AMX Netlinx Interface Guide
Version 5.0.0

Control of AudioReQuest™ through RS232 or Ethernet

Table of Contents

Revision History

Revision Number	Changes
2.5.0	Initial Version
2.5.1	Minor graphic and layout changes
3.0.1	Complete redesign/rewrite for new program
3.0.2	Updated version numbers to match new program
5.0.0	Updated to support new F.Series line of products Added Disconnect channel to filter unnecessary data

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Introduction

This document explains how to interface all models of AudioReQuest Digital Music Servers with AMX Netlinx control systems using the AudioReQuest AMX Netlinx Demo Program version 5.0.0. It will not give a detailed explanation of the protocol used to communicate with the AudioReQuest via Ethernet, Serial, or IR. For this information, please download the Communication Protocol Guide from www.request.com.

Rear Serial Port Pinout (Male RS-232 Port)

Pin	Purpose
1	*Not Used*
2	Receive
3	Transmit
4	*Not Used*
5	Ground
6-9	*Not Used*

Serial Cable Pinout (Female →Female RS232 cable)

Pin (ARQ Side)	Pin (Control Side)
2 *(Rx)* ————→	3 *(Tx)*
3 *(Tx)* ————→	2 *(Rx)*
5 *(GND)* ————→	5 *(GND)*

COM Settings

The **rear serial port** is used for integrating the AudioReQuest with a control system. Connection to the **rear serial port** requires a **Female→Female NULL MODEM** serial cable. The **front serial port** is used **ONLY** for configuring certain settings on the AudioReQuest, such as the IP Address. You **CANNOT** use the **front serial port** to control the ARQ.

The Baud Rate depends on the model of AudioReQuest unit. The table below shows the breakdown.

Rear Serial Port (Single Zone Units)		Rear Serial Port (Multi Zone Units)	
Parameter	Value	Parameter	Value
Baud	9600	Baud	57600
Data Bits	8	Data Bits	8
Stop Bits	1	Stop Bits	1
Parity	None	Parity	None
Flow Control	None	Flow Control	None

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Modifying the Netlinx Program

The following sections describe how to modify the Netlinx code to fit your system.

The Master Source File

When integrating the AudioReQuest Demo program in an existing program that already has a Master Source file, there are 2 options available:

1) Copy everything from the AudioReQuest Master Source file into your Master Source file
2) Leave the AudioReQuest Master Source file intact and use a #INCLUDE statement to *include* the AudioReQuest code into your program (i.e. #INCLUDE 'AudioReQuest Demo v5_0_0.axs').

When using option #2, you MUST define the TP and ARQ devices in the AudioReQuest Source file and NOT in your Master Source file or you will get compile errors.

Regardless of the method you choose, follow these steps to modify the master source file:

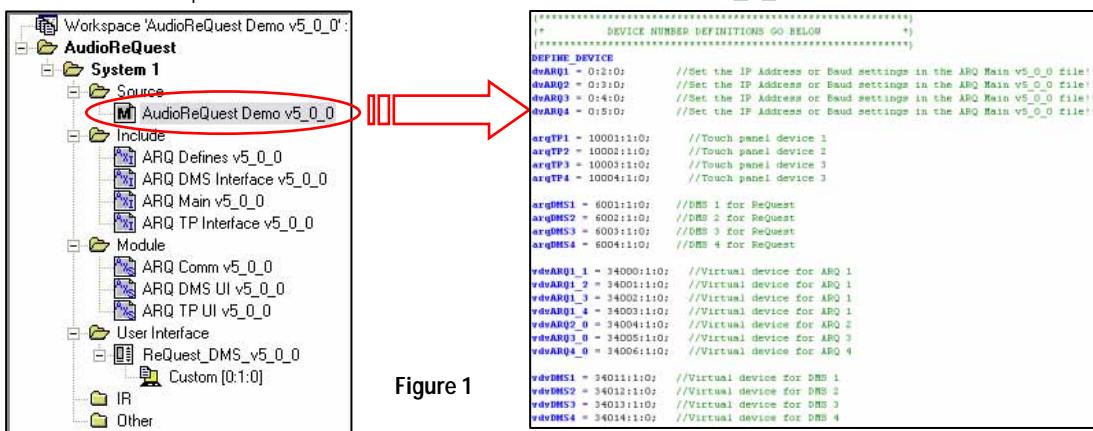1. From the Workspace, double-click on *AudioReQuest Demo v5_0_0*

