![MTi Montgomery Technology Incorporated logo]

*Simple, Reliable and Cost Effective Technology*

# MTI Digital Intercom Amplifier
# Part Number 91743

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## DESCRIPTION

The MTI 91743 Digital Amplifier is a cost effective solution for intercom applications. The 91743 communicates with the intercom master (i.e. touch screen computer or handheld device) over a standard Ethernet connection. The amplifier is designed to connect to a 25V intercom system. The digital amplifier also supports up to a 60W paging amplifier interface. In the standard MTI Intercom system, the 91743 connects to the MTI Intercom termination boards (81129/81229) via the speaker buss. See Figure 3 for the typical hookup for the 91743 digital amplifier.

The 91743 Digital Amplifier has two LED indications on the front panel. After the boot sequence, the green LED will flash every second. When the amp is in talk mode, the red LED will be solid on. The red LED will flash every second when in page mode.

Primary volume adjustment can be achieved remotely using MTI ProVision software. If additional receive volume adjustment is needed, the potentiometer on the front panel can be used.
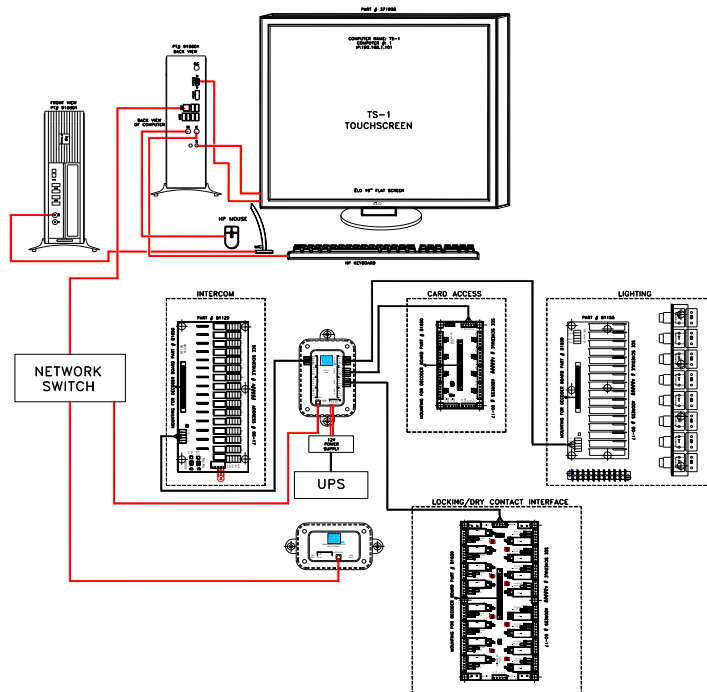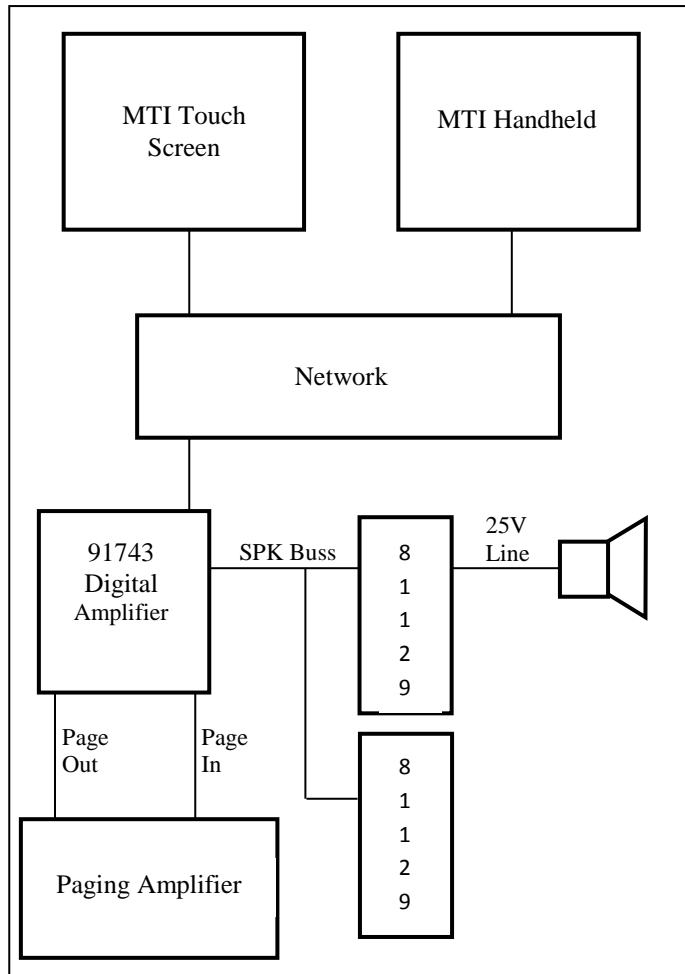


