

Modular Receiver Transcoder



Stock #	Model Name	Description
1002661A	MRT1000	Modular Receiver Transcoder

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Purchase Location Name:	
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MRT1000 Serial Number(s):	

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This guide makes use of hyperlinks for the Table of Contents, some cross-reference linking between sections, and external hyperlinking to web addresses. This has been done to assist the reader in finding the information they are seeking in a much quicker way. In addition to hyperlinking, the Table of Contents also makes use of the bookmarking feature present in the Adobe Reader application.

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Download the latest User Manual (PDF) by visiting our website. Navigate to the product page by entering the full Model Name or Stock Number in the search field. Upon reaching the product page, the "User Manual" download link will be located beneath the product image. **Firmware Updates** are available under "Tech Support" in the "Resources" section of the website. General instructions for the FTP site, as well as updating your firmware, are provided on this page.

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Section 1 – Important Safety Instructions

- 1. Read Instructions**—All the safety and operating instructions should be read before the product is operated.
- 2. Retain Instructions**—The safety and operating instructions should be retained for future reference.
- 3. Heed Warnings**—All warnings on the product and in the operating instructions should be adhered to.
- 4. Follow Instructions**—All operating and use instructions should be followed.
- 5. Cleaning**—Unplug this product from the wall outlet before cleaning. Do not use liquid cleaners or aerosol cleansers. Use a damp cloth for cleaning.
- 6. Attachments**—Do not use attachments that are not recommended by the product manufacturer as they may cause hazards.
- 7. Water and Moisture**—Do not use this product near water—for example, near a bathtub, wash bowl, kitchen sink or 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 product. Use only with a cart, stand, tripod, bracket, or table recommended by the manufacturer, or sold with the product. Any mounting of the product should follow the manufacturer's instructions, and should use a mounting accessory recommended by the manufacturer.
- 9.** A product and cart combination should be moved with care. Quick stops, excessive force, and uneven surfaces may cause the product and cart combination to overturn.
- 10. Ventilation**—Slots and openings in the cabinet are provided for ventilation and to ensure reliable operation of the product and to protect it from overheating, and these openings must not be blocked or covered. The openings should never be blocked by placing the product on a bed, sofa, rug, or similar surface. This product should not be placed in a built-in installation such as bookcase or rack unless proper ventilation is provided or the manufacturer's instructions have been adhered to.
- 11. 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 product dealer or local power company. For products intended to operate from battery power, or other sources, refer to the operating instructions.
- 12. Grounding or Polarization**—This product may be equipped with a polarized alternating current line plug (a plug having one blade wider than the other). This plug will fit into the power outlet only one way. This is a safety feature. If you are unable to insert the plug fully into the outlet, try reversing the plug. If the plug should still fail to fit, contact your electrician to replace your obsolete outlet. Do not defeat the safety purpose of the polarized plug. Alternate Warnings—If this product is equipped with a three-wire grounding-type plug, a plug having a third (grounding) pin, the plug will only fit into a grounding-type power outlet. This is a safety feature. If you are unable to insert the plug into the outlet, contact your electrician to replace your obsolete outlet. Do not defeat the safety purpose of the grounding-type plug.
- 13. Power-Cord Protection**—Power-supply cords should be routed so that they are not likely to be walked on or pinched by items placed upon or against them, paying particular attention to cords at plugs, convenience receptacles, and the point where they exit from the product.
- 14. Outdoor Antenna Grounding**—If an outside antenna or cable system is connected to the

product, be sure the antenna or cable system is grounded so as to provide some protection against voltage surges and built-up static charges. Article 810 of the National Electrical Code, ANSI/NFPA 70, provides information with regard to proper grounding of the mast and supporting structure, grounding of the lead-in wire to an antenna discharge unit, size of grounding conductors, location of antenna-discharge unit, connection to grounding electrodes, and requirements for the grounding electrode. See Figure A.

- 15. Lightning**—For added protection for this product during a lightning storm, or when it is left unattended and unused for long periods of time, unplug it from the wall outlet and disconnect the antenna or cable system. This will prevent damage to the product due to lightning and power-line surges.
- 16. 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.
- 17. Overloading**—Do not overload wall outlets, extension cords, or integral convenience receptacles as this can result in a risk of fire or electric shock.
- 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 instructions. Adjust only those controls that are covered by the operating instructions as an improper adjustment of other controls 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 damaged in any way, and
 - f. When the product exhibits a distinct change in performance—this indicates a need for service.
- 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 part. 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 condition.
- 23. Wall or Ceiling Mounting**—The product should be mounted to a wall or ceiling only as recommended by the manufacturer.
- 24. Heat**—The product should be situated away from heat sources such as radiators, heat registers, stoves, or other products (including amplifiers) that produce heat.

CAUTION STATEMENT

WARNING: TO PREVENT FIRE OR ELECTRICAL SHOCK DO NOT EXPOSE TO RAIN OR MOISTURE



An appliance and cart combination should be moved with care. Quick stops, excessive force and uneven surfaces may cause the appliance and cart combination to overturn.



The lightning flash with arrow head 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.



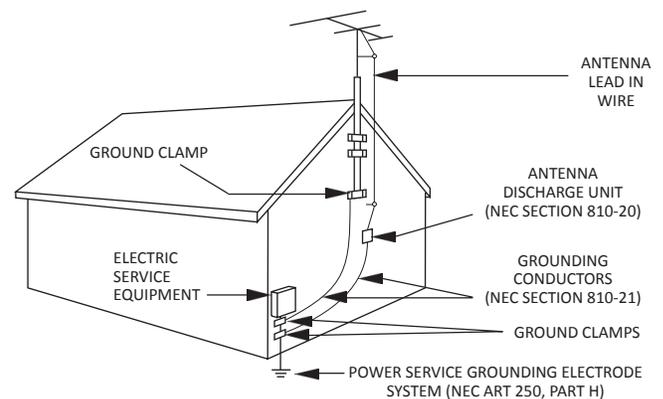
The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

WARNING: TO REDUCE THE RISK OF FIRE OR ELECTRICAL 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.