Figure 1

2. Under DEFINE_DEVICE, modify the device names or numbers as necessary according to the following guidelines:
   a. **dvARQ#:**   You need 1 of these for each *physical* AudioReQuest you have in the system.
   b. **arqTP#:**   You need 1 of these for each touch panel in the system that will be controlling the AudioReQuest.
   c. **arqDMS#:**   You need 1 of these for each DMS keypad in the system that will be controlling the AudioReQuest.
   d. **vdvARQ#:**   You need 1 of these for each "real" AudioReQuest *Zone* device.
                         Note: N-Series and older have 1 Zone, F.Series units have 2 or 4 Zones
   e. **vdvDMS#:**   You need 1 of these for each "real" DMS device.

3. Under DEFINE_START, modify the following:
   a. You must have 1 definition of the DMS-IMSMod module for each DMS device in the system.
   b. You must have 1 definition of the ARQ Comm v5_0_0 module for each "real" AudioReQuest device in the system.
   c. You must have 1 definition of the ARQ TP UI v5_0_0 module for each touch panel in the system that will control the AudioReQuest.
        i. Read the comments next to each parameter for more information on customizing the functionality of the touch panel.
   d. You must have 1 definition of the ARQ DMS UI v5_0_0 module for each DMS device in the system.

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The 'ARQ MAIN v500' Include File