Figure 1: Sample MTI control system

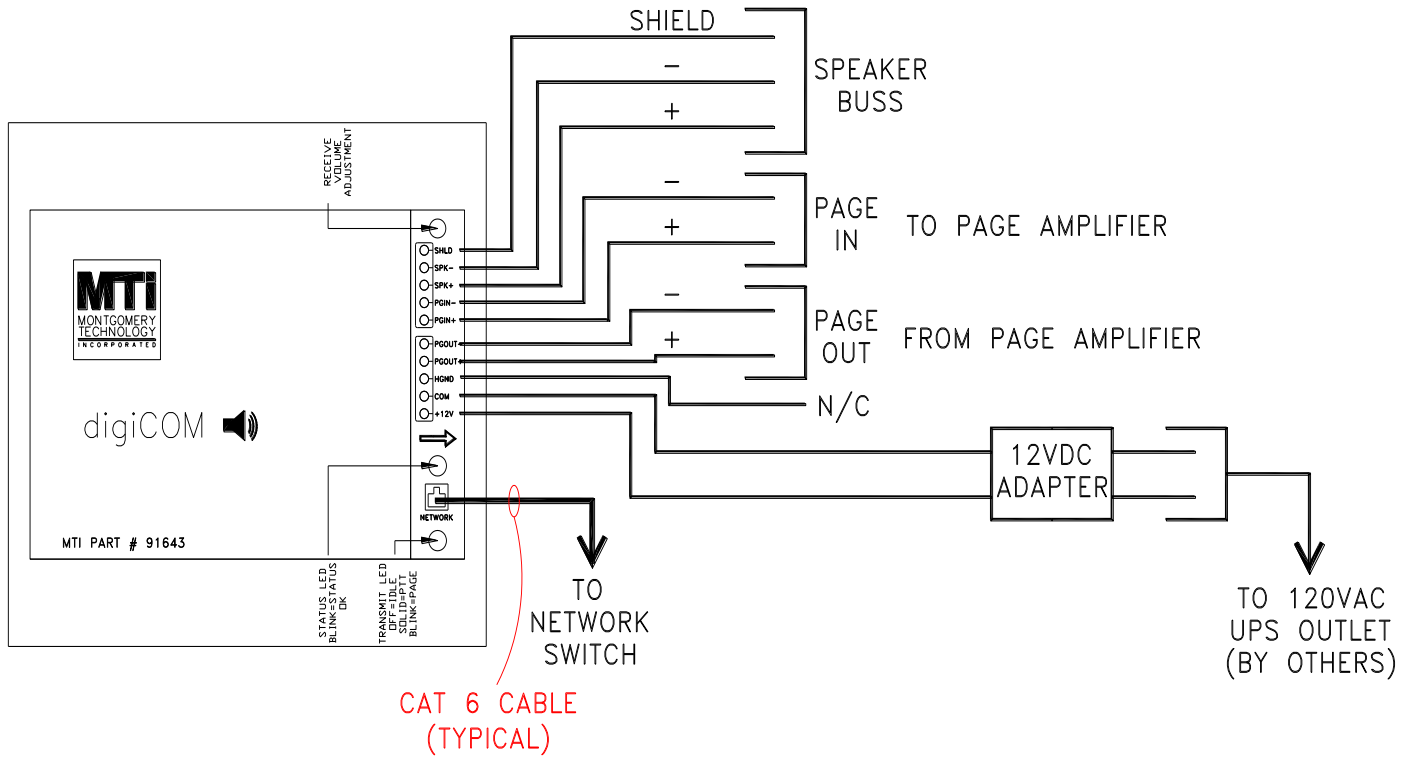Figure 2: Typical MTI Intercom System Diagram

Figure 3: 91743 Digital Intercom Amplifier Connections

## CONNECTING TO THE NETWORK

The 91743 Digital Intercom Amplifier supports a 100 Mbps network connection.

