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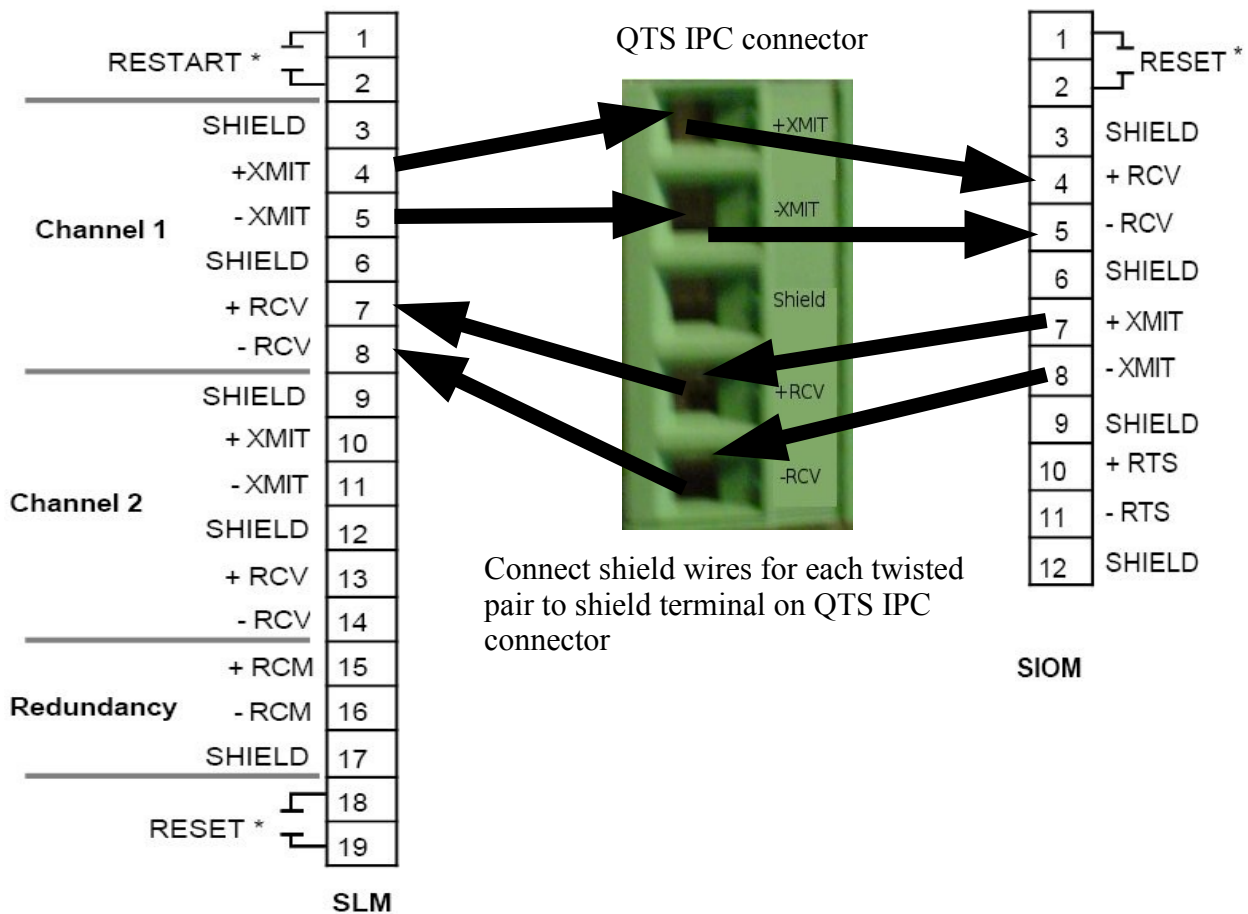
Revision 0.1

IPC-620 Serial IO Monitor Mode Configuration

Requirements:

1. QTS IPC-620 ControlLogix backplane module and ControlLogix rack with Logix controller.

2. Associated software distributed with the QTS IPC-620 hardware, a PC computer with RSLinx and RSLogix 5000 installed.

3. At least, one rack (card file) of IPC-620 IO with a SIOM (Serial IO Module). The QTS IPC620 module is designed to work with 621-9940 SIOM modules and the SLM 621-9939 SLM module. Older serial I/O versions are not supported (SIOM-621-9935, SLM-621-9936).