1. Under DEFINE_VARIABLE, modify the following:
   a. For each "real" AudioReQuest device in the program, create an instance of the **ARQ_COMM_DATA** variable.
   b. Make sure that the **ARQ_UNITS** device array contains all of the "virtual" AudioReQuest devices defined in the program.
2. Under DEFINE_START, set the parameters for how you will communicate with each AudioReQuest defined in the program. It is recommended that you use TCP/IP to communicate with the AudioReQuest in order to display the AlbumArt™ images on your Modero™ panels. If you choose to use RS232 communication, you can still receive AlbumArt™ images over TCP/IP if you set the IP address correctly. If you choose to use TCP/IP to communicate with the AudioReQuest, be sure to put "0" for the baud rate.
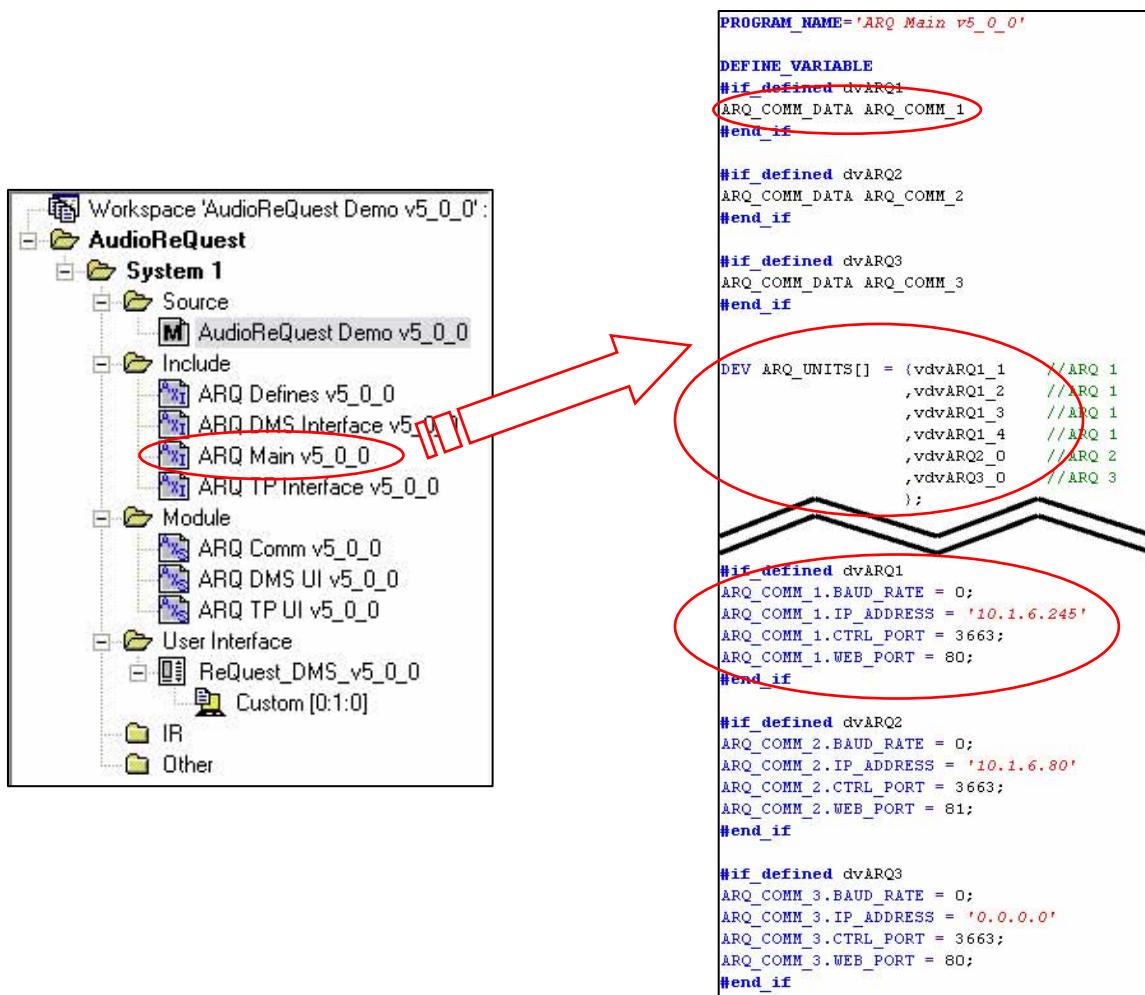
```
Workspace 'AudioReQuest Demo v5_0_0':
AudioReQuest
  System 1
    Source
      M AudioReQuest Demo v5_0_0
    Include
      ARQ Defines v5_0_0
      ARQ DMS Interface v5...
      ARQ Main v5_0_0
      ARQ TP Interface v5_0_0
    Module
      ARQ Comm v5_0_0
      ARQ DMS UI v5_0_0
      ARQ TP UI v5_0_0
    User Interface
      ReQuest_DMS_v5_0_0
        Custom [0:1:0]
    IR
    Other
```

```
PROGRAM_NAME='ARQ Main v5_0_0'

DEFINE_VARIABLE
#if_defined dvARQ1
ARQ_COMM_DATA ARQ_COMM_1
#end_if

#if_defined dvARQ2
ARQ_COMM_DATA ARQ_COMM_2
#end_if

#if_defined dvARQ3
ARQ_COMM_DATA ARQ_COMM_3
#end_if


DEV ARQ_UNITS[] = {vdvARQ1_1      //ARQ 1
                  ,vdvARQ1_2      //ARQ 1
                  ,vdvARQ1_3      //ARQ 1
                  ,vdvARQ1_4      //ARQ 1
                  ,vdvARQ2_0      //ARQ 2
                  ,vdvARQ3_0      //ARQ 3
                  };


#if_defined dvARQ1
ARQ_COMM_1.BAUD_RATE = 0;
ARQ_COMM_1.IP_ADDRESS = '10.1.6.245'
ARQ_COMM_1.CTRL_PORT = 3663;
ARQ_COMM_1.WEB_PORT = 80;
#end_if

#if_defined dvARQ2
ARQ_COMM_2.BAUD_RATE = 0;
ARQ_COMM_2.IP_ADDRESS = '10.1.6.80'
ARQ_COMM_2.CTRL_PORT = 3663;
ARQ_COMM_2.WEB_PORT = 81;
#end_if

#if_defined dvARQ3
ARQ_COMM_3.BAUD_RATE = 0;
ARQ_COMM_3.IP_ADDRESS = '0.0.0.0'
ARQ_COMM_3.CTRL_PORT = 3663;
ARQ_COMM_3.WEB_PORT = 80;
#end_if
```