1. Connect a Cat5e (or better) unshielded twisted pair (UTP) cable and connector to the RJ-45 connector on the 91743.
2. Connect the other end of the UTP cable to an available port on a 10/100 (minimum) compatible network switch.

## CONNECTING POWER

The 91743 Digital Intercom Amplifier requires a connection to a 12V DC power supply which is capable of supplying 2 A of current.

To connect power:

1. Connect two power conductors to pin 1 and 2 of the power connector.
2. Connect the other end of the two power conductors to the appropriate power source.

**The 91743 ships with a 12V DC power supply which already has the five position connector pre-terminated.**

## CONNECTING THE SPEAKER BUSS

The 91743 Digital Intercom Amplifier is intended to be used with MTI 81129/229 termination boards and 25 volt line audio devices. The speaker buss from the amplifier connects to the termination boards which distribute the audio signal to the audio devices. MTI recommends using West Penn Wire #292 cable for connecting an amplifier to MTI termination boards.

To connect the speaker buss to an MTI 81129/229 termination board:

1. Connect one end of the WPW 292 cable to the speaker buss connector on the MTI termination boards.
2. Connect the other end of the WPW 292 cable to the speaker buss connector on the MTI 91743 amplifier.

When used in conjunction with a paging amplifier, the 91743 Digital Intercom Amplifier supports paging over the intercom system. The maximum required power that can be sourced to each paging zone is 60W. The "Page In" signal on the 91743 is an unbalanced microphone level output which can be connected to the input of an external paging amplifier. The input of the paging amplifier must be unbalanced. The "Page Out" signal on the 91743 should be connected to the output of the paging amplifier. When the amplifier is in page mode, the output of the paging amplifier is directly connected to the MTI speaker buss. This allows 25 or 70 volt paging speakers to be used depending on the output of the paging amplifier. Typical page amplifier hookups can be seen in the Appendix.

To connect a MTI 91743 to a paging amplifier:

1. Connect two appropriately sized conductors to the "Page In" signals on the 91743.
2. Connect the other end of the conductors to an unbalanced, microphone level input of the paging amplifier.
3. Connect two appropriately sized conductors to the "Page Out" signals on the 91743.
4. Connect the other end of the conductors to the output of the paging amplifier.

## BEFORE YOU BEGIN

You will also need the following:

- An installed MTI Intercom System including 81129/229 termination boards and audio devices.
- Hand tools  and din rail to mount the 91743 in the cabinet/rack

## PARTS LIST

| Qty | Description |
|---|---|
| 1 | MTI 91743 Digital Intercom Amplifier |
| 1 | 12V DC Power Supply |
| 1 | 91743 Installation Manual (MTI DOC 91743-A1) |
| 1 | Product Serial Number Label (attached to the bottom of the 91743 case) |

## PRODUCT SERIAL NUMBER LABEL PLACEMENT

The product serial number label helps identify your 91743 Digital Intercom Amplifier in the event that your 91743 requires service. The serial number label is located on the bottom of the 91743.

## INSTALLATION

The 91743 Digital Intercom Amplifier can be din rail mounted to any back plate in a cabinet or rack. The 91743 must be mounted so that the ventilation holes are aligned vertically to allow air to flow properly.

To install the 91743 to a back plate:

1. Install the din rail on the back plate.
2. Mount the 91743 on the din rail.

## STARTUP

To start the 91743 Digital Intercom Amplifier:

1. Make all required connections as discussed in the Product Overview section.
2. Turn on the intercom system and verify the proper operation of the 81129/229 termination boards.
3. Turn on the MTI intercom amplifier and associated intercom master station.

**Auxiliary Interfaces**
Power/Audio Ports                          Two – five position connectors

**Power**
Power Supply Voltage                       12V DC (+/- 10%)
Power Supply Current (max)                 2A

**Audio**
Speaker Buss Interface                     25V Line
Max Output Power (talk mode)               2W
Max Paging Power (page mode)               60W (requires external paging amplifier)
Total Harmonic Distortion                  <1%
Frequency Range                            100 Hz to 12 kHz
Sample Rate                                8 kHz
Sample Resolution                          8 or 16 bit

**Network**
Interface                                  10/100 Ethernet RJ-45 port (100Base-T)

**LED Indications**
Run Mode                                   Green (blinks on and off once a second)
Audio Transmit – Talk Mode                 Red (solid on)
Audio Transmit – Page Mode                 Red (blinks on and off once a second)
Network Activity                           Green
Network Status                             Amber

