



# PMX41 | Four ASI Input MPEG Multiplexer

## **PMX41 Owners Manual**

Please read this manual thoroughly before use.  
Keep this manual handy for future reference.

Visit Our Website [www.picomacom.com](http://www.picomacom.com)  
Contact Us **858.546.5050**  
Toll Free **800.421.6511**

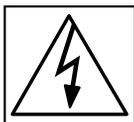
# Pico Macom PMX41- Four ASI Input MPEG Multiplexer OWNERS MANUAL

## Product Inspection

Inspect the equipment for shipping damage. Should any damage be discovered, immediately file a claim with the carrier.

## Important Safety Instructions

To ensure proper installation and operation, take a moment to read this guide before proceeding with the installation. If you have any questions or comments about the **PMX41 - Four ASI Input MPEG Multiplexer**, please contact your dealer or have him contact the **PICO MACOM** service center at this phone number: 800-421-6511.



The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.



The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

**WARNING:** TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE. DO NOT OPEN THE CABINET. REFER SERVICING TO QUALIFIED PERSONNEL ONLY.

**CAUTION:** TO PREVENT ELECTRIC SHOCK, DO NOT USE THIS (POLARIZED) PLUG WITH AN EXTENSION CORD RECEPTACLE OR OTHER OUTLET UNLESS THE BLADES CAN BE FULLY INSERTED TO PREVENT BLADE EXPOSURE.

**ATTENCION:** POUR PREVENIR LES CHOCS ELECTRIQUES, NE PAS UTILISER CETTE FICHE POLARISEE AVEC UN PROLONGATEUR, UNE PRISE DE COURANT OU UNE AUTRE SORTIE DE COURANT, SAUF SI LES LAMES PEUVENT ETRE INSEREES A FOND SANS EN LAISSER AUCUNE PARTIE A DECOUVERT.

- 1. Read Instructions:** All safety and operating instructions should be read before the appliance is operated.
- 2. Retain Instructions:** The safety and operating instructions should be retained for future reference.
- 3. Heed Warnings:** All warnings on the appliance should be adhered to.
- 4. Follow Instructions:** All operating and user instructions should be followed.
- 5. Cleaning:** Unplug this appliance from the wall outlet before cleaning. Use a damp cloth for cleaning. Do not use liquid cleaners or aerosol cleansers.
- 6. Do Not Use Attachments:** Use of attachments not recommended by the manufacturer may cause hazards.
- 7. Water and Moisture:** Do not use this product near water for example, near a bathtub, washbowl, kitchen sink, laundry tub, in a wet basement, or near a swimming pool and the like.
- 8. Accessories:** Do not place this product on an unstable cart, stand, tripod, bracket, or table. The product may fall, causing serious injury to a child or adult, and serious damage to the appliance.
- 9. Elevated Operating Ambient:** If installed in a closed or multi-unit rack assembly, the operating ambient temperature of the rack environment may be greater than room ambient. Therefore, consideration should be given to installing the equipment in an environment compatible with the maximum ambient temperature 50°C.
- 10. Reduced Air Flow:** Installation of the equipment in a rack should be such that the amount of air flow required for safe operation of the equipment is not compromised.
- 11. Mechanical Loading:** Mounting of the equipment in the rack should be such that a hazardous condition is not achieved due to uneven mechanical loading.
- 12. Circuit Overloading:** Consideration should be given to the connection of the equipment to the supply circuit and the effect that overloading of the circuits might have on overcurrent protection and supply wiring. Appropriate consideration of equipment nameplate ratings should be used when addressing this concern.

**13. Reliable Earthing:** Reliable earthing of rack-mounted equipment should be maintained. Particular attention should be given to supply connections other than direct connections to the branch circuit (e.g. use of power strips).

**14. Power Sources:** This product should be operated only from the type of power source indicated on the marking label. If you are not sure of the type of power supplied to your home, consult your appliance dealer or local power company.

**15. Power-cord Protection:** Power-supply cords should be routed so they are not likely to be walked on or pinched by items placed upon or against them. Pay particular attention to cords and plugs, convenience receptacles, and the point where they exit from the appliance.

**16. Lightning:** For added protection for this product during a lightning storm, or when it is left unattended or unused for long periods of time, the unit should be disconnected from power source.

**17. Power Lines:** An outside antenna system should not be located in the vicinity of overhead power lines, other electric light or power circuits, where it can fall into such power lines or circuits. When installing an outside antenna system, extreme care should be taken to keep from touching such power lines or circuits as contact with them may be fatal.

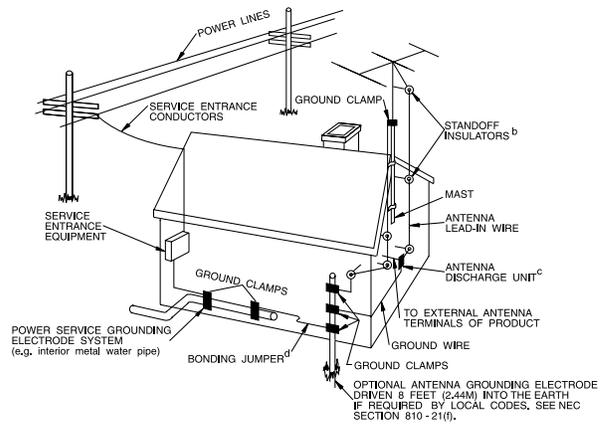
**18. Object and Liquid Entry:** Never push objects of any kind into this product through openings as they may touch dangerous voltage points or short-out parts that could result in a fire or electric shock. Never spill liquid of any kind on the product.

**19. Servicing:** Do not attempt to service this product yourself as opening or removing covers may expose you to dangerous voltage or other hazards. Refer all servicing to qualified service personnel.

**20. Damage Requiring Service:** Unplug this product from the wall outlet and refer servicing to qualified service personnel under the following conditions:

- a. When the power-supply cord or plug is damaged.
- b. If liquid has been spilled, or objects have fallen into the product.
- c. If the product has been exposed to rain or water.
- d. If the product does not operate normally by following the operating instruction. Adjust only those controls that are covered by the operating instructions. An improper adjustment may result in damage and will often require extensive work by a qualified technician to restore the product to its normal operation.
- e. If the product has been dropped or the cabinet has been damaged.
- f. When the product exhibits a distinct change in performance—this indicates a need for service.

EXAMPLE OF ANTENNA GROUNDING ACCORDING TO NATIONAL ELECTRICAL CODE INSTRUCTIONS CONTAINED IN ARTICLE 810 - "RADIO AND TELEVISION EQUIPMENT"



**21. Replacement Parts:** When replacement parts are required, be sure the service technician has used replacement parts specified by the manufacturer or have the same characteristics as the original parts. Unauthorized substitutes may result in fire, electric shock or other hazards.

**22. Safety Check:** Upon completion of any service or repairs to this product, ask the service technician to perform safety checks to determine that the product is in proper operating conditions.

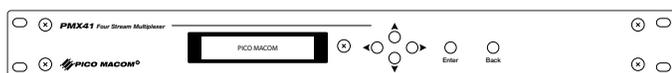
#### NOTE TO THE CATV SYSTEM INSTALLER

**THIS REMINDER IS PROVIDED TO CALL THE CATV SYSTEM INSTALLER'S ATTENTION TO ARTICLE 820-22 OF THE NEC THAT PROVIDES GUIDELINES FOR PROPER GROUNDING AND, IN PARTICULAR, SPECIFIES THAT THE CABLE GROUND SHALL BE CONNECTED TO THE GROUNDING SYSTEM OF THE BUILDING, AS CLOSE TO THE POINT OF CABLE ENTRY AS PRACTICAL.**

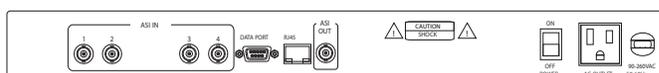


## PMX41 Four ASI Input MPEG Multiplexer

- Accepts up to 4 MPEG-2 or DVB transport streams to be combined on a single ASI output
- Inputs may be single or multiple program streams up to 100 Mbps each from common MPEG sources such as encoders, other multiplexers, demodulators, receivers and servers, in DVB-ASI format
- Output is single or multiple program transport stream of up to 100 mbps in DVB-ASI format suitable for modulation or other MPEG transport and processing equipment
- Passes DVB information and assembles SDT, NIT, EIT tables when in incoming streams' tables
- Simple to use front panel menus allows scan of inputs including data rates of the incoming material to avoid oversubscribing the output stream
- User selects the programs, video, audio content from each input to be passed on to the output
- Constant output rate selectable from 5 mbps to 100 Mbps
- Ethernet remote control with provided utility to augment front panel setup



PMX41 Front View



PMX41 Rear View

## Specifications

### Inputs

Connector	75Ω BNC x 4
Format	DVB-ASI (EN50083-9) (single or multiple programs TS)
Rate	up to 100 Mbps
Packet size	188/208 bytes (auto sense)

### Outputs

Connector	75Ω BNC x 1
Format	DVB-ASI (EN50083-9) (single or multiple programs TS)
Rate	5 to 100 Mbps Constant rate, User selected
Rate Resolution	1 Mbps step
Packet size	188 bytes

### Transport Stream Processing

Input Discovery	Scan determines content and rate
Output Configuration	User selects programs, content per input
PID assignment/remapping	Auto
PSI/SI filtering/regeneration	Per EN 300468 (Auto PMT, SIT, TDT, EIT tables)
NIT insertion	possible per PC utility

### Remote Configuration

Connector	RJ-45
Format	10/100Base-T Ethernet
Protocol	Supplied Utility
Function	Load pre-defined/saved configurations Configure/insert NIT table

### General

Voltage	90-260 VAC, 50/60 Hz.
Power	25 W

### Size

1 RU: 19W x 11.2D x 1.75H (in.)

### Weight

6.5 lb.