Figure 2

The 'ARQ TP Interface v500' Include File

Under DEFINE_VARIABLE, modify the following:

a. The **ARQ_DYNAMIC_IMAGES** array should contain the names of the dynamic image resources on their respective pages (see the comments next to each line for a description of each image). This variables should not be modified unless necessary.

b. The **ARQ_SELECT** array should contain the channel numbers for the source buttons for each AudioReQuest you have in the system. You need a unique channel number for each source button on the touch panel.

c. The **ARQ_DISCONNECT** variable should contain the channel number for the button the returns you to your source page. This tells the modules that you are no longer talking to the AudioReQuest from that panel, and helps minimize unnecessary data traffic.

d. The **ARQ_CMDS** array contains all the channel numbers for the commonly used commands in the module. This array MUST remain in order, however the actual channel number may be modified if necessary. For any commands that you do not plan to use, you may set those channel numbers to 9999.

e. The **ARQ_ADV_CMDS** array contains all the channel numbers for the more advanced, less commonly used features available in the module. This array MUST remain in order, however the actual channel number may be modified if necessary. For any commands that you do not plan to use, you may set those channel numbers to 9999.

f. The **ARQ_KEYBOARD_CH** array contains all the channel numbers for the keyboard commands. This array MUST remain in order, however the actual channel number may be modified if necessary. For any commands that you do not plan to use, you may set those channel numbers to 9999.

g. The **ARQ_NUM_CH** array contains all the channel numbers for the number commands (0-9). This array MUST remain in order, however the actual channel number may be modified if necessary. For any commands that you do not plan to use, you may set those channel numbers to 9999.

h. The **ARQ_FB_CH** array contains all the address numbers for the text feedback available in the module. This array MUST remain in order, however the actual channel number may be modified if necessary. For any commands that you do not plan to use, you may set those channel numbers to 9999.

i. The **ARQ_ELAPSED_LVL** integer contains the level value of the progress bar.

The 'ARQ DMS Interface v500' Include File

Every array in the file has the same properties as the corresponding array in the '**ARQ TP Interface v5_0_0**' include file. For example, the **ARQ_SELECT_DMS** array corresponds to the **ARQ_SELECT** array in the '**ARQ TP Interface v5_0_0**' file. The only exceptions are as follows:

1. The **ARQ_DMS_FILENAME** variable should contain the name of the .KPD file used on the DMS keypads.

2. The **REFRESH_RATE** variable should be set to the number of milliseconds after the module receives text before the DMS keypads refresh. The lower the number, the faster it will refresh, but it may slow down your system.

3. You must have 1 of the **ARQ_DMS_TEXT_#** variables for each DMS keypad defined in the system. These variables contain the text feedback for the DMS keypad.

NOTE: According to AMX Tech Note #440, the variable text is defined as follows:

CHAR strVarText[XX][YY]

Where:

XX is the highest number variable text channel and,

YY is the max number of characters each variable text string can contain

Therefore, if you use 101-115 for the variable text channels, you must set XX to 115

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New Features

This section highlights some of the latest and greatest features that have been added to the program and panels.

AlbumArt™ Over IP

The Modero™ line of panels ushered in a whole new era of power in the integration market. One new, powerful feature is the ability to display images through a web link, eliminating the need for a direct video feed to the panel. With a little coding and a simple addition to the AudioReQuest communication protocol, it is now possible to display AlbumArt images on wired *and wireless* Modero panels. The AudioReQuest demo program and demo touch screen interfaces showcase this new feature. The steps below will guide you through adding this capability to your own custom interfaces, should you choose not to use the AudioReQuest demo interfaces.