**Network**
Interface                                  10/100 Ethernet RJ-45 port (100Base-T)

**Environmental**
Operating Temperature                      32$^\circ$ to 120$^\circ$F
Storage Temperature                        -40$^\circ$ to 149$^\circ$F
Operating Humidity                         20% to 85%, noncondensing
Maximum Humidity Gradient                  10% per hour
Operating Altitude                         -50 to 10,000 ft

**Physical**
Construction                               UL94V-O Flame Retardant ABS
Finish                                     Black
Dimensions                                 6"Lx5.25"W
Mounting                                   Din Rail
Unit Weight                                1.15 lbs

The 91743 digital amplifier provides all of the standard features of any IP-based intercom system. These features include, but are not limited to the following set:

1. TCP/IP based digital transmission of all audio communications between master stations (touchscreen computers) and the amplifier via g.711 digital audio encoding.
2. A single digital amplifier, along with use of MTI 81129 or 81229 termination boards, can support any number of intercom stations.
3. The system can be utilized to meet any number of configuration requirements. The standard configuration method is to utilize 81129/229 intercom termination boards for switching the analog input/output between the digital amplifier and a set of intercom staff stations. If desired, the digital amplifier can be used in a 1:1 configuration, in which one digital amplifier directly connects to a single staff station, providing a fully digital system to the staff station.
4. Communications to and from the 91743 can be managed through a standard Microsoft Windows-based computer with PC sound card, or via a separate handset master station connected through the computer.
5. The mounting hardware provided with the 91743 and supporting components allows for simple installation under most configurations, including cabinet or rack mounting (with use of a backplate).
6. With the use of the MTI ProDesign suite, stations can be assigned labels based on an alpha-numeric numbering system. This allows the designer to assign station names/numbers based on a numbering system or a text-based naming system.
7. With the use of the MTI ProVision application, the intercom system can provide master-to-master calling and/or master-to-station calling.
8. Call indication can be activated through a number of inputs, including:
    a. Call station push button
    b. Auxiliary input such as a card access system or other indication.
    c. Audio Level (Scream alarm).
9. Call management can be governed by standard Push-To-Talk (PTT) control via the ProVision application, or through VOX still "ambient noise" control. For detention facilities, MTI recommends the use of the PTT feature so that the operator has full control over the flow of the conversation.
10. With the use of the ProVision application, the operator has the option to "protect" any intercom. Through this feature, the operator can enter a sort of "privacy" mode, in which the operator will only receive call-ins that are tagged as alarm points (such as audio level alerts).
11. The intercom system can be programmed to handle any number of paging zones, depending on the intercom system configuration.
12. The system can provide group paging capabilities, in which a single group page can be initiated from any associated master station.
13. Multiple paging zones can be activated through an "All-Call" button, or through a group paging icon.