### Temperature range

0-50°C

## Ordering Information

**PXM41** Four ASI Input MPEG Multiplexer

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## Introduction

For those familiar with multiplexers, you may jump to the Quick Start 5-step setup checklist in section 5 (“Quick Start Checklist”) in the Front Panel Setup and Operation section.

The **PMX41** is a four input port, one output port MPEG-2 compatible multiplexer. It handles SD or HD program content. It handles MPEG-2 and MPEG-4 programs that comply with the basic MPEG transport stream specification ITU 13818-1. All of the **PMX41** inputs and outputs comply with the DVB-ASI industry standard for signal connection within a headend. The **PMX41** creates a single or multiple program transport stream output from one or more of the inputs which can accept either multiple or single program transport streams.

The **PMX41** offers the ability to combine smaller transport streams into one larger stream for further processing or modulation onto a hospitality, MDU, or small cable systems. The **PMX41** can also drop programs or parts of a program (secondary audio, for example) in any input stream to minimize output stream size to allow the stream to fit into 64 QAM or 256 QAM modulated RF channels or to remove undesired programming from the distributed stream. The use of the **PMX41** allows more programming in limited RF bandwidth where channels are not available or where cost of modulation equipment is a concern.

Typical applications for the **PMX41** are to place off-air programming on a QAM cable plant, using 8VSB demods with ASI output (such as the Pico MPD-ASI); depending on the local broadcasters transport streams, 2 or 3 High Definition programs can be placed into one QAM-RF modulator, using only one 6 MHz. channel. Similarly, satellite receivers with ASI outputs can feed the **PMX41** to allow multiple SD or HD programs to be placed in one modulator, reducing cable plant bandwidth demands. Also, MPEG encoders, such as the Pico MEC, may be used where only analog content is available, with the encoder output feeding **PMX41** inputs to again reduce modulator and RF bandwidth requirements.

While the four inputs fits well with the applications mentioned above, the output of a **PMX41** may be input to a second **PMX41** which may be input to a third **PMX41** cascaded indefinitely, giving additional input ports to create the final stream. Using standard definition programming or a mix of SD and HD, as many as 10 to 12 (SD) programs may be combined into one QAM-RF channel, depending on the programmer provider’s compression and the cable system’s modulation mode (64 or 256 QAM).

The 1RU, rack mount **PMX41** is easy to install and configure, all within the front panel menus. After connecting the MPEG-2 transport stream sources, the user selects the desired output rate to fit his 64 QAM, 256QAM, or other application requirement. The **PMX41** will automatically insert Null packets to provide that output rate. The **PMX41** can scan the inputs to determine the input stream rate, PIDs and programs; the scan checks DVB tables including the SDT, TDT, and others. The user then may select the programs and the pids of that program to be included in the output. The PMT, Video and Audio PIDs are automatically renumbered and restamped to avoid conflicts in the new output stream. Other PSI/SI tables are filtered and regenerated; in particular, a regenerated SDT is in the output stream (when SDT tables are in the input streams) to support DVB set top boxes that require the SDT for installation scanning.

A utility program is supplied that allows saving the current configuration, and quickly reloading the desired configuration from a collection of config files. In addition, the utility allows configuration of a DVB NIT (Network Information Table) for insertion in the output stream, which is too complex for front panel operation. The utility does not network multiple **PMX41** together for operational control.

The **PMX41** has an autoranging power input to accept 120VAC and 240VAC power systems. The nondetachable power cord includes a NEMA15P plug.

The **PMX41** reliability is backed with a Five-Year Guarantee

## Installation

First, unpack the chassis. Find the power cord and the CD with this manual and utility.

Rack mount the chassis using four user provided screws in the front panel “ears”. The unit may be mounted in a rack without an air gap on the bottom if the adjacent equipment does not heat the **PMX41** and the ambient temperatures are below 30°C. The unit does not generate excessive heat and may be operated on a bench top. Do not obstruct the top cover vent holes.

Connect the power cord to the appropriate AC power mains that provides a NEMA15 3 prong socket. Do not cut the ground lug. Place the rear panel power switch in the “ON” position (press where marked “I”). The front panel will light, the internal fan will create a small noise, and the LCD will display characters after several seconds (<10 seconds).

An AC power socket is provided to allow daisy chaining equipment where power sockets are limited. Good practice dictates that the current draw from this socket is less than 10 A. The AC power is not switched by the rear panel power switch; it is always on when the **PMX41** cord is connected to the mains power.

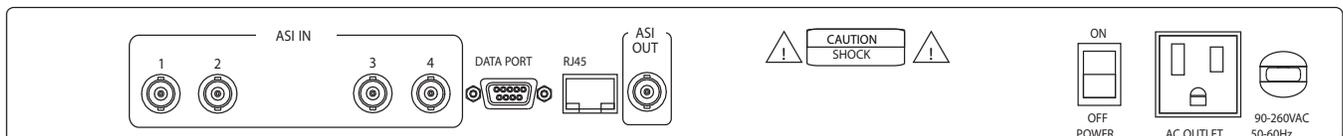
Input, Output, and Ethernet Connections may be made before or after power up.

## Connecting the PMX41

The rear panel includes the following user interfaces in addition to the power interfaces mentioned in the prior section:

- Four 75Ω BNC MPEG transports stream inputs.
- One 75Ω BNC MPEG transports stream output.
- One RJ-45 Ethernet socket, bi-directional (TCP-IP). CAT-5 or better is recommended.

In addition, there is one DB-9 serial port connector used for factory testing and troubleshooting. It has no operational purposes.



PMX41 Rear View

Connect one to four inputs using a 75 ohm coax with BNC connectors to a transport stream source such as an encoder, a digital demod, a digital output satellite receiver, an MPEG server or ASI output adaptor device. All four ports are the same functionality and may or may not be used.

No cable compensations are normally needed. The DVB-ASI standard provides for extremely short cables without attenuation to very long cables, well over 100 meters.

Removing an input connection while operating does not affect the **PMX41** except that the programming/PIDs that were taken from that input are no longer in the output; restoring the input restores the initial operation without further user intervention. If you remove an input cable while scanning that port, you must repeat the scan.

Connecting only one input allows an output to be generated from that input with reduced bit rate. If, for example, a multiple program transport stream is intended for a 256 QAM modulation in a 6 MHz, it may carry as much as 38 Mbps. This will overflow a modulator set for a 64QAM capable cable plant, resulting in no valid output of the modulator. Using the **PMX41**, it is possible to drop programs and PIDs until the total stream bit rate is less than the 27 Mbps limitation of the 64 QAM modulator.

The input (source) transport stream bit rates including Null packets must not exceed 100 Mbps. This is more than twice the typical cable, satellite, and broadcast stream rates and should not be an issue. No damage will result; the **PMX41** simply cannot process it consistently and properly above 100 Mbps.

Connect the one output using a 75 ohm coax with BNC connector to a transport stream “sink” that accepts MPEG transport streams on DVB-ASI, such as a QAM modulator, server/recorder, or ASI input adaptor device. The **PMX41** can operate with output settings from 5 Mbps to 100 Mbps; take note of the limitations of the device (the “sink”) receiving this output for front panel setup later.

*[Optional]* Connect a CAT-5 or better Ethernet cable to an Ethernet switch which also has a PC connected.

## Front Panel Setup and Operation

### 1. Button Operation

The front panel includes the 2-line LCD display and 6 buttons which have the following functions:

**Enter Button.** Used to move from the main menu and enter the second level menus, and to enter third level menus, etc. until an editable field is displayed on the bottom line of the display. Enter will shift that field into edit mode and allow changes. When changes are complete, pressing the Enter button retains those values (temporarily—see “Save” in System submenu) and moves the field out of edit mode.

**Back Button.** Used to move from a lower menu to a higher menu until at the top/main menu. Also, if in an editable field in edit mode, the Back button will abort the edit mode, discarding the changes in that field.

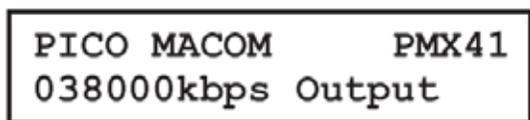
**Left and Right buttons.** Used to move among fields within a menu level. When the desired field is found, pressing Enter can change the field into edit mode if the field is editable. Some fields are not editable and are for information only.

**Up/Down Buttons.** Use in navigate mode to select menus for different ports or different streams. Used in edit mode to change a value or to select from a list of offered options.

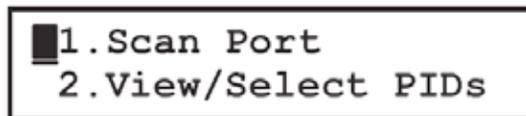
### 2. Front Panel Menu Navigation

This section outlines the menus navigation.

After power up or after 30 seconds of button inactivity, the unit shift to the Home menu shown below and the LCD backlight is off.



Pressing the Enter button (all others have no effect) awakens the **PMX41** to display the second tier sub-menus:



From here, pressing back would return to the Home menu. Pressing Left/Right has no effect. Pressing Enter would open the Scan Port functional menus. Pressing Down moves the blinking cursor down to the second line, where Enter would open the View/Select PIDS functional menus.

```
1.Scan Port
█2.View/Select PIDs
```

Pressing Down a second time shows the following:

```
2.View/Select PIDs
█3.Output Set up
```

Pressing the Down button again twice shows:

```
4.Communication
█5.System Setup
```

Pressing the Down button again completes the cycle of menus:

```
5.System Setup
█1.Scan Port
```

The Up button works similarly, moving from menu #1 to Menu #5, to Menu #4, to Menu #3, etc.