4. Network cable and termination resistors. Honeywell specifies Belden 9729 cable or equivalent, with a termination of 200 ohms at ½ watt.

Hardware configuration:

Connect shield wires for each twisted pair to shield terminal on QTS IPC connector

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The diagram above shows how to connect the IPC-620 module to the IPC-620 network via the two twisted-pair Belden cable. The termination resistors are placed across the +XMIT/-XMIT and +RCV/-RCV channels, if the IPC-620 module is located at the end of the serial network. Please, refer to your Honeywell documentation for further details on proper cable installation practices.

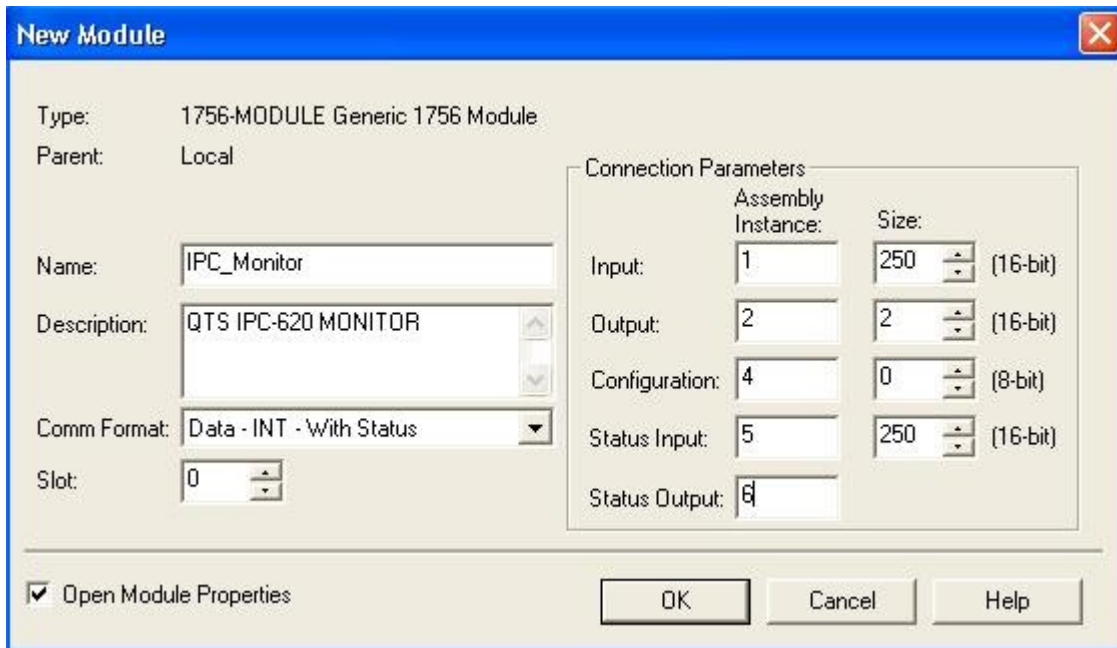## IPC-620 Module Mode and RSLogix 5000 Configuration:

The QTS IPC-620 module should be placed in the ControlLogix rack. The QTS IPC-620 module has two modes of operation: Scanner Mode and Monitor Mode. To set the mode of the QTS module, run the Clx422SetMode.exe application that is found in the root directory of the QTS IPC-620 beta software image.
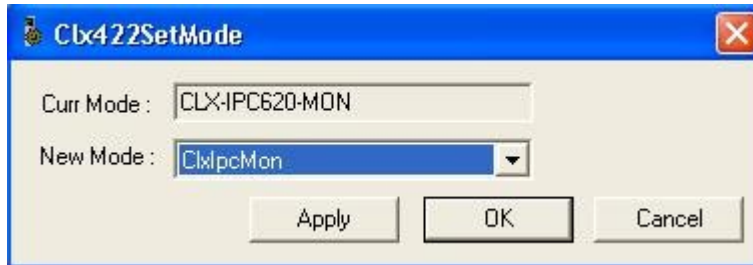
Select the 'ClxIpcMon' mode and hit 'OK' to download the Monitor firmware to the QTS module.

Using RSLogix 5000 software, the communications between the Logix controller and the IPC-620 module is configured in the following way:

1. Add a new module to your I/O Configuration and choose the "1757-Module (Generic 1757 Module).

2. Fill in the 'New Module' dialog as shown in the diagram below.

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IPC-620 Monitor Configuration

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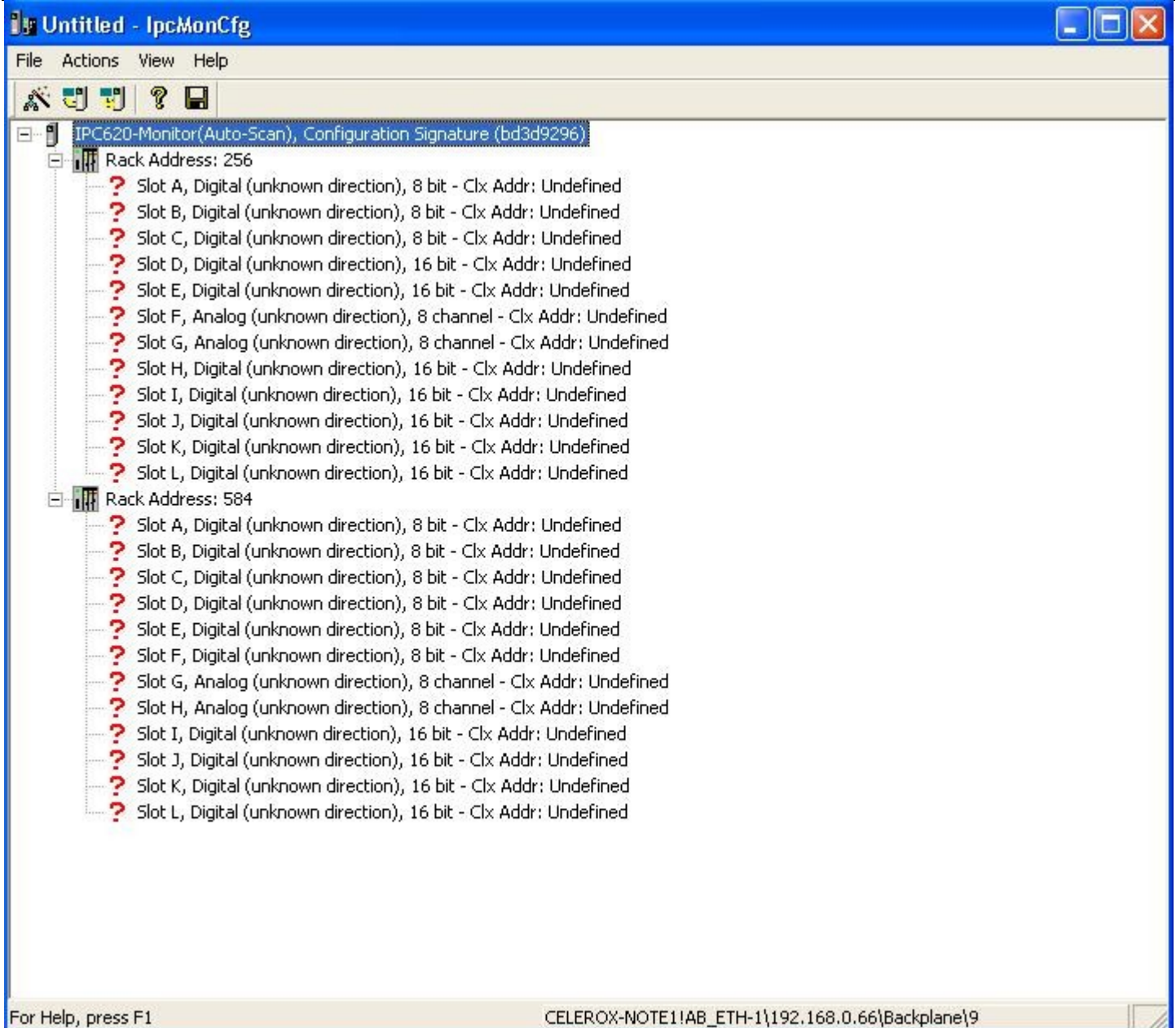321 757-8483 Fax 321 238-0122

