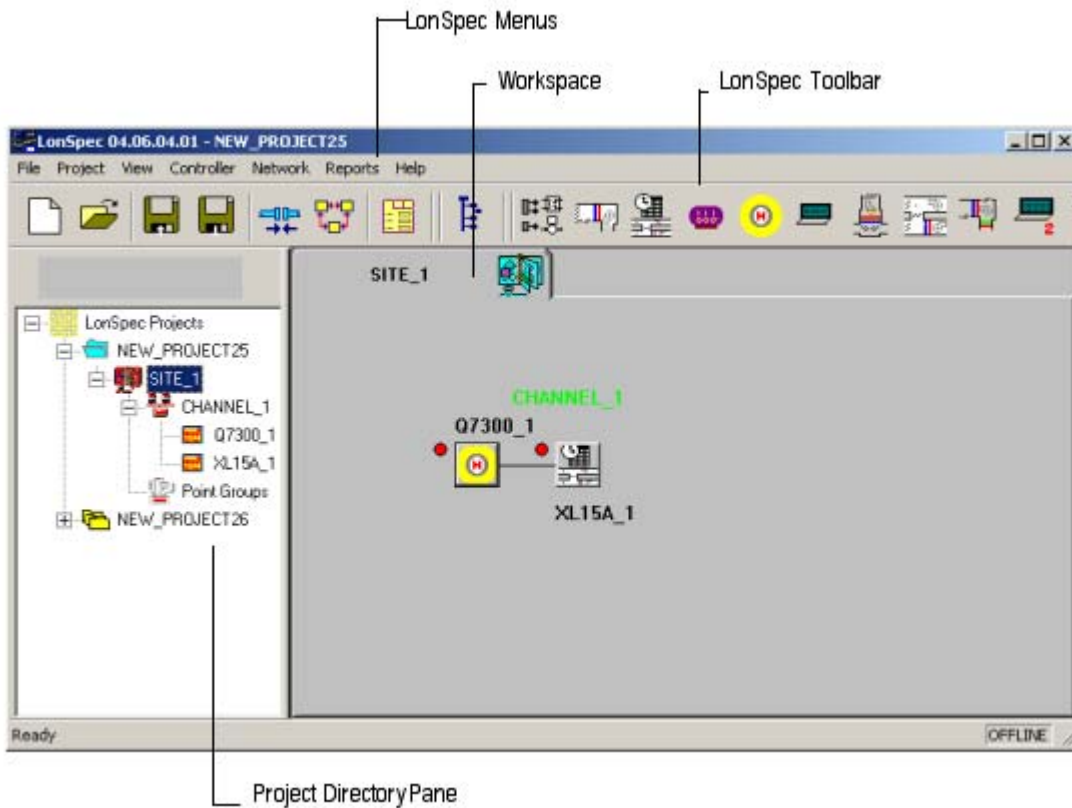
- Create a new project - Refer to [“Creating a LonSpec™ Project” on page 16](#).
- Restore projects that are backed up or restore previous versions of LonSpec™ - Refer to [“Restoring Projects” on page 28](#).

- Choose LonSpec™ communication settings that is you can select the network interface to connect LonSpec™ online - Refer to [“Connecting LonSpec™ to the Network” on page 61](#).

After creating or restoring a complete project (with network, subnet, and controllers added) into LonSpec™, you get to see the following LonSpec™ window.

NOTE: The information given in the succeeding pages has reference to the following LonSpec™ image. Please refer to this image when going through the text for a better understanding.

Fig. 2. LonSpec™ Window Displaying Project Details



In the preceding Fig 2: **LonSpec™ Window Displaying Project Details**, you can see the Project Directory pane with the typical tree structure (directories and subdirectories). Apart from this, the workspace shows the controller icons that are dragged and dropped from the toolbar. The workspace also shows partitions that represent virtual sites or networks.

The toolbar shows all the icons enabled, especially the controller icons as the current project NEW_PROJECT25 shown in Fig 2: **LonSpec™ Window Displaying Project Details**, has the channel or subnet CHANNEL_1 associated with it. Once you create or restore a project into LonSpec™, the status bar displays the status as 'OFFLINE' till you connect LonSpec™ online.

For easy identification, the following table lists the different folders in the Project Directory tree structure and the LonSpec™ components that they represent (refer to Fig 2: **LonSpec™ Window Displaying Project Details**):

Table 3. Folders in the Project Directory Pane

Folder	Represents...
Blue folder	A new or an existing open project
Yellow folder	A closed project
Red folder	A open active network
Blue folder	An open inactive network
Yellow folder	A closed network

The following table details all the icons displayed in the LonSpec™ toolbar (refer to Fig 2: **LonSpec™ Window Displaying Project Details**):

Table 4. Controller and Other Toolbar Icons








Icon	Represents...
	New Project (available both offline and online)
	Open Project (available both offline and online)
	Project Backup (available both offline and online)
	Restore (available both offline and online)
	LonSpec™ Help
	Tree Structure or View Tree Control (available both offline and online)
	Connect Network

Table 4. Controller and Other Toolbar Icons (Continued)


















Icon	Represents...
	Refer Points
	Application Selection (available both offline and online)
	Excel 10 RIO
	Excel 10 CVAHU
	Excel 15A Building Manager
	Excel 10 SLTA
	Q7300H
	T7350
	Excel 15 CD
	Excel 10 UV
	Excel 15C
	VAV II
	CD2
	Wireless Receiver
	VFD
	NX VFD
	Excel 10 FCU2

Table 4. Controller and Other Toolbar Icons (Continued)










Icon	Represents...
	Excel 10 CHC
	Excel 10 HYD
	RapidLink
	Excel 15B
	NOTE: The following icons are available only when LonSpec™ is online. Disconnect Network
	Commission Controller

Table 4. Controller and Other Toolbar Icons (Continued)

Icon	Represents...
	Unassign Controller
	Upload Controller
	Help Topics

NOTE: Move the mouse over an icon on the toolbar to view its tool tip. you can right-click in the Project Directory pane or the workspace to access all the shortcut menu options. For example, to add a controller to the subnet, you can select **Controller>New** or right-click the subnet icon in the Project Directory pane and select **New Controller** from the shortcut menu displayed.

Description of LonSpec™ Menu Options

The following table lists each menu option and also describes the task that is specific to each menu option. In case you need more information on a particular task, you are also provided references to topics in this LonSpec™ user guide.

Table 5. Menu Options

Menu Name	Menu Options Displayed	You can...
File	Communication Settings	Choose the network interface for LonSpec™. But, you cannot connect LonSpec™ to the network until and unless you have a open network associated with the open project. For more information, refer to "Setting the Communication Interface" on page 61 .
	Exit	Close LonSpec™. For more information, refer to "Commission Status" on page 15 . NOTE: The File menu options are available right from the time you open LonSpec™.

Table 5. Menu Options (Continued)

Menu Name	Menu Options Displayed	You can...
Project	New...	Create a new project on the New Project window. For more information, refer to “Creating a LonSpec™ Project” on page 16 .
	Open...	Select the project that you want to open on the Open Project window. For more information, refer to “Opening a Project” on page 18 .
	Edit...	Modify a project information on the Edit Project window. For more information, refer to “Modifying a Project” on page 18 .
	Close...	Close the current project. For more information, refer to “Commission Status” on page 15 . NOTE: LonSpec™ also closes the current project when you select the Project>New or the Project>Open option.
	Delete...	Delete or remove a project on the Open Project window. For more information, refer to “Deleting a Project” on page 18 .
	Backup...	Take backup of the selected LonSpec™ project on floppy disks, hard drive, or a network drive. For more information, refer to “Backing up a Project” on page 28 .
	Restore... Batch Restore	Retrieve an individual backed up project or multiple projects from any previous version of LonSpec™. For more information, refer to “Restoring Projects” on page 28 .
	Replicate...	Create a new project database from an existing database without backing up and restoring the project under a different name. For more information, refer to “Replicating a Project” on page 28 .
	Engineering Units...	Customize the default display unit of a particular measurement as either ‘English’ or ‘Metric’. For more information, refer to “Setting Default Display Unit for a Project” on page 17 .
View	Toolbar	Enable or disable the display of the toolbar. By default, the Toolbar option is selected.
	Status bar	Enable or disable the display of the status bar. By default, the Status Bar option is selected.

Table 5. Menu Options (Continued)



Menu Name	Menu Options Displayed	You can...
Controller	New...	<p>Add a new controller on the New Controller window. For more information, refer to “Adding a Controller” on page 22.</p> <div>  CAUTION The controller options are enabled only when you add a subnet to the existing project and network. Except for the Replicate option, all the other Controller menu options are available only if there is an open project in the LonSpec™ window. </div>
	Edit...	Modify a controller's information on the Edit Controller window. This includes editing the controller's Neuron® ID when LonSpec™ is offline. For more information, refer to “Modifying a Controller” on page 22.
	Delete...	Select a controller on the Delete Controller window to remove it from the workspace. The controller is also automatically removed from the corresponding subnet and site. For more information, refer to “Deleting a Controller” on page 22.
	Replicate...	Select a controller on the Replicate window to replicate its information from the source site to the target site of another project. For more information, refer to “Replicating a Controller” on page 22.
	Application Selection...	Select a controller on the Application Selection window to configure it. For more information, refer to “Selecting a Controller (Application Selection)” on page 30.
	Replace SLTA with RapidLink	<p>Replace SLTA with RapidLink as the communication network interface.</p> <p>NOTE: This option is enabled only if you have a SLTA controller in your current network and project.</p> <p>For more information, refer to “Replacing SLTA With RapidLink” on page 41.</p>
	Monitor...	<div>  CAUTION The following Controller menu options are available only when LonSpec™ is online. </div> <p>Select a controller on the Monitoring window to monitor its activities. You must commission a controller before you can monitor its data points. Related data points are grouped under tabs. For more information, refer to “Monitoring Controller Activities” on page 70.</p>
	Assign Neuron ID...	Select a controller on the Controller AssignID window to assign a Neuron® ID for the selected controller, either manually or using the service pin. For more information, refer to “Assigning a Neuron® ID” on page 64.
	Commission...	Select a controller on the Commission Controller window to download its configuration from LonSpec™ database. For more information, refer to “Commissioning a Controller” on page 64.

Table 5. Menu Options (Continued)

Menu Name	Menu Options Displayed	You can...
	Re-commission...	Select a controller on the Re-commission Controller window to update its configuration from LonSpec™ database. This option is available only for commissioned controllers. For more information, refer to “Re-Commissioning a Controller” on page 65 .
	Unassign...	Select a controller on the Unassign Controllers window to replace it on the network. By unassigning its Neuron® ID, you are resetting a controller's Neuron® ID in LonSpec™ database. The controller state will be 'Unassigned' in the LonSpec™ database. All the controller configuration including the bindings will remain intact in LonSpec™ database. For more information, refer to “Unassigning a Controller” on page 68 .
	Upload...	Select a controller on the Upload Controllers window to copy its database to LonSpec™. For more information, refer to “Uploading a Controller Configuration to LonSpec™ Database” on page 66 .
	Diagnostics...	Select a controller on the Controller Diagnostics window to position either in a test mode or a manual mode. It is done to verify the controller's performance. The controller diagnostics is possible only after configuring and commissioning the selected controller. For more information, refer to “Controller Diagnostics” on page 71 .
	Calibration...	Select a controller on the Calibrate Controller window to calibrate its input sensors. For more information, refer to “Calibrating a Controller” on page 71 .
	Upload Excel 15B	You can connect LonSpec™ to Excel 15B and upload all the configurations present in Excel 15B to LonSpec™ local database. For more information, refer to “Uploading Excel 15B” on page 66 .
	Commission SLTA...	Commission SLTA with the latest configuration present in the LonSpec™ database. For more information, refer to “Commissioning SLTA” on page 66 .
	Read Alarms and Logs...	Read the following logs for both Excel 15A Building Manager and Excel 15C plant controllers, on the Read Alarms & Logs window: <ul style="list-style-type: none"> • Alarm_log • Bypass_log • Energy_log • Runtime_log • Trend_log For more information, refer to “Reading Alarms and Logs” on page 68 .
	Reset Counters and Runtimes...	Reset the Excel 15A Building Manager and Excel 15C plant controller counters and runtime logs to zero. For more information, refer to “Resetting Counters and Runtime Logs” on page 68 .
	Commission RapidLink...	Commission RapidLink with the latest configuration present in the LonSpec™ database. For more information, refer to “Commissioning SLTA” on page 66 .
	View Flow Linearization Values...	View the default factory calibration values, converted and downloaded values, and the last set of values that are captured for a VAV II controller. For more information, refer to “Viewing Flow Linearization Values” on page 68 .
	Commission Excel 15B...	Download Excel 15B configuration from LonSpec™ database. For more information, refer to “Commissioning Excel 15B” on page 67 .
	Store LonSpec™ Database in Excel 15B	Save the latest LonSpec™ database into Excel 15B and retrieve it when needed. For more information, refer to “Storing LonSpec™ Database in Excel 15B” on page 67 .
	Retrieve LonSpec™ Database from Excel 15B	Retrieve LonSpec™ database from Excel 15B. If needed, you can also restore it as a project in to LonSpec™. You can perform this task only if there is a LonSpec™ database stored in Excel 15B. For more information, refer to “Retrieving LonSpec™ Database from Excel 15B” on page 67 .

Table 5. Menu Options (Continued)


Menu Name	Menu Options Displayed	You can...
Network	New...	Create a new network on the New Network window, for the selected open project. For more details, refer to “Creating a Network” on page 19 .  CAUTION The Network menu options are available only if there is an open project in the LonSpec™ window.
	Open...	Select a network on the Open Network window to view its details. Only the networks associated with the current project are displayed. For more details, refer to “Opening a Network” on page 20 .
	Edit...	Select a network on the Edit Network window to modify its details. For more information, refer to “Modifying a Network” on page 20 .
	Close...	Close the current network. This activity will automatically open the other network (if any) in the current project. For more information, refer to “Closing a Network” on page 20 .
	Delete...	Select a network on the Delete Network window to remove a network from the open project. Both the active and inactive networks associated with the current project are displayed. For more information, refer to “Deleting a Network” on page 20 .
	Add Subnet...	Add a new subnet by entering the new subnet details on the Add Subnet window. The new subnet is automatically added to the network that is open. NOTE: It is important that you open the related project and network before adding a subnet. You can add only one subnet to a network. The Add Subnet option is automatically disabled once you add a subnet to a open network. For more information, refer to “Adding a Subnet” on page 21 .
	Edit Subnet...	Select a subnet on the Edit Subnet window to modify its details. For more information, refer to “Modifying a Subnet” on page 21 .
	Delete Subnet...	Select a subnet on the Delete Subnet window to remove it from the open network. The subnet that is associated with the open network of the current project will be deleted. For more information, refer to “Deleting a Subnet” on page 21 .
	Refer Points...	Specify data sharing between controllers. Only the controllers available on the current subnet, network, and project are displayed in the Source Controllers and Destination Controllers lists on the Refer Points window. For more information, refer to “Data Sharing Using Refer Points” on page 24 . NOTE: The Refer Points option is enabled only if there are controllers available on the subnet of the current network and project and if the subnet is not connected.
	Connect (This option is available only when LonSpec™ is offline.)	Connect LonSpec™ to the network by specifying the network interface on the Communication Settings window. For more information, refer to “Setting the Communication Interface” on page 61 .
	Create Network (This option is available only when LonSpec™ is online.)	Create a network from the online device status by connecting to the physical network using LonSpec™. For more information, refer to “Creating Network” on page 69 .
	Disconnect	Disconnect from the network. All online functions are disabled. For more information, refer to “Disconnecting from the Network” on page 71 .
	Point Group...	Create a point group, select and modify an existing point group on the Network Group window. But, you must connect LonSpec™ to the network to monitor a point group. For more information, refer to “Monitoring a Point Group” on page 71 .

Table 5. Menu Options (Continued)

Menu Name	Menu Options Displayed	You can...
Reports	Device Status	Generate a report that lists the status of the controllers on the network. For more information, refer to “Device Status Report” on page 57.
	Document Project	Generate a report in text format to document entire project details. For more information, refer to “Click Reset Subnet/Node ID to reset the selected Subnet or Node.” on page 58.
	Alarms Report (This option is available only when LonSpec™ is online.)	Generate a report to display the history of recent alarms and all current configured alarms. For more information, refer to “Alarms Report” on page 58.
Help	Help Topics	View the LonSpec™ Online Help that provides detailed information about LonSpec™.
	About LonSpec™	Know the version number of LonSpec™.

NOTE: For more information on the LonSpec™ interface screen, refer to [LonSpec™ Online Help - Using LonSpec™ Windows, Menus, and Toolbars.](#)

Commission Status

LonSpec™ assigns each controller icon on the subnet, a commission status indicated by a green, blue or red dot. Just below the subnet, in the workspace is the commission status legend.

- Red or **Not Assigned** - Indicates an inactive controller that is not commissioned by LonSpec™ because it does not exist or is not wired to the SLTA. It can also be a controller that is available and is yet to be commissioned by LonSpec™.
- Green or **Commissioned** - Indicates that the controller is commissioned by LonSpec™.
- Blue or **Not Commissioned** - Indicates an active controller that has not been commissioned or whose configuration has changed since the last time you commissioned it. The revised configuration must be download to the controller to change the controller status to **COMMISSIONED** (green dot).

Closing LonSpec™

LonSpec™ automatically saves the current project when you close it.

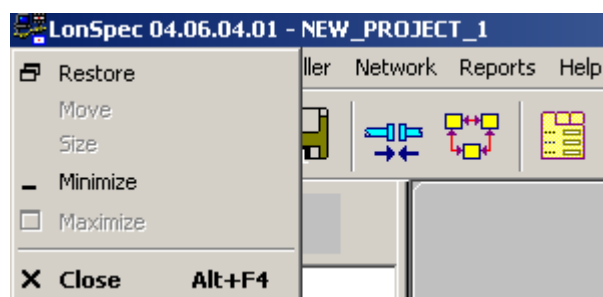
Procedure

- Click **File>Exit**. If there is any open project, a message is displayed that the open project will be closed and existing networks disconnected. Click **Yes** to exit LonSpec™.

OR

- Click the *LonSpec™* icon located at the left top corner of the LonSpec™ title bar. Select **Close** from the menu displayed as shown in the following image.

Fig. 3. Title Bar Displaying the LonSpec™ Icon



WORKING WITH PROJECTS

A LonSpec™ project is a logical collection of networks or sites. You can create a network, add subnet, add and configure controllers in the workspace only for an open project. You can create multiple projects in LonSpec™.

This section provides information about the following topics:

- Project Planning
- Creating a LonSpec™ Project
- Setting Default Display Unit for a Project
- Opening a Project
- Modifying a Project
- Deleting a Project
- Closing a Project

You can also perform most of the online functions when LonSpec™ is online.

Project Planning

To work in LonSpec™, you must define a project if none exists. If projects exist, one must be open. You must have an open project, network, and subnet to enable the controller icons and begin placing them in the workspace.

It is important to plan your project before setting up a LonSpec™ network and subnet. This will save time when configuring the controllers. Tools that might be helpful in this process are blueprints, sitemaps, drawings, or even your own rough sketch of the site.

Software programs are available specifically for this purpose, such as Visio Technical 4.1 for Microsoft® Windows®. You may also use tab layout programs such as Paint, CorelDraw, PageMaker, Adobe Illustrator, or Microsoft® Word 97drawing toolbar.

While planning your project, draw out layout symbols representing all the controllers that are to be included in your network, their inputs and outputs, and connections. Include information such as identifying an Excel 15A Building Manager as a time master and the working of control loops. Use your drawings when you are working with LonSpec™ to configure each controller.

The basic steps to complete your project are as follows:

Procedure (General)

1. Start LonSpec™
2. Create a Project
3. Create a Network
4. Add a Subnet
5. Add Controllers to the Subnet
6. Configure each controller
7. Customize Controllers
8. Replicate Controllers
9. Specify data sharing between controllers using refer points
10. Connect LonSpec™ to the Network
11. Assign Neuron IDs
12. Commission Controllers
13. Calibrate Controllers

Creating a LonSpec™ Project

Procedure

1. Click **File>New** or click the *New Project* icon on the LonSpec™ toolbar to view the **New Project** window.

Fig. 4. New Project Window

2. Retain the default directory path for saving the project or click the ... button to select a different directory location.
3. Enter a unique name for the project in the **Project Name** box. It should be a maximum of 32 characters.
4. Enter the refresh time in the **Refresh Time** box.
5. Enter the failure detect time in the **Failure Detect Time** box.
6. Select 'English' or 'Metric' as the standard unit of measurement, from the **Engineering Unit** list.
7. Select '50 hz' or '60 hz' as the line voltage frequency, from the **Line Voltage Frequency** list.
8. Click **OK**. The new project is created and displayed as a blue folder in the Project Directory pane.



CAUTION

Refresh Time and Failure Detect Time are preset with defaults that apply to most situations. Do not change these defaults without proper consideration, testing, and consultation.

After creating a project, you can right-click the project folder in the Project Directory pane to view the shortcut menu options.

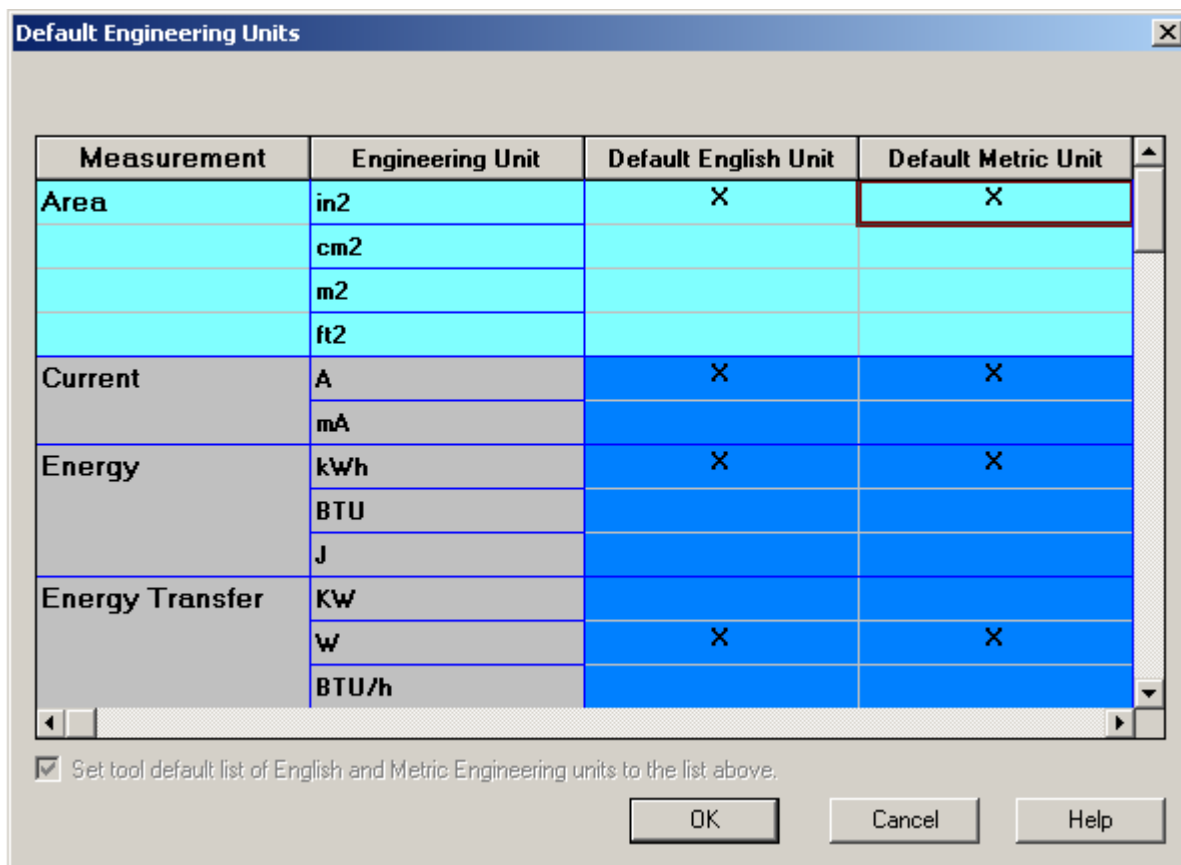
Setting Default Display Unit for a Project

You can customize the default display unit of a particular measurement as either 'English' or 'Metric'. This unit of measurement will be taken as a standard across the entire project.