From the menu position shown above, with the cursor at the #1 Scan Port line, pressing Enter would move to the Scan functional menus:

```
121500 kbps
█Port 1
```

Pressing Up or Down would move through Port 2, Port 3, Port 4 and back to Port 1. Pressing the Back button would return to #1. Scan Port, the sub-menu level. Pressing Enter would initiate the scan procedure; pressing Back while scanning will cancel the scan.

Other menus navigate similarly.

**Important Note:** After any edits to the individual menus, apply those changes and store the changes in non-volatile memory by navigating to menu #5. SYSTEM SETUP, pressing ENTER, and pressing ENTER again when the cursor is at left of SAVE. (See detailed menu operation, SYSTEM MENU, below.)

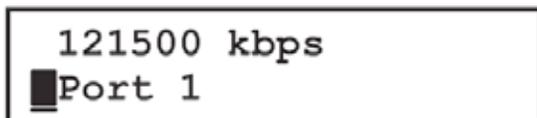
### 3. Front Panel Menu Map

Home Menu	Pico Macom PMX41		
	038000 kbps Output		
<b>1. Scan Port</b>	<i>(Line 1 = Input rate)</i>	000000 kbps	
	Port 1	Enter = scan	
	Port 2	Enter = scan	
	Port 3	Enter = scan	
	Port 4	Enter = scan	
<b>2. View/Select PID's</b>	Port 1	<i>[incoming] PGMs=000</i> Out PGMs 000	Enter = select program/pids
	Port 2	<i>[incoming] PGMs=000</i> Out PGMs 000	Enter = select program/pids
	Port 3	<i>[incoming] PGMs=000</i> Out PGMs 000	Enter = select program/pids
	Port 4	<i>[incoming] PGMs=000</i> Out PGMs 000	Enter = select program/pids
<b>3. Output setup</b>	Out Bitrate [5-100]	038000 Kbps	
	Out Packet Length	188/204	
	<i>Total In Bitrate</i>	<i>038000kbps</i>	
<b>4. Communication</b>	IP Address	192.168.020.041	
	Port Number	5000	
	Subnet Mask	255.255.255.0	
	Gateway	192.168.020.001	
	<i>MAC Address</i>	<i>00.00.550.A1.C2.E0</i>	
<b>5. System Setup</b>	Save	Enter = store edit in non-volatile memory	
	Factory Default	Enter=restore	
	<i>System Info</i>	<i>PMX41-Ver1.02</i>	

*Items in italics are not editable*

### 4. Menu detailed operation

#### Scan Port menu



When entering this menu, the incoming stream bit rate is displayed, including null packets in the incoming stream. Pressing the Enter button will start an automatic scan for programs, specifically the PAT, PMTs and associated video and audio PIDs plus DVB compatible SDT, TDT, and EIT tables. The scan proceeds quickly if all tables are present. If the stream does not have the DVB tables, it will pause, showing the table for which it is searching for approximately 30 seconds then finish the scan. The purpose of this scan is to enable Program selection in the 2.View/Select menu. Both are performed by port number and this scan must be completed on a specific port before the View/Select menu will operate on that port.

The input may be either 188 byte or 204 byte (satellite) packet lengths and the **PMX41** adjusts automatically. The input stream may be either single program transport stream (SPTS) or multiple program transport stream (MPTS).

Doing a scan during normal operation will interrupt the content flow in that port during the scan.

### View/Select PIDs menu

The 2.View/Select PIDS menu is the most complex menu set but is easy to navigate once understood. Starting at:

```

1. Scan Port
█ 2. View/Select PIDs
    
```

Press the Enter button to go to:

```

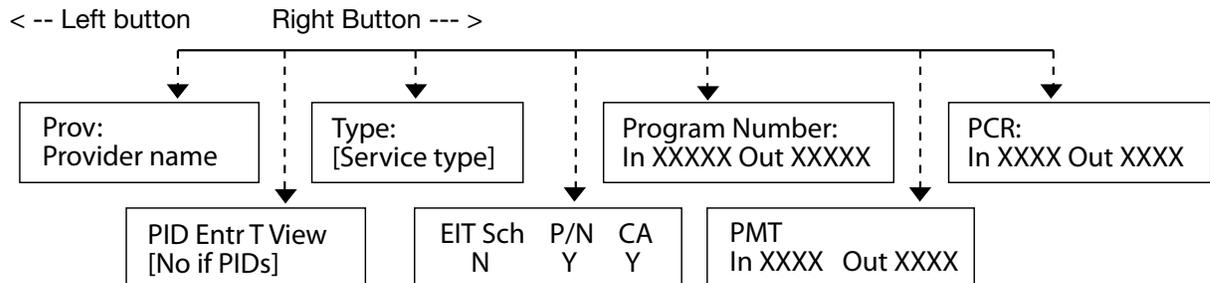
Port1      PMGs XXX
OutPGMs   YYY
    
```

In the menu above, the total number of programs found by the scan is shown as XXX. The number of programs currently taken for the output is shown by YYY; this will always be zero in the first steps of setup. You may use the Up/Down buttons to select Port 2, 3, or 4. Press the Enter button to show the following:

```

Port1      PMGs XXX
001. Program name
    
```

You may use the Up/Down button to scroll through Program 1, 2, up to XXX. This “Program name” is taken from the incoming transport stream and maybe blank (showing only “001.”, for example) if the source failed to include program name. After scrolling to the desired program, use the Right (or Left) button to scroll through other sub-menu affecting Program 001.



The “Provider name” (often the network name) is taken from the incoming transport stream and maybe blank if the source failed to include a provider name.

```
PID Entr to View  
[03]
```

The key menu is the “PID Entries to View” menu, above. A typical Video and Audio program will have “[02]” shown on line 2, meaning 2 PIDs, one video and one audio. A program with secondary audio may have [03] or more shown. Unless there are stringent bandwidth issues, we recommend you select and taken all of the pids numbered here. Press the Enter button to move down one additional level, under the “PID Entr to View” menu:

```
Video*  
In:XXXX Out:YYYY
```

In the above menu, the XXXX indicates the incoming stream PID number for the video packets, and YYYY indicates the reassigned PID number in the output. In this case, the **PMX41** has determined from the incoming stream that this PID carries video; the menu may display other data types, including audio, private, user, or others. **MOST IMPORTANTLY**, note the asterisk on the first line. When present, this PID’s data is in the output as part of the program; when the asterisk is absent, this PID’s data is not included in the output stream. The Enter button will toggle the asterisk present (on) or absent (off). Use the Down (or Up) button to scroll through other PIDs that may be included in the program in the output:

```
Audio*  
In:XXXX Out:YYYY
```

This is the first of one or more Audio elements in the program. Note that the incoming and outgoing PID numbers are provided. Note the presence of the asterisk, so you know this PID is in the program in the output stream.

**Note:** When you have selected all of the PIDS in this program that you wish to be in the output stream, from any of the menu at this level, press the Back button to move back to the “PID Entr to View” menu level.

You may use the Right button to view other stream parameters:

- Stream type is from the incoming program table; Typically, [00] or [01] is used for video and audio programs.
- DVB tables are displayed as present or not present.
- The incoming Program number and outgoing Program number are displayed.
- Incoming PID number and outgoing PID numbers are displayed for PMT and PCR.

In the default configuration, the **PMX41** does not pass TOT, EIT, and NIT tables. See the section on remote configuration if these tables are needed. The **PMX41** does not pass the 0x1FFE A65 ATSC base PID containing EIT and other tables.

To include the second program on the selected port in the output stream, press Back until you reach the “Port n” menu below, then use Down (or Up ) buttons to select another program number, as shown below. Use the Right (or Left) button to scroll through other submenus affecting the selected program number.

```
Port1      PMGs XXX  
002.Second PGM name
```

At any time, in this process, you may go to the 5.System Setup -> SAVE menu and press the Enter button to save your selections, then return to the 2.View/Select PIDS menu to select more programs. A good practice would be to save after each Port is selected.

Changes made during normal operation will interrupt the content flow in that port until the 5.System Info save is completed and the **PMX41** resets with new program and PID selections effective. The SAVE process will interrupt output for 1-3 seconds.

### Output Setup menu

The Output Setup has three sub-menus. The first is used to set the total output bit rate. The **PMX41** will add as many Null packets (PID number 1FFFF) as needed to provide a constant out at the selected rate. If the selected program total 15 Mbps and the output rate is set to 26800 kbps, the **PMX41** will generate Null packets totaling 11800 kbps (i.e., 26800-15000). If the selected streams consistently exceed the selected rate, such as selected stream total 16 mbps and the setting is 15 mbps, the **PMX41** cannot perform this requested task and the output will be 100% Null packets.

<b>Out Bitrate [5-100]</b> 038000
--------------------------------------

We recommend to never fully subscribe the output bit rate, that is, never set the output to exactly the total of all selected programs. First, the MPEG transport tables may add to the data rate. Secondly, some sources such as off-air broadcasts frequently change their stream makeup, shifting bit rates among the programs. More importantly, even in “constant” bitrate sources, there is always some “jitter” in transport streams, so the instantaneous rate may jump up and down slightly. If the selected programs spike and exceed the buffering, packets will be lost, impairing video and audio decoding. If the overflow is extended, the **PMX41** may reset and drop larger numbers of packets. As noted above, if the overflow continues for a longer term, the **PMX41** will not reset completely and continue to output Null packets until the oversubscribed condition is removed. As a guideline: most transport streams operate well with most equipment with at least 500 kbps (0.5 Mbps) of null packets or more.