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IPC-620 Monitor Configuration:

The QTS IPC-620 Monitor configuration software (IpcMonCfg.exe) is shipped as a win32 application. The IpcMonCfg.exe executable can be run in-place without any installation process.

The The IPC-620 scanner module's configuration consists of two parts: IPC-620 card file configuration and ControlLogix data addressing. The IpcMonCfg application is designed to do both of these operations automatically, with some user input and produce an Alias import (csv) file for the RSLogix 5000 software.

IPC-620 Card File Configuration:

1. The configuration process requires the QTS IPC Monitor module be attached to a live IPC-620 serial I/O network that contains an active SLM and at least one SIOM (card file).

2. Start the IpcMonCfg.exe application and use the 'Actions - Start Auto Configuration' menu command.

3. The IpcMonCfg tool will prompt the user for the RSLinx path to the QTS IPC-620 module and store this path for future communications with the scanner module (see status bar in diagram, below).

4. The QTS IPC-620 monitor module will wait for up to 60 seconds for the SLM (scanner) to ask for the configuration information from the I/O card files. **An easy way to force the SLM to start a configuration cycle is to disconnect the SLM network connector slowly until the SLM 'link fault' LED appears. Replace the SLM network connector and reset the SLM (short terminals 1 and 2).**

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5. The diagram above shows the result of an 'Auto Configuration' cycle. All the card files that are attached to the serial network should appear with corresponding rack byte address. **It is important to check that all the expected card files were found before progressing further.** If any of the excepted card file(s) are missing from the tree shown above, repeat the 'Auto Configure' command (step 2).

6. The network auto-scan cycle does not give any information about the direction of the I/O modules for any of the found I/O card file racks. However, the type of module (digital or analog) and size should match for each slot found in each card file rack. If any I/O slots

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contain a mismatch in module type (digital or analog) or module size (8-bit, 16-bit, etc.), check your card file (SIOM) configuration and repeat step 2.

7. Select the first rack icon in the configuration tree and right-click to open the rack properties menu. Select the 'edit rack properties' command and the following dialog box will open:

8. For each slot in the 'Rack Properties' dialog, set the slot direction (input or output) to match the physical card file configuration. Click the 'OK' button when all slots have been configured.