FIGURE A

Example of antenna grounding as per National Electrical Code, ANSI/NFPA 70



NEC - NATIONAL ELECTRIC CODE

NOTE TO CATV SYSTEM INSTALLERS:

THIS REMINDER IS PROVIDED TO CALL THE CATV SYSTEM INSTALLER'S ATTENTION TO ARTICLE 820 - 40 OF THE NEC WHICH 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.

Partie 1 – Importantes De Sécurité

- 1. Lire les directives**—Toutes les directives de sécurité et d'utilisation devraient être lues avant de mettre l'appareil en opération.
- 2. Conserver les directives**—Les directives de sécurité et d'utilisation devraient être conservées pour consultation future.
- 3. Tenir compte des avertissements**—Tous les avertissements apparaissant sur l'appareil et dans les consignes d'utilisation devraient être respectés.
- 4. Suivre les directives**—Toutes les directives d'opération et d'utilisation devraient être suivies.
- 5. Nettoyage**—Débrancher l'appareil de la prise électrique murale avant le nettoyage. Ne pas utiliser de nettoyants liquides ou aérosols. Employer un linge humide pour le nettoyage.
- 6. Fixation**—Ne pas utiliser d'autres fixations que celles recommandées par le manufacturier; elles pourraient être source de dangers.
- 7. Eau et humidité**—Ne pas utiliser cet appareil près de l'eau. Par exemple, près d'une baignoire, d'un bac de lavage, d'un évier de cuisine ou d'une cuvette de lessivage; dans un sous-sol humide; ou à proximité d'une piscine; et autres environnements similaires.
- 8. Accessoires**—Ne pas installer cet appareil sur un chariot, un socle, un trépied, un support ou une table instables. L'appareil pourrait tomber, entraînant des blessures graves à un enfant ou à un adulte, et des dommages importants à l'appareil. Employer seulement avec un chariot, un socle, un trépied, un support, ou une table recommandés par le fabricant ou vendu avec l'appareil. Toute installation de l'appareil devrait être conforme aux directives du manufacturier et devrait utiliser des accessoires d'installation recommandés par celui-ci.
- 9. Un chariot supportant l'appareil** devrait être déplacé avec précaution. Les arrêts brusques, la force excessive et les surfaces inégales peuvent renverser le chariot.
- 10. Ventilation**—Des fentes et ouvertures dans le châssis sont prévues pour la ventilation de l'appareil, pour en assurer la fiabilité d'opération et le protéger contre la surchauffe. Ces ouvertures ne doivent pas être bloquées ou recouvertes. Ces ouvertures ne devraient jamais être bloquées en plaçant l'appareil sur un lit, un sofa, une couverture, ou une surface semblable. Cet appareil ne devrait pas être installé dans un meuble encastré comme une bibliothèque ou une étagère à moins de lui fournir une ventilation adéquate ou que l'installation soit conforme aux directives du manufacturier.
- 11. Sources d'alimentation électrique**—Cet appareil devrait être utilisé seulement avec le type d'alimentation électrique inscrite sur l'étiquette. Si vous n'êtes pas certain du type d'alimentation électrique fourni à votre maison, consultez le vendeur de l'appareil ou l'entreprises d'énergie locale. Pour des appareils alimentés par une batterie ou d'autres sources, se référer aux consignes d'utilisation.
- 12. Mise à la terre ou Polarisation**—Cet appareil est équipé avec un cordon d'alimentation à trois fils. Il est à brancher sur une prise ayant un connecteur à la terre. Assurez-vous que la connection à la terre ne manque pas.
- 13. Protection du cordon d'alimentation**—Les cordons d'alimentation devraient être disposés de façon à ce qu'on ne puisse marcher dessus ou qu'ils soient susceptibles d'être coincés par des articles placés sur ou contre eux. Une attention particulière doit être portée aux fiches, prises de courant, et aux points où ils sortent de l'appareil.
- 14. Mise à la terre de l'antenne extérieure**—Si un système extérieur d'antenne ou de câble est relié à l'appareil, s'assurer que le système d'antenne ou de câble est muni d'une mise à la terre afin de fournir une certaine protection contre les surtensions et les charges d'électricité statique. L'article 810 du code électrique national, ANSI/NFPA 70, fournit l'information nécessaire en ce qui concerne la mise à la terre appropriée du mât et de la structure porteuse, la mise à la terre du câble de connexion à une unité de décharge d'antenne, le calibre des conducteurs de mise à la terre, la location de l'unité de décharge d'antenne, le raccordement

aux électrodes de mise à la terre et les spécifications pour les électrodes de mise à la terre. Voir la figure A.