Procedure

1. Click **Project>Engineering Units** to view the **Default Engineering Units** window.

Fig. 5. Default Engineering Units Window



2. To set the unit for a particular measurement, double-click in the relevant row under **Default English Unit** or **Default Metric Unit**. Some of the measurements have preset default english or metric units. A message is displayed that the default unit is being changed.
3. Click **Yes** to confirm your task.
4. Select the checkbox for **Set tool default list of English and Metric Engineering Units to the list above** if you want the selected engineering unit to be used as the

default display unit when displaying values in all LonSpec™ screens. This option is enabled only for an open project.

Managing a Project

You can open and edit only one project at a time. The **Edit** option is disabled for closed projects.

Opening a Project

Procedure

1. Click **Project>Open** or click the *Open Project* icon on the LonSpec™ toolbar to view the **Open Project** window, if there are no open projects.

NOTE: If you want to open a project other than the existing one, a message is displayed that the existing project will be closed and all networks for that project will be disconnected. Click **Yes** to proceed. The existing project is closed and the **Open Project** window is displayed.

2. Select the project from the **Current Projects** list.
3. Click **OK**. The selected project is displayed as a blue folder in the Project Directory pane along with the network and subnet details (if the project is configured completely).

Modifying a Project

Procedure

1. Click **Project>Edit** to view the **Edit Project** window.
2. Navigate to the essential fields and modify the project details.
3. Click **OK**. The project is automatically updated.

Deleting a Project

Once you delete a LonSpec™ project, all the networks, subnets, controllers, and point group details are permanently removed from the LonSpec™ database. But, if you have taken a backup of the project, it can be restored when required. You can delete both open and closed projects. In case of open projects, all the open networks will get closed and connected networks will get disconnected.

Procedure

1. Click **Project>Delete**. A message is displayed based on your choice of deleting an open project or a closed project.
2. Click **Yes** on the message box to confirm deleting the project.

Closing a Project

Procedure

1. Click **Project>Close**. A message is displayed that all the connected networks will be disconnected once the project is closed.
2. Click **Yes** to proceed. The project is deleted from LonSpec™ database.

NOTE: For more information on creating and working with projects, refer to LonSpec™ Online Help - Projects.

WORKING WITH NETWORKS

A Lon network is a collection of subnets or channels. LonSpec™ supports one subnet per network.

This section provides information about the following topics:

- Creating a Network
- Opening a Network
- Modifying a Network
- Deleting a Network
- Closing a Network

Creating a Network

Procedure

1. Click **Network>New** to view the **New Network** window.

Fig. 6. New Network Window

2. Enter a unique name for the network in the **Network Name** box.
3. Enter an ID for the network in the **Site ID** box.
4. Click **Advanced Features** to:
 - Enter the domain ID in the **Domain ID** box.
 - Select domain index from the **Domain Index** list.
5. LonSpec™ can connect to a remote site. Select the mode of communication and enter the necessary details.
 - If you want a direct connect, then do not enter any telephone number.
 - If you want a dialup network, then enter a telephone number for modem connectivity.
 - If you want to connect through Excel 15B, then enter either the host name or the IP address of Excel 15B.
6. Click **OK**. The network is added to the open project.

Managing a Network

You can open and modify, or delete the network of only an open project.

Opening a Network

Procedure

1. Click **Network>Open** to view the **Open Network** window.
2. From the **Network Name** list, select the network that you want to open and click **OK**. The network expands to display the associated subnet (if it is added) and the point group, in the Project Directory pane. (The same is reflected in the workspace also.)

Modifying a Network

Procedure

1. Click **Network>Edit** to view the **Edit Network** window.
2. From the **Current Networks** list, select the network that you want to edit. Only those networks that are associated with the current project are displayed in the list.
3. Make the necessary changes to network information.

4. Click **Apply**. The changes are directly updated in the LonSpec™ database.

Deleting a Network

Procedure

1. Click **Network>Delete** to view the **Delete Network** window.
2. From the **Network Name** list, select the network that you want to delete and click **OK**. Only those networks associated with the current project are displayed in the list.

Closing a Network

Procedure

- Click **Network>Close**. The network that is open is closed. The associated subnets and controllers are no longer visible in the workspace.

NOTE: **For more information on managing networks, refer to LonSpec™ Online Help - Networks.**

WORKING WITH SUBNETS

Each subnet supports a maximum of 120 controllers and four Excel 15A Building Managers. You need to add a repeater if more than 60 controllers are present on a subnet.

This section provides information about the following topics:

- Adding a Subnet
- Modifying a Subnet
- Deleting a Subnet

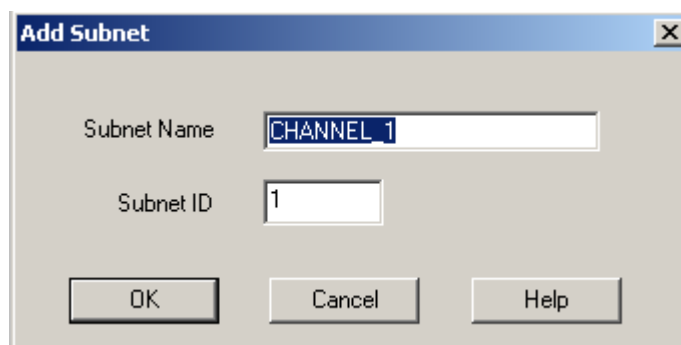
Adding a Subnet

NOTE: To create a subnet, you must have an open network. If the open network already has a subnet, then LonSpec™ disables the **Add Subnet** functionality. In such cases, you must create a new network to add a subnet.

Procedure

1. Click **Network>Add Subnet** to view the **Add Subnet** window.

Fig. 7. Add Subnet Window



2. Enter the name of the subnet in the **Subnet Name** box.
3. Enter the ID for the subnet in the **Subnet ID** box.
4. Click **OK** to add the new subnet to the open network.

NOTE: You can also use the **Create Network** option to discover devices when LonSpec™ is online and add them to LonSpec™. For more details, refer to LonSpec™ Online Help - Create Network from Online Devices.

Managing a Subnet

Only the subnet that is associated with the open network of an open project can be edited.

Modifying a Subnet

Procedure

1. Click **Network>Edit Subnet** to view the **Edit Subnet** window.

2. Overwrite the existing subnet name with a new name in the **Subnet Name** box.
3. Click **Apply** to view the updated subnet in the Project Directory pane.

Deleting a Subnet

Procedure

1. Click **Network>Delete** to view the **Delete Subnet** window.
2. Select the subnet from the **Subnet Name** list. Only the subnet that is associated with the current network and project is displayed in the list.
3. Click **Delete**. The subnet is removed from the open network and project.

NOTE: For more information on managing subnets, refer to LonSpec™ Online Help - Subnets.

WORKING WITH CONTROLLERS

You can view the controller icons on the LonSpec™ toolbar only when a subnet is open. You can then drag and drop the controller on to the workspace and configure the controller.

This section provides information about the following topics:

- Adding a Controller
- Modifying a Controller
- Deleting a Controller
- Replicating a Controller
- Data Sharing Using Refer Points

Adding a Controller

To add a controller, you must have the related project, site, and subnet open.

Procedure

1. Click **Controller>New** to view the **New Controller** window.

Fig. 8. New Controller Window

2. Enter a name for the controller in the **Controller Name** box. If you are going to add more than one controller of the same type, then name them according to their location for easy identification.
3. Select the subnet or the channel from the **Channel** list.
4. Select the type of controller that you want to add from the **Controller Type** list.
5. Click **OK** to add the controller to the subnet. In addition, the controller is also displayed in the workspace.

Managing a Controller

You can modify or delete only those controllers that are available in an open project and site.

Modifying a Controller

Procedure

1. Click **Controller>Edit** to view the **Edit Controller** window. All the controllers that are available on the current subnet and network are displayed in the **Controllers In the Network** list.
2. From the list, select the controller whose details you want to modify. The controller's name and Neuron® ID are displayed.
3. Make the necessary modifications and click **Apply**.

NOTE: You can also assign Neuron® ID to a controller by pressing the service pin, when LonSpec™ is online. For more details, refer to LonSpec™ Online Help - Controller Functions - Online Functions - Assign Neuron ID or refer to [“Assigning a Neuron® ID” on page 64](#)

Deleting a Controller

Removing a controller from the subnet will automatically delete all the corresponding controller information from the LonSpec™ database.

Procedure

1. Click **Controller>Delete** to view the **Delete Controller** window.
2. Select the controller that you want to remove and click **Delete**.



CAUTION

You must be careful when deleting a controller. LonSpec™ deletes all those mapping relationships that reference the selected controller and assigns a non-commissioned status to the affected controller.

Replicating a Controller

You can replicate a controller from the source site to the target site of another project. The source and target projects can be selected from any of the available projects in LonSpec™. If the source controller that you select is already configured, then the entire configuration is also replicated to the target controller.

The replication process ensures that, at any point of time, there are only a maximum of 120 devices in the subnet.

- When an Excel 15A device configuration is replicated, the replication process ensures that there are only four such configurations in the destination network.
- When a SLTA or a RapidLink is replicated, the replication process ensures that there are only six such combined configurations (combination of SLTA and Rapidlink) in the destination network.



CAUTION

No duplicate controller names are allowed during the replication process. Replication does not completely replicate on Excel 15A Building manager, Excel 15C Plant Manager, CD, CD2, Q7300, and RF Gateway.

More Details on Controller Replication

The replication does not effectively replicate selected controller configuration details. The controllers and part of the configuration that will not be replicated during the replication process are mentioned below.

- Replication of Excel 15A controller configuration
Generally, if an Excel 15A controller is replicated, the following configuration details are not replicated: alarms, trend, runtimes, bypass logs, schedule assignment details, alarm mapping, and DLC assignments.
 - If replicated within the same network, in addition to the above-mentioned configuration details, the remote output points are also not replicated.
 - If replicated across networks, in addition to the above-mentioned configuration details, both poll points and remote points are not replicated.
- Replication of Excel 15C device configuration
 - If replicated within the same network, remote output points are not replicated. If replicated across networks, both remote poll points and remote output points are not replicated.
 - If an Excel 15C object's output is unconfigured, the input that uses the pseudo point is also unconfigured, even if replicated within the same network.

NOTE: In Excel 15C, outputs of an object (Control loops, Start-Stop loops, Logic loops, or Math functions) can be used as input to other objects. Such points are called pseudo points.

- All the inputs or outputs using remote points of an associated RIO are not replicated in both Excel 15A and Excel 15C.
- Replication of CD and CD2 devices' configurations'
 - If a CD is replicated, the configuration with respect to other controllers is not replicated.
 - If a CD2 is replicated within the same network, the entire configuration is copied. If replicated across networks, the logical object configuration is not copied.
- Replication of Q7300H and RF Wireless Receiver controller configuration
 - In case of Q7300H, the schedule assignment details are not replicated.
 - In case of Q7790A, the Excel 10 controller configuration is not replicated.
- Replication of Excel 15B controller configuration
Excel 15B configuration details except schedule configurations are not replicated. You need to configure the alarms, trends, DLC and schedule assignments again.
- Replication of T7350 controller configuration
All the configuration details except the schedule assignment and remote input point configurations are replicated.

Procedure

1. Click **Controller>Replicate** to view the **Replicate** window.
2. Select the source project from the **Source Project** list and the target project from the **Target Project** list. The networks that are associated with the selected projects are displayed in the individual **Source Network** list and **Target Network** list.
3. Select the source and the target networks. The controllers that are available in the source site are displayed in the **Source Controller** list.
4. Select the controller whose details you want to replicate. Also, select the starting number from the **Starting No.** list, the number of replications from the **Number of Copies** list, and the number of increments from the **Increment** list.
5. Click **Replicate**. The controller is replicated in the specified site.

NOTE: For more information on creating and managing controllers, refer to LonSpec™ Online Help - Controller Functions - Off-Line Functions.

Fig. 9. Replicate Window

Replicate

Source Project:
NEW_PROJECT_1

Source Network
SITE_1

Source Controller
CD_1
CD2_1
CHC_1
CVAHU_1
FCU_1
Q7790A_1
SLTA_1
UV_1
VAV II_1
VFD_1
XL15A_1
XL15C_1

Target Project:
NEW_PROJECT_1

Target Network
SITE_1

Target Controller
CD_??

Starting No 1

Number of copies 1

Increment 1

Replicate

Close

Help

Data Sharing Using Refer Points

You can specify data sharing between controllers through the **Refer Points** window. The nv (network variable) input point of one controller will refer the data from the nv output point of

another controller. These are called the refer points. You must commission controllers after adding or deleting data share points.

Procedure

1. Click **Network>Refer Points** or click the *Refer Points* icon on the LonSpec™ toolbar to view the **Refer Points** window. You can only refer points between controllers that are available in the current network.

Fig. 10. Refer Points Window

The screenshot shows the 'Refer Points' window with the following sections:

- Source Controller:** A dropdown menu with 'FDA' selected.
- Source Controller points:** A list box containing: Application Mode out, Bypass Out, Cool Output, Effective Occ Out, Effective Stpt Out, Fan Out, Heat Output, and Setpoint Out.
- Destination Controllers:** A list box containing: FDA, Q7300_1, and XL15A_1.
- Destination Controller points:** An empty list box.
- Bound Points:** A table with the following data:

Source Controller	Source Point	Destination Controller	Destination Point	Can Delete
FDA	Application Mode out	FDA	Application Mode In	YES

At the bottom of the window are four buttons: Add, Delete, Close, and Help.

2. From the **Source Controller** list, select the source controller whose points you want to refer with the destination controller. All the points for the selected source controller are listed in the **Source Controller Points** list.
3. Select a point and choose a destination controller of the same type, from the **Destination Controllers** list. Only those points that can be bound with the source point are displayed in the **Destination Controller Points** list.
4. Select a destination point and click **Add**. The bound points are displayed in the **Bound Points** section. Click **Delete** to remove the binding. Click **Close** to exit without binding any controller points.

NOTE: For more information on binding and refer points, refer to LonSpec™ Online Help - Controller Functions - Advanced Off-Line Functions. Also, refer to System Engineering Guide 74-3679—1 - Appendix A Refer Points Tables.

WORKING WITH POINT GROUPS

After commissioning a network, you can group and monitor a set of related points from multiple controllers on the network. These are called the point groups.

NOTE: For more information on monitoring point groups, refer to *LonSpec™ Online Help - Controller Functions - Point Group - Monitoring a Point Group* or refer to “*Monitoring a Point Group*” on page 71.

This section provides information about the following topics:

- Adding a Point Group
- Editing a Point Group

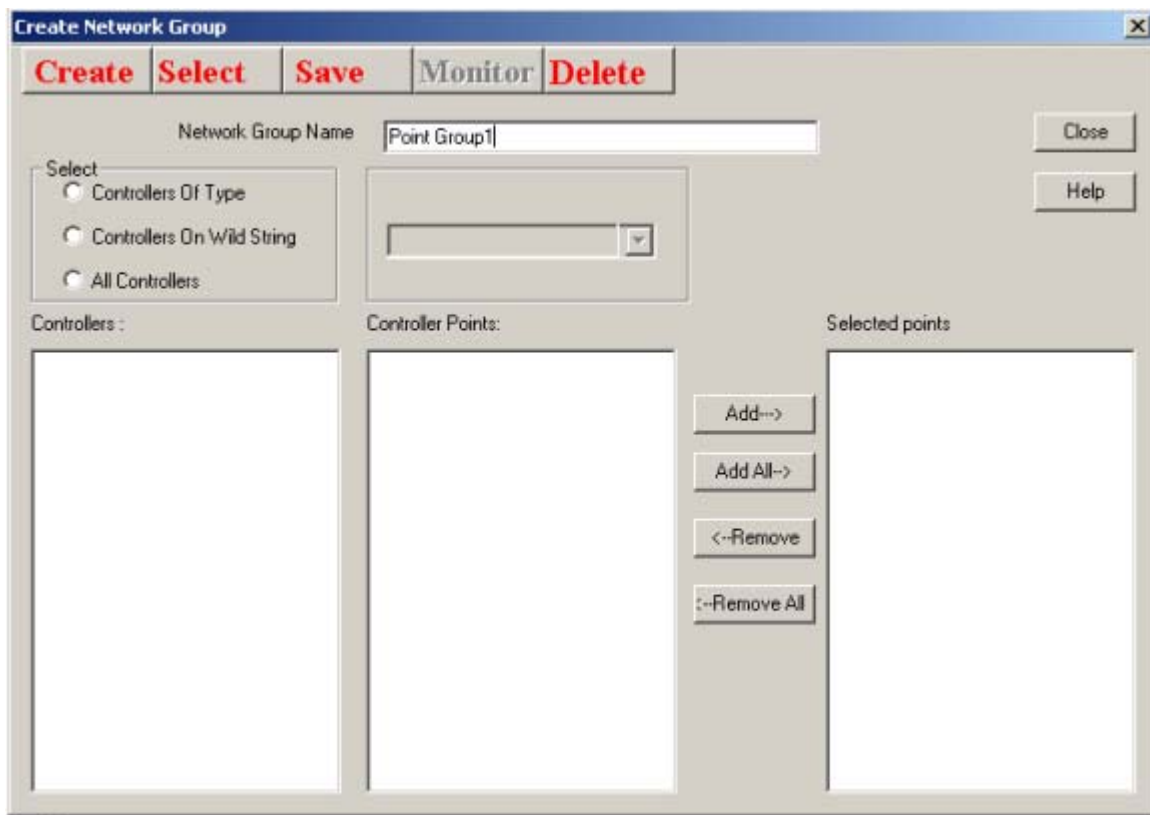
Adding a Point Group

You can create a point group only if controllers are present in the workspace.

Procedure

1. Click **Network>Point Group** to view the **Network Group** window.

Fig. 11. Point Group (Network Group) Window



2. Click **Create** and enter a name for the point group in the **Network Group Name** box.
3. To select the points, you need to first select the controller type as 'All Controllers', 'Controllers Of Type', or 'Controllers on Wild String'. This in turn filters the list of controllers for selecting the points.

NOTE: Only the controllers that are associated with the open site are displayed in the list.

4. As per the selection made, the controllers are displayed in the **Controllers** list. Select a controller to view its points in the **Controller Points** list.
5. Select a point in the **Controller Points** list and click **Add-->**. The point is displayed in the **Selected Points** list. (Click **Add All-->** to add all the points to the list.)

6. To remove a point from the **Selected Points** list, select the point and click **<--Remove**. The point is automatically displayed in the **Controller Points** list. (Click **<--Remove All** to remove all the selected points from the list.)
7. Click **Save** to add the new point group to the open site.

NOTE: You can also right-click the *Point Group* icon of the open project, in the Project Directory pane to select the **New Point Group** option.

Editing a Point Group

Procedure

1. Click **Network>Point Groups** to view the **Select Network Group** window.

2. Click **Select** and choose the point group that you want to modify from the **Select Network Group** list. An error message is displayed if there are no point groups in the selected network.
3. Make the necessary modifications and click **Save**.

4. To delete a point group, select the point group from the **Select Network Group** list and click **Delete**.

NOTE: **For more information on adding and editing point groups, refer to LonSpec™ Online Help - Controller Functions - Point Groups.**

MAINTAINING LONSpec™ PROJECTS

You can take a backup of the LonSpec™ project and restore it when required.

This section provides information about the following topics:

- Backing up a Project
- Restoring a Project
- Restoring Multiple Projects
- Replicating a Project

Backing up a Project

It is a safe practice to periodically take a backup of your project while working. You can restore a project from the backup folder at any point in time. You can take a backup on floppy disks, hard disk, or on a network drive. If you are using Novel, then the backup file name must be a maximum of 8 characters.

NOTE: By default, when you select the **Backup** option, LonSpec™ automatically takes a backup of the current project. If you want to take a backup of another project other than the current one, you need to open that project.

Procedure

1. Click **Project>Backup** or click the *Project Backup* icon on the LonSpec™ toolbar to view the **Backup Project** window.
2. Enter a name for the project backup file in the **File Name** box and click **Save**. The project is automatically saved with a .ntb extension (Ntool Backup Files).



CAUTION

The project backup file must be saved outside the LonSpec™ program directory. If the backup file resides within the LonSpec™ program directory, the restore function may fail. LonSpec™ backs up the database in *.ntb and *.hdr files. In case the files are transferred, then both the files need to be copied. The *.ntb file must not be deleted as it is used for restoration.

Restoring Projects

You can restore an individual backed up project from any previous version of LonSpec™ when required, or in case of LonSpec™ database failure. During the restore process, LonSpec™ checks for adequate disk space and terminates the process if there is insufficient disk space. In addition, an error message is displayed if the restore process is incomplete and any restored data is deleted so that no partial files remain.

Restoring a Project

Procedure

1. Click **Project>Restore** or click the *Restore Project* icon on the LonSpec™ toolbar. A message is displayed that any open project will be closed.

2. Click **Yes** to proceed with the restore process. The **Restore Project** window is displayed.
3. Go to the directory where the project backup file of type **ntb** is located.
4. Select the project file and click **Open**. LonSpec™ starts restoring the selected project.

NOTE:

1. If a project with the same name already exists, then you must confirm if the existing project can be overwritten or if it has to be restored under a different name.
2. If a different project is open, then a message is displayed that the open project will be closed. You need to confirm if you want to proceed with the restore process.

Restoring Multiple Projects (Batch Restore)

Procedure

1. Click **Project>Batch Restore** to view the **Select the Files for Restore** window. All the projects that are saved in the default LonSpec™ directory are displayed.

NOTE: Click the down arrow to locate the directory if it is different from the default LonSpec™ directory.

2. Enter a name for the log file in the **Log File Name** box. You can view this log file after the restoration or when an error occurs during the restore process.
3. Click **>>** button to transfer all the projects from the **Available Files** list to the **Selected Files** list. (Click **>** to transfer one file at a time.)
4. Click **<<** to remove all the transferred files back to the **Available Files** list. (Click **<** to remove only the selected file back to the **Available Files** list.)

NOTE: If the project that is restored already exists in LonSpec™, then a message is displayed with the following options: Abort the Restore Operation, Overwrite the Existing Project, or Rename the Project being restored. Choose the relevant option.

5. After the restore operation, it is important that you view the Restore log file. There might be changes that are recommended by LonSpec™ or errors logged during the restore process. These details need to be verified and relevant changes incorporated. The **Batch Restore** option allows you to restore a project from the *.mdb file also.

Replicating a Project

You can create new project database from an existing database without backing up and restoring the project under a different name.

Procedure

1. Click **Project>Replicate**. A message is displayed that the current project will be closed and all the connected networks will be disconnected.

2. Click **Yes** to proceed. The **Ntool Project Replicate** window is displayed.
3. From the **Project Name** list, select the project whose details you want to replicate.
4. Enter a unique name for the new project in the **New Project Name** box and click **OK**. The new project is created with all the replicated project information.

NOTE: For more information on project backup and restore processes, refer to LonSpec™ Online Help - Projects.

CONFIGURING CONTROLLERS

This section provides information about the process of selecting and configuring a controller. The configured controllers can share data across the network by a process called binding.

This section provides information about the following topics:

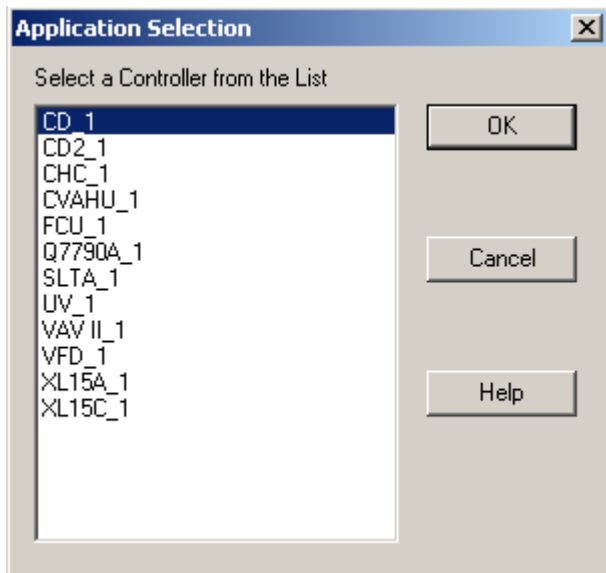
- Selecting a Controller (Application Selection)
- Configuring Excel 15A Building Manager
- Configuring Excel 15B Building Manager
- Configuring RIO
- Configuring UV and CVAHU
- Configuring SLTA
- Configuring RapidLink
- Configuring VFD
- Configuring Q7300H
- Configuring T7350
- Configuring CD
- Configuring CD2
- Configuring VAV II
- Configuring Q7900
- Configuring CHC, HYD, and FCU
- Configuring NX VFD
- Configuring Excel 15C Plant Controller

Selecting a Controller (Application Selection)

Procedure

1. Click **Controller>Application Selection** to view the **Application Selection** window. All the controllers that are associated with the open site are displayed.

Fig. 12. Application Selection Window



2. Select a controller from the list and click **OK**. The configuration screen for the selected controller is displayed.