14. Utilizing the PLC logic, any number of behaviors can be added to the intercom system, such as emergency intercom shutdown, emergency all-call, pre-recorded notifications, and so on.
15. Individual staff stations can be included in a paging zone so that the operator can page individual cells.
16. Auxiliary input can be provided through the paging system to allow for audio from a secondary source, for use in situations where music or other audio is desired.
17. The intercom system provides a number of call handling features, such as the following:
    a. Single-touch dialing via the use of on-screen icons.
    b. Call forwarding – Master stations can be configured in a "call-stack", in which certain stations receive a priority level. Intercom call-ins will flow through the stack based on the priority given each station. If stations at first priority do not answer within a designated time period, the second level priority stations will receive the call. Multiple stations can be given the same priority levels so that any station at the same level can answer the call.
    c. The system can be configured to annunciate a call-in through a continuous calling tone.
    d. The operator can be provided the option of handling calls via the computer's standard sound card, or via a handset option.
    e. The system can be configured to allow any master station control over any intercom, or to refuse control of any call station or paging zone to any master station. Furthermore, through the use of operator security levels, access to individual call stations can be allowed or denied based on the operator's permissions. Also, call station access can be managed through the task-group feature of the ProVision application, in which operators only see and have access to the call stations included within their associated task group.
    f. Group remote response capabilities.
    g. Passive station monitoring is available, in which a master station can be set to cycle through an arbitrary arrangement of staff stations for passive supervision purposes.
    h. Master override capabilities are available, in which a higher-priority station can override a lower priority station's conversation.
    i. Call-in time-outs can be set so that any call-in will automatically end after a prescribed time.
    j. Auxiliary activation of intercom calls can be accommodated through dry contact inputs. In this case, a separate physical input can initiate a predefined call, such as a paging station or direct staff station call.
18. The intercom system can be configured to provide interfaces to auxiliary systems, such as CCTV systems, for added functionality. These interfaces can be provided via dry contact, serial communications, or (in some cases) direct API interface.
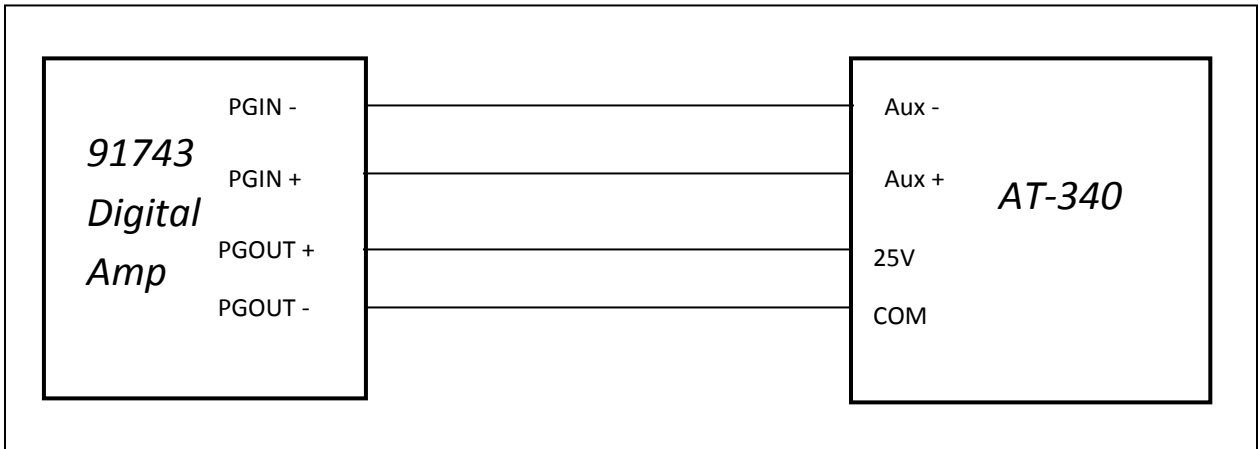
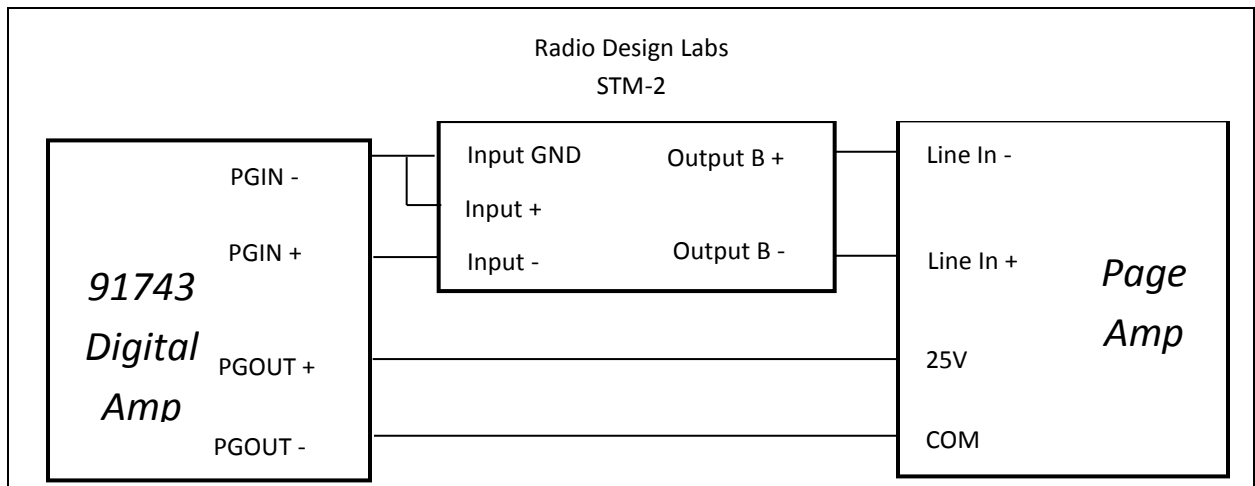**Figure 4: Typical Hookup to a Burtek AT-340 Paging Amplifier**



**Figure 5: Typical Hookup for Line Level Page Amplifier Inputs**