- 15. Foudre**—Pour une protection supplémentaire de cet appareil pendant un orage électrique, ou quand il est laissé sans surveillance et inutilisé pendant de longues périodes, le débrancher de la prise électrique murale et déconnecter le système d'antenne ou de câble. Ceci prévient les dommages à l'appareil dus à la foudre et aux surtensions.
- 16. Lignes électriques**—Un système d'antenne extérieur ne devrait pas être situé à proximité de lignes électriques aériennes ou de tout autre circuit électrique, où il pourrait tomber sur de tels circuits ou lignes électriques. Lors de l'installation d'un système d'antenne extérieur, d'extrêmes précautions devraient être prises afin de prévenir tout contact avec des lignes ou circuits électriques. Entrer en contact avec de tels circuits ou lignes électriques pourrait être fatal.
- 17. Surchage**—Ne pas surcharger les prises de courant murales, les rallonges électriques ou les prises de courant intégrées. Un risque d'incendie ou de choc électrique pourrait résulter d'une telle surcharge.
- 18. Insertion d'objet ou de liquide**—Ne jamais insérer d'objet par les ouvertures de cet appareil. Il pourrait toucher des points de voltage dangereux ou court-circuiter des pièces, ce qui pourrait résulter en incendie ou en choc électrique. Ne jamais verser de liquide sur l'appareil.
- 19. Entretien**—Ne pas essayer de faire soi-même l'entretien de cet appareil. En ouvrir ou en retirer les couvercles pourrait vous exposer à des voltages dangereux ou à d'autres dangers. Confier tout entretien à un personnel de service qualifié.
- 20. Dommage exigeant un entretien**—Débrancher cet appareil de la prise de courant électrique et confier l'entretien au personnel de service qualifié dans les éventualités suivantes:
 - a. Quand le cordon d'alimentation ou sa fiche sont endommagés,
 - b. Si des objets sont tombés dans l'appareil, ou si du liquide y a été renversé,
 - c. Si l'appareil a été exposé à la pluie ou à l'eau,
 - d. Si l'appareil ne fonctionne pas normalement en suivant les consignes d'utilisation. Ajuster seulement les commandes qui sont mentionnées dans le guide d'opération. Un mauvais ajustement des autres commandes pourrait causer des dommages à l'appareil et souvent exiger un travail supplémentaire de la part d'un technicien qualifié pour remettre l'appareil en état normal d'opération.
 - e. Si l'appareil a été échappé ou endommagé de n'importe quelle façon, et
 - f. Quand l'appareil montre un changement notable de performance – ceci indique qu'un entretien est nécessaire.

- 21. Pièces de rechange**—Si des pièces de rechange sont nécessaires, s'assurer que le technicien de service a employé des pièces de rechange spécifiques du manufacturier ou ayant les mêmes caractéristiques que les pièces originales. L'utilisation de pièces de rechange non autorisées pourrait résulter en incendie, choc électrique ou autres dangers.
- 22. Vérification de sécurité**—À la suite de toute réparation ou entretien de cet appareil, demander au technicien de service d'exécuter des vérifications de sécurité afin de s'assurer que l'appareil est en condition normale de fonctionnement.
- 23. Montage au mur ou au plafond**—L'appareil ne devrait être monté au mur ou au plafond qu'uniquement de la façon recommandée par le manufacturier.
- 24. Chaleur**—L'appareil devrait être situé loin de sources de chaleur telles que des radiateurs, des registres de chaleur, des fourneaux, ou d'autres appareils (y compris amplificateurs) produisant de la chaleur.

ATTENTION DÉCLARATION

AVERTISSEMENT: AFIN D'ÉVITER TOUT RISQUE D'INCENDIE OU D'ÉLECTROCUTION, NE PAS EXPOSER CET APPAREIL À LA PLUIE OU À L'HUMIDITÉ.



Une combinaison de l'appareil et chariot doit être déplacé avec précaution. Des arrêts brusques, une force excessive et des surfaces inégales peuvent causer la combinaison de l'appareil et le chariot.



Le symbole de l'éclair à l'intérieur d'un triangle équilatéral est destiné à alerter l'utilisateur sur la présence d'une "tension dangereuse" non isolée dans le boîtier du produit. Cette tension est suffisante pour provoquer l'électrocution de personnes.



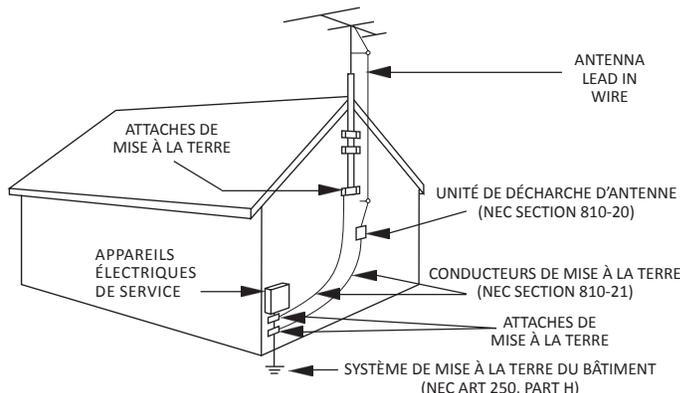
Le point d'exclamation à l'intérieur d'un triangle équilatéral est destiné à alerter l'utilisateur sur la présence d'opérations d'entretien importantes au sujet desquelles des renseignements se trouvent dans le manuel d'instructions.

AVERTISSEMENT: AFIN D'ÉVITER TOUT RISQUE D'INCENDIE OU D'ÉLECTROCUTION, NE PAS EXPOSER CET APPAREIL À LA PLUIE OU À L'HUMIDITÉ. NE PAS OUVRIR LE BÔTIER, CONFIER TOUS TRAVAUX À DU PERSONNEL TECHNIQUE QUALIFIÉ.

CAUTION: POUR PRÉVENIR LES CHOC ÉLECTRIQUES, NE PAS UTILISER CETTE FICHE POLARISÉE AVEC UN PROLONGATEUR, UNE PRISE DE COURANT OU UNE AUTRE SORTIE DE COURANT, SAUF SI LES LAMES PEUVENT ÊTRE INSÉRÉES A FOND SANS EN LAISSER AUCUNE PARTIE À DÉCOUVERT.