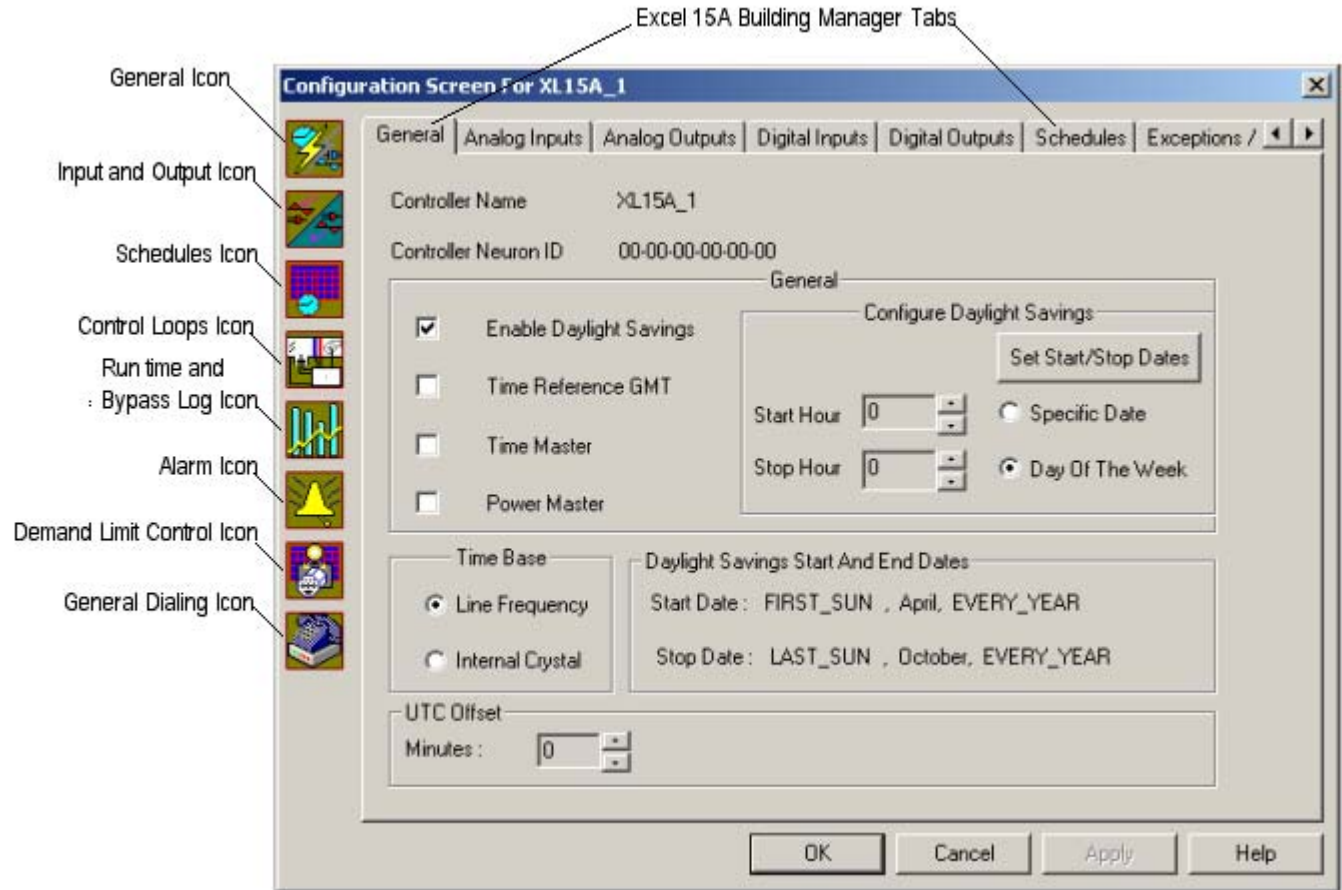
NOTE: You can also click the controller that you want to configure, in the workspace. **For more information, refer to LonSpec™ Online Help - Controller Functions - Off-Line Functions.**

You can assign Neuron® ID and configure a controller as you add it to the subnet. Later, you can commission the controller when LonSpec™ is online. After commissioning the controller, the LonSpec™ advanced functions like monitoring point groups, setting network time, monitoring, calibration, and diagnostics of a controller, creating a network, generating a report, and closing the network are available.

Configuring Excel 15A Building Manager

Excel15A Building Manager communicates with other controller nodes, monitoring devices, and engineering tools using a LonWorks® digital data network. It is designed to monitor and control HVAC equipment and other miscellaneous loads in a distributed network. It also provides building management functions, such as real-time clock and time of day scheduling, for Excel 10 Unitary controllers and Q7300 and T7350 Communicating Thermostats. It can also be used as a general purpose controller.

Fig. 13. Excel 15A Building Manager Configuration Window



Procedure

After placing the Excel 15A Building Manager on the network, click the *Excel 15A Building Manager* icon to view the **Configuration Screen for Excel15A** window. The configuration window displays Excel 15A settings that can be configured under different tabs. The following topics briefly describes the various tabs and also the reference source for a detailed information.

Configuring Excel 15A General Functions

Each Excel 15A includes a real time clock (RTC) and calendar. However, you can configure only one Excel 15A per project (site) to act as a Network Time Master and Network Power Master. Additional Excel 15As on a project act as time slaves and power slaves, for they follow the designated master. Through the Time Master, you can set and reset the network day and time. Multiple Excel 15A Building Managers can store and execute time schedules on the same network.

Click the **General** tab (if it is not the default selection) to configure the following Excel 15A Building Manager's general functions:

- Start-Stop Dates for daylight savings
- Time Base
- UTC Offset

NOTE: For more details on configuring the general settings and to know the field definitions, refer to **LonSpec™ Online Help - Configuring Excel 15A Building Manager General Functions**.

Configuring Excel 15A Points

You can specify the sensor types and attributes for up to eight analog and four digital inputs. You can also configure up to two analog outputs and up to eight digital outputs. Analog inputs monitor external conditions such as temperature, humidity, or pressure, and their inputs can further be used as inputs to thermostat and control loops or can also be used to initiate alarms based on out-of-range readings.

Analog outputs control variably driven controlled devices such as damper actuators, valve actuators, step controllers, and other transducers.

Digital inputs monitor external events via dry contact closures (10 mA, 5V dc). These inputs are commonly used as inputs to Control Loops, Start-Stop Loops, Math Functions & Logic Loops.

Digital outputs control HVAC equipment, fans, and lighting. Each Digital output may be configured as 'Digital', 'PWM', or 'Float'. Digital outputs configured as 'Digital' can drive a digital load and one configured as PWM or Float can drive an analog load.

Click the **Analog Input/Analog Output/Digital Input/Digital Output** tabs to configure the analog input/output and digital input/output points.

NOTE: **For more details on configuring the analog and digital points and to know the field definitions, refer to the following topics in LonSpec™ Online Help:**

- Configuring Excel 15A Building Manager Analog Inputs.
- Configuring Excel 15A Building Manager Analog Outputs.
- Configuring Excel 15A Building Manager Digital Inputs.
- Configuring Excel 15A Building Manager Digital Outputs.

Configuring Excel 15A Loops

You can configure six control loops that create outputs based on the PID, Non-linear PID, or Virtual Thermostat algorithm types. Control loops accommodate different types of control applications that include humidity control, space pressure control, discharge temperature control, and outdoor ambient lighting control. Each loop can have an occupied, unoccupied, and standby setpoint. These setpoints will be used based on the status of the assigned schedule.

You can also configure eight start/stop loops. The start/stop control loops direct control of loads based on time-of-day schedules. The most common applications for start/stop control loops include exhaust fans, pumps, lighting, or any other loads requiring time-of-day control.

Click the **Control Loops** and **Start/Stop Loops** tabs to configure the loops.

NOTE: **For more details on configuring the control and start/stop loops, and to know the field definitions, refer to the following topics in LonSpec™ Online Help:**

- Configuring Excel 15A Building Manager Control Loops.
- Configuring Excel 15A Building Manager Control Loops Recovery.
- Configuring Excel 15A Building Manager Control Loops Setpoints.
- Configuring Excel 15A Building Manager Control Loops DLC.
- Configuring Excel 15A Building Manager Control Loops Control Params.
- Configuring Excel 15A Building Manager Control Loops I/O.
- Configuring Excel 15A Building Manager Start/Stop Loops.

Configuring Excel 15A Logic Functions

You can configure eight Excel 15A logic functions for the analog and digital inputs. The logic operators differ based on the kind of logic function being configured. You can also set the engineering unit for an analog function. A logic function's output can be used as an input only for Excel 15A control loops or start/stop loops.

Click **Logic Functions** tab to configure the analog or digital logic functions.

NOTE: **For more details on configuring the logic functions and to know the field definitions, refer to LonSpec™ Online Help - Configuring Excel 15A Building Manager Logic Functions.**

Configuring Excel 15A Demand Limit Control

You can configure DLC (Demand Limit Control) to monitor the network's rate of power consumption and in turn reduce energy consumption at peak usage hours. Accordingly, Excel 15A DLC sheds or adjusts control loops when it is at peak usage. It also contains the Energy History log valid for the power billing distribution.

Click **DLC** tab to specify DLC setpoints, set DLC parameters, and schedule controllers on the network.

NOTE: **For more details on configuring the DLC settings and to know the field definitions, refer to LonSpec™ Online Help - Configuring Excel 15A Building Manager Demand Limit Control.**

Configuring Excel 15A Run Times

You can configure 15 Excel 15A run times on Excel 15A configured loops and points. The data accumulated includes the number of complete hours the input/output has been active.

Click **Run Times** tab to configure the run times.

NOTE: **For more details on configuring the run times and to know the field definitions, refer to LonSpec™ Online Help - Configuring Excel 15A Building Manager RunTimes.**

Configuring Excel 15A Schedules

Schedules are the building blocks for Excel 15A control and start/stop loops. Excel 15A supports eight regular, two temporary and 20 exceptions/holiday schedules. Each regular and temporary schedules in turn support six events per day. The temporary schedule accommodates non-permanent functions, such as temporary maintenance.

Use the exception or holiday schedules to define permanent state changes for special days of the year. Use the 20 exception schedules to define holidays or special days that may or may not reoccur each year.

Excel 15A searches for and executes temporary schedules, then exception schedules, and finally regular schedules. You can design up to eight, multi-event schedules for each day of the week and three special days.

You can copy schedule events and also assign and activate a schedule for each controller on the network.

Click **Schedules** tab, **Exceptions/Holidays** tab, and **Schedule Assign** tab to configure and assign schedules to controllers.

NOTE: **For more details on configuring these settings and to know the field definitions, refer to the following topics in LonSpec™ Online Help:**

- Configuring Excel 15A Building Manager Schedules.
- Configuring Excel 15A Building Manager Temporary Schedules.
- Configuring Excel 15A Building Manager Exceptions and Holidays.
- Configuring Excel 15A Building Manager Schedule Assign.

Configuring Excel 15A Trends

You can configure 16 periodic or delta type input trend points. Each trend point includes the input point, the sampling interval, the trend type, and the start-end dates.

Click **Trends** tab to configure the Excel 15A trend points.

NOTE: **For more details on configuring these settings and to know the field definitions, refer to LonSpec™ Online Help - Configuring Excel 15A Building Manager Trends.**

Configuring Excel 15A Bypass Logs

You can configure a maximum of 20 TOD bypass logs. Each log maintains details on the number of minutes a tenant selects bypass mode for occupancy during unoccupied times. Each Excel 15A supports a TOD bypass log for all scheduled control loops. For each control loop, the Excel 15A maintains the number of minutes in bypass for the current and previous month, and most recent date/time of bypass.

Click **Bypass Logs** tab to configure the Excel 15A logs.

NOTE: **For more details on configuring these settings and to know the field definitions, refer to LonSpec™ Online Help - Configuring Excel 15A Building Manager Bypass Logs.**

Configuring Excel 15A Alarms

You can configure six alarm types on Excel 15A control loops, 20 alarm types each on analog points and digital points. In addition, you can also configure general alarms and route alarms to controllers on the network.

Click **Alarms** tab to configure the Excel 15A alarm types and do alarm mapping.

NOTE: **For more details on configuring these settings and to know the field definitions, refer to LonSpec™ Online Help - Configuring Excel 15A Building Manager Alarms.**

Configuring Excel 15A General Dialing Information

You can configure the dialing information that will be used by Excel 15A to report alarms and site status to a central workstation. You need to select the workstation type, select the interface if it is a remote location, and specify the workstation settings (workstation phone numbers and workstation IDs). You also need to setup dialing parameters such as number of redials, number of loops, etc.

Click **General Dialing Information** tab to configure the dialing information for Excel 15A.

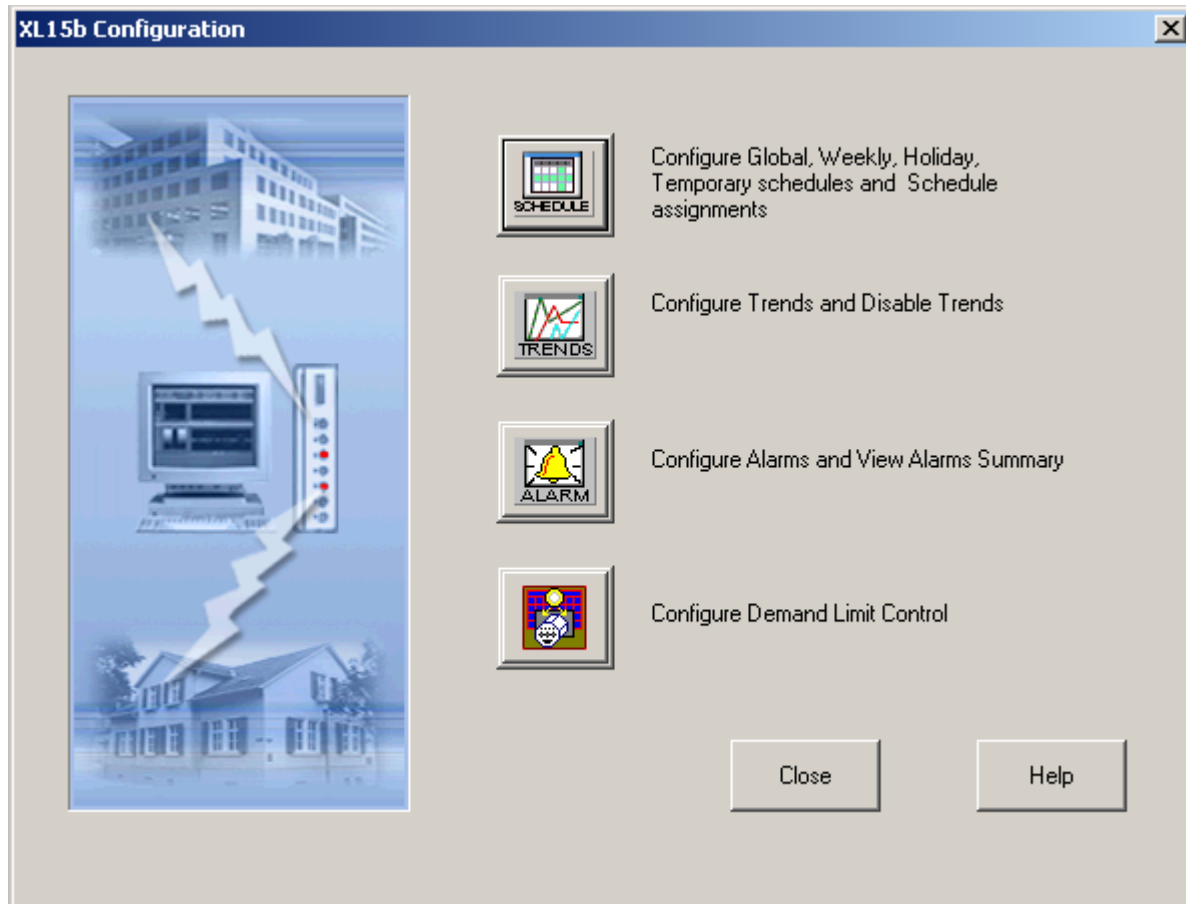
NOTE: **For more details on configuring these settings and to know the field definitions, refer to LonSpec™ Online Help - Configuring Excel 15A General Dialing Information.**

Configuring Excel 15B Building Manager

Excel 15B Building Manager is a versatile web-based operator interface for Light Commercial Building Solutions™ and helps to reduce energy and operating costs in small-to medium-sized buildings. It acts as an interface for LonWorks® network devices and communicates over the ethernet to display HTML pages that provide multi-user access for configuring, commanding and monitoring the NX VFD, Excel 10 and Excel 15 devices over the LonWorks® network. In addition, it also manages building management applications such as scheduling, trending, and alarming. Excel 15B has a self-discovery feature that makes system setup simple. It usually supports up to 120 devices, a combination of NX VFD, Excel 10 and Excel 15C devices on different domains that are

inter-connected by gateways. You can use Excel 15B to easily access and monitor building control points through the internet or your local intranet.

Fig. 14. Excel 15B Building Manager Configuration Window



Procedure

After placing the Excel 15B Building Manager on the network, click the *Excel 15B Building Manager* icon to view the **XL15b Configuration** window. The configuration window displays Excel 15B settings that can be configured under different tabs. The following topics briefly describes the various tabs and also the reference source for a detailed information.

Configuring Excel 15B Schedules

You can configure Excel 15B schedules to schedule occupancy modes and start/stop functions on all supported LonWorks® network devices. Excel 15B supports the following four types of schedules:

- Main or Global Schedules
- Weekly Schedules
- Holiday Schedules
- Temporary Schedules

Excel 15B has 20 unique Global Schedules and each Global Schedule can be assigned to multiple LonWorks® network devices. A Global Schedule is configured using one or more of the 20 Weekly Schedules, 50 Holiday Schedules, and 50 Temporary Schedules. At least one Global Schedule must be configured as a Master.

Click the *Schedules* icon to configure the following schedules and assign one of the Global Schedules to other devices on the network:

- Global Schedules
- Holiday Schedules
- Temporary Schedules
- Weekly Schedules
- Schedule Assignment

NOTE: For more details on configuring the schedules and assigning schedules to devices, refer to the following topics in LonSpec™ Online Help:

- Configuring Excel 15B Schedules.
- Configuring Excel 15B Global Schedules.
- Assigning Global Schedules to Devices.
- Configuring Excel 15B Weekly Schedules.
- Configuring Excel 15B Holiday Schedules.
- Configuring Excel 15B Temporary Schedules.

Configuring Excel 15B Trends

Trending is the process of monitoring the variations in a point value for a specified period. By default, Excel 15B performs trending on all supported devices on the LON® networks and also allows configuring of trends.

Excel 15B supports over 100 user-defined trend logs. Each such trend log can have up to 10 trend points and over 10,000 samples (trend records) and you can configure the sample rate for each trend log.

Both default and user-defined trend logs use periodic sampling. When trend log exceeds the configured sample number, new trend data overwrites the oldest trend data and the most recent trend samples are displayed.

Click the *Trends* icon to configure user-defined trends.

NOTE: For more details on configuring the trends and to know the field definitions, refer to LonSpec™ Online Help - Configuring Excel 15B Trends.

Configuring Excel 15B Alarms

The word "alarm" means a condition that exceeds a predefined set of limits. In this sense, each Excel 10 and Excel 15 devices define their own alarms. They monitor various conditions and generate alarms when these conditions exceed their limits. Excel 15B has a predefined set of alarms and also allows customizing alarm types.

Alarm mechanisms are used to report the occurrence and history of certain events. Excel 15B generates alarms when controllers fail to communicate with the system or if the controller is removed from the network. In such cases, you must delete the controller from the list to eliminate any future alarms. During initialization, Excel 15B builds a controller list of all LonWorks® compatible controllers on the network. Periodically, it updates the list to find new controllers that may be added during Device Discovery process.

Excel 15B polls the devices every 15 seconds for alarm data. The alarm database can store up to 5,000 alarm records. A new alarm record overwrites the oldest alarm record when the alarm database is full.

User-defined alarms are individual points from any supported LonWorks® control device that are configured to generate an alarm. Up to 500 user-defined alarms can be configured. There are three types of user-defined alarms:

- Analog Alarms
- Digital Alarms
- SNVT (Enumerated) Alarms

Alarm priorities from 1-8 can be set for each alarm type. It helps to determine e-mail alarm message recipients. High priority alarms have a higher reporting priority. For example, system alarms (e.g., low battery) are always high priority. As alarms are reported, associated data like the user address, alarm text, time, and date are stored in data files.

Click the *Alarms* icon to configure the user-defined alarms.

NOTE: For more details on configuring the alarms and to know the field definitions, refer to LonSpec™ Online Help - Configuring Excel 15B Alarms.

Configuring Excel 15B DLC Load

Demand Limit Control (DLC) continuously monitors the building's rate of energy consumption by automatically shedding or restoring loads to prevent the demand (load) from

exceeding the maximum allowable level or configured setpoint. For DLC to have control over energy savings, the configured setpoint must be less than the actual demand allocated by the power generating plant. DLC sheds or adjusts the loads during peak usages only. DLC is driven from the current KW demand, which is an instantaneous value averaged over a period of time (demand averaging window period).

NOTE: It is a good practice to adjust the DLC window close to the utility company's demand window period as it helps Excel15B DLC to follow the utility company's criteria when taking KW demand shed decisions. The energy history log must also match the peak demand recorded by the utility company.

DLC Load Shedding and Restoring Methods

DLC monitors the current KW levels at every staging interval and averages it over a period of time.

- If the current KW demand is above the configured peak setpoint, then DLC sheds loads at defined intervals until the demand drops below the peak setpoint.
- If the KW demand drops below the normal level (peak setpoint minus the dead band), then the previously shed loads are actively restored at every staging interval until the KW demand rises back above the normal level.

DLC Load Shedding Method

- DLC starts shedding the loads by first searching for all the 'Off Continuous' loads that are eligible for shedding.
- Then it sheds the lowest numbered 'Off Continuous load' and waits the staging interval to see if the demand has reduced.
- If the demand is still above the peak setpoint, then DLC sheds the next lowest numbered 'Off Continuous' load.
- This process continues till the demand is well within the peak setpoint limits.
- If the demand has still not reduced, then DLC searches for all the 'Rotating' loads followed by the 'Last Resort' loads.

DL Load Restoring Method

If the demand drops below the normal level, then the loads that are currently shed will be actively restored one at a time, every staging interval, until the demand reaches the normal level. When restoring loads, DLC, on priority, searches and restores:

- The 'Last Resort' loads (highest load number to lowest) followed by the 'Rotating' loads where the last shed load is restored first.
- Then the 'Off Continuous' loads where the load restoration goes from highest load number to the lowest load number.
- Loads are restored every staging interval if the override condition becomes true or the maximum shed time has been met. All loads meeting these conditions are restored.

NOTE:

- Excel15B raises a system alarm when all the available loads are shed and still the demand exceeds the peak setpoint.
- Excel15B also raises an RTN when the current KW value falls below the peak setpoint KW value.

DLC Load Assignments

Excel15B supports a maximum of 50 load assignments across 120 objects. Each load or a group of loads controlled by the DLC is connected to an Excel 10 or Excel 15C output relay or an external load object. In addition to Excel 15B supporting DLC for loads connected to an Excel 15C object, it also supports those connected to the following objects on the network:

- CVAHU (Excel 10 Constant Volume Air Handling Unit)
- UV (Excel 10 Unit Ventilator)
- Q7300
- VAV II (Excel 10 Variable Air Volume Unit)
- FCU (Excel 10 Fan Coil Unit)
- HYD (Excel 10 Hydronic Controller)
- CHC (Excel 10 Chilled Ceiling Controller)
- T7350 (Communicating Sub-base for T7350)

NOTE: DLC does not drive NX VFD directly. It is configured to drive an XL15C object, which in turn can be configured to drive the NX VFD.

These objects have the output relay circuits through which loads can be energized or de-energized. Excel15B always requires the Excel 10 or Excel 15Cs to control the external loads.

Types of DLC Loads

The following are the three types of loads that DLC sheds to maintain demand below the peak setpoint:

Off Continuous Loads

'Off Continuous' loads are the first loads that are shed by DLC. Once shed, they are not restored immediately. Loads marked as 'Off Continuous' generally control the loads that are least important to the overall functioning of the facility. When KW demand exceeds the peak setpoint, 'Off Continuous' loads are shed first starting from the lowest numbered load (1) to the highest (50). These loads are shed until the demand goes below the peak setpoint limit. The first load is shed at staging interval seconds after the KW exceeds the peak setpoint. Additional loads are shed at staging interval, seconds until the KW is less than the peak setpoint.

'Off Continuous' loads, once shed are the last to be restored when demand is less than the normal level (setpoint minus the dead band). 'Off continuous' loads are restored in the order reverse to which they were shed (highest load (50th) is restored first). Any 'Off Continuous' load shed remains inactive for at least the configured minimum shed time.