9. The above screen capture shows the first configured rack. Repeat steps 6, 7 and 8 for each rack.

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Untitled - IpcMonCfg

File   Actions   View   Help

IPC620-Monitor(Auto-Scan), Configuration Signature (4ecc4027)
- Rack Address: 256
  - Slot A, 8 bit Digital Input(256 - 263) - Clx Addr: Undefined
  - Slot B, 8 bit Digital Output(264 - 271) - Clx Addr: Undefined
  - Slot C, 8 bit Digital Input(272 - 279) - Clx Addr: Undefined
  - Slot D, 16 bit Digital Output(280 - 295) - Clx Addr: Undefined
  - Slot E, 16 bit Digital Input(296 - 311) - Clx Addr: Undefined
  - Slot F, 8 channel Analog Output(312 - 327) - Clx Addr: Undefined
  - Slot G, 8 channel Analog Input(328 - 343) - Clx Addr: Undefined
  - Slot H, 16 bit Digital Input(344 - 359) - Clx Addr: Undefined
  - Slot I, 16 bit Digital Input(360 - 375) - Clx Addr: Undefined
  - Slot J, 16 bit Digital Input(376 - 391) - Clx Addr: Undefined
  - Slot K, 16 bit Digital Input(392 - 407) - Clx Addr: Undefined
  - Slot L, 16 bit Digital Input(408 - 423) - Clx Addr: Undefined
- Rack Address: 584
  - ? Slot A, Digital (unknown direction), 8 bit - Clx Addr: Undefined
  - ? Slot B, Digital (unknown direction), 8 bit - Clx Addr: Undefined
  - ? Slot C, Digital (unknown direction), 8 bit - Clx Addr: Undefined
  - ? Slot D, Digital (unknown direction), 8 bit - Clx Addr: Undefined
  - ? Slot E, Digital (unknown direction), 8 bit - Clx Addr: Undefined
  - ? Slot F, Digital (unknown direction), 8 bit - Clx Addr: Undefined
  - ? Slot G, Analog (unknown direction), 8 channel - Clx Addr: Undefined
  - ? Slot H, Analog (unknown direction), 8 channel - Clx Addr: Undefined
  - ? Slot I, Digital (unknown direction), 16 bit - Clx Addr: Undefined
  - ? Slot J, Digital (unknown direction), 16 bit - Clx Addr: Undefined
  - ? Slot K, Digital (unknown direction), 16 bit - Clx Addr: Undefined
  - ? Slot L, Digital (unknown direction), 16 bit - Clx Addr: Undefined

For Help, press F1   CELEROX-NOTE1!AB_ETH-1\192.168.0.66\Backplane\9

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10. Save the configuration ('File – Save') to an *.imn file.

The IPC-620 I/O card file configuration portion of this process is done when all racks in the network are found, all slots in each rack have the correct direction, module type and module size.

ControlLogix Data Addressing

Now that the serial I/O network configuration has been entered into the configuration application, it is time to map the serial network I/O data into the ControlLogix data tables.