FIGURE A

Exemple de mise à la terre d'antenne selon le Code Électrique National, ANSI/NFPA 70



NEC - CODE ÉLECTRIQUE NATIONAL

NOTE AUX INSTALLATEURS DE SYSTÈME DE CATV:

CE RAPPEL EST FOURNI POUR PORTER À L'ATTENTION DES INSTALLATEURS DE SYSTÈME DE CATV, L'ARTICLE 820 - 40 DU NEC QUI DONNE DES DIRECTIVES POUR UNE MISE À LA TERRE APPROPRIÉE ET, EN PARTICULIER, SPÉCIFIE QUE LE CÂBLE DE MISE À LA TERRE DEVAIT ÊTRE RACCORDÉ AU SYSTÈME DE MISE À LA TERRE DU BÂTIMENT LE PLUS PRÈS POSSIBLE DE L'ENTRÉE DU CÂBLE.

Section 2 – Product Summary

2.1 Revision History & Reason

This release of the user manual uses firmware release v1.0.5.4 (Current as of 12/20/19).

2.2 Product Application & Features

Application:

The **MRT1000**, from Drake Digital, is a Commercial grade Modular Receiver Transcoder for use in Shaw’s QT-Plus Satellite Service. It was designed to replace the transitional Receiver/IRD and Out-of-Band Modulator with a single 1RU device. The unit comes equipped with a Satellite Demodulator module (L-band Tuner) with a frequency range of 950-2150 MHz, which tunes to the Satellite Transponder to provide the required Out-of-Band data.

The MRT1000 also includes a QPSK Modulator producing SCTE 55-1 output to feed downstream Set-Top devices. The unit extracts the data from the satellite stream, and provides it as an SCTE 55-1 QPSK output for delivery of STB authorizations, Electronic Program Guide and other data signaling used in the system.

Features:

- Designed for use in SHAW’s QT-Plus systems
- Frequency range of 950 to 2150 MHz
- QPSK Agile RF Output 70 to 130 MHz; +25 to +40 dBmV (SCTE 55-1)

Description:



FRONT PANEL

- 1 POWER:** If the LED is Green, AC power is detected. If the LED is Off, it will indicate one of the following:
 - (i) AC power is not connected, or
 - (ii) AC power is connected but the power supply is defective. Unit must be sent to factory for repairs.
- 2 CONTROL/DATA:** RJ45 connector for 1000Base-T Ethernet (GigE) interface for monitoring and configuring the unit via standard web browser. Only a static IP address can be assigned to this interface. (Factory Default: "172.16.80.1")
- 3 IP RESET:** When this button is pushed and held for ">1 seconds", temporarily resets the IP address, Usernames, and Passwords to Factory Default for the CONTROL/DATA port. Default values are as follows:
 - IP address = 172.16.80.1
 - Subnet Mask = 255.255.255.0
 - Username = admin (case-sensitive)
 - Password = pass (case-sensitive)

NOTE: The effects of activating the IP Reset feature are temporary and the user-set IP address, login, and password will still be present in the encoder settings.

2.2 Product Application & Description (continued)



REAR PANEL

- 4 RF OUTPUT:** "F" female connector for QPSK Output 70-130 MHz.
- 5 DEMOD INPUT:** "F" female connector for RF Input 950-2150 MHz.
- 6 ASI OUTPUT:** Not applicable on this model.
- 7 AC POWER:** Accepts 120VAC, 60Hz, 20 Watts via power plug.

2.3 Product Specifications

Satellite Input

Connector:	1x "F" Female (Rear-Panel)
Frequency Range:	950 to 2150 MHz
Input Impedance:	75 Ω
Return Loss:	10 dB
Input Level Range:	-25 dBm to -65 dBm / Transponder
Modulation:	QPSK, 8PSK
Format:	DVB-S2, advanced Turbo modes
Symbol Rate:	2 to 45 MSymbols/sec (Mbaud)

QPSK Modulator Output

Output Mode:	SCTE 55-1
Symbol Rate:	1.024 Ms/s
Frequency Range:	70-130 MHz (tunable in 50 kHz steps)
Max. Power Output Level:	+40 dBmV
Level Adjustment Range:	15 dB
Phase Noise:	-95 dBc @ 10 kHz offset
Broadband Noise:	-75 dBc @ > ± 12 MHz
MER:	> 30 dB equalized
Channel Frequency Response:	< 1 dB

General

Dimensions: (W x D x H)	19.0" x 14.5" x 1.75" (482.6 mm x 368.3 mm x 44.45 mm)
Weight:	8.35 lbs (3.79 kg)
Power Requirements:	100-120 VAC/60 Hz, 20 W
Operating Temperature:	32 to 122 °F (0 to 50 °C)
Storage Temperature:	-13 to 158 °F (-25 to 70 °C)
Operating/Storage Humidity:	0 to 95% RH @ 35 °C max non-condensation

ASI Output

Connector:	Not Applicable on this Model.
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Alarms/Monitoring/Control

Local Monitoring:	1x Power LED
Local Control:	1x IP Reset Button (Front-Panel)
Remote Monitoring/ Control:	1x RJ45; 10/100/1000Base-T Ethernet (Front-Panel) (GUI-based menu via Web browser)

Section 3 – Unpacking and Connecting the Unit

3.1 Unpacking

You will find the following items in the box:

- MRT1000 Modular Receiver Transcoder Unit (QTY=1)
- MRT1000 Instruction Manual

3.2 Installation and Power-Up

The MRT1000 is designed to be installed in a standard 19-inch (483 mm) rack (EIA 310-D, IEC 60297, and DIN 41494 SC48D). The unit should be mounted in the close proximity to a 120 VAC, 60Hz power outlet.