Rotating Loads

Rotating loads are shed or adjusted after shedding 'Off Continuous' loads, as DLC needs to reduce the demand. Loads marked as 'Rotating' have more important equipment assigned to them than the loads marked as 'Off Continuous'.

'Rotating' loads are shed or adjusted only after all the 'Off Continuous' loads are shed and the KW demand still exceeds the peak setpoint. If demand exceeds the peak setpoint and all the 'Off Continuous' loads are shed (or there are no 'Off Continuous' loads that can be shed), the DLC shall shed the 'Rotating' loads in sequence starting with the lowest numbered load first. When demand is below the normal level (peak setpoint minus the dead band), the 'Rotating' loads are

restored on a priority basis. Highest priority is given to the load that has been shed for the longest period. If restoration of a 'Rotating' load causes KW to raise above the peak setpoint, then the next eligible 'Rotating' load (usually the next higher numbered 'Rotating' load) is shed.

NOTE:

- 'Rotating' loads are restored before 'Off Continuous' loads when KW demand is below the normal level (less than the peak setpoint minus the dead band).
- 'Rotating' loads are not eligible for shed until their minimum on time has elapsed after restoration.
- Once shed, a 'Rotating' load cannot be shed again until all the other eligible 'Rotating' loads are shed.
- 'Rotating' loads are not restored until their minimum shed time has elapsed.

Last Resort Loads

'Last Resort' loads are shed as a last resort after shedding all the eligible 'Off Continuous' and 'Rotating' loads. These loads are shed only if DLC has shed all other possible loads and demand is still not below the peak setpoint limits.

Loads marked as 'Last Resort' control important equipment that manage the assigned overall operations of the installations. 'Last Resort' loads are shed only if the KW demand conditions are critical that is after all the eligible 'Off Continuous' and 'Rotating' loads are shed and KW demand still exceeds the peak setpoint limits.

'Last Resort' loads are shed in sequence starting with the lowest numbered 'Last Resort' load first. They are the first to be restored when the KW demand is below the normal level (peak setpoint minus the dead band) and the minimum shed time has expired. In addition, 'Last Resort' loads are restored at or above setpoint if twice the minimum shed time has elapsed. When KW falls below the normal level (setpoint minus the dead band), 'Last Resort' loads shall be restored based on the largest load number first.

NOTE: 'Last Resort' loads remain shed for at least the configured minimum shed time and no longer than twice the configured minimum shed time (which is the maximum shed time).

Click the *DLC* icon to configure the DLC loads and assign them to Excel 10 and Excel 15C objects.

NOTE: For more details on configuring, viewing, and assigning DLC loads, refer to the following topics in LonSpec™ Online Help:

- **Configuring DLC Parameters.**
- **Assigning DLC Loads to External Objects.**
- **Enabling Load Override Condition.**
- **Viewing DLC Configuration.**

Configuring RIO

Excel 10 Remote Input/Output (RIO) is a LonMark® compliant controller that is designed to monitor and control the HVAC equipment, lighting, and other miscellaneous loads in a

distributed network. It also communicates with other controller nodes, monitoring devices, and engineering tools. It has six analog and four digital inputs, and eight digital outputs.

Fig. 15. RIO Configuration Window

Configuration Screen For RIO_01

Inputs | Outputs | Deltas

Analog Inputs - Resistive

Input	Value	Name
1	UNUSED_RAI	RemoteAnalog1
2	UNUSED_RAI	RemoteAnalog2
3	UNUSED_RAI	RemoteAnalog3
4	UNUSED_RAI	RemoteAnalog4

Analog Inputs - Voltage

Input	Value	Name
5	UNUSED_VAI	RemoteAnalog5
6	UNUSED_VAI	RemoteAnalog6

Digital Inputs

Input	Active State	Maintained/Momentary	Name
1	UNUSED_DI	MAINTAINED	RemoteDigital1
2	UNUSED_DI	MAINTAINED	RemoteDigital2
3	UNUSED_DI	MAINTAINED	RemoteDigital3
4	UNUSED_DI	MAINTAINED	RemoteDigital4

OK Cancel Apply Help

Procedure

After placing RIO on the network, click the *RIO* icon to view the **Configuration Screen for RIO** window. The configuration window displays RIO settings that can be configured under different tabs. The following topics briefly describes the various tabs and also the reference source for a detailed information.

Configuring RIO Points

You can configure a maximum of six analog and four digital inputs. Out of the six analog inputs, four are of the 'Resistive' type and two are of the 'Voltage' or 'Current' type. The 'Resistive' inputs are associated with sensors of type 'Temperature'. Further, 'Voltage' or 'Current' inputs are associated with sensors of type 'Humidity', 'Flow', or 'Pressure'.

RIO has four digital inputs and eight digital outputs. The digital outputs are of type 'Discrete', 'Modulating' or 'Floating'.

Click **Inputs** and **Outputs** tabs to configure the analog and digital inputs, and digital outputs.

NOTE: For more details on configuring the inputs and outputs, and to know the field definitions, refer to the following topics in LonSpec™ Online Help:

- Configuring RIO Inputs.
- Configuring RIO Outputs.

Configuring RIO Deltas

By default, all the RIO type sensor values are set to zero. Delta is an adjustable threshold that allows you to determine, on a per-sensor basis, the change in the value that is required before the sensor is updated. All Excel 10 controllers have a guaranteed periodic update time of 55 seconds, which requires that all sensors report any change every update period. The delta for each sensor is used to reduce LonWorks® Bus traffic by reducing the amount of updates on a sensor that are constantly changing.

Click **Deltas** tab to view and modify the delta values for different sensor types.

NOTE: For more details on configuring the delta values and to know the field definitions, refer to LonSpec™ Online Help - Configuring RIO Deltas.

Configuring UV and CVAHU

Both Unit Ventilator (UV) and Constant Volume Air Handling Unit (CVAHU) are LonMark® compliant devices. UV is used to monitor or control HVAC equipment, lighting, and other miscellaneous loads in a distributed network. CVAHU is designed to control single zone and heat pump air handlers. You can configure CVAHU to control a variety of possible equipment arrangements. The following are the models that are available for Excel 10 CVAHU:

- W7750A
- W7750B
- W7750B Enhanced
- W7750C

NOTE: UV and CVAHU have identical tabs on their configuration windows. Hence, only the UV configuration window is displayed here.

Fig. 16. UV Configuration Window

Procedure

After placing the UV or CVAHU on the network, click the *UV* or the *CVAHU* icons to view their configuration windows. The configuration windows display the controllers settings that can be configured under different tabs. The following topics briefly describes the various tabs and also the reference source for a detailed information.

Configuring UV and CVAHU Points

Click the **Output** tab to configure the following:

- Heating point
- Cooling Point
- Fan Speeds
- Economizer

You can set the **Heating** and **Cooling** to a 'Stage', 'PWM', or a 'Floating' point and an **Economizer** to 'PWM' or a 'Floating' point. In addition, you can also set other optional points.

NOTE: For a CVAHU, the heating and cooling points, and the economizer differ based on the type of CVAHU that you select. For example, CVAHU model A supports only staged outputs. **For more information, refer to LonSpec™ Online Help - Intro and Links Configuring the CVAHU.**

Click the **Input** tab to configure the **Space Temp** (Space Temperature sensor), the four **Optional Analog (Resistive and Voltage)**, and **Digital Input** points.

NOTE: **For more details on configuring the outputs and inputs and to know the field definitions, refer to the following topics in LonSpec™ Online Help:**

- Configuring Unit Ventilator Outputs.
- Configuring Unit Ventilator Inputs.
- Configuring CVAHU Outputs.
- Configuring CVAHU Inputs.

Configuring UV and CVAHU Zone Options

You can configure the output setpoint values for the different cooling and heating stages and also specify the minimum and maximum setpoint limits for wall modules.

Click **Zone Options** tab to configure the temperature setpoints for heating and cooling.

NOTE: For more details on configuring the zone options and to know the field definitions, refer to the following topics in LonSpec™ Online Help:

- Configuring Unit Ventilator Zone Options.
- Configuring CVAHU Zone Options.

Configuring UV and CVAHU Custom Wiring

You can assign configured output points to different pins available, depending on the CVAHU hardware type that you select. You can change the terminal assignments at random. The output points that you configure on the **Outputs** tab screen are displayed in the **Configured outputs** column of the **Custom Wiring** tab screen.

Click **Custom Wiring** tab to assign the configured outputs, which in turn will be displayed in the Selected Outputs column. You can also configure the advanced settings if the selected CVAHU hardware type is W7750C.

NOTE: For more details on configuring custom wiring and to know the field definitions, refer to the following topics in LonSpec™ Online Help:

- Configuring Unit Ventilator Custom Wiring.
- Configuring CVAHU Custom Wiring.

Configuring UV and CVAHU PID Loops

You need to adjust the Proportional Integral Derivative (PID) control parameters gradually. This includes adjusting the following:

- Cooling and heating throttling range, integral time, and derivative time values.
- Heating, cooling, and economizer control band values.

You can see the default values displayed for each parameter on the **PID** tab screen. You need to be cautious when trying to deviate from the value displayed. For example, decreasing the throttling range will aggravate the effect of the error and higher the integral time, slower will be the control response time.



CAUTION

If you do not adjust the PID parameters gradually, it can lead to equipment damage and result in short cycling of compressors or wide swings in space temperature and excessive overdriving of modulating outputs.

Click **PID** tab to edit the control parameters.

NOTE: For more details on configuring the PID parameters and to know the field definitions, refer to the following topics in LonSpec™ Online Help:

- Configuring Unit Ventilator PID.
- Configuring CVAHU PID.

Configuring UV and CVAHU Economizer

You can configure CVAHU economizer settings for determining when to use outdoor air for cooling the space. Also, you can specify the minimum damper position in normal conditions and when IAQ exists, and also define the setpoint value for enabling the economizer.

Click **Economizer** tab to configure the economizer settings.

NOTE: For more details on configuring the economizer values and to know the field definitions, refer to the following topics in LonSpec™ Online Help:

- Configuring Unit Ventilator Economizer.
- Configuring CVAHU Economizer.

Configuring UV and CVAHU Equipment Control

You can configure the equipment control parameters that are used by UV and CVAHU to control the unitary equipment.

Click **Equipment Control** tab to configure the equipment control settings.

NOTE: For more details on configuring the equipment control settings and to know the field definitions, refer to the following topics in LonSpec™ Online Help:

- Configuring Unit Ventilator Equipment Control.
- Configuring CVAHU Equipment Control.

Configuring UV and CVAHU Heating and Cooling Stages

You can set the minimum properties for the heating and cooling stages.

Click **H/C Stages** tab to set the minimum On or Off times, cycles per hour, and recovery ramps for the heating and cooling stages.

NOTE: For more details on configuring the heating and cooling stages, refer to the following topics in LonSpec™ Online Help:

- Configuring Unit Ventilator H/C Stages.
- Configuring CVAHU H/C Stages.

Configuring UV and CVAHU Miscellaneous Settings

You can configure the DLC setpoint bump, wall module, and other settings that are required by UV and CVAHU.

- Click **Misc** tab to configure the miscellaneous settings for UV.
- Click **Miscellaneous** tab to configure the settings for CVAHU.

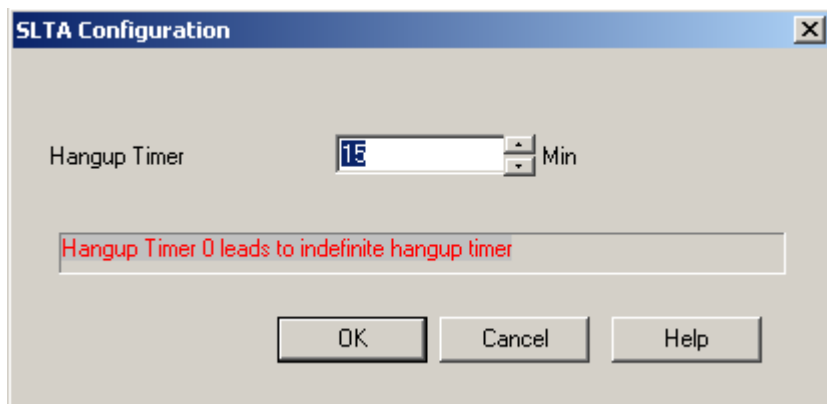
NOTE: For more details on configuring the miscellaneous settings and to know the field definitions, refer to the following topics in LonSpec™ Online Help:

- Configuring Unit Ventilator Miscellaneous.
- Configuring CVAHU Miscellaneous.

Configuring SLTA

The Excel 10 Serial LonTalk Adapter (SLTA) is an Echelon® LonMark® compliant network interface unit that allows a PC with an RS-232 port to connect to the LonWorks® network. It includes all the hardware and software that is necessary for executing network functions on a twisted pair LonWorks® network.

Fig. 17. SLTA Configuration Window



Procedure

After placing the SLTA on the network, click the *SLTA* icon to view the **SLTA Configuration** window.

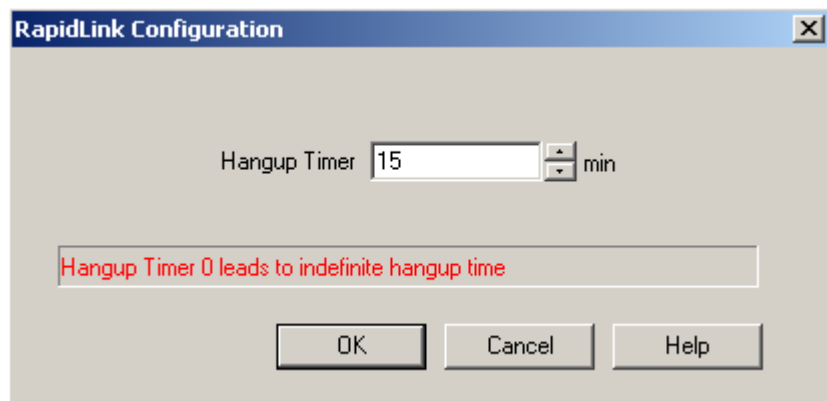
You can modify the hang up timer, the default being 15 minutes. This is the amount of time after which SLTA will hang up the connection, if it finds no activity in the remote connection.

NOTE: For more details on configuring the hang up timer, refer to LonSpec™ Online Help - Intro and Links Configuring the SLTA.

Configuring RapidLink

RapidLink is an RS-232 and telephone line compatible serial device that will allow any host (PC) with an RS-232 and modem interface, and the necessary driver software to communicate to a LonWorks® network. RapidLink has the capability to interface the tools in either local or remote modes to the LCBS™ controllers.

Fig. 18. RapidLink Configuration Window



Procedure

After placing the RapidLink on the network, click the *RapidLink* icon to view the **RapidLink Configuration** window.

You can modify the hang up timer, the default being 15 minutes. This is the amount of time after which RapidLink will hang up the connection, if it finds no activity in the remote connection.

NOTE: For more details on configuring the hang up timer, refer to LonSpec™ Online Help - Intro and Links Configuring the RapidLink.'

Replacing SLTA With RapidLink

You can directly replace SLTA with Rapidlink in the LonSpec™ workspace. This option is provided with an aim of making the migration from SLTA to a RapidLink simple for the user.

Procedure

1. Right-click *SLTA* icon in the workspace or Project Directory pane and select **Replace SLTA with RapidLink** option from the shortcut menu displayed. The **Replace SLTA with RapidLink** window appears displaying the **Source Name**, **Device Name**, **Neuron ID**, and the **Hangup Timer** details.
2. Retain the default details or change the device name, the hangup timer, and assign a Neuron® ID to the new RapidLink controller.
3. Click **OK** to update the new settings. The *SLTA* icon is automatically replaced by *RapidLink* icon in the workspace. The same is reflected in the Excel 15A Building Manager's General Dialing Configuration tab where the network interface for a remote connection is automatically taken as RapidLink. If the SLTA is configured, then its hangup timer value is retained by RapidLink.



CAUTION

After replacing SLTA with RapidLink, you need not re-commission the Excel 15A Building Manager to enable it to dial out alarms through RapidLink. But, you have to commission RapidLink.

NOTE: For more details on replacing SLTA with RapidLink, refer to LonSpec™ Online Help - Replace SLTA with RapidLink.

Configuring Q7300H

The Excel 10 Q7300H controller communicates with other controller nodes, monitoring devices, and management tools using a wired twisted pair LonWorks® digital data network. It has a LonMark® certified Communicating Subbase that uses Transformer-coupled Free Topology Transceiver (FTT) to provide networking capability for the T7300F Thermostat in a LonWorks® system.

The Q7300 shares time, schedules, setpoints, and other information on the network. You can program the thermostat schedule for seven days of the week with four designated periods per day. By using network messaging, the subbase selects fan function and system mode designated by another

thermostat, and communicates time-of-day, temporary setpoint, bypass status, and other information to multiple Excel 10 and Excel 15 devices.

Fig. 19. Q7300H Configuration Window

Procedure

After placing the Q7300H on the network, click the *Q7300H* icon to view the **Configuration Screen for Q7300H** window. The configuration window displays Q7300H settings that can be configured under different tabs. The following topics briefly describes the various tabs and also the reference source for a detailed information.

Configuring Q7300H Keyboard and Display Settings

Q7300H is the communicating subbase for T7300 thermostats. The thermostat has a front panel with a keyboard and an LCD display.

Click **Keyboard and Display** tab to configure the following settings:

- Fan Key
- Time Display
- Display Units
- Keyboard
- System Switch

NOTE: For more details on configuring the thermostat keyboard and display settings, and to know the field definitions, refer to LonSpec™ Online Help - Configuring Q7300 Keyboard and Display.

Configuring Q7300H Setpoints

The thermostat has a thermostat loop with Occupied and UnOccupied heating and cooling setpoints.

Click **Set points** tab to configure the following:

- Heating and cooling occupied and unoccupied setpoints
- Minimum cooling and maximum heating setpoints
- Temperature offsets
- Minimum On, Off, or bypass time.

NOTE: For more details on configuring the thermostat setpoints and to know the field definitions, refer to LonSpec™ Online Help - Configuring Q7300 Setpoints.

Configuring and Assigning Q7300H Schedules

Each Q7300 on the network supports one regular schedule that has four events. Each regular schedule can be either an occupied or unoccupied schedule. Q7300H supports two occupied and two unoccupied schedules. You can assign Q7300H schedules to other controllers on the network. Q7300 can drive a maximum of four other schedulable objects on the network.

Click **Schedules** tab to configure the regular schedules and click the **Schedule Assign** tab to assign the configured schedules to other controllers on the network.

NOTE: For more details on configuring and assigning schedules and to know the field definitions, refer to the following topics in LonSpec™ Online Help:

- **Configuring Q7300 Schedules.**
 - **Configuring Q7300 Schedule Assign.**
- Also, refer to Excel 15 S7760A Command Display II Specification Data, form 74-2972, or Excel 15 S7760A Command Display Installation Instructions, form 95-7561 for more information.

Configuring Q7300H System Configuration

Click **System Configuration** tab to configure the following:

- **Heating and Cooling Stages**
- **Space Temperature Sensor Type**
- **OB Mode**

- **Fan and Intelligent Fan Mode**
- **Aux Contactor**

Configuring T7350

T7350 is a full-featured Commercial programmable thermostat that communicates with other controller nodes, monitoring devices, and engineering tools using a LonWorks® digital data network. It is widely used in buildings with less than 55,000 square feet on single zone rooftop units, split systems, heat pumps, or hot/chilled systems.

The electronic thermostat consists of two parts:

- Cover assembly
- Subbase.

The thermostat cover assembly is mounted on the subbase; the subbase includes the equipment's control connections and is mounted on the wall. Different subbases are used for different applications including Three Heat or Three Cool or Two Heat or Four Cool, Modulating Outputs, and Dehumidification High Limit Control. Each subbase is compatible with the common cover assembly.

The thermostat has serial communicators that allow communications with an installer configuration tool and a future communicating subbase. The thermostat is configured using "Installer Setup" through the thermostat keys for basic setup functions. The communicating subbase contains relays, humidity sensor, and power supply.

A Palm Personal Digital Assistant can also be connected to the thermostat used to configure or program the thermostat.

Fig. 20. Configuration Window for T7350

Configuration Screen For T7350_1

General | KeyPd/Display | Setpoints | Equip Control | Scheduling | Holidays

Thermostat Model: T7350H1009

Equipment Type: Standard

Outputs

Heat Stages: Three Stage

Cool Stages: Three Stage

Aux DO: Time Of Day

Heat Pump Rev Valve: Active Cooling

Inputs

Room Temp: Local

Room humidity: Local

Discharge Air Temp: None

Outdoor Air Temp: None

Occupancy Sensor: None

Network Time Master

☐ Use T7350 for network Time Master

Daylight Savings

☒ Enable Daylight Savings

Start Month: April

End Month: October

Start Day: FIRST_SUN

End Day: LAST_SUN

Configuration ID

OK Cancel Apply Help

Procedure

After placing T7350 on the network, click the T7350 icon to view the **Configuration Screen for T7350** window. The configuration window displays T7350 settings that can be configured under different tabs. The following topics briefly describes the various tabs and also the reference source for a detailed information.

Configuring T7350 General Functions

Configuring T7350 general functions includes selecting the model as either T7350H1009 (Three Heat or Three Cool mode) or T7350H1017 (the Modulating Subbase). Based on the selection made, the appropriate equipment types and input and output options are displayed. In addition, you can also set the day light savings and enable T7350 as a network time master, if required.

If you select a T7350 as the network time master and save the configuration, LonSpec™ prompts you to confirm your task before removing the current time master. All the existing time master bindings are removed and new time master bindings are created.

NOTE:

- If the current time master that happens to be T7350 is replaced by another T7350, uploading will not recreate the bindings to render it as Time Master. That is, the T7350 will no longer be a Time Master till it is configured so again.
- This selection does not affect the Excel 15B. Excel15B, if any in the network, will follow its own time."

You can also click **Configuration ID** to view the configuration information (16 character alphanumeric number or code) of the equipment that is connected to the thermostat.

Click **General** tab to configure the general functions.

NOTE: For more details on configuring the general functions and to know the field definitions, refer to **LonSpec™ Online Help - Configure T7350 Thermostat - Configuring General Page.**

Configuring T7350 Keypad and Display Settings

The following keypad and display settings can be configured:

- Keypad lockout level
- Display temperature unit in the thermostat
- Time display format
- System switch configuration
- Fan switch configuration

You can do the following:

- Enable or disable all the keypad keys through special keypad sequence on the thermostat. It means that you can allow the user to access all the keys on the thermostat or lockout all the keys except the Setpoints and Override keys.
- Configure the display units for temperature fields as 'Degrees F' or 'Degrees C'
- Configure the format for displaying time as either '12 Hour' format (AM/PM) or '24 Hour' format.
- Configure the system operation of the thermostat to either 'OFF', 'AUTO', 'Cool', or 'Heat'.

NOTE: The 'Emergency Heat' option is available only when the equipment type is selected as 'Heat Pump'.

- Configure the fan switch as 'ON (On in Occupied)' or 'AUTO (Intermittent in Occupied)'.

Click **KeyPd/Display** tab to configure the preceding settings.

NOTE: For more details on configuring the keypad and display settings and to know the field definitions, refer to **LonSpec™ Online Help - Configure T7350 Thermostat - Configuring Keypad/Display Page.**

Configuring T7350 Setpoints

You can do the following:

- Specify the heating and cooling setpoints for the 'Occupied', 'Unoccupied', and 'Standby' modes.
- Specify the minimum heating and maximum cooling setpoint range.
- Configure energy management features like DLC bump and power sequential start.
- Configure dehumidification strategy.
- Configure recovery parameters and bypass timer.

Click **Setpoints** tab to configure the setpoints.

NOTE: For more details on configuring the setpoints and to know the field definitions, refer to **LonSpec™ Online Help - Configure T7350 Thermostat - Configuring SetpointPage.**

Configuring T7350 Equipment Control Settings

You can configure the heating and cooling selections and loop tuning parameters. In addition, you can also do the following:

- You can configure the heating or cooling outdoor air temperature lockouts by selecting the **Enable Heating OAT Lockout** or **Enable Cooling OAT Lockout** checkboxes. These checkboxes are enabled only if the **Outdoor Air Temp** (outdoor air temperature) input is configured under the **General** tab.
- You can also configure the discharge air temperature heating high limit and cooling low limit by selecting the **Enable DAT Hi Limit** and **Enable DAT Lo Limit** checkboxes. These checkboxes are enabled only if the **Discharge Air Temp** (discharge air temperature) input is configured under the **General** tab.