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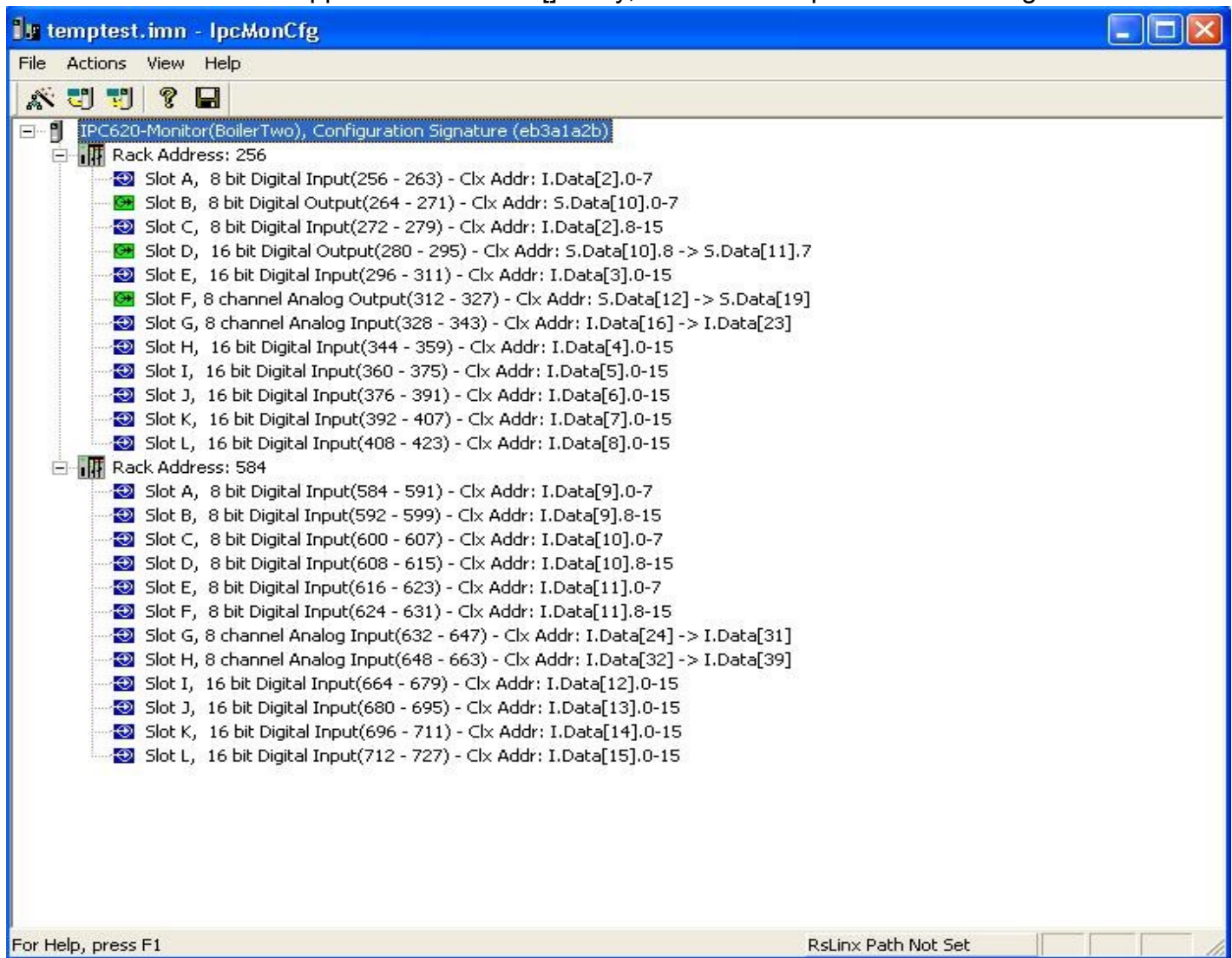4110 Mourning Dove Crt
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1. Select the root of the network configuration tree (IPC-620-Scanner icon) and right-click to show the scanner properties menu. Select the 'Edit Module Properties' command to open a dialog box that allows the user to set a unique module name (default is Auto_Scan).

IPC-620 Monitor Properties

Module Name: BoilerTwo

OK   Cancel

2. Select and right-click the IPC-620 scanner node again. Select the 'Auto-allocate ControlLogix Addressing' command. The configuration application will map all the IPC-620 input modules (both digital and analog) to the I.Data[] and S.Data[] arrays. The IPC-620 **monitored** output modules will be mapped to the S.Data[] array, after all the input data. See diagram below:

temptest.imn - IpcMonCfg

File   Actions   View   Help

IPC620-Monitor(BoilerTwo), Configuration Signature (eb3a1a2b)
- Rack Address: 256
  - Slot A, 8 bit Digital Input(256 - 263) - Clx Addr: I.Data[2].0-7
  - Slot B, 8 bit Digital Output(264 - 271) - Clx Addr: S.Data[10].0-7
  - Slot C, 8 bit Digital Input(272 - 279) - Clx Addr: I.Data[2].8-15
  - Slot D, 16 bit Digital Output(280 - 295) - Clx Addr: S.Data[10].8 -> S.Data[11].7
  - Slot E, 16 bit Digital Input(296 - 311) - Clx Addr: I.Data[3].0-15
  - Slot F, 8 channel Analog Output(312 - 327) - Clx Addr: S.Data[12] -> S.Data[19]
  - Slot G, 8 channel Analog Input(328 - 343) - Clx Addr: I.Data[16] -> I.Data[23]
  - Slot H, 16 bit Digital Input(344 - 359) - Clx Addr: I.Data[4].0-15
  - Slot I, 16 bit Digital Input(360 - 375) - Clx Addr: I.Data[5].0-15
  - Slot J, 16 bit Digital Input(376 - 391) - Clx Addr: I.Data[6].0-15
  - Slot K, 16 bit Digital Input(392 - 407) - Clx Addr: I.Data[7].0-15
  - Slot L, 16 bit Digital Input(408 - 423) - Clx Addr: I.Data[8].0-15
- Rack Address: 584
  - Slot A, 8 bit Digital Input(584 - 591) - Clx Addr: I.Data[9].0-7
  - Slot B, 8 bit Digital Input(592 - 599) - Clx Addr: I.Data[9].8-15
  - Slot C, 8 bit Digital Input(600 - 607) - Clx Addr: I.Data[10].0-7
  - Slot D, 8 bit Digital Input(608 - 615) - Clx Addr: I.Data[10].8-15
  - Slot E, 8 bit Digital Input(616 - 623) - Clx Addr: I.Data[11].0-7
  - Slot F, 8 bit Digital Input(624 - 631) - Clx Addr: I.Data[11].8-15
  - Slot G, 8 channel Analog Input(632 - 647) - Clx Addr: I.Data[24] -> I.Data[31]
  - Slot H, 8 channel Analog Input(648 - 663) - Clx Addr: I.Data[32] -> I.Data[39]
  - Slot I, 16 bit Digital Input(664 - 679) - Clx Addr: I.Data[12].0-15
  - Slot J, 16 bit Digital Input(680 - 695) - Clx Addr: I.Data[13].0-15
  - Slot K, 16 bit Digital Input(696 - 711) - Clx Addr: I.Data[14].0-15
  - Slot L, 16 bit Digital Input(712 - 727) - Clx Addr: I.Data[15].0-15

For Help, press F1   RsLinx Path Not Set

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3. The QTS IPC-620 configuration process is complete. Save the file.

4. Use the 'Actions – Download Cfg' main menu command or the Download toolbar icon to send this configuration to the IPC-620 monitor module.

5. The IPC-620 module will start to monitor the serial I/O network and display the configured module name. All lights on the IPC-620 monitor module should be green.

Alias Export Function:

The IpcMonCfg application has a export function ('File – Export Tags') for exporting RSLogix 5000 alias information to a csv file.

The alias names are constructed as follows:

<name_of_monitor_config>_DI_Ipc<IPC-620 bit address>

<name_of_monitor_config>_AI_Ipc<IPC-620 bit address>

<name_of_monitor_config>_MON_DO_Ipc<IPC-620 bit address>

<name_of_monitor_config>_MON_AO_Ipc<IPC-620 bit address>

For example, the configuration shown above would have an alias for the following IPC 620 bit addresses:

BoilerTwo_DI_Ipc256

BoilerTwo_AI_Ipc328

BoilerTwo_MON_DO_Ipc264

BoilerTwo_MON_AO_Ipc312

This way the new ControlLogix program can reference the IPC-620 I/O according to it's original IPC-620 PLC program address.

To maximize the usefulness of monitor mode, the user may wish to write control logic for the ControlLogix PLC that uses the monitored inputs to calculate output values that can be compared to the processes real monitored outputs. The exported csv file contains alias values for all the system outputs that are addressed to a temporary array. In this way, changing from monitor to scanner mode will require no changes to the ControlLogix PLC program's addressing.

Before importing the csv file into RSLogix 5000, the user must create a array variable of type SINT[250] in the ControlLogix project with the name: **TempIpcOutputArray**. Consult the RSLogix 5000 software help for how to import csv files.