- 1 To install, secure the unit's front panel to the rack by inserting four (4) machine screws, with cup washers, through the four (4) mounting holes in the front panel. A 1RU open space is recommended above the unit for ventilation.



DO NOT BLOCK THE UNIT'S AIR INTAKE OR AIR DISCHARGE OPENINGS.

**Unit performance will be degraded without proper ventilation.
Excessive heat will shorten the life of the unit.**

- 2 To power the unit up, connect the plug to a 120 VAC, 60 Hz power outlet.

3.3 Setting up Ethernet Access

Local or remote communication with the unit is only possible through a GUI-based menu via web browser (Chrome or Firefox is recommended). Before you can communicate with the unit, you must configure your computer's IP address to be in the same subnet as the unit's default IP address. To do so, follow these steps:

- 1 Connect one end of the Ethernet cable to the “**CONTROL/DATA**” port on the unit's rear-panel interface. Connect the other end of the Ethernet cable to your computer.
- 2 The factory default IP address of the Control port is “**172.16.80.1**”. In order to communicate with the Control port, you must first change your computer's IP address.

The following steps explain how to do this for a computer with **Windows 7, Windows 8.x** or **Windows 10** operating software:

(a) On your computer, navigate to the “Network and Sharing Center”.

(Note: It can be found using the search box in the Start Menu or for Windows 8.x, the Start Screen)

(b) Once open, click on “Change Adapter Settings” on left hand side of the window.

(c) Right-click on the “Local Area Connection”, and then click on the “Properties”.

(d) A dialog box entitled “Local Area Connection Properties” will appear. In this box, double-click on the “Internet Protocol Version 4 (TCP/IPv4)”.

(e) A dialog box entitled “Internet Protocol Version 4 (TCP/IPv4) Properties” will appear. Select the “Use the following IP address” option and enter the following addresses:

IP address: **172.16.80.2**

Subnet mask: **255.255.255.0**

No need to enter a value for the Default Gateway.

Click OK to close the dialog box. Your computer is now ready to communicate with the unit.

3.4 Accessing the User Interface via the Web Browser

You must complete the steps described in **Section 3** before proceeding as follows:

- 1 Open a web browser on your computer (Chrome or Firefox is recommended) and enter the following URL address (**http://172.16.80.1**). The “**Log In**” screen (Figure 3.4a) will appear.
- 2 Enter the following case-sensitive factory-default Username and Password, and click on the [**LOG IN**] button.

NOTE: When logged in as Admin, the user has read and write permission. Only one Admin can be logged in at a time.

Username = **admin** (case-sensitive)
Password = **pass** (case-sensitive)

The screenshot shows a light blue login form. It has two input fields: 'Username' containing the text 'admin' and 'Password' containing four dots. Below the fields is a blue button with the text 'LOG IN' in white capital letters.

Figure 3.4a - “Login” Screen



Figure 3.4b - Page Navigation

Monitoring and configuration of the unit is achieved via a series of web pages as described in the following sections. As shown in Figure 3.4b, under the “**Page Header**” the following Navigation tabs and links will appear:

- Navigation Menu (Left): “**Status**”, “**Modules**”, “**Multiplex**”, “**Output**”, and “**System**”
- Navigation Menu (Right): “**Log**” and “**Firmware Update**”
- In addition, in the upper right corner above the navigation, the user can access the “**admin**” screen through a link, alongside the [**LOG OUT**] button.

Each Navigation bar tab is described in the subsequent Sections.

Section 4 – Configuring the Unit

4.1 “Status” Tab

The “**Status**” tab (Figure 4.1) is a “read-only” screen which displays the general information of the unit. The information is provided as a quick way to monitor the system or assist with troubleshooting issues that may arise.

The screenshot shows the 'Status' tab interface. At the top, there are navigation tabs: Status (selected), Modules, Multiplex, Output, System, Log, and Firmware Update. Below the tabs, the main content area is titled 'System Information and Status'. Under 'System Information', there are two items: 'Version: 1.0.5.4_20191218' (marked with a blue circle 1) and 'Uptime: 0 days, 00:18:16' (marked with a blue circle 2). Under 'Status', there are two tables. The first table, 'Installed Modules' (marked with a blue circle 3), has columns 'Slot' and 'Type'. The rows are: Slot 1 (Type: SDM1000) and Slot 2 (Type: None). The second table, 'Output Statistics' (marked with a blue circle 5), has rows for 'Bitrate' (0.511 Mbps) and 'Output Buffer Usage' (Current: 0% / Maximum: 0%). At the bottom, there is a 'Log Messages (10 Most Recent Entries)' section (marked with a blue circle 6) showing a single log entry: '0 days, 00:00:16 - SDM1000 module detected in slot 1.'

Figure 4.1 - “Status” Tab - System Information and Status

- 1 **Version:** Indicates the software version of the unit. Please see **Section 6** for instructions on updating the software version.
- 2 **Uptime:** Indicates the elapsed time in which the unit has been operating.
- 3 **Slot:** Displays the modules installed for each slot. (**Note:** For this unit model, only Slot 1 is active)
- 4 **Type:** Displays the module type that is installed into each slot. For the MRT1000, the module installed in Slot 1 is SDM1000.
- 5 **Output Statistics:** Indicates the bitrate and buffer usage of the output. (**Note:** If the bitrate and buffer information does not appear, refresh the page)
- 6 **Log Messages:** The Log Messages sections will show the 10 most recent entries to the system log. For a full view of all messages, please see the “**Log**” tab. See **Section 5.3** for more information on types of messages.