NOTE: For more details on configuring the equipment control settings and to know the field definitions, refer to **LonSpec™ Online Help - Configure T7350 Thermostat - Configuring Equip Control Page.**

Configuring T7350 Schedule and Holidays

The following sub-topics briefly explains configuring T7350 schedule and holidays or exceptions.

Configuring T7350 Schedule

You can configure only one T7350 schedule that has occupancy schedules for eight days of the week (includes 'Monday' through 'Sunday' and a 'Holiday'). Each day schedule has four events with one mode or time per event. **Event 1** and **Event 3** can be configured to be in the 'Occupied', 'Standby', or 'Unconfigured' mode. **Event 2** and **Event 4** can be configured to be in the 'Unoccupied', 'Standby', or 'Unconfigured' mode. You can also set 24 hour format for displaying time.

In addition to configuring a schedule, you can also do the following:

- Copy the schedule from one day or event to another day or event.
- Save a schedule configuration as a ".qss" file and later restore the schedule configuration on any T7350 on the network.

T7350's schedule can be assigned to other Excel 10 controllers and Excel 15C objects. T7350 can schedule a maximum of 120 controllers or objects.



CAUTION

There cannot be more than two 'Occupied', 'Unoccupied, or 'Standby' events per day.

Configuring T7350 Holidays

T7350 supports a maximum of 10 holidays that it follows every year as per the assigned date and month, until unless the holiday schedule is deleted. A T7350 holiday has a start date (date or day) and duration (period for which it must be active). A holiday follows a holiday schedule configured under the **Scheduling** tab.

You can also download a list of pre-configured US holidays. If there are more than four holidays already configured, upon clicking **Load US holidays**, only the first few holidays that are required to reach the maximum count of 10 are loaded. All the six holiday schedules are not loaded as they exceed the maximum holiday count.

You can also save a holiday configuration as a “.qhs” file and restore it when required on any T7350 on the network.

NOTE: No duplicate holiday configurations are allowed. LonSpec™ maintains an internal numbering for each configured holiday. For example, if a holiday is deleted from middle of a list and a new holiday is added, it will occupy the empty slot in between the list.

CAUTION

A T7350 cannot schedule more than one control loop or start-stop loop object that belong to the same Excel 15C controller.

Click **Scheduling** tab to configure and assign the schedule to a device or object and click **Holidays** tab to configure holidays for T7350.

NOTE: For more details on configuring schedules, assigning schedules, and configuring holidays, refer to the following topics in LonSpec™ Online Help - Configure T7350 Thermostat:

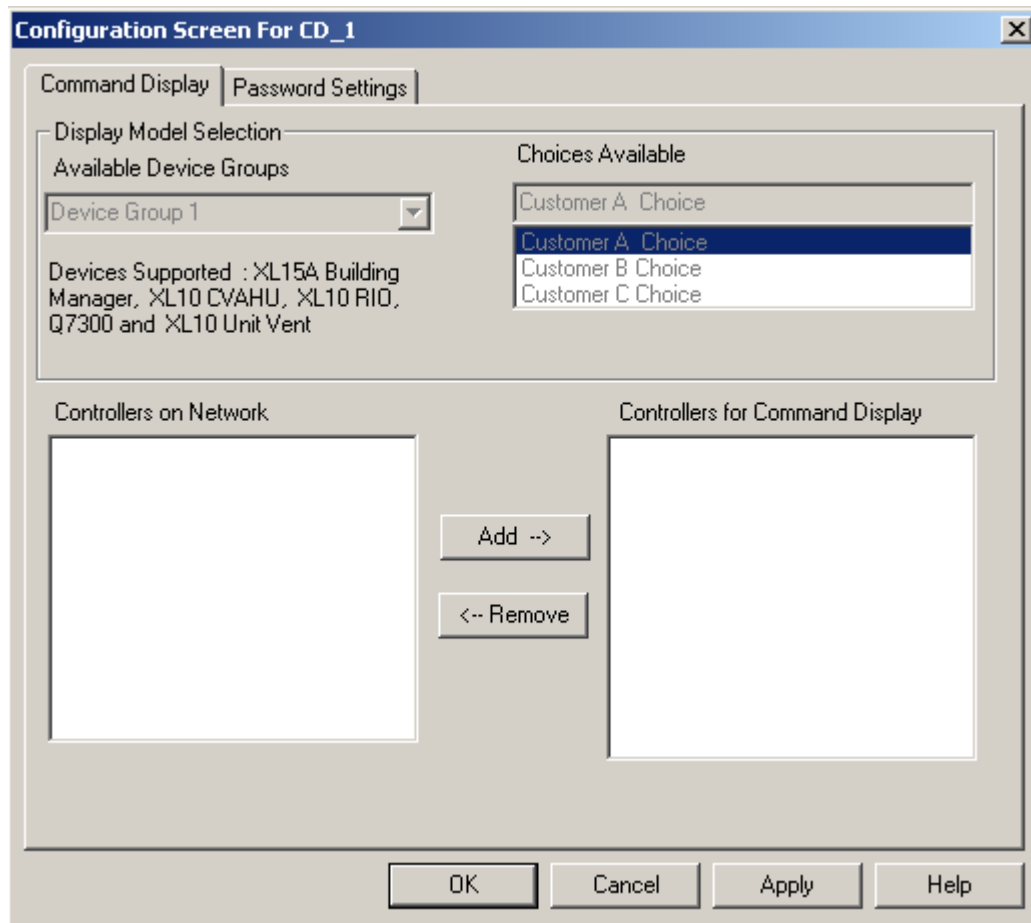
- **Configuring Scheduling Page.**
- **Configuring Holidays Page.**

Configuring CD

The S7760A Command Display (CD) is an Echelon® LonWorks® network display module. It supports a maximum of 24 Excel 10 controllers. It also supports one Excel 15A Building Manager on the network. It allows viewing and modifying the parameters of the controllers over the LonWorks® network. For example, space temperature, setpoint, occupied and unoccupied override, application mode (HVAC), and fan mode/speed.

Using the keypad and appropriate password level, you can read and write schedules, read and silence alarms, and change passwords. You can also change the engineering units.

Fig. 21. CD1 Configuration Window





CAUTION

The Command display must be the last node commissioned on a network.

You can do the following:

- Under the **Command Display** tab, select a device group to view its controllers list. Also, you can select a controller and its associated logical object to be displayed by the CD.
- Under the **Password Settings** tab, set the passwords or change passwords for each user access level.

NOTE:

1. For more details on configuring these settings and to know the field definitions, refer to the following topics in LonSpec™ Online Help:
 - Configuring Command Display II Assign Groups.
 - Configuring Command Display II Assign Points.
 - Configuring Command Display II Splash Screen.
 - Configuring Command Display II Password Settings.

2. Also, refer to Excel 15 S7760A Command Display Specification Data, form 74-2972, or Excel 15 S7760A Command Display Installation Instructions, form 95-7561 for more information.

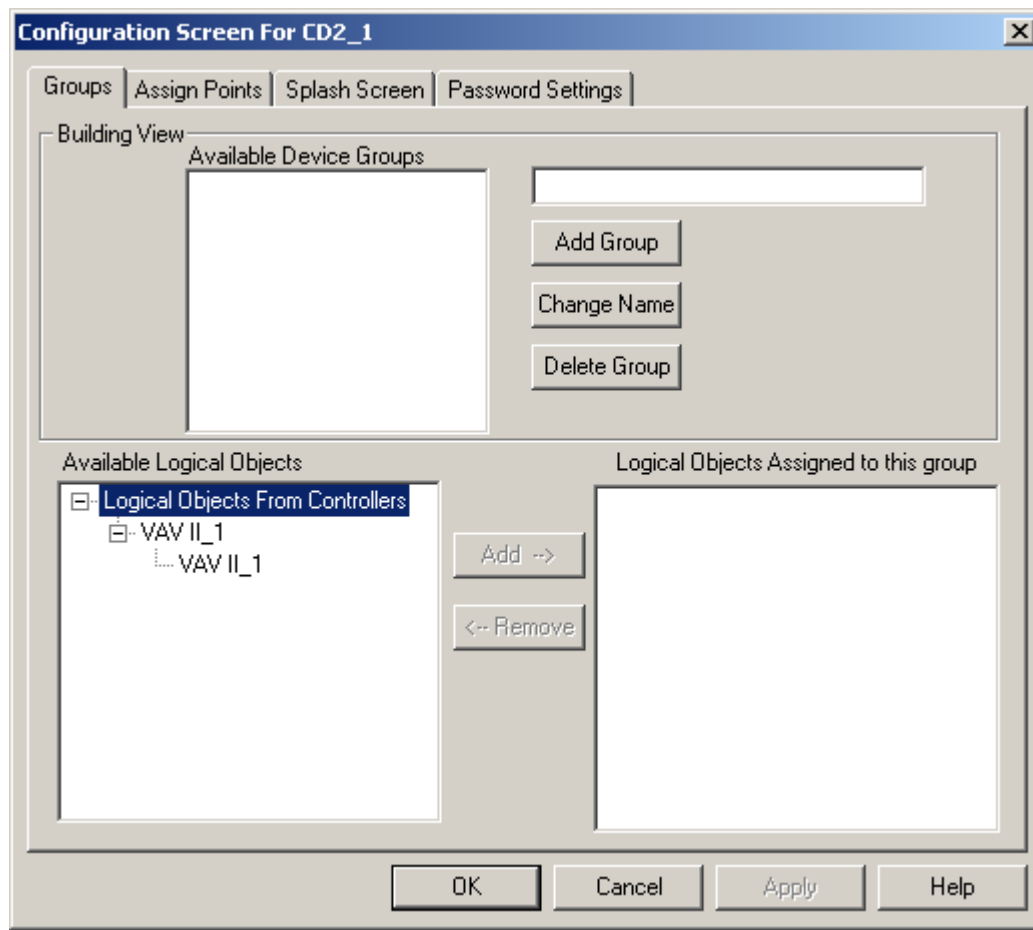
Configuring CD2

The S7760A Excel 15 Command Display II (CD II) is an Echelon® LonWorks® network display module. It allows viewing and modifying the parameters of the controllers over the LonWorks® network. For example, space temperature, setpoint, occupied and unoccupied override, application mode (HVAC), and fan mode/speed.

Using the keypad and appropriate password level, you can do the following:

- Read and write schedules to controllers
- Read and silence alarms
- Change passwords
- Change configuration information such as engineering units.
- Change controller setpoints (set room temperature), HVAC mode, fan mode/speed, initiate or cancel bypass.

Fig. 22. CD2 Configuration Window





CAUTION

The Command display II must be the last node commissioned on a network.

You can do the following:

- Under the **Groups** tab, create a device group and modify, or delete an existing device group. Also, you can assign a controller's logical object to a device group.
- Under the **Assign Points** tab, select a logical object's point as a primary network variable.
- Under the **Assign Points** tab, select points that you want to view for a particular logical object.
- Under the **Splash Screen** tab, select the type of data that you want to view in each row on the splash screen. There are a maximum of eight rows on the screen and the type of data displayed can be 'Plain text', 'Current Date and Time', or 'Point Data'.
- Under the **Password Settings** tab, set the passwords or change passwords for each user access level.

NOTE:

1. For more details on configuring these settings and to know the field definitions, refer to the following topics in LonSpec™ Online Help:
 - Configuring Command Display II Assign Groups.
 - Configuring Command Display II Assign Points.
 - Configuring Command Display II Splash Screen.
 - Configuring Command Display II Password Settings.
2. Also, refer to Excel 15 S7760A Command Display Specification Data, form 74-2972, or Excel 15 S7760A Command Display Installation Instructions, form 95-7561 for more information.

Configuring VAV II

Variable Air Volume II (VAV II) is a LonMark® compliant device designed to control volume and air pressure. It has an integrated flow sensor on an expanded I/O platform. The expanded I/O platform allows you to configure additional analog and digital input sensors.

Fig. 23. VAV II Configuration Window

Configuring VAV II Configuration Settings

You can configure the controller type, wall module type, and

other general settings. In addition, you can also select the output settings, motor speed, and PWM settings.

Click **Configuration** tab to select the hardware type and set the attributes.

NOTE: For more details on configuring these settings, and to know the field definitions, refer to **LonSpec™ Online Help - Configuring Excel 10 VAV II Configuration**.

Configuring VAV II Input Settings

You can specify the sensors that have to be wired to VAV II by configuring the analog and digital inputs.

Click **Inputs** tab to configure these inputs.

NOTE: For more details on configuring the analog and digital points and to know the field definitions, refer to **LonSpec™ Online Help - Configuring Excel 10 VAV II Input**.

Configuring VAV II Control Parameters

You can specify the following equipment control parameters used by VAV II to control the unitary equipment:

- **Cooling Setpoints**
- **Heating Setpoints**
- **Flow Setpoints**
- **Duct Area**
- **Setpoint Limits for the Wall Module**

Click **Control Parameters** tab to configure the required parameters. The setpoint and flow setpoint validations are also mentioned on the screen for your reference.

NOTE: For more details on configuring the control parameters and to know the field definitions, refer to **LonSpec™ Online Help - Configuring Excel 10 VAV II Control Parameters**.

Configuring VAV II Flow Pickup Settings

Each flow sensor table displays 10 pairs of air flow values and their corresponding velocity in feet/minute or feet/second. You can do one of the following:

- Specify the differential pressure and velocity for the existing table.
- Select a new flow sensor table from the **Sensor Table** list.
- Create a new flow sensor table.

Click **Flow Pickup Table** tab to configure the flow pickup settings.

NOTE: For more details on configuring the flow pickup settings and to know the field definitions, refer to **LonSpec™ Online Help - Configuring Excel 10 VAV II Flow Pickup**.

Configuring VAV II PID Settings

You need to adjust the Proportional Integral Derivative (PID) control parameters gradually. This includes adjusting the following:

- Cooling and heating throttling range, integral time, and derivative time values.
- Heating, cooling, and economizer control band values.

You can see the default values displayed for each parameter on the **PID** tab screen. You need to be cautious when trying to deviate from the values displayed. For example, decreasing the throttling range will aggravate the error effect and higher the integral time, slower will be the control response time.

Click **PID** tab to configure the PID settings.

NOTE: For more details on configuring the PID settings and to know the field definitions, refer to **LonSpec™ Online Help - Configuring Excel 10 VAV II PID**.

Configuring VAV II Miscellaneous Settings

You can specify the maximum air flow limit in percentage for the following: **Window, Reheat, Minimum, Maximum, Standby, Press, Depress, Purge, and Warmup**. In addition, you can configure the **Bypass Settings** like the bypass time, type, and priority, and also other settings.

Click **Misc Parameters** tab to configure the miscellaneous settings.

NOTE: For more details on configuring the miscellaneous settings and to know the field definitions, refer to **LonSpec™ Online Help - Configuring Excel 10 VAV II Miscellaneous Settings**.

Configuring VAV II Wiring

You can assign configured output points to different pins available. You can change the terminal assignments at random. The output points that you configure on the **Configuration** tab screen are displayed in the **Configured outputs** column on the **Wiring** tab screen.

Click **Wiring** tab to choose the configured outputs as the selected outputs.

NOTE: For more details on configuring the wiring settings and to know the field definitions, refer to **LonSpec™ Online Help - Configuring Excel 10 VAV II Custom Wiring**.

Configuring Wireless Receiver (Q7900)

The Wireless Receiver is a device that connects the T7790C wireless wall modules to the Excel 10 family controllers on the Lon network. The wireless receiver receives data, such as the space temperature values from the T7790C, transforms the data, and sends it to a Excel 10 controller using network variables. The receiver sends occupancy data from a RF Occupancy Sensor to a Excel 10 in a similar manner. The wireless receiver receives 'Low Battery Alarms' from the T7790C wall module and relays them on the LonWorks® network. The Wireless or LonWorks® Receiver can send alarms to only an Excel 15A Building Manager.

Click **Add Sensor** on the **Configuration Screen for Q7900** window to add a RF wall module.

Fig. 24. Wireless Receiver Configuration Window

Configuration Screen For Q7790A_1

Low battery Alarm Refresh Rate hrs

	Sensor Name	Sensor ID	Assigned XL10	Alarm Controller
1	T7790CWallModule1	0-00-00	UnAssigned	UnAssigned
2	T7790CWallModule2	0-00-00	UnAssigned	UnAssigned
3	T7790CWallModule3	0-00-00	UnAssigned	UnAssigned
4	T7790CWallModule4	0-00-00	UnAssigned	UnAssigned
5	T7790CWallModule5	0-00-00	UnAssigned	UnAssigned
6	T7790CWallModule6	0-00-00	UnAssigned	UnAssigned
7	T7790CWallModule7	0-00-00	UnAssigned	UnAssigned
8	T7790CWallModule8	0-00-00	VAV II_1	UnAssigned
9	T7790CWallModule9	0-00-00	UnAssigned	UnAssigned
10	T7790CWallModule10	0-00-00	UnAssigned	UnAssigned
11	T7790CWallModule11	0-00-00	UnAssigned	UnAssigned

Add Sensors Delete Sensors Ok Apply Cancel Help

Configuring Q7900 RF Wall Module Sensors

You can add and associate a maximum of 14 RF wall modules with Excel 10 controllers. A Q7900 reads the space temperature, setpoint, and manual occupancy of these Excel 10 controllers through the associated RF wall module. All the low battery alarms generated are directed to the associated Excel 15A Building Manager. If the Excel 10 controllers are in turn assigned to different Excel 15As, then Q7900 displays a warning message and sends the alarms to the first Excel 15A in the **Alarm Controllers** list. You can add and edit RF wall modules, and also configure the refresh rate. The default rate is 24 hours and the range can be between 0-72 hours.

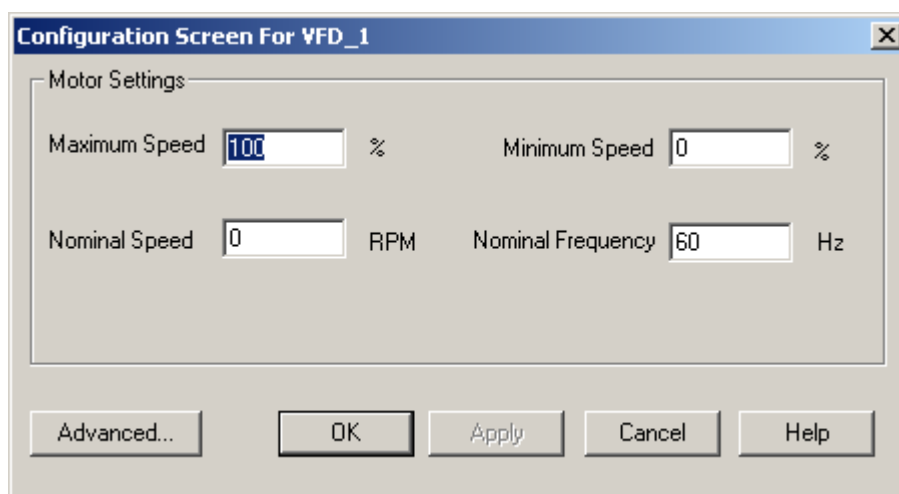
NOTE: For more details on configuring the RF wall modules and to know the field definitions, refer to **LonSpec™ Online Help - Configuring Wireless Receiver**.

Configuring VFD

Excel VRL CX/CXL/CXS frequency drive (VFD) is an electronic device used for controlling speed and torque of three-phase alternating current (AC) motors. VFD converts the fixed frequency and voltage of the main supply to a variable frequency and voltage. The variable frequency and voltage can then be regulated to provide flexible motor function and also reduce energy consumption. Excel VRL CX/CXL/CXS frequency converters can be connected to LonWorks® network by using CX203OPT option board. They

can then be controlled, monitored, and programmed from the LonWorks® network. Excel VRL CX LonWorks® option board follows Variable Speed Motor Drive Profile.

Fig. 25. VFD Configuration Window



Configuring VFD Motor and Advanced Settings

You can configure the VFD motor, transmission, and EEPROM saving options. Click **Advanced Settings** to configure the VFD advanced features.

NOTE: For more details on configuring the motor and advanced settings and to know the field definitions, refer to the following topics in LonSpec™ Online Help:

- Configuring Driving Parameters.
- VFD Advanced Settings.

Configuring NX VFD

VACON NX frequency converter (NXVFD) is an electronic device used for controlling speed and torque of alternating current (AC) induction motors. It converts the fixed frequency of the main supply (mains) to a variable frequency that can then be regulated to provide flexible motor operation and further reduce energy consumption.

it can be connected to the LonWorks® network using a fieldbus board. VACON NXOPTC4 option board is equipped with an FTT-10A transceiver supporting the Free Topology transformer coupled network that allows the network wire to be connected as bus, star, loop, or a combination of all the three network types. The converter can then be controlled, monitored, and programmed from the LonWorks® (Host) network; the LonWorks® board will be installed in slot E on the control board of the frequency converter.

The following are the locations from where you can control NXVFD.

- I/O terminal
- Key Pad (default control panel)
- Field bus

The Key Pad control of NXVFD device is used for the following:

- Parameter setting
- Reading status data
- Giving control commands

The NXVFD must be configured to select field bus as control place before starting any of the operations through LonSpec™. This configuration can be performed using the Key Pad control provided along with device.

NOTE:

- Refer NX VFD's user manual for details on selecting field bus as control place (www.Vacon.com).
- None of the values sent by LonSpec™ through field bus) are considered until and unless the device is configured to use field bus as control place.

Fig. 26. Configuration Screen for NX VFD

The image shows a software window titled "Configuration Screen For NXVFD_1". It contains two main sections: "Motor Settings" and "NXS/P Settings".

Motor Settings:

- Maximum Speed: 100 %
- Minimum Speed: 0 %
- Nominal Speed: 1800 RPM
- Nominal Frequency: 60 Hz

NXS/P Settings:

- Acceleration Time: 10 sec
- Deceleration Time: 10 sec

At the bottom, there is a "Default Drive Speed Scale" set to 0 %.

Buttons at the bottom: OK, Apply, Cancel, Help.

Procedure

After placing NX VFD on the network, click the *NX VFD* icon to view the **Configuration Screen for NX VFD** window. The configuration window displays NX VFD settings that can be configured under different tabs. The following topics briefly describes the various tabs and also the reference source for a detailed information.

Configuring NX VFD Motor and Advanced Settings

You can configure the NX VFD motor parameters, transmission control parameters, and EEPROM saving options.

NOTE: For more details on configuring the motor and advanced settings and to know the field definitions, refer to *LonSpec™ Online Help - Configure NXVFD - Configuring NX VFD Drive Parameters*.

Configuring CHC, HYD, and FCU

The W7752D,E,F, and G controllers are communicating mains-powered Fan Coil Unit (FCU) controllers in the Excel 10 family of controllers. They cover a wide range of fan coil control applications like air conditioning.

The W7762A and B controllers are Hydronic controllers in the Excel 10 family of controllers. They cover a wide range of control applications including radiators, induction units, and fan coil units with manual fan switching.

The W7763C, D and E controllers are Chilled Ceiling Controllers (CHC) in the Excel 10 family of controllers. They cover a wide range of control applications including radiators, induction units, and fan coil units with manual fan switching, chilled ceiling, and chilled beam.

Both HYD and CHC are suitable for wall mounting or unit mounting.

The FCU, HYD, CHC controllers can operate as stand-alone units or networked using the standard Echelon® LonWorks® bus. Interfaces are provided for a wide range of actuator types. Heating systems can be water or electric and cooling systems can be chilled water supply or compressors. Extensive timing and interlock features make these controllers especially suitable for systems using electric heat and compressors.

NOTE: CHC, HYD, and FCU have identical tabs on their configuration windows. Hence, only the CHC configuration window is displayed here.

Fig. 27. CHC Configuration Window

The screenshot shows the 'Configuration Screen For CHC_1' window. It has three main tabs: 'Miscellaneous', 'PID', and 'WIRING'. Under 'Miscellaneous', there are sub-tabs: 'Output', 'Inputs', 'Equipment Control', 'Switching Levels', and 'Zone Control'. The 'Output' sub-tab is selected. In the 'Application' section, 'Safety' is set to 'Condensation Protection' and 'System' is set to 'Four Pipe'. In the 'Control Outputs' section, there are two columns. The first column, labeled '-Output1-', has 'Heat Mode' for 'Mode' and 'Floating' for 'Type'. The second column, labeled '- Output2 -', has 'Cool Mode' for 'Mode' and 'Floating' for 'Type'. At the bottom are buttons for 'OK', 'Cancel', 'Apply', and 'Help'.

Configuring CHC, HYD, and FCU Points

You can configure the application and control outputs, the control output type being 'Staged', 'PWM', 'Floating', 'Thermal', or 'Changeover mode'. You can either use two or four pipes on the system. In addition, you can also configure the wall module parameters and input points.

Click the **Output** and **Inputs** tabs to configure the controller points.