A common application is to multiplex programs together for input to a QAM modulator for cable systems. If you are using 64 QAM modulation, we recommend setting Out bitrate less than 265000 kbps. If you are using 250 QAM modulation, we recommend setting Out bitrate less than or equal to 38000 kbps. This leaves a small headroom and the QAM modulator can add its own null packets as needed without overflowing.

<b>Out Packet len</b> 188
------------------------------

The second Output Setup menu indicates output packet length is 188 bytes per packet. In this model, packet size is fixed and not editable.

<b>Total in Output</b> 000000 kbps
---------------------------------------

The Total in Bit Rate menu allows you to set the fullness of the transport stream. As an example, an incoming stream of (total) 15 mbps may have 10 Mbps of that as null packets, and only 5 Mbps of the total as PAT, PMT and the video and audio content. When you select that program in 2.View/Select menus, this 5 Mbps content is added to the “total” shown here, To understand the bandwidth usage, you may add a program, check this number, add another program, check the total of the two here, add a third, check the total, until you approach over subscribing the output stream. Note that this display is a snapshot and will vary each time the menu is entered, due to normal stream rate variations and the impact of statistical multiplexing if you have taken only a part of the incoming stream to output.

**Communication menu**

**IP Addr**  
192.168.001.002

**Port**  
5000

**Subnet Mask**  
255.255.255.000

**Gateway**  
192.168.001.001

The submenus in the Communication menus allow configuration of the Ethernet port for network communications with a PC. This is not required for normal setup and operation, but is required if you wish to use the supplied utility to save and re-load **PMX41** setups for rapid shift among applications or advanced application if you wish to add a DVB NIT table into the multiplexed output, in those cases where your downstream applications require it.

The unit does not support DHCP and requires a static IP address. For small systems, there is a default IP address, subnet mask, and gateway included. To check the defaults, press Enter at the 4.Communication menu, then use the Down button to move through the fields. To edit any parameter, press the Enter button, and Enter to save or Back or abort in the editing processing. The factory loaded Mac address is displayed but not editable.

As a minimum, to use most of the default values, change the IP address to one that is the same as your PC except different in the last 3 digits (the last octet). For example, if your MAC or PC is 172.254.20.020, select any number for your **PMX41** address with 172.254.20.xxx. If the numbers selected are already used by other equipment in the subnetwork, there will be collisions so try several if there are problems connecting. The more advanced user can use Windows Start/Run/cmd, then >ipconfig to find the PC IP address and then >ping xxx.xxx.xxx.xxx to test if an address is in use.

**System menu**

The System Info submenus are key to the **PMX41** operation.

**Save**  
**Factory Default**

The SAVE menu acts as an Apply function to edits made in menus #1 to #4, re-setting the **PMX41** with the edited data as the active configuration. Further, the SAVE menu stores the edits made in the prior menus into non-volatile memory so they will be restored to the operating mode when power is restored. With the cursor at the left of SAVE, press the Enter button and observe a 1-3 second delay. The cursor returns to the left of Save and the process is completed.

**Save**  
**Factory Default**

When the cursor is at the left of Factory Default, pressing the Enter button restores the factory loaded parameters. If the unit malfunctions, a first step in troubleshooting is to load the factory default and follow the Quick Setup checklist below to restore operation.

**System Info**  
**Save**

To aid troubleshooting, the Info menu shows the model number and firmware version.

## 5. Quick Set up Checklist

- ✓ Unpack, mount in rack, and apply power.
- ✓ Connect input and output BNC connectors
- ✓ Set #3.Output/Out Rate to 038000 for 256 QAM, 026500 for 64 QAM, or as needed. Nulls packets fill to make a constant output rate if less than the set amount.
  - o If the programs, even momentarily exceed, the set amount, results are unpredictable; typically the total output goes to all null packets until the rate is less than the set amount.
  - o If the program source is a broadcast station or a statistically multiplexed satellite transponder, allow 15% or more extra (null) space in your program selection.
- ✓ With sources present, use #1.Scan Port menus to scan all transport streams at the input ports and then use #2 View/select to build the output stream.
  - o Note that the Scan Port menu displays input bit rate. This includes Null packets.
  - o If there is concern about the output rate, perform Scan and View/select on a the port with most important programming first, then repeat scan and View/select on the next port of importance, and so forth. Note that you can scan and view/select, and then check #3 Output Setup/Total [Program content] In Bitrate menu to observe how each program addition adds to the output content rate limit.
  - o Selection of the output is at three levels: first Port; second, Program; third, PIDs. From the 2.View/Select PIDS menu, press Enter, Enter and note the program number/name. Scroll up or down to the program(s) you wish to include in the output. For each program, press Enter, Right to “PID Entr T View” menu, and Enter to show the video PID. Press Enter to toggle the asterisk on and press down to the next PID in the program. Press Enter to toggle the asterisk on, for all PIDs in the program you wish to be in the output. Use Back button twice to go back the programs and scroll to another program you wish to include in the output and repeat the PID selection. Use the Back button three times to get back to the Port level
- ✓ Navigate to the 5.SYSTEM SETUP menu, press Enter. With the cursor at left of the SAVE submenu, press Enter again. Make sure you **SAVE**.
- ✓ Set up complete!

## Ethernet Remote Communication

The information in preceding sections describes the basic setup using the front panel to multiplex incoming streams, to select which programs and which program elements are present in the output. This section describes options provided for more advanced users to:

- Save the **PMX41** configuration in a PC and to load one of possible several such setups in a quick manner.
- Change some of the default setting such as PID renumbering, change EIT offsets for time zone differences (potentially desirable for satellite delivered programming if guide issues are present), and more
- Generate and insert an NIT (Network Information Table) that facilitates system applications where more than one **PMX41** is used in a network of multiple channels, to allow some set top boxes, when enabled in the set top box, to associate logical programming and their physical channels.

### 1. Installing the PMX41 Utility

The PMX41 was shipped with a CD containing the Owner’s Guide (this document) and the PMX\_Utility.exe files. The files may be copied onto any convenient folder or the desktop. You may wish to create a shortcut by highlighting the utility file name or icon and right clicking on the mouse, to select “Create Shortcut”. You may drag this onto the desktop for convenient access. No specific Windows Installation is needed.

### 2. Starting the PMX41 Utility.

Open the utility by double clicking the file name or icon, or by highlighting the name/icon and pressing Enter. A password dialogue box will open.



Figure 1. Enter Password window

The factory default password is “picomux41”. Type this (in lower case letters) in the space provided and click **OK**. (Some PC operating systems allow only 6 characters, so try ‘picomux4’ if there is difficulty.)

The following screen will open:

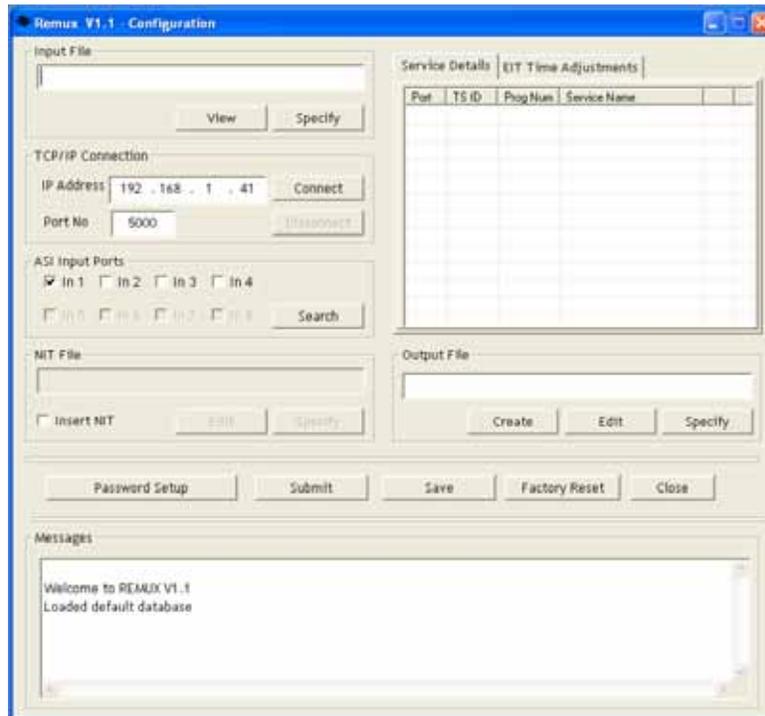


Figure 2. Main PMX41 Utility window

## 2.1 Change Password

To change the password to one of your own, find the **Password Setup** button, directly above the “Messages” text box. Click on the button to open the following window:



Figure 3. Change Password window

The new password you enter **MUST** be 6 characters long. Enter your desired password, re-enter the desired password, and click the **OK** button to apply and save the new password.

If you forget your password, there is no “backdoor” to reset it. You must delete the copy of PMX\_Utility.exe and copy a version from the original factory CD in its place.

### 3. Connecting/Disconnecting to your PMX41

The **PMX41** use standard Ethernet 10/100Base-T networking protocols. The **PMX41** only supports static IP addressing, so you may have to ask the local network IT manager to issue an address that does not interfere with the network if you are using a LAN connection. See the section above that discusses the *4.Communcations* menu and installing an IP address, port and subnet.