4.2 “Modules” Tab

The “**Modules**” tab (Figure 4.2) is a “read and write” screen which displays information for the installed SDM1000 module and allows users to configure it.

The screenshot shows the "Modules" tab in the MRT1000 user interface. The interface has a top navigation bar with tabs: Status, Modules (selected), Multiplex, Output, System, Log, and Firmware Update. Below the tabs is the "Module Configuration" section. It contains several numbered callouts (1-8) pointing to specific elements:

- 1 Select Module:** A dropdown menu showing "SDM1000 (Slot 1)". Below it is a note: "*When configuring multiple modules, please apply settings before selecting a different module."
- 2 Module Information:** A table with two rows: "Module Type" (SDM1000) and "Firmware Version" (1.0).
- 3 Receiver Status:** A table with two rows: "Demodulator Lock" (Locked) and "SNR" (12.47dB).
- 4 Demodulation Mode:** A dropdown menu showing "Turbo 8PSK 2/3".
- 5 Frequency (MHz):** A dropdown menu showing "1252.2".
- 6 Symbol Rate (MSym/Sec):** A dropdown menu showing "20.500".
- 7 Revert:** A button located at the bottom right of the configuration area.
- 8 Apply:** A button located at the bottom right of the configuration area.

Figure 4.2 - “Modules” Tab - Module Configuration

- 1 Select Module:** Select “SDM1000” in Slot #1.
- 2 Module Information:** displays the type and firmware version of the installed SDM1000 module.
- 3 Receiver Status:** indicates if the demodulator is locked/unlocked and displays the received Signal-to-Noise Ratio (SNR).
- 4 Demodulation Mode:** Ensure that “Turbo 8PSK 2/3” is selected as the demodulation mode.
- 5 Frequency (MHz):** Ensure that “1252.2” is selected as the frequency of the transponder that carries the out-of-band data. The range is 950.0 to 2150.0 MHz.
- 6 Symbol Rate (MSym/Sec):** Ensure that “20.500” is selected as the symbol rate of the transponder. The range is 2.000 to 45.000 MSym/Sec.
- 7 Revert:** Click button to revert any changed settings prior to a save/apply.
- 8 Apply:** Click button to apply changed settings.



Note: It is recommended to keep the settings for the Satellite Tuner as suggested above.

4.3 “Multiplex” Tab

The “**Multiplex**” tab (Figure 4.3) is a “read and write” screen that allows the user to configure the program number that contains the satellite data.

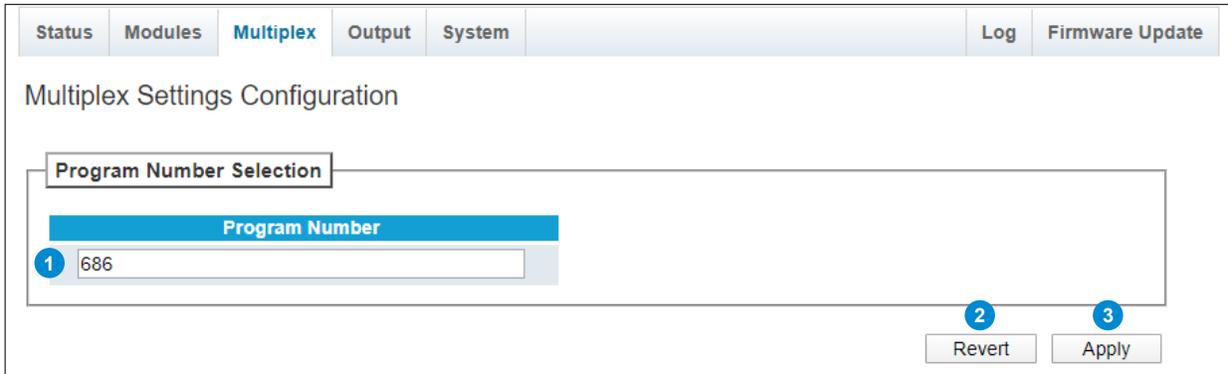


Figure 4.3 - “Multiplex” Tab - Multiplex Settings Configuration

- 1 **Program Number:** Enter “686”, as shown above.
- 2 **Revert:** Click button to revert any changed settings prior to a Save/Apply.
- 3 **Apply:** Click button to apply changed settings.

4.4 “Output” Tab

The “**Output**” tab (Figure 4.4) is a “read and write” screen that allows the user to configure the RF output settings for the unit.