Adding AlbumArt to Modero Panels:

1. Create a dynamic image resource for each image type you wish to display (i.e. Current Song image, Next Song image, Browse Selected Line image).

    a. From the "Panel" menu, select "Resource Manager" (**Figure 3**).

    b. In the "Resource Manager" dialog box, click the "New" button in the upper right. This will open the "Create Dynamic Image" dialog box (**Figure 4**).

    c. Set the parameters of the dynamic image as follows:
        i. Set the name to a name describing the image (i.e. "player_cur" for the current song image).
        ii. Set Protocol to HTTP.
        iii. Set Host to the IP address of your AudioReQuest.
        iv. Path can be left blank as it is driven by the feedback.
        v. File should be set to either "album.jpg" or "thumb.jpg" depending on if you want the full 170x170 image or the 70x70 thumbnail image.
        vi. Leave all other parameters as default and click "OK".

    d. In the "Resource Manager" you will see the Dynamic Image you created (**Figure 5**). Repeat the above steps for each separate resource you need to create.
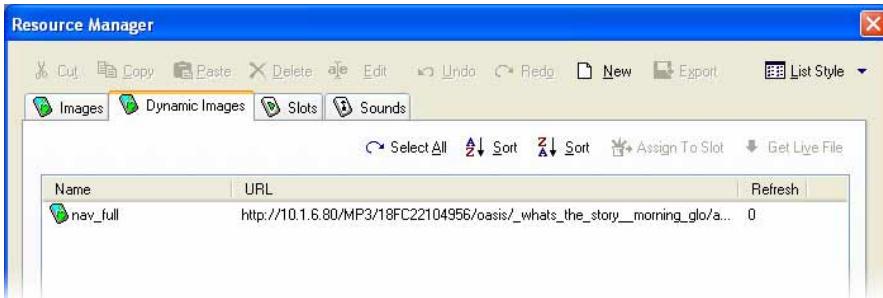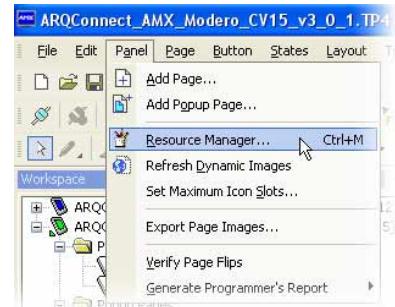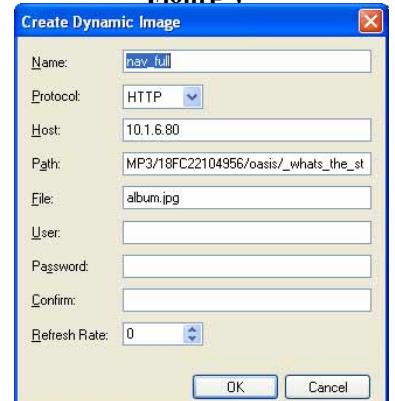

Figure 3

Figure 4

Figure 5

2. After you have created the dynamic image resources, draw a button on the page where you want the image displayed. Be sure to set the size to either 70x70 or 170x170, depending on the size image you choose.

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3. Set the bitmap of the OFF state of the button to the dynamic image resource you wish to use.
4. In Netlinx Studio, open the 'ARQ TP Interface v5_0_0.axi' include file.
5. At the top of the file, locate the CHAR array containing the names of the dynamic image resources(**Figure 6**).
6. Enter the names of the dynamic images you created, using the comments and guidelines. For any image that you aren't using, leave the default name or enter something as a placeholder.
7. Save the file, upload the program and the panel, and test.

```
PROGRAM_NAME='ARQ TP Interface v5_0_0'

DEFINE_VARIABLE
CHAR ARQ_DYNAMIC_IMAGES[6][25] = {'nav_thumb'              //Thumbnail image
                                 ,'nav_full'               //Full size image
                                 ,'player_cur_thumb'       //Thumbnail image
                                 ,'player_cur_full'        //Full size image
                                 ,'player_next_thumb'      //Thumbnail image
                                 ,'player_next_full'       //Full size image
                                 };
```

Figure 6

**NOTE: It is important that you have cover art for every album on your system. For any albums that do not have cover art, the panel will display the previously found image, which could cause confusion.

Technical Support

If you encounter any problems or have any questions that are not answered in this document, please call ReQuest Technical Support at (800)236-2812 or send an email to arqip@request.com.

For any questions related to AMX hardware or software, please contact AMX Tech Support at (800)932-6993 or visit www.amx.com for further assistance.

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