In the main utility window, locate the section shown below:

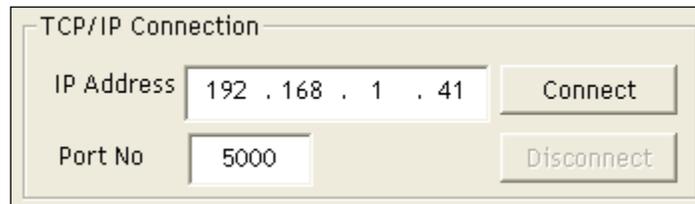


Figure 4. TCP/IP Connection portion of the utility window

Check the front panel of the **PMX41** under *4. Communications* to see the IP address and Port number entered into the front panel. Enter them here, as displayed on the front panel. Click on the **Connect** button and observe the Messages box for success or failure notification.

If the connection failed, check Cat5 jumpers to your switch from both the PC and the PMX41 and re-check/re-enter the IP address and port. Your PC and the **PMX41** should have similar addresses, that is, the first three sets of 1-to-3 digits are the same and the last group of three numbers different by at least one; change the **PMX41** to match the PC except that the last number cannot be the same.

Note that many other buttons “connect” as their first action even if you have not previously tried the connection by pressing the button yourself.

Once you have connected to the **PMX41**, the button changes to “Disconnect” and the user is NOT allowed to make changes on the front panel to avoid conflicts between remote and front panel settings. To return control of the **PMX41** to the front panel, click the Disconnect button.

### 4. Using the Utility

The Utility has three main applications.

- First, you may configure the unit from the utility as you have done with the front panel. If this is your objective, you will find using the front panel faster and simpler. You may save this configuration as a backup file and load it into a spare unit or the primary unit if needed.
- Second, you may re-configure those defaulted or automatically assigned parameters not selectable on the front panel menu. If you must place a certain program or video stream on a certain PID number for your network application, you may do so by configuring the **PMX41** via the front panel, and then use the utility to create an “output file”, edit it and make it active.
- Third, you may create an NIT (Network Information Table) that is used to bind this **PMX41** output with other streams (from other **PMX41** or otherwise) into a common “network” of content

The second and third applications are considered more advance use, and you should have knowledge of MPEG-2 and DVB protocols.

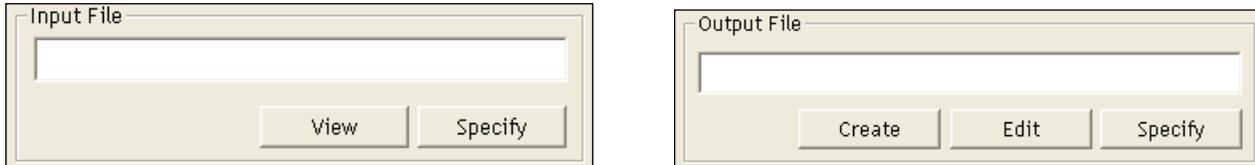
During the following steps, please note the Message window as the steps proceed. The message box will show progress as the processes complete or advise the process failed.

## 4.1 Basic setup of the Utility

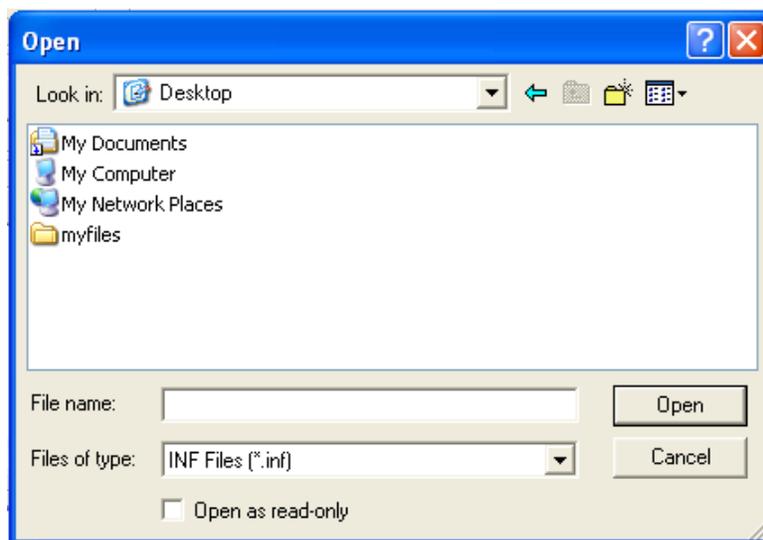
All of the applications of the PMX41 Utility begin with creating new files or selecting existing files to hold configuration information.

### 4.1.0 Selecting Input and Output files.

The utility generates two types of files to control operation, an input “.inf” file and the output “.txt” file:



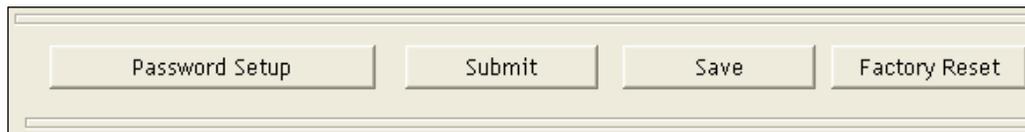
The input file is used to contain information about the streams present on the **PMX41** inputs. The input file may be viewed by clicking the **VIEW** button. There is additional configuration information not displayed as text in the input file as well. The simplest approach is to use an existing .inf file; one example is on the CD with the Utility and should be copied to your working folder. To select a previously used file name, click on the Specify button to show:



Either select a file name or enter a new file name (without the .inf extension) and click Open. You may then View the file's contents. If new, it is a formatted file without data. If selecting a previously used file name, the last data of the input streams will be shown in the View window, as last saved, until you overwrite by doing a new ASI input Search. When you exit the file, you will be asked to save it. The input information, without other configuration information, as seen in the output file, may saved for reference or printed as a text file for your use.

If you do not click on the Specify button and specify an input file name, one will be generated when you scan the inputs.

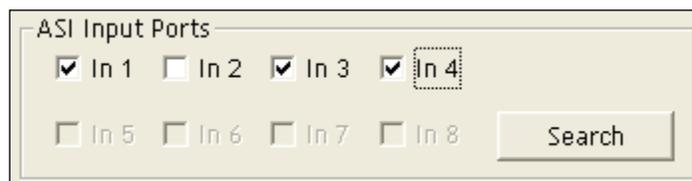
Likewise, an output file will be generated for you when you do an ASI Input Search if you do not either **Create** a new file name or **Specify** an existing file name. After a file name is selected by or generated for you, you may also click Edit and make changes in the text file. Returning from the Edit mode does NOT save the file and does NOT make it active. When we are ready to save the file, we will click the Save button. When we are ready to apply the changes to the **PMX41**, we will click the **Submit** button.



### 4.1.1 Remote scanning of input ports.

If you have not specified input and output files, this step generates them for you when you click the Search button. See the previous section for file information.

In the main utility window, locate the section shown below:



First, check those ports which have input streams and which you wish to include in the output stream. In the screen above, the content on input port 2, if any, will be ignored. Then, click the **Search** button. One caution: the scan interrupts **PMX41** output, with only null packets output during the scan.

The scan of all the selected ports can proceed quickly if the **PMX41** can find the DVB tables in the input streams; if the streams are missing SDT, TDT or other DVB tables, the scan waits for an instance of the tables for as much as 30 seconds in each input before proceeding without them. [Checking a port without a stream input also delays the scanning.]

The programs on the selected ports are listed in the **Service Details** window in the upper right of the main utility screen. Check those programs you desire to be in the output. Click on the Save button. (Caution: you will be overwriting the file name shown in the Output text box.) Click the Submit button and the configuration is downloaded to the **PMX41**.

You have now completed the basic setup as may be done on the front panel, allowing **PMX41** defaults and automatic assignments to be used.

### 4.2 Advanced stream configuration editing.

This section discusses what is in an output configuration file, how to export and import configuration files, and discusses why you would want to do so, and what impact you can have on the output stream.

Internal memory in the **PMX41** holds configuration that you have entered in the Scan, View PIDs, and Output front panel menus in addition to parameters that the **PMX41** automatically assigned to simplify your setup. This data used at power up to configure the unit for operation until you modify it with a front panel SAVE action. If you have a typical ongoing operation and wish to change items that are input via the front panel, do it there, as it is simpler and less likely to cause errors.

To change the multiplexed transport output stream parameters requires saving, editing, and re-importing of the the output.txt file described in the above “Basic Setup” section. An example of an output .txt file is included for reference to show the parameters that you may change.

The saved output .txt files may be of value in some more advanced cases, whether edited or unedited.

- If you wish to have a backup of the configuration, to use in the event of problems with this unit, or in the event you wish to quickly load a spare **PMX41** used to replace a problematic unit.
- If the same device is used in more than one configuration; if you have a weekday program lineup and a weekend program line, or a routine lineup with special event lineups, and need to make changes in the multiplexer, then saving each as a separate file and re-importing them can make this re-configuration quicker. (Again, the front panel menu may be simpler and quicker to change if the changes are small, limited to one input port or including/excluding one program.)

We will focus on editing the parameters and saving the output \*.txt file, then re-importing it to change automatically assigned parameters, such as PID numbers, EIT time region corrections, etc. You may need to do this to homogenize a larger network of several multiplexers and stream sources. To make these changes, the current configuration (as set up by the front panel with automatic selections or by a prior edited output \*.txt file) is exported as a file and edited and then re-imported (or it is edited in the Utility). That configuration is then downloaded to the **PMX41** to be used in place of the prior parameters. Some knowledge of MPEG and DVB<sup>®</sup> technologies may be required to select the edits needed for your application, but this training is beyond the scope of this manual.