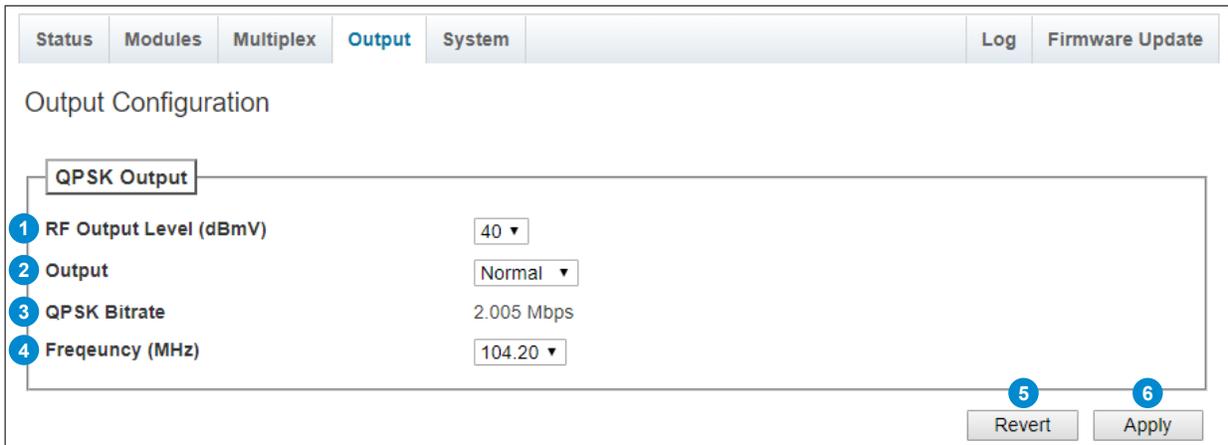


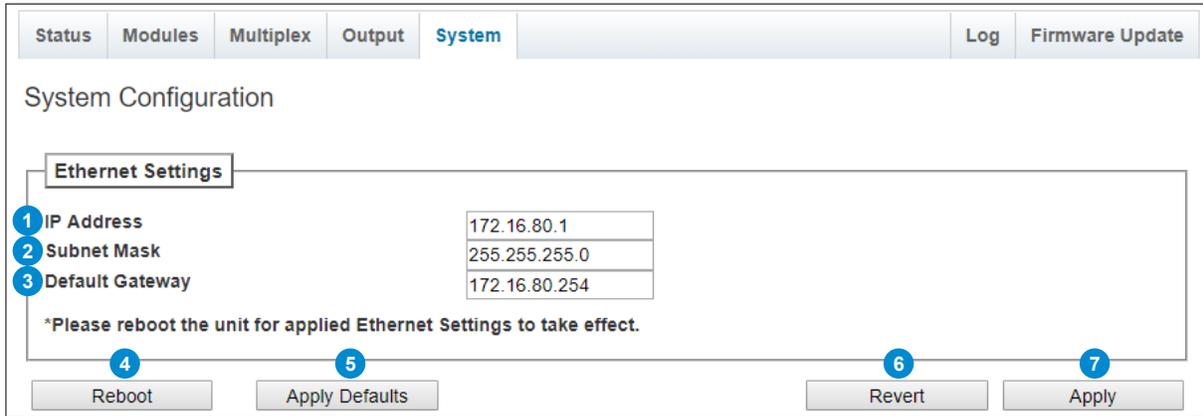
Figure 4.4 - “Output” Tab - Output Configuration

- 1 **RF Output Level (dBmV):** Select “40” for the output level. The range is 25 to 40 dBmV.
- 2 **Output:** Select “Normal”. Other options are CW and Standby (No Output).
- 3 **QPSK Bitrate:** The QPSK bitrate is a read-only fixed number set to 2.005 Mbps, as shown above.
- 4 **Frequency (MHz):** Select output frequency from the pull-down menu. The range is 70.00 to 130.00 MHz in 50 kHz steps.
- 5 **Revert:** Click button to revert any changed settings prior to a save/apply.
- 6 **Apply:** Click button to apply changed settings.

Section 5 – Unit Administration

5.1 “System” Tab

The “System” tab (Figure 5.1) allows the user to configure the general ethernet connection settings for the unit. It is a “read and write” screen.



Field	Value
1 IP Address	172.16.80.1
2 Subnet Mask	255.255.255.0
3 Default Gateway	172.16.80.254

*Please reboot the unit for applied Ethernet Settings to take effect.

4 Reboot 5 Apply Defaults 6 Revert 7 Apply

Figure 5.1 - “System” Tab - System Configuration

Ethernet Settings

- 1 IP Address:** the static IP address that is assigned to the **CONTROL/DATA** port, allowing the user to access the unit via the web interface. (Factory Default: “172.16.80.1”)
- 2 Subnet Mask:** the Subnet Mask address assigned to the **CONTROL/DATA** port of the unit, allowing the user to determine which subnet the Control Port IP address belongs to. (Factory Default: “255.255.255.0”)
- 3 Default Gateway:** the Default Gateway address assigned to the **CONTROL/DATA** port, allowing the user to access the unit from another network via the web interface. The gateway should be in the same subnet as the IP address and the out-of-band modulator (OBM)(Factory Default: “172.16.80.254”)



NOTE: The Default Gateway setting is needed for remote access and should be in the same subnet as the IP address.

Additional Controls

- 4 Reboot:** click button to reboot the unit. After Reboot, the user must refresh page and re-login when prompted.
- 5 Apply Defaults:** click button to apply factory defaults to all user-configurable settings.
- 6 Revert:** click button to revert any changed settings prior to a save/apply.
- 7 Apply:** click button to apply changed settings.

5.2 “Admin” Page

The “Admin” page (Figure 5.2) settings allow the user to change or modify the Username and Password for the unit while logged in. To access this screen, click the “[admin](#)” link at the top right corner as shown.