NOTE: For more details on configuring the outputs and inputs and to know the field definitions, refer to the following topics in LonSpec™ Online Help:

- Configuring CHC Outputs.
- Configuring CHC Inputs.
- Configuring HYD Outputs.
- Configuring HYD Inputs.
- Configuring FCU2 Outputs.
- Configuring FCU2 Inputs.

Configuring CHC, HYD, and FCU Equipment Control Settings

You can specify the **Output**, **Reheat**, and **PWM** Options.

Click **Equipment Control** tab to configure the different equipment control parameters.

NOTE: For more details on configuring the equipment control parameters and to know the field definitions, refer to the following topics in LonSpec™ Online Help:

- Configuring CHC Equipment Control.
- Configuring HYD Equipment Control.
- Configuring FCU2 Equipment Control.

Configuring CHC, HYD, and FCU Zone Control

You can configure the heating and cooling temperature setpoints for the **Occupied**, **UnOccupied**, and **Standby** states.

Click **Zone Control** tab to configure the temperature setpoints.

NOTE: For more details on configuring the temperature setpoints and to know the field definitions, refer to the following topics in LonSpec™ Online Help:

- Configuring CHC Zone Control.
- Configuring HYD Zone Control.
- Configuring FCU2 Zone Control.

Configuring CHC, HYD, and FCU Switching Levels

There are four switching levels (stages) for both the heating and cooling modes:

- **First Stage**
- **Second Stage**
- **Third Stage**
- **Hysteresis**

Click **Switching Levels** tab to configure the different heating and cooling stages.

NOTE: For more details on configuring the switching levels and to know the field definitions, refer to the following topics in LonSpec™ Online Help:

- Configuring CHC Switching Levels.
- Configuring HYD Switching Levels.
- Configuring FCU2 Switching Levels.

Configuring CHC, HYD, and FCU PID Loops

You can configure the variables for closed control loop and set separate PID parameters for both the heating and cooling controls.

Click **PID** tab to configure the PID loops.

NOTE: For more details on configuring the PID settings and to know the field definitions, refer to the following topics in LonSpec™ Online Help:

- Configuring CHC PID.
- Configuring HYD PID.
- Configuring FCU2 PID.

Configuring CHC, HYD, and FCU Miscellaneous Settings

You can configure the energy management parameters like the DLC and the recovery ramps for heating and cooling functions. In addition, you can also specify the **Bypass Time** and select the **Override Priority**, where you allocate priority between the local wall module functions and the commands from the building management central.

Click **Miscellaneous** tab to configure these settings.

NOTE: For more details on configuring the miscellaneous settings and to know the field definitions, refer to the following topics in LonSpec™ Online Help:

- Configuring CHC Miscellaneous.
- Configuring HYD Miscellaneous.
- Configuring FCU2 Miscellaneous.

Configuring CHC, HYD, and FCU Wiring Settings

Click **Wiring** tab to view the individual controller wiring diagram.

NOTE: For more details on viewing the diagram, refer to the following topics in LonSpec™ Online Help:

- Configuring CHC Wiring.
- Configuring HYD Wiring.
- Configuring FCU2 Wiring.

Configuring FCU Fan Settings

You can define the **Fan General** and **Fan Interlock** settings and also configure the fan occupancy states.

NOTE: You can define the pre-run and post-run periods if the **Fan Interlock** option is selected as one of the output options on the **Equipment Control** tab.

Click **Fan** tab to specify the fan general and interlock settings.

NOTE: For more details on configuring the fan settings and to know the field definitions, refer to LonSpec™ Online Help - Configuring Controllers - Configure FCU - Configuring FCU2 Fan.

Configuring Excel 15C Plant Controller

The Excel 15C plant controller is designed to control HVAC equipment and other miscellaneous loads in a distributed control network. You can configure plant controller functions such as start/stop loops, control loops, user-defined setpoint values, math, and logic functions.

Fig. 28. Excel 15C Configuration Window

Configuring Excel 15C Plant Controller Points

Excel 15C plant controller has eight analog inputs, six analog outputs, and eight digital inputs and outputs each.

Analog Inputs and Outputs: Analog Inputs are used to monitor external conditions, such as temperature, humidity, or pressure. These inputs are commonly used as inputs for control loops, start /stop loops, math functions, and logic loops. Analog outputs are used to control variably driven controller devices, such as damper actuators, valve actuators, variable speed fans, step controllers, and other transducers.

You can configure each Analog Input and Output as 'Analog' or 'Digital'. Analog Inputs configured as 'Analog' receive input from various types of sensors whereas those configured as 'Digital' receive only digital signals as inputs. Analog Outputs configured as 'Analog' drive an analog load and those configured as 'Digital' drive a digital load.

Digital Inputs and Outputs: Digital Inputs are used to monitor external events, such as contact closures. The contact closures initiate alarms, monitor equipment status, and read pulse meters. These inputs are commonly used as inputs for control loops, start /stop loops, math functions, and logic loops. You can configure each digital input as 'Maintained', 'Momentary', 'Counter Slow', 'Counter Fast', or 'Pulse Meter'. An external Digital Input source is connected to the digital input.

Digital Outputs are often used to control lighting, fans, and HVAC equipment. You can configure a Digital Output as 'Digital', 'PWM', or 'Float'. Digital Outputs configured as 'Digital' can drive a digital load and those configured as 'PWM' or 'Float' can drive an analog load.

Click **Analog Inputs**, **Analog Outputs**, **Digital Inputs**, and **Digital Outputs** tabs to configure the analog and digital points.

NOTE: For more details on configuring the analog and digital points, and to know the field definitions, refer to the following topics in LonSpec™ Online Help:

- Configuring Excel 15C Plant Controller Analog Inputs.
- Configuring Excel 15C Plant Controller Analog Outputs.
- Configuring Excel 15C Plant Controller Digital Inputs.
- Configuring Excel 15C Plant Controller Digital Outputs.

Configuring Excel 15C Plant Controller Setpoints

You can configure a maximum of 40 setpoints. These are internal points for which you can assign an engineering unit and specify a setpoint value. You can use them to provide analog inputs to start/stop loops, control loops, logic loops, and math functions. The setpoint values that you specify are constants which can be modified from an operator interface like LonStation™.

Click **Setpoints** tab to configure the internal points (setpoints).

NOTE: For more details on configuring the setpoints and to know the field definitions, refer to LonSpec™ Online Help - Configuring Excel 15C Plant Controller Setpoints.

Configuring Excel 15C Plant Controller Math Functions

You can configure a maximum of 30 math functions. Math functions are of two types: 'General Purpose' and 'Network Special'. General Purpose math function operates on a maximum of six floating point analog inputs. These Inputs can be a physical or remote point value, set point, output of a flex, logic loop, or a math function. You can in turn specify the math functions output to be used by any flexible, logic loop, or a math function.

A minimum of two analog inputs need to be selected if you are configuring a Network Special math function.

Click **Math Functions** tab to configure the general purpose or network special math functions.

NOTE: For more details on configuring the math functions and to know the field definitions, refer to LonSpec™ Online Help - Configuring Excel 15C Plant Controller Math Functions.

Configuring Excel 15C Plant Controller Loops

You can configure a maximum of eight start/stop loops to turn the equipment On or Off based on a schedule (TOD) or a demand load. The minimum number of times the equipment is turned On or Off is recorded. The start/stop configuration is used to set up the control loop's input and output choices.

The Excel 15C controller may be configured for a maximum of 10 control loops. In the simplest form, a control loop reads a sensor (i.e. the control sensor) and calculates an output to maintain the sensed value at a user-defined setpoint. You can configure the following:

- Inputs as control, reset, recovery, occupancy, enable/disable, and TOD bypass sensors.
- Outputs as four modulating analog outputs with a maximum of four stages for each analog output and an auxiliary digital output for controlling a fan or pump.

The control portion of the loop is an Enhanced PID (EPID) algorithm. You can configure control algorithm type (PID or Non-linear), bias (position of set point within the proportional band (i.e. 0% or 50%), direct/reverse acting output, which sensor and outputs to use, throttling range, integral time, derivative time, start up ramp time, recovery, reset and sequencer parameters, set points, minimum on, off and bypass times, DLC shed bump and lead/lag.

Flexible loops are enhanced proportional integral derivative (EPID) control loops. You need to configure a control sensor for the flexible loop to be considered as configured. Various external (i.e. network variables) conditions can influence how the flexible loop controls.

The Excel 15C controller has 32 Logic Loops.

Each configured Logic Loop generates outputs by applying logic functions on different analog and digital inputs selected. These logic loop outputs are commonly used as inputs to control loops, start /stop loops, and math functions.

Click **Start/Stop Loops**, **Control Loops**, and **Logic Loops** tabs to configure the Excel 15C loops.

NOTE: For more details on configuring the Excel 15C loops and to know the field definitions, refer to LonSpec™ Online Help:

Starting from - **Configuring Excel 15C Plant Controller Start/Stop Loops** - till **Unconfigured Remote Dialog**.

GENERATING REPORTS

You can generate and view the following reports in LonSpec™:

- Device Status Report
- Document Project Report
- Alarms Report (only when LonSpec™ is online)

NOTE: The Device Status Report and the Document Project Report can be generated both when LonSpec™ is offline or online.

Device Status Report

You can view both the online and offline controller status on a network.

- When LonSpec™ is offline, the controller status information is read from the LonSpec™ database. The generated report lists the following details in the **Offline Device Status** window:
 - Device name.
 - Device type.
 - Commission status.
 - Associated Subnet or node.
 - Controller Neuron® ID.
- When LonSpec™ is online, the device status of each device is read from the network and mapped with those in the LonSpec™ database. In addition to the preceding device details, the generated report also lists the following details in the **Online Device Status** window: Node State, Last Reset Cause, and Last Error Logged, Transmission Errors, Transaction Timeouts, Receive Transaction Full Errors, Lost Messages and Missed Messages for all devices on an open network.

The following table provides a brief description of each column:

Table 6. Device Status Report

Column Heading	Description
Device	Indicates the name of the device.
Type	Indicates the type of the device. Examples are CVAHU, RIO.
Status	Indicates the device status. Examples are 'Not Assigned', 'Commissioned'.
Subnet/Node	Indicates the subnet number followed by network node number (1-27).
Neuron ID	Indicates the Neuron® ID of the device.

Table 6. Device Status Report (Continued)

Column Heading	Description
Node State	<p>NOTE: The following are displayed if the device status report is generated when LonSpec™ is online.</p> <p>Indicates the current device mode and state. The controller can be in one of the following states:</p> <ul style="list-style-type: none"> • Applicationless and Unconfigured • Unconfigured • Configured, Hard Off-Line • Configured, Soft Off-Line • Configured, Bypass Off-Line • Configured, On-Line
Last Reset Cause	<p>Indicates the cause for the last reset. It can be one of the following:</p> <ul style="list-style-type: none"> • Power-up reset • External reset • Watchdog reset • Software reset • Cleared
Last Error Logged	Indicates the last error detected by the firmware on the target node.
Transmission errors	Indicates the number of CRC errors detected during packet reception. These errors might be generated due to collisions or noise on the transceiver input.
Transaction timeouts	<p>Indicates the number of times that the node has failed to receive expected acknowledgements or responses after retrying the configured number of times. The following are the probable reasons:</p> <ul style="list-style-type: none"> • Destination nodes being inaccessible on the network • Transmission failures because of noise on the channel • Destination node has insufficient buffers or receive transaction records.
Receive transaction full errors	Indicates the number of times an incoming packet has been discarded due to insufficient space in the transaction database.
Lost messages	<p>Indicates the number of times an incoming packet has been discarded due to non-availability of application buffer. The following are the probable reasons:</p> <ul style="list-style-type: none"> • Application program's low rate of processing incoming packets. • Insufficient application buffers • Excess traffic on the channel.

Table 6. Device Status Report (Continued)

Column Heading	Description
Missed Messages	Indicates the number of times that an incoming packet was discarded because there was no network buffer available. The following are the probable reasons: <ul style="list-style-type: none"> • Excess traffic on the channel • Insufficient network buffers • Network buffers not large enough to accept all packets on the channel; whether they are addressed or not addressed to this particular node.

You can also do the following when the report is generated online:

- Click **Reset Subnet/Node ID** to reset the selected Subnet or Node.
- Click **Set Config/Online** to set the selected controller's state to 'Configured Online'.
- Click **Reset Network Image** to reset the selected node's Domain Table, Address Table, and NV Config Table message box displays before proceeding further.
- Click **Clear Status** to clear a selected node's status.

Document Project Report

You can generate a report in text format to document entire project details including network name and domain number, subnet name and number, and each controller's name on the network, including controller configuration details. The report displays the project, network, subnet, and controller information.

NOTE: You can also generate Document Project Report when LonSpec™ is online.

Alarms Report

You can generate a report to display the history of recent alarms and all current configured alarms. Each controller node has information on the current alarms and the last five alarms generated, which can be read from the controller.

NOTE: **You can generate the Alarms Report only when LonSpec™ is online.** Excel 15 CD, CD2, and Excel 15A Building Manager does not maintain current alarms and recent alarms history.

Procedure (to generate reports)

Click **Reports>Device Status**, or **Reports>Document Project**, or **Reports>Alarms Report** to view the individual reports.

NOTE: For more details on generating the reports, refer to the following topics in LonSpec™ Online Help:

- **Create Device Status Report.**
- **Create Document Project Report.**
- **Create Alarms Report.**

Replicate Report

The replicate report gives a report of the list of points that got unconfigured when an Excel 15A or a Excel 15C controller was replicated. You can save this report as a text file for future reference, when reconfiguring the points again. This report is displayed at the end of replication of Excel 15A or Excel 15C controllers. This list of points that got unconfigured is shown in this report at the end of replicate operation.

When a Excel15A is replicated, apart from runtimes, trends, alarms, and bypass configurations (bypass log configuration is not replicated when replicated across networks), few input and output points are also unconfigured.

- When a Excel15A is replicated within the same network, the outputs of control loops and start/stop loops are configured using the remote points.
- When replicated across networks or projects, both the poll points and the remote output points of control loops, logic loops, start/stop loops, and alarms are unconfigured.

In Excel 15C, outputs of control loops, start/stop loops, math functions, and logic loops can be used as inputs for each of these objects. Such points are called pseudo points. Input points that use remote points remain untouched if replicated within the same network. If replicated across networks or projects, both the inputs and outputs using remote points are unconfigured.

When a Excel 15C is replicated, if an output is using a remote point, it is reconfigured to use its own pseudo point. But there are some special cases, where we unconfigure the outputs. Any input using such output point (pseudo point) is also unconfigured.

Procedure

1. Replicate an Excel 15A or Excel 15C controller. Refer to [“Replicating a Controller” on page 22](#).
2. If there are remote points that got unconfigured during replication, the **Replicate Report** window is displayed at the end of the replication process. The following details are displayed about the unconfigured remote point in the Replicated Report:
 - Object name (to which the unconfigured point belongs)
 - User defined name of the object
 - Unconfigured remote point

NOTE: For more details on replacing a report, refer to **LonSpec™ Online Help - Replicate Report**.

LONSpec™ INSTALLATION

This section provides information about the following topics:

- Software Requirements
- Hardware Requirements
- Installing LonSpec™

Software Requirements

Following are the softwares that must be installed on the pc (personal computer):

- Microsoft® Windows™ 2000 Professional Edition with Service Pack (SP) 3 or Higher **OR** Microsoft® Windows™ XP Home Edition or Microsoft® Windows™ XP Professional Edition with SP1.
- Microsoft® Internet Explorer 6.0

Hardware Requirements

Following are the components that the pc must have. The adapters that must be supported for different connections are also included:

- 500 Megahertz microprocessor, or higher (a faster processor will optimize the pc performance)
- Minimum of 128 megabytes (MB) of Random Access Memory (RAM).
- Minimum of 100 MB of available disk space.
- Super VGA monitor with a minimum 1024 x 768 resolution.
- **Local Connection (Direct)** - For communicating with a directly connected local site, the pc must support the following adapters:
 - External RapidLink with standard RS 232 9 pin male to 9 pin female cable
 - External Serial LONTALK® Adapter, SLTA-10, FT-10 (O.S. Number Q7760A2001) with standard RS 232 9 pin male to 9 pin female cable
 - Internal LONTALK® Adapter, PCLTA-10, PCLTA-20 FT-10.
 - Internal LONTALK® Adapter for laptops, PCMCIA PCC-10, FT-10 (O.S. Number Q7752B2009).
- **Remote connection** - For communicating with a remote site, the pc must support the following:
 - Honeywell RapidLink with a telephone line connection
 - Special NULL modem cable(s) (O.S. Number: 32002517-001).
 - External Modem(s): 3Com U.S. Robotics 5686D, V.90/V.92 56K Standard compatible.
 - Special NULL modem cable(s) (O.S. Number: 32002517-001).
 - Honeywell XM500-US TCP/IP modem for LAN/WAN connection, instead of telephone line connection.

NOTE: If an Excel 15B is available on the network, LonSpec™ can remotely connect to the Excel 15B over TCP/IP or PPPoE and communicate with the other devices using Excel 15B as the network interface.

Installing LonSpec™

Prerequisites

Before beginning the installation procedure on a new machine, ensure that the following are taken care off:

- One of the operating systems listed in the [“Software Requirements” on page 59](#) is loaded on the system.
 - Screen resolution is set to 1024 X 768 minimum.
 - Small fonts are selected.
- Please note that the following installation procedure is given for LonSpec™ ver. 05.01.00.



CAUTION

It is prudent and recommended that you copy the existing project databases into another directory before manipulating any file. To do this, locate your project databases and use Windows Copy-Paste feature to copy the databases and paste them in another location. If upgrading from a previous version of LonSpec™, then perform steps 1.a and 1.b mentioned in the following procedure before loading the operating system onto the same pc.

NOTE: Ensure that the logged on user has administrative privileges on the local machine (it is not necessary to be a network administrator if LAN is available).

Procedure

1. Before installing LonSpec™, do the following:
 - a. Backup all project databases and then delete them from the existing LonSpec™ tree (in the Project Directory pane). To backup the projects, follow this quick procedure:
 - (1) Use **Project>Backup** or click the *Project Backup* icon on the LonSpec™ toolbar or press Ctrl+B on the keyboard.
 - (2) On the **Backup Project** window, enter the name for the project that is being backed up. If you are taking a backup on the hard drive, then give the project file a temporary file name.

NOTE: **For more information on backing up projects, refer to “Backing up a Project” on page 28 or you can also refer to LonSpec™ Online Help - Projects - Backup a Project.**

- b. Uninstall the older version of LonSpec™ on the **Add/Remove Programs** window. To do this, follow this quick procedure:
 - (1) Click **Start** (located on the bottom left corner of the Windows® taskbar),
 - (2) Point to **Settings**
 - (3) Click **Control Panel**
 - (4) Double-click the **Add/Remove Programs** icon. (Do not delete the directory where LonSpec™ was originally installed.)
 - (5) Select the LonSpec™ program and click **Remove**. The older version is uninstalled.
- c. Turn off or reset any virus checking software on the pc. Also, close all Windows® programs that are currently running on the pc.

2. Insert the LonSpec™ CD into the CD-ROM drive. Setup will launch automatically. If it fails to automatically launch, then do the following:
 - a. Click **Start** (located on the bottom left corner of the Windows® taskbar) and then **Run** to view the **Run** dialog.
 - b. Type "d:\setup", where d: represents your CD-ROM drive (the exact letter used to represent the CD-ROM drive can be different on different systems.)
 - c. Click **OK**. **Setup** begins by first displaying a message that it is preparing an installation wizard, followed by a **Welcome** screen, and then a reminder that you need to close all Windows® programs running on the pc including any anti-virus software.
3. Select the location for installing LonSpec™.
4. Click **Next>** to begin the installation. **Setup** installs LonSpec™ at the preferred location and adds the LonSpec™ icon to your Windows® Desktop.

NOTE: It is suggested that you restart the pc once LonSpec™ is installed for completing the installation.

5. Then, launch LonSpec™. For more information, refer to ["Starting LonSpec™" on page 6](#).
6. Restore the project database(s) that you took a backup off (before installing LonSpec™). To restore the projects, follow this quick procedure:

- a. **If you have to restore an individual project:** Click **Project>Restore** or click the *Restore Project* icon or press **Shift+Ctrl+B**.
If you have to restore multiple projects: Click **Project>Batch Restore**.
- b. On the **Restore Project** window, locate the directory where you placed the project files, select the projects and click **Open**.

NOTE: For more information on restoring projects, refer to ["Restoring Projects" on page 28](#). You can also refer to LonSpec™ Online Help - Projects - **Restore a Project and Batch Restore**.

7. After the project(s) are restored, view the **Restore Log** file. LonSpec™ may recommend certain changes or errors that occurred during LonSpec™ installation. Carefully read all the details in the log file and make the recommended corrections.
8. If the projects are restored successfully, then open the project with LonSpec™. If not, uninstall and re-install LonSpec™.

CONNECTING LONSPEC™ TO THE NETWORK

You need to connect to the network to get LonSpec™ online. You can commission the controllers, discover controllers on the network, map them with the existing data in LonSpec™ database, read the logs, and monitor the controllers when LonSpec™ is online. You can use one of the following as a network interface:

- SLTA
- PCMCIA
- PCLTA
- Modem
- RapidLink
- Excel 15B

NOTE: For you to establish a connection, you need to have an open project and network.

This section provides information about the following topics:

- Setting the Communication Interface
- Connecting Using SLTA
- Connecting Using PCMCIA
- Connecting Using PCLTA
- Connecting Using Modem
- Connecting Using RapidLink
- Connecting Using Excel 15B

Setting the Communication Interface

Procedure

1. Click **Network>Connect** or click the *Connect Network* icon on the LonSpec™ toolbar to view the **Communication Settings** window. The following are the three connection types supported by LonSpec™:
 - Direct
 - Modem
 - Wan

Fig. 29. Communication Settings Window

2. If it is a direct connection, then select **Direct** as the communication type and choose the port network interface details. The network interfaces can be SLTA, PCMCIA, PCLTA, Excel 15B or RapidLink.
3. If it is a remote connection, then select **Modem** as the **Connection Type** and connect to a site that has SLTA or RapidLink.
4. If you want a remote connection and the network interface as Excel 15B, then select **Wan** as the **Connection Type**. Enter your user ID and password, and click **OK**. The connection is established.



CAUTION

Only one LonSpec™ can be connected to Excel 15B at any given point of time. Excel 15B maintains a timeout of 30 minutes and closes the connection if there are no tasks performed from LonSpec™. If there is a network connection failure or an abnormal termination on the LonSpec™ side when the connection is on, then you have to wait for the timeout of 30 minutes to expire on Excel 15B's side for you to connect LonSpec™ to Excel 15B again.

Similarly, when connected through a modem, SLTA or RapidLink will disconnect if there is no activity on the line for the configured hang up timer. For more information on changing the hang up timer, refer to "Configuring SLTA" on page 40 and "Configuring RapidLink" on page 40.

NOTE: For more details on selecting the communication settings and to know the field definitions, refer to the following topics in LonSpec™ Online Help:

- Selecting the Communication Settings.
- Connecting to SLTA.
- Connecting to PCMCIA.
- Connecting the PCLTA.

Connecting PC to LonWorks® Network

You can connect the pc to the LonWorks® network using different network interfaces. The network interface that you use depends on whether it is a direct connection or a remote connection.

If it is a direct connection, use one of the following to connect the pc to the network:

- SLTA
- RapidLink
- PCLTA
- PCMCIA

If it is a remote connection, use one of the following to connect the pc to the network:

- Modem
- Excel 15B

NOTE: For more information on the procedure adopted for choosing a network interface, refer to [“Setting the Communication Interface” on page 61](#).

Direct Connect Using SLTA

To connect using a SLTA, choose SLTA as the interface type when configuring LonSpec™ communication settings.

Prerequisites

The pc must be within 49 ft. (15m) of the controller. At greater distances (maximum 3281 ft. [1000m]), add a line driver.

Procedure

1. Use a 9-pin to 9-pin cable to connect the RS-232 Interface on the pc to the SLTA device.

NOTE: SLTA part number depends on the channel type for the connection. Channel type depends on the transceiver type in the controllers. Excel 10 VAV II controllers use a Transformer Coupled Transceiver (TPT). All other Excel 10s use the Free Topology Transceiver (FTT). If connecting to a TPT channel, use SLTA part number - Q7752A1003. If connecting to FTT, use SLTA part number Q7752A2001. The part number for the SLTA FTT PCMCIA card is Q7752B2009.

2. Use Cable 205979 to connect the SLTA device to the LonWorks® bus connection (on the Excel 10 controller) or to a network hub.

NOTE: For SLTA Installation and Specification details, refer to 74-2954 and 95-7511 documents.