Procedure:

1. Follow the above section “Basic Setup” through the action to selecting the programs in the Service Window and pressing SAVE. Note the .txt file name.
2. Locate and open the .txt file with a text editor such Notepad. Do not open and save in WORD as .doc file to avoid Word’s added formatting data.
3. Select the parameters to change and make your edits. Note that there is no checking by the editors to prevent MPEG-2 and DVB protocols violations. For example, you might edit the out PID number from PMT= 256, Video = 257, Audio=258 to PMT=11, Video =12, and Audio =13. This violates protocol reservations of content in PIDS less than 16 or 32, so the stream will not operate correctly in many decoders. Also note that the edit would allow entering PID number 256 for all three service elements, but the PMX41 would either fail to multiplex them in the same PID altogether or the stream would be useless.
4. When edits are complete, save the file as the same .txt file name or a new .txt file name.
5. Return to the PMX\_Utility screen Output section and click **SPECIFY**. Browse to the edited file name and click OPEN. So that the file name appears in the Output section textbox.

Alternative to using an external text editor, you may **SAVE** the output file as in step 1, but ignore step 2, to use the internal editor: Press **EDIT** in the output section, make the edits, and close the window. Make sure you press **SAVE** again.

6. Click on the **SUBMIT** button to initiate download of output .txt file to the PMX41 configuration memory and wait for the action to complete in the Messages window.

### 4.3 Adding a NIT to the PMX41 output

The DVB protocols overlay the basic MPEG-2 with added features and functionality by describing the contents of a single (multiple program) transport stream and also by describing the contents of a group (“network”) of related multiple program transport streams. The PMX41 handles many of the tables in the input streams but cannot know the breadth of the network.

For example, the input streams may contain an SDT (Service Description Table) with content data about that stream and the PMX will consolidate the data from inputs streams into a SDT in the output stream by default. Devices such as a Set Top Box (STB) can access this information to present to the user onscreen or use it to scan, lock to, and save program information of the stream.

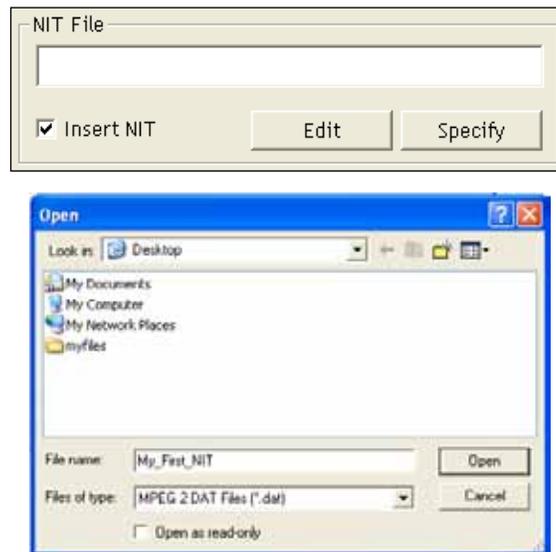
If your system needs a NIT (Network Information Table) to assist a STB to know about the other streams in the network while receiving this stream, you may manually set up a NIT and insert it in the output stream. For example, in a multiple channel cable system the NIT might carry the QAM modulated signal's frequency (RF channel), its symbol rate, and other information to allow the STB to tune to that transport stream when the user changes programs.

The NIT contains "sections" that provide data on the streams in the network. The Utility allows you to define a section, then fill it, and define additional sections, one for each stream. When completed, the NIT table with these sections can be inserted in the output stream.

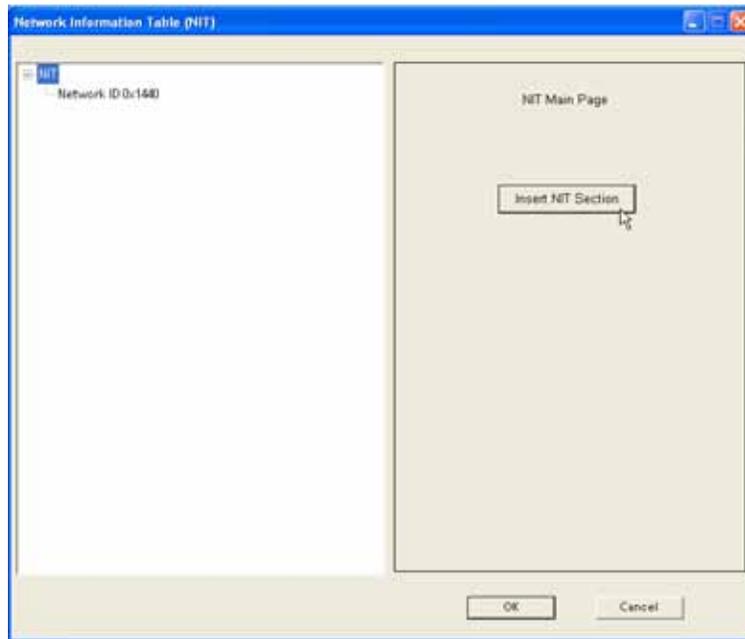
The set up of a NIT is much too complex to be done on the front panel and the Utility is needed. Knowledge of the MPEG and DVB protocols which is needed is beyond the scope of this manual.

Procedure to create and insert a NIT:

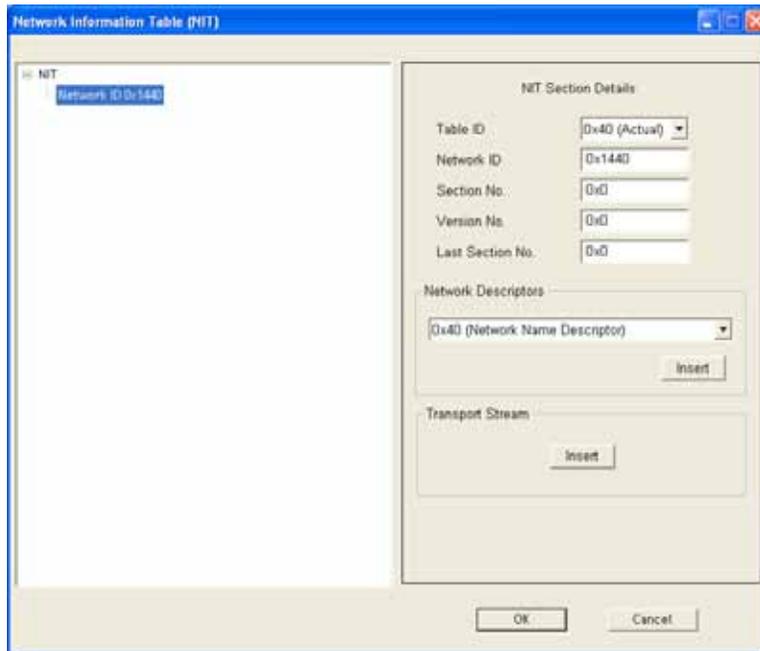
1. On the main Utility screen, locate the NIT Table section. Click "Insert NIT" and then click **SPECIFY** to create a new NIT table such as "My\_First\_NIT" or select an existing .dat file from a previously saved NIT table in the window that opens. Click **OPEN** to finish file name selection.



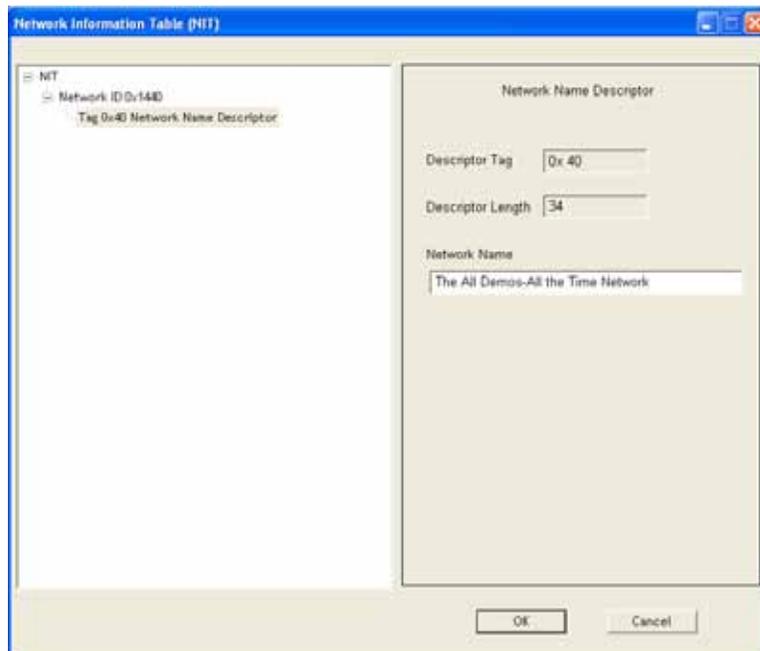
2. Click the **EDIT** button to open the Main NIT window, and click the "Insert NIT Section" button. Observe the "tree" view in the left window pane. A Network ID entry is added when you click "Insert NIT Section" with default number 0x1440. Pressing **OK** would save the NIT and exit (without any data included at this point) while **CANCEL** would abandon the NIT table activity.



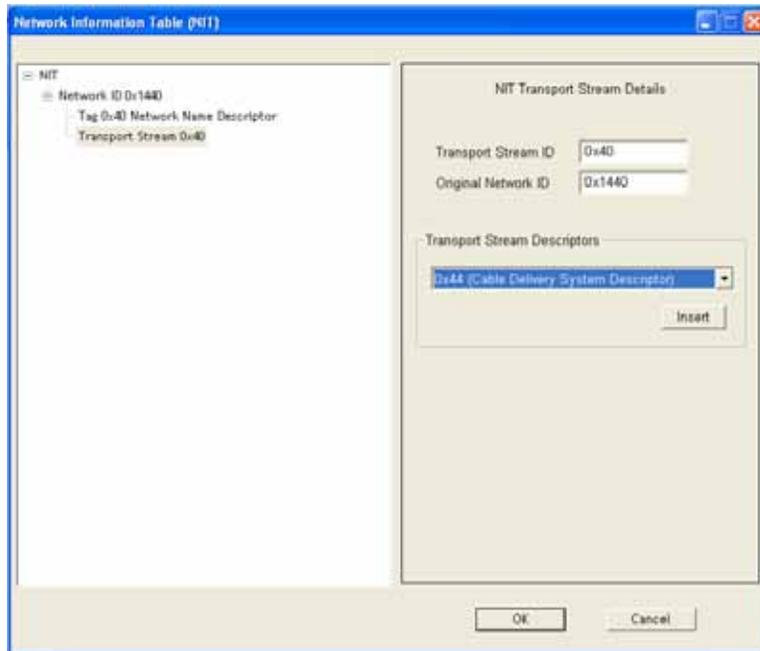
3. In the tree view left pane, click on the Network ID line and a new right pane appears with NIT Section Details.
  - Select Table ID 0x440 if you are entering data about this PMX41 output stream, select 0x041 if for another stream in the network.
  - You may select another Network ID number if desired.
  - The first stream or RF channel is described in section 0x00, the second in stream 0x01, the third in section 0x02, and so forth.
  - Version number refers to this NIT version; if you make a change in the future, increment the Version to help devices flag the change.
  - Last Section refers to the number of streams or channels you will include in the NIT. The last section number is the number of streams minus 1; for example with a network of 15 streams, the Last section number would be 0x0E.



- 4. To proceed, click on Network Descriptors **INSERT** and click on the “Tag” line in the left pane, to show the window below and insert your network name. As you type the Descriptor length is adjusted; the Tag is not editable.



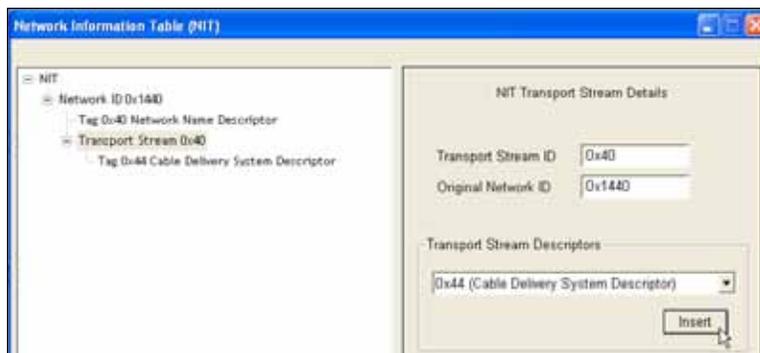
- 5. With introductory network information generated, it is time to add the first transport stream data. Click on the Network ID line in the left pane to back up to the NIT Section Details pane, but now click on the Transport Stream **INSERT** button. Highlight the Transport stream line.



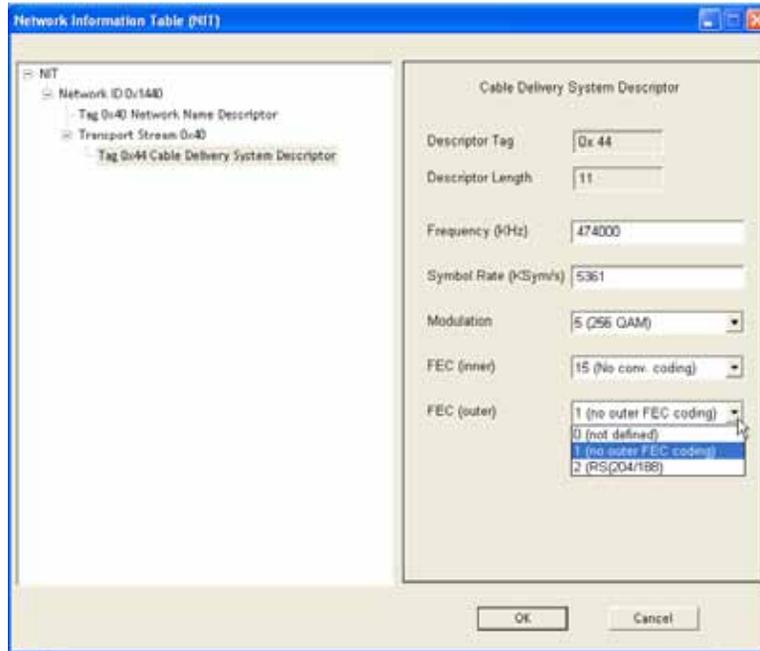
You may edit the Transport Stream ID and Original Network ID if desired. Each Transport Stream ID must be unique in a network, so, when we add another transport stream, this must be edited to a unique number.

In our example, the system is a multiple RF channel QAM cable application, so we have selected 0x44 Cable Delivery System in Transport stream Descriptor

6. When you click on **INSERT**, the Tag 0x44 line is added in the left pane.

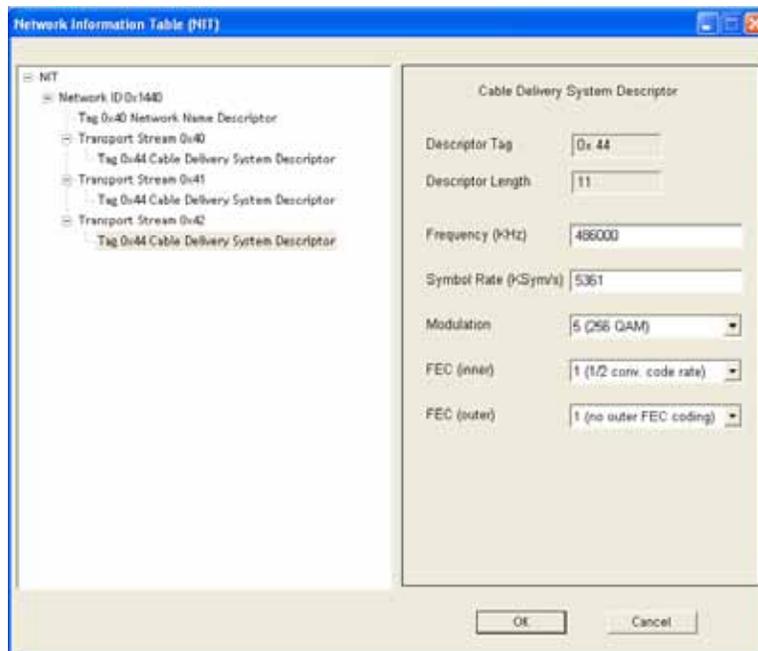


Highlight the Tag 0x44 System Descriptor to open the following:



Edit the fields per your network plan, using numerical entry for RF frequency of the channel and the symbol rate and pull downs for QAM constellation. FEC is present for satellite applications and not used in our cable example. (The defaults of 1, 1 work as well for QAM.)

- Additional Steams and channels by clicking on the Network ID line in the left pane, then clicking the Transport Stream **INSERT** button as you did in step 5. Make sure you use a unique Transport Stream ID in each added stream/channel. The system below has three RF channels of QAM modulated transport streams:



8. Press OK to save the table as a .dat file. Note the message “Successfully saved to file - C:\Documents and Settings\myname\Desktop \My\_First\_NIT.dat”. You may generate and save more than one NIT file or keep a backup file copy.
9. To insert this NIT or another NIT or a backup copy of your NIT, make sure “Insert NIT” is clicked on the main Utility screen and the desired NIT table file is selected in the NIT File textbox, then click SUBMIT.
  - Note that this will also submit the currently select output .txt file as well.
  - Be sure you have specified and input and output file, have scanned the port and selected the programs to be in the output as outlined in the basic Utility setup section.

## Appendix A - Sample Files

**INPUT EXAMPLE:** (Ports One and Two with inputs, One program and two, respectively)

\*\*\*\*\*

REMUX V1.1 INPUT FILE

\*\*\*\*\*

\*\*\*\*\* INPUT PORT NO 1 \*\*\*\*\*

[DIGITAL TV]

INPUT =1

NAME =Program91

PROV =MEC

TSID =0x3DF

PNUM =0x1

CA =NO

EIT =NO

PID=0x20 (PMT)

PID=0x21 (PCR)

PID=0x21 (MPEG2 - Video)

PID=0x22 (MPEG2 - Audio)

\*\*\*\*\* INPUT PORT NO 2 \*\*\*\*\*

[RESERVED]

INPUT =2

NAME =

PROV =

TSID =0x0

PNUM =0x3

CA =NO

EIT =NO

PID=0x30 (PMT)

PID=0x31 (PCR)

PID=0x31 (MPEG2 - Video)

PID=0x34 Scheduled

PID=0x35 Scheduled

[RESERVED]

INPUT =2

NAME =

PROV =

TSID =0x0

PNUM =0x4

CA =NO

EIT =NO

PID=0x40 (PMT)

PID=0x41 (PCR)

PID=0x41 (MPEG2 - Video)

PID=0x44 Scheduled

[RESERVED]

INPUT =2

NAME =

PROV =

TSID =0x0

PNUM =0x5

CA =NO

EIT =NO

PID=0x50 (PMT)

PID=0x51 (PCR)

PID=0x51 (MPEG2 - Video)