Direct Connect Using PCMCIA

To connect using a PCMCIA, choose PCMCIA as the interface type when configuring LonSpec™ communication settings.

Procedure

1. Install the PCLTA card in the pc.
2. Run the **Echelon® Setup for Drivers** that is provided along with the PCLTA card.
3. On the Windows® taskbar, click **Start>Settings>Control Panel**. If the PCLTA card is installed properly, then the LonSpec™ *Plug and Play* icon is displayed in the **Control Panel** window.
4. Click the *Plug and Play* icon to know the Lon device name that is used and also to verify if the card is functioning properly.
5. Select *System* icon in the **Control Panel** window. The **System Properties** window is displayed.
6. Among the tabs displayed, select the **Device settings** tab.
7. Under the item **LonWorks® interface**, check for the entry - PCLTA Lonworks® network Interface. If the card is not installed properly, a red cross is displayed for this entry. Consult Echelon® PCLTA manual and re-install the PCLTA card, if required.
8. Once card is installed properly, you can view the Lon device names that are displayed in the LonSpec™ **Communication Settings** window, like the 'PCCLON1' and 'PCCLON2'.

Direct Connect Using PCLTA

To connect using a PCLTA, choose PCLTA as the interface type when configuring LonSpec™ communication settings.

1. Install the PCC -10 card in the PCMCIA card that is available on the pc.
2. Run the **Echelon® Setup for Drivers** provided with the card.
3. On the Windows® taskbar, click **Start>Settings>Control Panel**. If the PCLTA card is installed properly, then the LonSpec™ *Plug and Play* icon is displayed in the **Control Panel** window.
4. Click the *Plug and Play* icon to know the Lon device name that is used and also to verify if the card is functioning properly.
5. Select *System* icon in the **Control Panel** window. The **System Properties** window is displayed.
6. Among the tabs displayed, select the **Device settings** tab.
7. Under the item **LonWorks® interface**, check for the entry - PCC - 10 Lonworks® Network Interface. If the card is not installed properly, a red cross is displayed for this entry. Consult Echelon® PCLTA manual and re-install the PCLTA card, if required.
8. Consult Echelon® PCC -10 manual and re-install the PCC - 10 card, if required.
9. Once card is installed properly, you can view the Lon device names that are displayed in the LonSpec™ **Communication Settings** window, like the 'PCCLON1' and 'PCCLON2'.

Direct Connect Using RapidLink

To connect using a RapidLink, choose RapidLink as the interface type when configuring LonSpec™ communication settings.

Prerequisites

The pc must be within 49 ft. (15m) of the controller. At greater distances (maximum 3281 ft. [1000m]), add a line driver.

Procedure

1. Use a 9-pin to 9-pin cable to connect the RS-232 Interface on the pc to RapidLink.
2. Use Cable 205979 to connect the RapidLink device to the LonWorks® bus connection (on the Excel 10 controller) or to a network hub.

NOTE: For RapidLink Installation and Specification details, refer to 74-3981 and 95-7700 documents.

Remote Connect Using Modem

To connect using a Modem, choose Modem as the interface type when configuring LonSpec™ communication settings. Also, you need to select the COM port to which the modem is connected.

Remote Connect Using Excel 15B

The Excel 15B is a network interface that connects the pc to a Lonworks® network over TCP/IP. To connect using a Excel 15B, choose Excel 15B as the interface type when configuring LonSpec™ communication settings and give the IP address, User ID, and password.

NOTE: For more information, refer to [“Setting the Communication Interface” on page 61](#).

LONSPEC™ ONLINE FUNCTIONS

After configuring a controller, you need to connect online to perform specific tasks like assigning Neuron® ID, commissioning a controller, creating and monitoring network point groups, setting system time, resetting counters, runtimes, and reading logs. This section provides a brief overview on all the tasks that can be performed when LonSpec™ is online.

NOTE: The following topics list the standard procedures for selecting controller menu options when LonSpec™ is online. In addition, you can also right-click a controller in the workspace to view all the online menu options.

Assigning a Neuron® ID

Each LonWorks® controller node has a unique 48 bit identifier called the Neuron® ID. It is the physical ID that is imprinted on the every controller hardware and is used to address the controller node on LonWorks® network.

You can assign the Neuron® ID to the controller either by manually entering the number or by pressing the controller's service pin.

Procedure

1. Click **Controller>Assign Neuron ID** to view the **Controller AssignID** window. The details of all the controllers available on the network are displayed.

Fig. 30. Controller AssignID Window

Device Name	Device Status	Neuron ID	Controller Type
XL15A_1	Not Commissioned	000330392601	XL15A Building Manager
BOARD4_XL15C_2	Not Commissioned	000378859901	XL15C Plant Controller
BOARD1_VAV II_2	Not Commissioned	000868361600	XL10 VAV II
XL15C	Not Commissioned	000353367201	XL15C Plant Controller
BOARD5Q7300_2003_8	Not Commissioned	000509874700	Q7300
BOARD2Q7300_2003_1	Not Commissioned	000861932300	Q7300
BOARD4Q7300_2029_2	Not Commissioned	00c012501300	Q7300
BOARD2_VAV_1	Not Commissioned	000868362100	XL10 VAV II
Q7300_1	Not Commissioned	000861917900	Q7300
BOARD4_RIO_2	Not Commissioned	000689213100	XL10 RIO
BOARD2_RIO_1	Not Commissioned	00a239072700	XL10 RIO
BOARD4_XL15C_1	Not Commissioned	000364908801	XL15C Plant Controller
BOARD1Q7300_2003_1	Not Commissioned	000861934900	Q7300
BOARD5_Q7300_1	Not Commissioned	000438555500	Q7300
BOARD4Q7300_2029_1	Not Commissioned	00c012503300	Q7300
BOARD2_CVAHU_B1	Not Commissioned	000849024400	XL10 CVAHU
BOARD1_RIO_1	Not Commissioned	00a201067800	XL10 RIO

Obtain ID

☒ Manually Enter ID

☐ Use Service Pin

Time Left

New ID

00-03-30-39-26-01

Assign ID

Close

Help

2. Select a controller to view its existing Neuron® ID in the **New ID** box.
3. The **Obtain ID** section displays the 'Manually Enter ID' and 'Use Service Pin' options.
 - a. If you want to assign the Neuron® ID manually, then select **Manually Enter ID**. Modify the Neuron® ID in the **New ID** box and click **Assign ID**.
 - b. If you want to assign the Neuron® ID using the service pin, then select **Use Service Pin** and click **Assign ID** to activate the service pin in the controller hardware. A progress bar is displayed. You have to press the service pin within two minutes of the progress bar displayed.
4. Click **Close** when finished assigning the Neuron® ID.

NOTE: For more information on assigning a Neuron® ID for a controller, refer to LonSpec™ Online Help - Controller Functions - On-Line Functions - Assign Neuron® ID.

Commissioning a Controller

Commissioning is the process of downloading the configuration information from the LonSpec™ database to the controller.

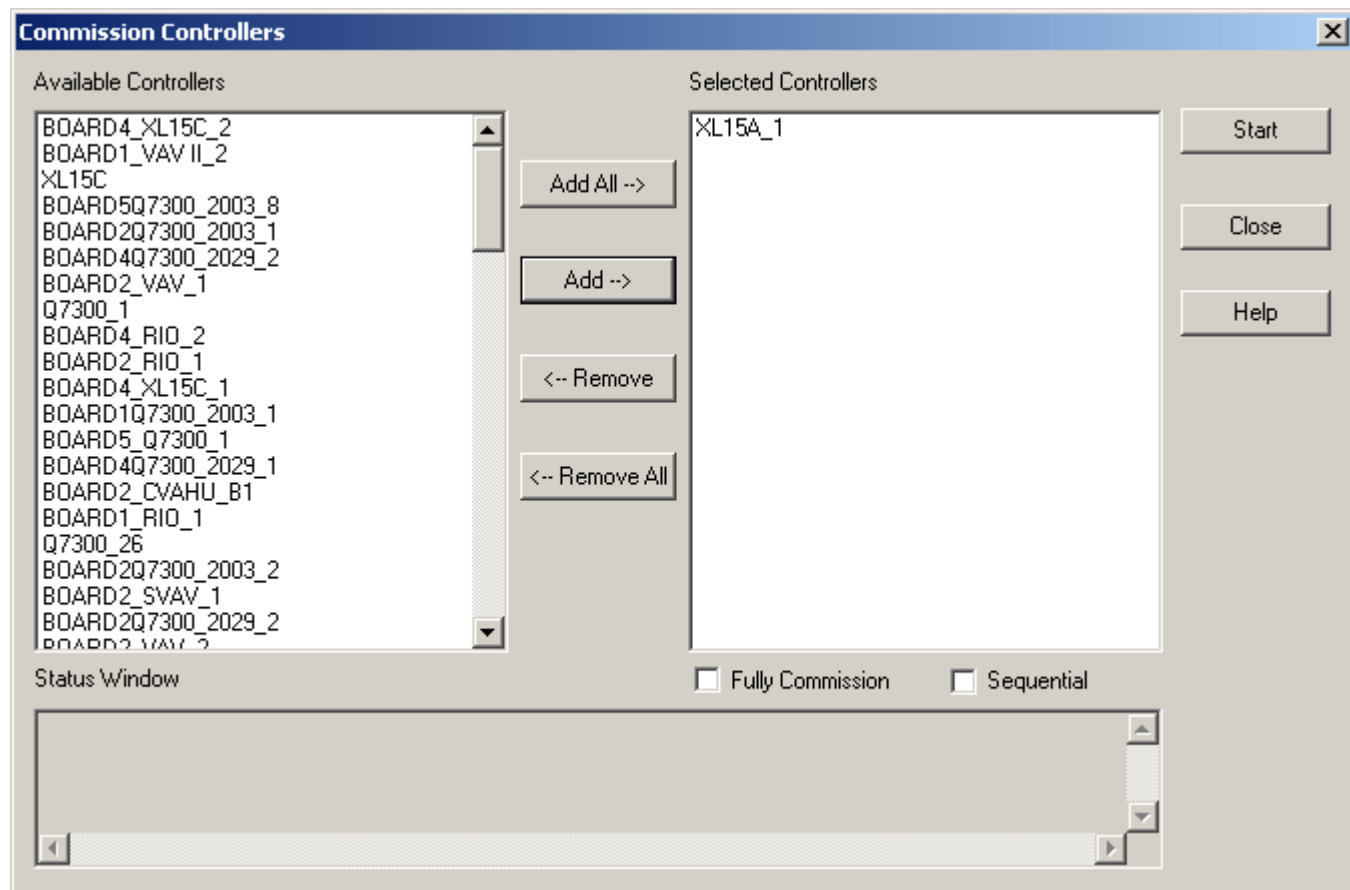
NOTE: You can select **Quick Download** to download updated controller configuration like the modified network and file variables, and binding information. If

you select the **Fully Commissioned** option, then the complete network and file variables, and binding information are downloaded.

Procedure

1. Click **Controller>Commission** to view the **Commission Controllers** window. All the controllers that are available on the open network are displayed in the **Available Controllers** column.

Fig. 31. Commission Controllers Window



2. Select the controller that you want to commission. Use the Shift key to select multiple controllers.
3. Click **Add** to transfer the selected controller to the **Selected Controllers** list. (Use **Add All-->** to add all the controllers.)
4. Click **Remove** to delete the controller from the **Selected Controllers** list and bring it back to the **Available Controllers** list. (Use **Remove All<--** to remove all the controllers from the **Selected Controllers** list.)
5. Select **Fully Commissioned** checkbox to download all the configuration to the selected controller. You can view the **Status** window to know the progress of the commissioning process. Upon successful commission, you can see a green dot beside the controller icon.

NOTE: In case of Excel 15A and Excel 15C controllers, the **Select an Option for Commissioning** window is displayed, where you can select the **Quick Commission** option or the **Fully Commissioned** option. This window is displayed only if you do not select the **Fully Commissioned** checkbox. You can also select the **Sequential Commission** option for these two controllers.

For more information on commissioning a con-

troller, refer to LonSpec™ Online Help - Controller Functions - On-Line Functions - Commissioning a Controller.

Re-Commissioning a Controller

Re-commissioning updates the controller with the configuration in the LonSpec™ database. This option is available only for commissioned controllers.

Procedure

1. Click **Controller>Re-commission** to view the **Re-commission Controllers** window. The already commissioned controllers that are available on the open network are displayed in the **Available Controllers** column.
2. Follow the steps 2-5 mentioned for "[Commissioning a Controller](#)" on page 64, to re-commission the selected controller.

NOTE: **For more information on re-commissioning a controller, refer to LonSpec™ Online Help - Controller Functions - On-Line Functions - Re-commission a Controller.**

Uploading a Controller Configuration to LonSpec™ Database

A controller's configuration can be saved or uploaded from the controller to the LonSpec™ database.

Procedure

1. Click **Controller>Upload** to view the **Upload Controllers** window. All the controllers that are available on the current network are displayed.
2. Select a controller and click **Add**. The selected controller is displayed in the **Selected Controllers** list.
3. Click **Remove** if you do not want the selected controller's configuration to be updated.
4. Click **Start** to initiate the upload process. You can view the **Status** window to know the progress of the upload process.



CAUTION

The following details are not uploaded:

- Network bindings.
- User assigned point names stored locally in the LonSpec™ database.
- Configuration details for alarm, runtime, trends, remote output point assignments.
- Name of the exceptions, runtime, trends, alarms.
- Display Engineering Units.
- Controllers Subnet node IDs.

NOTE: For more information on uploading a controller configuration, refer to LonSpec™ Online Help - Controller Functions - On-Line Functions - Upload a Controller.

Uploading Excel 15B

You can connect LonSpec™ to Excel 15B and upload all the configurations present in Excel 15B to LonSpec™ local database.

Procedure

1. Add an Excel15B to the open network.

NOTE: Ensure that the Excel 15B's IP address or the host name details are updated in the Edit Network window. For more information, refer to ["Modifying a Network" on page 20](#).

2. Connect to the network by giving the User ID, Password and Proxy Server IP Address. LonSpec™ establishes the connection with Excel15B.

NOTE: For more information on selecting the communication network interface, refer to ["Setting the Communication Interface" on page 61](#).

3. Right-click on the Excel15B in the workspace or in the Project Directory pane and select the **Upload Excel15B** option. LonSpec™ uploads the entire alarms, trends, schedules and DLC information from Excel 15B.

NOTE:

1. If the devices present in the Excel15B configuration are not available in the LonSpec™ network, then an error message is displayed that the upload function failed and that the latest controller information has to be fetched using the **Create Network** option. Then, you can try uploading Excel 15B configuration again.
2. Also, LonSpec™ will not upload any configuration done on non-supported controllers. If there are any unsupported controllers used in the configuration, LonSpec™ will ignore that and proceed to upload the next configuration.

Commissioning SLTA

You can commission SLTA with the latest configuration data present in the LonSpec™ project database.

Procedure

1. Click **Controller>Commission SLTA** to view the **Commission SLTAs** window.
2. Select the SLTA that you want to commission, from the **Available SLTA** list. The **Available SLTA** list displays the list of only those SLTAs that are available in the current network. (To select multiple SLTAs, hold down the **Shift** key and select each SLTA.)
3. Click **Add-->** to move the selected SLTA to the **Selected Controllers** list. (Click **Add All-->** to move all the SLTAs to the **Selected Controllers** list.)
4. To remove a SLTA from the **Selected Controllers** list, select it and click **--Remove**. (Click **--Remove All** to move all the SLTAs from the **Selected Controllers** list back to the **Available SLTA** list.)
5. Click **Start** to begin the commissioning process. A message is displayed prompting you to confirm if the selected SLTA is in a local network. Click **Yes** to confirm the same.
6. Click **No** if the selected SLTA is available on the Lon network like any other controller.

NOTE: You are not prompted with the preceding message if SLTA is being commissioned through a RapidLink or an Excel15B. In such scenarios, the SLTA is considered to be remote.

7. Observe the progress of the commission process in the **Status** window. If the commission process fails, then the reason for the failure is displayed in the **Status** window and LonSpec™ proceeds with the commissioning of the next selected SLTA. Other error messages that are displayed include communication failures and commissioning not supported by the current device state.
8. Upon a successful commission, LonSpec™ assigns a green, or Commissioned status to the SLTA.

NOTE: For more information on commissioning SLTA, refer to LonSpec™ Online Help - Commissioning SLTA.

Commissioning RapidLink

You can commission RapidLink with the latest configuration data present in the LonSpec™ project database.

Procedure

1. Click **Controller>Commission RapidLink** to view the **Commission RapidLinks** window.
2. Select the RapidLink that you want to commission, from the **Available RapidLink** list. The **Available RapidLink** list displays the list of only those RapidLinks that are available in the current network. (To select multiple RapidLinks, hold down the **Shift** key and select each RapidLink.)
3. Click **Add-->** to move the selected RapidLink to the **Selected Controllers** list. (Click **Add All-->** to move all the RapidLinks to the **Selected Controllers** list.)
4. To remove a RapidLink from the **Selected Controllers** list, select it and click **<--Remove**. (Click **<--Remove All** to move all the RapidLinks from the **Selected Controllers** list back to the **Available SLTA** list.)
5. Click **Start** to begin the commissioning process. A message is displayed prompting you to confirm if the selected RapidLink is in a local network. Click **Yes** to confirm the same.
6. Click **No** if the selected RapidLink is available on the Lon network like any other controller.

NOTE: You are not prompted with the preceding message if RapidLink is being commissioned through a SLTA or an Excel15B. In such scenarios, the RapidLink is considered to be remote.

7. Observe the progress of the commission process in the **Status** window. If the commission process fails, then the reason for the failure is displayed in the **Status** window and LonSpec™ proceeds with the commissioning of the next selected RapidLink. Other error messages that are displayed include communication failures and commissioning not supported by the current device state.
8. Upon a successful commission, LonSpec™ assigns a green, or Commissioned status to the RapidLink.

NOTE: For more information on commissioning RapidLink, refer to LonSpec™ Online Help - Commissioning RapidLink.

Commissioning Excel 15B

You can configure Excel 15B in LonSpec™ and then download its configuration from the LonSpec™ database.



CAUTION

You can commission Excel 15B only when LonSpec™ is online and if the network interface is Excel 15B. It is not possible to commission an Excel 15B through SLTA or RapidLink. If there is any unassigned device present in the Excel 15B configuration, You are displayed an error message from LonSpec™ and the commissioning process is aborted.

Procedure

1. Configure all the Excel 15B schedules, alarms, and trends.

2. Select **Network>Connect**. On the **Communication Settings** window, choose the **Connection Type** as 'WAN' and **Network Interface** as 'XL15B'.
3. Enter the **Proxy IP** address and **User Details** (user ID and password) to log on to Excel 15B. You can ignore the **Proxy IP** option if no proxy server is used.
4. Click **OK** to connect LonSpec™ to the network.
5. After connecting online, right-click *Excel 15B* icon in the workspace and select **Commission Excel 15B** from the shortcut menu displayed to download the configurations. You can view the **Status** window to know the progress of the commissioning process.

NOTE: For more information on commissioning Excel 15B, refer to LonSpec™ Online Help - Controller Functions - On-Line Functions - Commission Excel15B.

Storing LonSpec™ Database in Excel 15B

Excel 15B is capable of maintaining the latest LonSpec™ database file containing all the network configurations. This enables you to retrieve the latest configuration database to LonSpec™ from Excel 15B at any point in time.

Procedure

1. Click **Network>Connect** to connect to the network using Excel 15B as the communication interface.

NOTE: For more information, refer to [“Setting the Communication Interface” on page 61](#).

2. When connected, right-click *Excel 15B* icon and select the **Store LonSpec Database in Excel 15B** option from the shortcut menu displayed. This updates a copy of the local LonSpec™ database into Excel 15B.

NOTE:

1. For more information on storing LonSpec™ database in Excel 15B, refer to LonSpec™ Online Help - Controller Functions - On-Line Functions - Store LonSpec Database™ in Excel15B.
2. Excel 15B does not verify if the database being stored is the latest version. You must ensure that the database stored is the latest configuration.

Retrieving LonSpec™ Database from Excel 15B

You can retrieve LonSpec™ database from Excel 15B and also restore it in to LonSpec™ as a project. An error message is displayed if there is no LonSpec™ database stored in Excel 15B and the upload process is cancelled.

Procedure

1. Click **Network>Connect** to connect to the network using Excel 15B as the communication interface.

NOTE: For more information, refer to [“Setting the Communication Interface” on page 61](#).

- When connected, right-click *Excel 15B* icon and select the **Retrieve LonSpec Database from Excel 15B** option. You need to select the destination folder where you want the database to be copied. You can also use the restored database as a LonSpec™ project.

NOTE: For more information on retrieving database from Excel 15B, refer to **LonSpec™ Online Help - Controller Functions - On-Line Functions - Retrieve LonSpec™ Database from Excel15B**.

Unassigning a Controller

You can replace a controller on the network by unassigning its Neuron® ID. Unassigning is a process where the controller's Neuron® ID is inactivated and the controller is replaced by a new controller. You need to specify a new Neuron® ID and commission the new controller. This will download the exact configuration to the new controller from LonSpec™ database.

Unassigning puts the controller in an unassigned state in the LonSpec™ database but the unassigned controller's configuration remains intact.

Procedure

- Click **Controller>UnAssign** to view the **UnAssign Controllers** window. All the controllers that are available on the current network are displayed in the **Commissioned Controllers** list.
- Select the controller that you want to unassign and click **Add-->** to add the controller to the **Selected Controllers** list. (Click **Add All-->** to add all the controllers to the **Selected Controllers** list.). If you want to remove a controller from the **Selected Controllers** list, select **Remove<--**. The controller is removed and displayed in the **Commissioned Controllers** list. (Click **Remove All<--** to add all the controllers from the **Selected Controllers** list.)
- Click **Start**. You can view the **Status** window to know the progress of the unassign process.

NOTE: For more information on unassigning controllers, refer to **LonSpec™ Online Help - Controller Functions - On-Line Functions - Unassigning Controller**.

Reading Alarms and Logs

Excel 15A Building Manager supports alarms notifications and log maintenance. It logs alarm notifications from the remote nodes. These alarms can be read by LonSpec™ and displayed in a tabular or graphical form. Each Excel 15A supports TOD bypass logs and runtime logs.

Procedure

- Configure the Runtime logs. For more information, refer to [“Configuring Excel 15A Run Times” on page 32](#).
- Configure TOD Bypass. For more information, refer to [“Configuring Excel 15A Bypass Logs” on page 33](#).
- Configure the Alarms. For more information, refer to [“Configuring Excel 15A Alarms” on page 33](#).
- Configure the Trends. For more information, refer to [“Configuring Excel 15A Trends” on page 33](#).

- Select the commissioned controller and then select **Controller>Read Alarms and Logs**.
- On the **Read Alarms & Logs** window, select the log that is supported by the controller.
- If it is the **Alarm Log**, then press **Display Alarms**. The log screen appears displaying the alarms details. Press **All Alarms** to see all the alarms.
- If it is other than the **Alarm log**, click **Display Points**. The configuration points for the selected log will be displayed.
- Select the points for which the log is needed.
- Press **Show Log** to see the logs. You can see the Energy and Trend log types.

NOTE: For more information on reading alarms and logs, refer to the following topics in **LonSpec™ Online Help**:

- Read Alarms and Logs.**
- Alarms Descriptions.**

Resetting Counters and Runtime Logs

You can reset the counters and runtime logs that are available on Excel 15A Building Manager or Excel 15C Plant Manager.

Procedure

- Click **Controller>Reset Counters and Runtime** to view the **Select a Controller** window.
- Select either 'Excel 15A Building Manager' or 'XL 15C Plant Controller'.
- Click **OK** to view the appropriate **Reset Counters and Runtimes** window.
- In case of Excel 15A Building Manager, to preset a counter, enter a number in the **Counts** box and click **Preset**. To preset a runtime, enter a number in the **Runtime** box and click **Preset**. In case of Excel 15C plant controller, to set a counter, enter a number in the **Counts** box and click **Set**. To set a runtime for a selected control loop, enter the value in the **Runtime** box and click **Set**.
- Click **Close** to close the window.

NOTE: For more details on resetting counters and runtime logs, refer to **LonSpec™ Online Help - Controller Functions - On-Line Functions - Reset Counters and Runtime**.

Viewing Flow Linearization Values

You can view the following for a VAV II controller:

- Default factory calibration values
- Configured flow pickup table
- Calculated flow linearization values downloaded during commissioning
- Last set of values that are actually read from the device. These values displayed in turn ensure that the calibration values entered by you are correct.

Procedure

- Click **Controller>View Flow Linearization Values** to see the **View Flow Linearization Values** window.