PID=0x54 Scheduled

\*\*\*\*\* INPUT PORT NO 3 \*\*\*\*\*

\*\*\*\*\* INPUT PORT NO 4 \*\*\*\*\*

\*\*\*\*\*

END OF FILE

\*\*\*\*\*

**OUTPUT EXAMPLES:**

An example output file before scanning and saving the PMX41 configuration:

```
*****
                                REMUX V1.1 OUTPUT FILE
*****

[CONFIG]
GEN_PAT      =YES
GEN_PMT      =YES
GEN_SDT      =YES
GEN_TDT      =YES
GEN_TOT      =NO
GEN_NIT      =NO
GEN_EIT      =NO

PAT_PERIOD   =80           -- UNIT : ms --
PMT_PERIOD   =100          -- UNIT : ms --
SDT_PERIOD   =200          -- UNIT : ms --
NIT_PERIOD   =5000         -- UNIT : ms --
EIT_PERIOD   =15000        -- UNIT : ms --

NETID        =0x1440       -- Network ID --
TSID         =0x40         -- Transport Stream ID --
RATE         =45000        -- Output bit rate, UNIT : Kbps --
PKT_TYPE     =0            -- Packet type, 0 : 188 bytes, 1 : 204 bytes --

[EIT TIME ADJUSTMENTS]      --hh:mm / polarity = 0 for positive, 1 for negative--
PORT 1      0:0    0
PORT 2      0:0    0
PORT 3      0:0    0
PORT 4      0:0    0

*****
                                END OF FILE
*****
```

An example output file after scanning and saving the PMX41 configuration:

\*\*\*\*\*

REMUX V1.0 OUTPUT FILE

\*\*\*\*\*

[CONFIG]

GEN\_PAT =YES

GEN\_PMT =YES

GEN\_SDT =YES

GEN\_TDT =YES

GEN\_TOT =NO

GEN\_NIT =NO

GEN\_EIT =NO

PAT\_PERIOD =80 -- UNIT : ms --

PMT\_PERIOD =100 -- UNIT : ms --

SDT\_PERIOD =200 -- UNIT : ms --

NIT\_PERIOD =5000 -- UNIT : ms --

EIT\_PERIOD =15000 -- UNIT : ms --

NETID =0x1440 -- Network ID --

TSID =0x40 -- Transport Stream ID --

RATE =29000 -- Output bit rate, UNIT : Kbps --

PKT\_TYPE =0 -- Packet type, 0 : 188 bytes, 1 : 204 bytes --

[EIT TIME ADJUSTMENTS] --hh:mm / polarity = 0 for positive, 1 for negative--

PORT 1 0:0 0

PORT 2 0:0 0

PORT 3 0:0 0

PORT 4 0:0 0

[RESERVED]                    ----- 1 -----  
 INPUT =1  
 NAME =                    (INPUT =1;    NAME =)  
 PROV =                    (INPUT =1;    PROV =)  
 PNUM =0x1                (INPUT =1;    TSID =0x0;            PNUM =0x1)  
 CA =NO  
 EIT =NO  
 PID=0x100                (INPUT =1;    PID =0x20;            (PMT))  
 PID=0x101                (INPUT =1;    PID =0x21;            (PCR))  
 PID=0x101                (INPUT =1;    PID =0x21;            (MPEG2 - Video))  
 PID=0x102                (INPUT =1;    PID =0x22;            Scheduled)

[RESERVED]                    ----- 2 -----  
 INPUT =2  
 NAME =                    (INPUT =2;    NAME =)  
 PROV =                    (INPUT =2;    PROV =)  
 PNUM =0x2                (INPUT =2;    TSID =0x0;            PNUM =0x1)  
 CA =NO  
 EIT =NO  
 PID=0x300                (INPUT =2;    PID =0x20;            (PMT))  
 PID=0x301                (INPUT =2;    PID =0x21;            (PCR))  
 PID=0x301                (INPUT =2;    PID =0x21;            (MPEG2 - Video))  
 PID=0x302                (INPUT =2;    PID =0x22;            Scheduled)

[RESERVED]                    ----- 3 -----  
 INPUT =3  
 NAME =                    (INPUT =3;    NAME =)  
 PROV =                    (INPUT =3;    PROV =)  
 PNUM =0x3                (INPUT =3;    TSID =0x0;            PNUM =0x1)  
 CA =NO  
 EIT =NO  
 PID=0x500                (INPUT =3;    PID =0x20;            (PMT))  
 PID=0x501                (INPUT =3;    PID =0x27;            (PCR))  
 PID=0x502                (INPUT =3;    PID =0x21;            (MPEG2 - Video))  
 PID=0x503                (INPUT =3;    PID =0x22;            Scheduled)

```
[DIGITAL TV]          ----- 4 -----  
INPUT =4  
NAME =pal             (INPUT =4;   NAME =pal)  
PROV =scc test       (INPUT =4;   PROV =scc test)  
PNUM =0x5            (INPUT =4;   TSID  =0x1;   PNUM =0x2)  
CA =NO  
EIT =Present/Follow  
PID=0x704            (INPUT =4;   PID   =0x21;   (PMT))  
PID=0x705            (INPUT =4;   PID   =0x64;   (PCR))  
PID=0x705            (INPUT =4;   PID   =0x64;   (MPEG2 - Video))  
PID=0x706            (INPUT =4;   PID   =0x65;   (MPEG2 - Audio))  
PID=0x707            (INPUT =4;   PID   =0x66;   (MPEG2 - Audio))
```

```
[DIGITAL TV]          ----- 5 -----  
INPUT =4  
NAME =ntsc           (INPUT =4;   NAME =ntsc)  
PROV =scc test       (INPUT =4;   PROV =scc test)  
PNUM =0x6            (INPUT =4;   TSID  =0x1;   PNUM =0x3)  
CA =NO  
EIT =Present/Follow  
PID=0x708            (INPUT =4;   PID   =0x22;   (PMT))  
PID=0x709            (INPUT =4;   PID   =0xC8;   (PCR))  
PID=0x709            (INPUT =4;   PID   =0xC8;   (MPEG2 - Video))  
PID=0x70A            (INPUT =4;   PID   =0x74;   (MPEG2 - Audio))  
PID=0x70B            (INPUT =4;   PID   =0x75;   (MPEG2 - Audio))
```

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END OF FILE

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## Five-Year Limited Warranty



Most products designated as “Headend Electronics” are covered for a full 5-year warranty period. Considered the best warranty in the industry, Pico Macom will repair or, at its discretion, replace without cost to the original purchaser, the product which, upon inspection by Pico Macom, appears to be defective or not conforming to the Factory Specifications. Pico Macom will cover the cost of parts, labor, and return freight from factory.

## Three-Year Limited Warranty



Some Pico Macom products are covered with a full 3-year warranty period. Pico Macom will repair or, at its discretion, replace without cost to the original purchaser, the product which, upon inspection by Pico Macom, appears to be defective or not conforming to the Factory Specifications. Pico Macom will cover the cost of parts, labor, and return freight from factory.

## One-Year Limited Warranty\*



Pico Macom warrants to the original purchaser a full 1-year warranty period on all new products. Pico Macom will repair or, at its discretion, replace without cost to the original purchaser, the product which, upon inspection by Pico Macom, appears to be defective or not conforming to the Factory Specifications. Pico Macom will cover the cost of parts, labor, and return freight from factory.

## Warranty Limitations

This warranty excludes coverage of damage or inoperability resulting from (1) use or installation other than in strict accordance with Pico Macom’s written instructions, (2) disassembly or repair by someone other than Pico Macom or a Pico Macom authorized repair center, (3) misuse, misapplication or abuse, (4) alteration, (5) lack of reasonable care or (6) wind, ice, snow, rain, lightning, power surges, excessive heat, or any other weather conditions or acts of God. Pico Macom’s warranty with respect to third-party proprietary sub-assembly modules and/or private-label products are limited to the duration and terms of third-party vendors’ warranty. Pico Macom shall in no event and under no circumstances be liable or responsible for any consequential, indirect, incidental, punitive, direct or special damages based upon breach of warranty, breach of contract, negligence, strict tort liability or otherwise or any other legal theory, arising directly or indirectly from the sale, use, installation or failure of any product acquired by buyer from Pico Macom. This limited warranty extends to the original purchaser and cannot be assigned or transferred to any other party without the prior express written permission of Pico Macom, which permission Pico Macom may withhold for any reason or for no reason at all. Pico Macom reserves the right to modify or discontinue this warranty at Pico Macom’s sole discretion without notification. No other warranties are expressed or implied.

## Damage or Shortage Claims

Our shipping staff carefully packs and ships your orders in compliance with common carriers’ requirements. Please make note of any obvious damage or shortage on the freight bill or carrier’s receipt next to your signature. The carrier’s agent must also sign acknowledging the loss. Failure to do so may result in the carrier’s refusal to honor the claim. Please open your order immediately upon receipt to check for concealed damage and compare the packing list to the items shipped. If damaged, keep the original shipping cartons for possible inspection by the carrier. You must report claims for loss or damage within 3 days of delivery, while claims for erroneous charges or price corrections must be presented within 30 days of invoice date.

## Returning Shipped Items

To return any shipped items, including those shipped for warranty repairs or credit, call our Customer Service desk to request a Return Merchandise Authorization (RMA) number. Please reference the original invoice number and purchase date, and product serial number (if any). Be certain to mark the RMA number on the package boldly and legibly. Unless we specify a different carrier, please ship your returned items to us via UPS freight prepaid and fully insured. If returned for credit, we will promptly process your request upon receipt of your return order.

## Our Return Policy: Your Satisfaction Guaranteed

Our goal is your complete satisfaction. If for any reason, our products were not quite what you anticipated, simply call your customer service rep and we will be happy to assist you in replacing or returning the order. You may return current, non-discontinued items for full credit for up to 30 days from invoice date. Our requirements are simple: Excepting defective items, the products must be returned in their original packaging and in re-salable condition. Re-certification fees of 10% to 50% of original purchase price may otherwise apply beyond this period or if products are not returned in their original condition. Please contact your customer service rep for more information.

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