NOTE: For more details on viewing the flow linearization values, refer to LonSpec™ Online Help - Configuring Controllers - Configure VAV II - View VAV II Flow Linearization Values.

Setting Network Time on Controllers

You can get and set the time in the network time master as well as on other controllers.

Procedure

1. Click **Network>Connect** to connect LonSpec™ to the network.

NOTE: For more information, refer to “Setting the Communication Interface” on page 61.

2. Then, select **Network>Network Time** to view the **Network Time Settings** window.
3. Select the controller from the **Controller** list.
4. To select the date and time, double-click in the **Date** and **Time** boxes and select the date and time by using the up and down arrows.

NOTE: If you click **Use PC Time**, then the current pc date and time are displayed in the **Date** and **Time** boxes.

5. Select **Set Time** or **Get Time** to set the time or get the time from the controller.
6. Select **Use PC Time** and then **Set Time** to set the System time on the controller. The controller that you selected is displayed as a disabled text in the **Time Master** box.

NOTE: For more details on resetting counters and runtime logs, refer to LonSpec™ Online Help - Controller Functions - Advanced On-Line Functions - Network Time Settings.

Creating Network

You can create a network of devices when LonSpec™ is online. LonSpec™ addresses the following scenarios while creating network from the online devices.

When the network is empty

In case of an empty network (with no devices), LonSpec™ discovers all the devices and displays them in the **Create Network** list box. You can then select all the devices or select only those devices that are required and clear all the other selections, and then press **Update Network** to add the selected devices to the LonSpec™ network. If a subnet has not been created, LonSpec™ also creates a subnet. You can add the device type and assign Neuron® ID from the LonSpec™ screen.



CAUTION

Once the device is added to the network, LonSpec™ will not allow clearing the selection on the LonSpec™ screen.

When the network is not empty

In the case of a non-empty network, LonSpec™ discovers the devices from the Lon network and match the Neuron® ID of the Lon network devices with the Neuron® ID of the devices present in the project database. If there are devices whose Neuron® IDs are matching, then LonSpec™ displays those devices at the top of the list as bold text. Other devices (from the LonSpec™ project database and the Lon network) whose Neuron® IDs do not match are also displayed as normal text. You can select those devices that are not part of the project database and create the network or you can also unassign the Neuron® ID of one of the Lon network device and assign that ID to one of the devices in the LonSpec™ project database.

NOTE:

- LonSpec™ assigns the subnet Node ID automatically.
- It does not upload the configuration information from Lon network; instead fills the configuration information with default settings.
- It uploads Model Type from Lon network while adding the controller.

Procedure

1. Click **Network>Create Network** to create a network of devices when LonSpec™ is online. The **Create Network** window is displayed. The relevant details like the

device name, device type, and Neuron® ID are displayed for all the controllers that are currently available on the Lon® network.

Fig. 32. Create Network Window

SL No	Add	Device	Type	Neuron ID
1	<input checked="" type="checkbox"/>	XL15A_1	XL15A Building Manager	000000000000
2	<input checked="" type="checkbox"/>	Q7300_1	Q7300	000378431200
3	<input checked="" type="checkbox"/>	HYD_1	XL10 HYD	000932338900
4	<input checked="" type="checkbox"/>	VAV3	XL10 VAV II	000429303200
5	<input checked="" type="checkbox"/>	T7350_1	T7350 thermostat	0414b8d10000
6	<input checked="" type="checkbox"/>	CVAHU_1	XL10 CVAHU	01001f2c0f00
7	<input checked="" type="checkbox"/>	XL15A_2	XL15A Building Manager	01007f519e00
8	<input checked="" type="checkbox"/>	UNKNOWN_1	MIP_LPC	001026846000
9	<input checked="" type="checkbox"/>	XL15A_3	XL15A Building Manager	010053b60600
10	<input checked="" type="checkbox"/>	XL15C_1	XL15C Plant Controller	01008ffa800

Legend

1. UNKNOWN - Nodes not configured through current Project
2. Nodes marked in red has subnet/Node ID clash with another node(s) on the network

(De)Select All New devices to Network

Update Network Print Help Close

NOTE: You can also right-click a network and select the **Create Network** option from the popup menu displayed.

2. Select or clear the checkbox adjacent to any controller in the **Add** column.
 - By selecting the checkbox for a controller, you are adding that controller to the network that is connected to LonSpec™.
 - By clearing the checkbox for a controller, you are removing it from the network connected to LonSpec™.
3. If required, modify the device name displayed in the **Device** column.
4. Click **Update Network** to add all the selected controllers to the network that is connected to LonSpec™.
5. In case of creating a network in a non-empty network, after discovering the Lon devices, you can unassign the Neuron® IDs of controllers that are not part of LonSpec™ project database and assign it other controllers that are part of the LonSpec™ project database. The unassigned Neuron® IDs are available in the **Neuron ID** drop-down list.

NOTE: For more details on creating a network from online controllers, refer to LonSpec™ Online Help - Controller Functions - Advanced On-line Functions - Create Network from Online Devices.

Monitoring Controller Activities

You must commission a controller before you can monitor its data points. Related data points are grouped under tabs. The screen is continuously refreshed to display the latest values.

Procedure

1. Click **Controller>Monitor** to view the **Monitoring** window. The list of controllers that are available on the current network are displayed.
2. Select the controller that you want to monitor and click **OK**. The **Monitoring** window for the selected controller appears displaying the controller points under individual tabs.
3. If you want to modify the values, navigate to the particular field under the individual tab, make changes, and click **Update**.

NOTE: For more details on monitoring each controller points, refer to LonSpec™ Online Help - Configuring Controllers (select the appropriate controller information).

Monitoring a Point Group

You can monitor a point group when LonSpec™ is online.

Procedure

1. Click **Network>Point Groups** to view the **Network Group** window.
2. Click **Select** to open the group that you want to monitor.
3. Click **Monitor**. The selected point group details are displayed on the **Monitor Network Group** window.
4. Click **Refresh** to update the screen. You can also select **Refresh Automatically** to refresh the points every 10 seconds if you are using a local connection and every 30 seconds if you are using a remote connection.

NOTE: For more information on monitoring point groups, refer to LonSpec™ Online Help - Point Group - Monitor Point Group.

Controller Diagnostics

After configuring and commissioning a controller, you can put the controller in a test mode or a manual mode and verify the controller's performance.

NOTE: You cannot test Q7300 and Excel 15 CD2 controllers.



CAUTION

Equipment Damage is Possible. It may cause short-cycling of compressors, or may cause damage to other heating or cooling equipment. Take appropriate and recommended precautions when initiating the Test Mode as it directly drives controller outputs to the manually-entered states.

Procedure

1. Click **Controller>Controller Diagnostics** to view the **Controller Diagnostics** window. All the controllers that are available on the current network are displayed.
2. Select a controller from the list and click **OK**. The **Test** screen for the selected controller appears displaying its settings that must be configured for you to test the controller.

NOTE: For more details on individual controller diagnostics, refer to LonSpec™ Online Help - Configuring Controllers (select the appropriate controller information).

Calibrating a Controller

You must commission the controller before calibrating its input sensors. The input value of a particular sensor is read and appropriate correction is applied.

Procedure

1. Click **Controller>Calibrate** to view the **Calibrate Controller** window. The list of commissioned controllers is displayed.
2. Select a controller from the list and click **OK**. The **Sensor Calibration** screen for the selected controller appears displaying the controller details.

NOTE: For more details on calibrating the input values for each controller, refer to LonSpec™ Online Help - Configuring Controllers (select the appropriate controller information).

Disconnecting from the Network

You will not be able to perform any of the online functions like commissioning controllers and assigning Neuron® IDs when you disconnect from the network.

Procedure

Click **Network>Disconnect** or click the *Disconnect Network Connection* icon on the LonSpec™ toolbar.

NOTE: For more details on disconnecting from the network, refer to the LonSpec™ Online Help - Disconnect from Echelon Network.

QUICK TIPS TO ACCESS DIFFERENT LONSpec™ FEATURES

The following table lists all the features of LonSpec™ and the key combinations that you can use to quickly access the project screens. Quick Tips.

Table 7. Quick Access Keys.

Task	Quick Tips
To Create a Project	Ctrl+N
To Open a Project	Ctrl+O
To Edit a Project	Ctrl+E
To Close a Project	Shift+Ctrl+O
To Delete a Project	Shift+Ctrl+N
To Back up a Project	Ctrl+B
To Restore a Project	Shift+Ctrl+B
To Replicate a Project	Shift+Ctrl+P
To Add Engineering Units	Ctrl+U
To Add a Controller	Ctrl+Alt+N
To Edit a Controller	Ctrl+Alt+E
To Delete a Controller	Ctrl+Alt+D
To Replicate a Controller	Ctrl+Alt+R
To Select an Application (Controller)	Ctrl+Alt+S
To Add a Network	Alt+W
To Open a Network	Alt+O
To Edit a Network	Alt+E
To Close a Network	Shift+Alt+O
To Delete a Network	Shift+Alt+W
To Add a Subnet	Alt+S
To Edit a Subnet	Alt+D
To Delete a Subnet	Shift+Alt+S
To Bind Controller Points (Refer Points)	Alt+f5
To Connect Online	F3
To Manage Point Groups	Shift+Alt+P
To Set Communication Settings	Ctrl+C
To Exit (from LonSpec™)	Alt+F4
To View Device Status Report	F5
To View Document Project Report	F6

Task	Quick Tips
When LonSpec™ is Online	
To Monitor a Controller	Ctrl+Alt+M
To Assign a Neuron ID	Ctrl+Alt+A
To Commission a Controller	Ctrl+Alt+C
To Re-commission a Controller	Ctrl+Alt+X
To Unassign a Neuron ID	Ctrl+Alt+O
To Upload a Controller Configuration	Ctrl+Alt+U
To Select an Application	Ctrl+Alt+S
To do Controller Diagnostics	Ctrl+Alt+T
To do Controller Calibration	Ctrl+Alt+B
To Commission SLTA	Ctrl+Alt+L
To Read Alarms and Logs	Ctrl+Alt+G
To Reset Counters and Runtimes	Ctrl+Alt+I
To Commission RapidLink	Ctrl+Alt+P
To View Flow Linearization Values	Ctrl+Alt+V
To Commission Excel 15B	Ctrl+Alt+X
To Disconnect	Shift+Alt+D
To Manage a Point Group	Shift+Alt+P
To Set the Network Time	Shift+Alt+T
To Create a Network	Shift+Alt+N
To View Alarms Report	F7

GLOSSARY

A

Adaptive Intelligent Recovery

A Honeywell-trademark control that gradually increases or decreases occupant space temperature setpoint before the occupied periods for maximum comfort and energy savings.

Analog

A continuous variable (e.g., a faucet controlling water from off to full flow).

Algorithm

A calculation method that produces a control output by operating on an error signal or a time series of error signals.

B

Backup

A duplicate copy of your project made either for archiving or safeguarding purposes, in case of loss of information.

Backup and restore

LonSpec™ backup and restore system maintains backup files and restores them when you need.

Bypass

Temporary override of scheduled unoccupancy state to occupied state. At the end of the bypass time, the control returns to the scheduled unoccupancy state.

C

Command Display Unit

It is an operator interface for the small building system of controllers. The S7760A Excel 15 Command Display (CD) is an Echelon® LonWorks® network display module. It is a LonMark® compliant device designed to read and write schedules, read and silence alarms, change configuration settings, and passwords. The CD also displays space temperature, setpoint, Occ/Unocc override, application mode (HVAC), and fan mode/speed selection over the LonWorks® network.

CVAHU Controller

Constant Volume Air Handling Unit Controller. The W7750A and B are the CVAHU Controllers in the Excel 10 family. It is a LonMark® compliant device designed to control single zone and heat pump air handlers.

Commission Status

Current status of the device.

- 'Not Assigned' means the Neuron® ID is not yet assigned.
- 'Not Commissioned' means the Neuron® ID has been assigned, but the controller is not yet commissioned.
- 'Commissioned' means the Neuron® ID has been assigned and the controller is commissioned.

Constant Air Volume (CAV) System

A central fan system where the airflow in the duct is maintained at a constant volume.

Control Band

Control Band is used for discharge temperature control of modulating outputs, including controlling economizer dampers, and heating and cooling valves using Cascade Control. 10 percent of this band is the size of the deadband around the setpoint where no actuator motion occurs. The smaller the Control Band, the more responsive the control output.

Control Loop

A typical control loop has the following components:

- **Controller:** A device that senses changes in the controlled variable and derives the proper correction output.
- **Corrective action:** Control action that results in a change of the manipulated variable. It is initiated when the controlled variable deviates from the actual setpoint.
- **Cycle:** It is a complete execution of a repeatable process and is measured in cycles-per-hour. In basic heating process, a cycle comprises of one 'On' period and one 'Off' period, if it is a two-position control system.
- **Cycling:** If is a periodic change in the controlled variable's value. The 'Out-of-control' analog cycling is called hunting. Too frequent on-off cycling is called short cycling. Short cycling can harm electric motors, fans, and compressors.

D

Daylight Savings Time (DST)

In the US, DST begins on the first Sunday in April and ends on the last Sunday in October.

Deadband

It is a controlled variable range in which no corrective action is taken by the controlled system and no energy is used.

Delta

Delta refers to the change of state or a particular amount. If the reporting data is left at 0, any change of state causes a trend sample to be generated.

Demand Limit Control (DLC)

DLC monitors energy consumption by reading a demand meter. You can obtain demand meters directly from your local utility company.

Derivative Time or Gain

It refers to CVAHU Controller PID configuration. The Derivative Time determines how much impact the error rate has on the output signal. The error rate can be defined as the constant change in error value or the direction taken by the space temperature and its speed. A decrease in Derivative Time causes a given error rate to have a larger effect on the output signal.

Deviation (Offset)

It is the difference between the setpoint and the value of the controlled variable.

DLC Rotating Load

Max Shed Time = 1-99. Rotating loads are shed or adjusted as DLC needs to reduce the demand.

DLC Off Continuous Loads

Off Continuous loads are the first loads that DLC can shed. When these loads are shed, they will not rotate back on. They remain off until DLC restores them when demand is below the setpoint minus the deadband.

DLC Last Resort Load

Last Resort loads are shed as a last resort. These loads are shed only if DLC has shed all other possible loads and demand is still low.

DLC Deadband

Deadband is a kW range where additional loads are neither shed nor restored by the DLC program. Deadband prevents unnecessary cycling of loads when the demand level is close to the setpoint.

DLC

Demand Limit Control is an energy management function.

Digital

A series of On and Off pulses arranged to convey information. Processors (computers) operate using digital language. Digital control is a control loop in which a microprocessor-based controller directly controls equipment based on sensor inputs and setpoint parameters. The programmed control sequence determines the output to the equipment. LonSpec™ examples: controlling a fan unit or lighting equipment.

E**Excel 15A Building Manager**

It is a Small building management system. A direct digital controller which acts as a network time scheduler for Excel 10s and other controllers on the network and may act as a network time master for the LonWorks® network. It can also be used as a general purpose controller.

Excel 15C

Plant Controller

Energized On / Energized Off

The 2-state output for Digital Outputs is defined as follows:

Table 8. Energized Output States.

Output State	Physical Input State	Logical Input State
Energized On	On	Energized
	Off	De-energized
Energized Off	On	De-energized
	Off	Energized

Enhanced Proportional-Integral-Derivative (EPID) Control

A control algorithm that enhances the standard PID algorithm by allowing the designer to enter a startup output value and error ramp duration in addition to the gains and setpoints. These additional parameters are configured so that at startup the PID output varies smoothly to the control point with negligible overshoot or undershoot.

Excel 10

It is a family of Honeywell room and zone controllers based on Echelon® communication technology.

F**FCU (Excel 10 Fan Coil Unit)**

It is a controller that handles specific functions of an HVAC unit, such as air conditioning.

I**Integral Time or Gain**

It refers to CVAHU Controller PID configuration. Integral time determines how much impact the error-over-time has on the output signal. Error-over-time has two components making up its value:

- The amount of time the error exists
- The size of the error.

The higher the Integral Time, the slower the control response. In other words, a decrease in Integral Time causes a more rapid response in the output signal.

L**Load**

It is the amount of heat that the system is expected to provide and the work that the system must perform in a heating or cooling system.

LonSpec™

LonSpec™ is a trademark of Echelon® Corporation. You can use LonSpec™ to configure, commission, calibrate, and monitor Excel 10 and Excel 15 family of controllers. These include the Excel 15A Building Manager, CVAHUs, RIOs, Q7300s, CDs, and SLTAs. Using LonSpec™, you can also create, report, monitor network groups, read alarms and logs, and build onto existing networks.

LonStation™

LonStation™ is a trademark of Echelon® Corporation. It enhances the power of LonSpec™ through advanced network monitoring tools such as assigning user access levels.

LonTalk® Protocol

LonTalk is a low level network protocol and is a registered trademark of Echelon® Corporation. Media access is through an enhanced proprietary version of Carrier Sense Multiple Access (CSMA). All nodes are peers on the bus. Routers (LonSpec™ version 1.4.8 does not support routers) and repeaters are available to extend the network to a maximum of 32000 nodes. Types of services available are acknowledged, unacknowledged repeated, unacknowledged, and request response. Addressing modes are domain-subnet-node, domain-group, domain-broadcast, and domain-subnet-broadcast.

LonWorks®

It is a communication medium that connects Excel 10 controllers and routers (LonSpec™ version 1.4.8 does not support routers) for the exchange of data, alarms, and commands.

LonWorks® Network

LonWorks® is a registered trademark of Echelon® Corporation. It is a local operating network with an open control architecture consisting of Neuron® chips, network operating software (such as LonSpec™), and I/O devices.

M**Maintained Contact Closure**

A maintained contact closure is where the monitored contact input changes condition and remains.

Modes of Operation

At any point in time, LonSpec™ can either be on-line or off-line. Some functions and their accompanying menus and toolbar icons are available only when LonSpec™ is on-line, that is, at least one controller is commissioned, active and physically connected to the PC through the SLTA. On-line functions include commissioning and monitoring of controllers. Most configurations must be completed while LonSpec™ is off-line, such as creating a network or network group. However, LonSpec™ allows controller configurations, such as designing control loops, in either on-line or off-line mode.

Modulating

An action that adjusts by minute increments and decrements.

Modulating Flex Loop

For a modulating flex loop, if the output is >0 and any loop stage is on, the Aux Out is on.

Momentary Contact Closure

A momentary contact closure is where the monitored contact input only needs to stay in one condition for a minimum of one second.

N**Network**

A group of subnets. Each subnet supports up to 120 controllers.

Network Time Master

The network time master synchronizes the time of day for all other network devices (even if those devices have their own real time clock). If the Network Time Master fails, other Excel 15As on the network operate based on their own real time clock or calendar.

Network Time Scheduler

A network time scheduler sends out current and next state (occupied, unoccupied, or standby), and time to all its control loops based on programmed schedules. This is till the next change of state (TUNCOS) occurs.

Neuron®

It is a microprocessor chip that implements the LonWorks® network protocol, manages I/O devices, and executes user-written application code.

Neuron® ID

It is a unique 48-bit identifier provided by each Neuron® chip. It is permanently written into the EEPROM during chip manufacture and cannot be modified.

Network Power Master

An Excel 15A Building Manager defined as Power Master calculates the final kWh to be used by the DLC programs of all Excel 15As in that power billing distribution. It also contains the Energy History log that is valid for the power billing distribution (see Reports).

NOTE: The W7760 Excel 15A Building Manager is an NEC Class 2 rated device. This listing imposes limits on the amount of power the product can consume or directly control, to a total of 100 VA.

Non-Linear PID

It is an alternative to the PID algorithm and gives a more stable output when PID creates instability. Its main advantage over PID is that the non-linear algorithm cannot make large changes in the output.

O**Offset**

In stable operating conditions, it is a sustained deviation between the control point and the setpoint of a proportional control system.

Outdoor Air (oa) Sensor

LonSpec™ can define an input as the outdoor air sensor. If this input is selected, the associated values become common to other controllers as an automatic one-to-many function.

The input types are as follows:

Table 9. Outdoor Air Sensor Input Types.

Temp_20KNTC	-40 to 241°F (-40 to 116°C)
Temp_PT3000 (Custom)	-40 to 257°F (-40 to 125°C)

Outdoor Humidity (oh) Sensor

LonSpec™ can define an input as the outdoor humidity sensor. If this input is selected, the associated values become common to other controllers as an automatic one-to-many function.

The input types are as follows:

Table 10. Outdoor Humidity Sensor Types.

Hum_C7600B	0 to 100%
Hum_C7600C	0 to 100%

P**PID**

Refer to - *Proportional-Integral-Derivative (PID) control*.

Project

A project is a collection of one or more controllers that are routed through a single SLTA.

Project Directory window

The left-hand pane of the LonSpec™ main window work area. The directory displays LonSpec™ projects in an outline structure similar to Windows Explorer.

Proportional Control

It is a control algorithm or method in which the final control element moves to a position proportional to the deviation of the value of the controlled variable from the setpoint.

Proportional-Integral (PI) Control

A control algorithm that combines the proportional (proportional response) and integral (reset response) control algorithms. Reset response tends to correct the offset resulting from proportional control. It is also called proportional-plus-reset or two-mode control.

Proportional-Integral-Derivative (PID) Control

It is a control algorithm that enhances the PI control algorithm by adding a component that is proportional to the rate of change (derivative) of the controlled variable deviation. It compensates for system dynamics and allows faster control response. It is also called three-mode or rate-reset control.

PCMCIA

Honeywell Q7752 or Echelon® PCMCIA Network Interface is a PCMCIA card that can be installed in a laptop or a PC (if equipped) PCMCIA slot. It can be connected directly to the network but cannot be used for remote (modem) communication.

PCLCA

The Echelon® PCLCA network interface is an internal card that is used for installation in a desktop PC or a docking station with expansion slots. It can be connected directly to the network but cannot be used for remote (modem) communication.

Q**Q7300**

Q7300 Communicating Subbase. The Q7300H Series 2000 Communicating Subbase is a LonMark® certified device that provides networking capability for the T7300F Thermostat in a LonWorks® system using transformer-coupled Free Topology Transceiver (FTT).

R**Real Time Clock (RTC)**

Real Time Clock. The real time clock runs on either 50/60 Hz line frequency or its internal crystal. The RTC tracks the time of day, day of week, month, and year (including automatic leap year calculations) and synchronizes the time/date for all other network devices.

RIO

Remote Input/Output Device. The W7761A Excel 10 Remote Input/Output Device (RIO) is a LonMark® compliant device designed to monitor and control HVAC equipment, lighting, and other miscellaneous loads in a distributed network. Use the RIO to configure additional inputs and outputs for Excel 15A Building Manager.

Router

It is a device that connects multiple network segments and provides services up to the OSI Network Layer by sending messages transparently between networks. Routers are not supported by all versions of LonSpec™.

S**Shortcut**

Shortcut icons are aliases of programs and files that you can place on the desktop, in other folders, or in the **Start** menu for quick access to that item. To make a shortcut, select the item and right-click. The shortcut menu usually includes a **Create Shortcut** function.

Setpoint

It is the desired value at which the controller is set (e.g., the desired room temperature set on a thermostat), the desired control point.

Site

A site is the same as a project. A site is collection of one or more controllers that are routed through a single SLTA.

SLTA

Serial LonTalk Adapter. The Q7752A Excel 10 SLTA is an Echelon® LonMark® compliant device that allows a PC with an RS-232 port to connect to the LonWorks® network. The SLTA is a complete network interface unit that includes all of the required hardware and software to execute network tasks for a twisted pair LonWorks® network.

SNVT

Standard Network Variable Type (LonMark® terminology).

Subnet

It is a group of controllers. Each subnet supports up to 120 controllers.

T**Thermostat Control Loop**

A thermostat control loop controls commercial single zone HVAC equipment. Thermostat loops can be configured as either Standard Thermostat or Heat pump control. Thermostat loops control the temperature of heating and air conditioning units.

Refer to the Excel 15 W7760A Building Manager System Engineering guide, Honeywell form 74-2969, tab 30.

Throttling Range

Refers to CVAHU Controller PID configuration. Throttling range determines the intensity of the impact the error will have on the output signal. Decreasing the throttling range amplifies the effect of the error; that is, for a given error (the difference between the measured space temperature and the current actual space temperature setpoint), a small throttling range causes a higher output signal value.

Time Constant

It is the time required for a dynamic component, such as a sensor or a control system to reach 63.2 percent of the total response to an instantaneous (or step) change to its input. Typically used to judge the responsiveness of the component or system.

V**Variable Air Volume II (VAV) Controller**

VAV II controls the space temperature by changing the amount of constant air temperature allowed into the space.

W**Workspace**

The right-hand pane in the LonSpec™ main window work area. The workspace shows the subnets and devices in networks that are currently open.

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