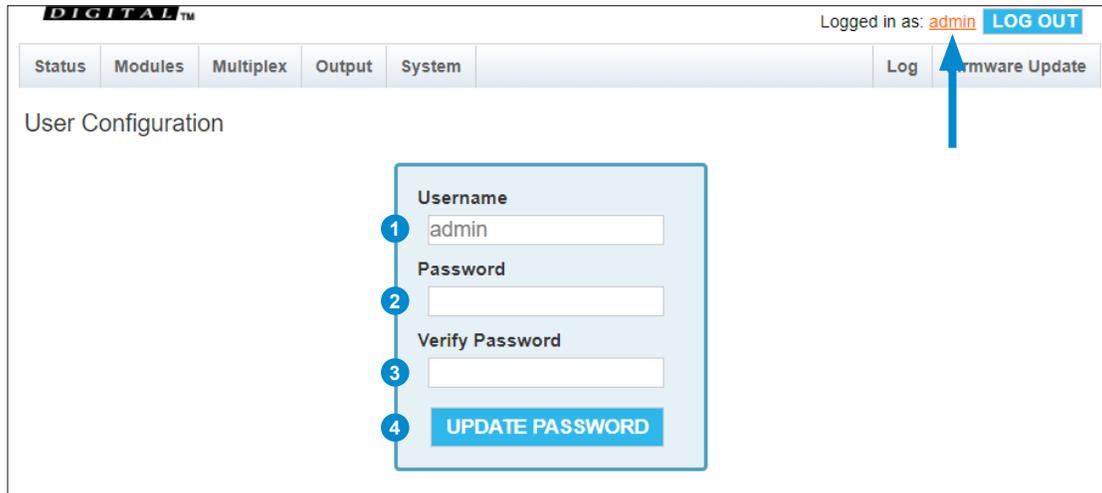


Figure 5.2 - “Admin” Tab - User Configuration

- 1 **Username:** is the Administrator’s login (4 characters minimum, 16 characters maximum). This login allows the user to make changes to any area of the unit. The username may contain letters or numbers. (Factory Default: “**admin**”)
- 2 **Password:** is only used when changing the current Administrator’s password (4 characters minimum, 16 characters maximum). The password will not be displayed. (Factory Default: “**pass**”)
- 3 **Verify Password:** is required when changing the current Administrator's password. It **MUST** match the “Password” field and will not be displayed.
- 4 Click the **UPDATE PASSWORD** button to apply changes to the User Configuration.



NOTE: Login and Password are both case-sensitive and may contain letters or numbers.

5.3 “Log” Tab

The “Log” tab (Figure 5.3) allows the user to view the system log messages. The information is provided as a quick way to monitor the system or assist with troubleshooting issues that may arise.

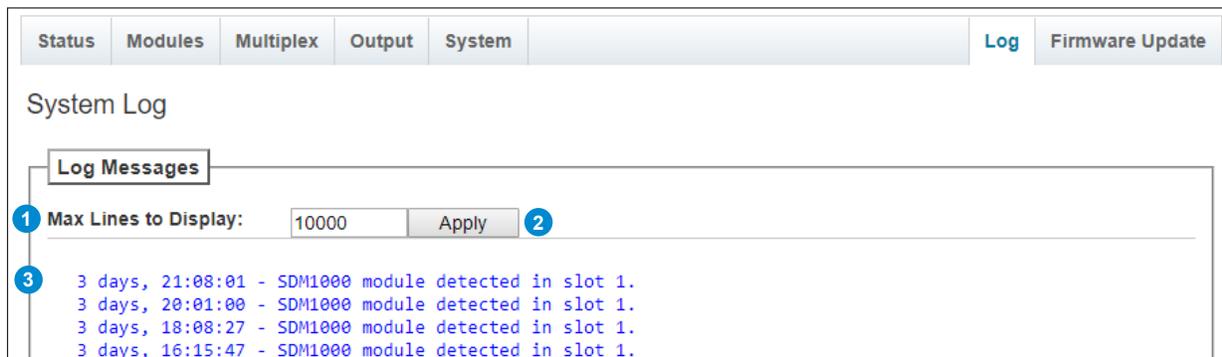


Figure 5.3 - “Log” Tab - System Log

- 1 Max Lines to Display:** allows the user to enter the maximum number of lines to display starting at the most recent. (Minimum: 1, Maximum: 100,000)
- 2 Apply:** Click button to apply changed settings.
- 3 System Message Types:** The following message types may be displayed depending on the event.
 - **Informational:** messages appear in **blue text** and indicate an informational-only event was logged.
 - **Success:** messages appear in **green text** and indicate an event was logged where an operation was successful.
 - **Error:** messages appear in **red text** and indicate an event was logged that caused or may cause loss of service.

5.4 “Firmware Update” Tab

The “Firmware Update” tab (Figures 5.4) is located on the right side of the main menu. This tab allows the user to upload the newest available firmware for the MRT1000 and deploy firmware to the unit.

Check the “Status” tab (Section 4.1) to ensure you have the latest firmware. To determine if a new firmware update has been released, please go to our website at: (www.blondertongue.com/page/resources/tech-support/firmware-updates/)

Click the “Download Firmware Updates” link and then scroll down to the product folder to access the update file(s).

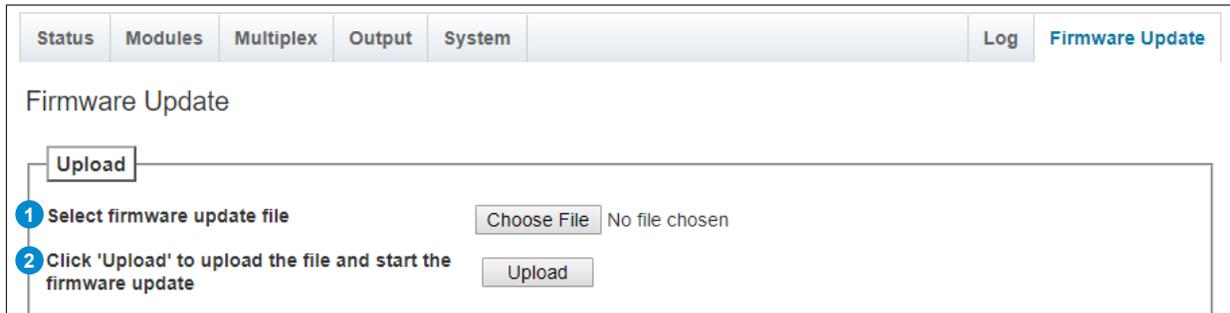


Figure 5.4 - “Firmware Update” Tab - Output Configuration

- 1 Select Update File:** Click the button to select the appropriate firmware file from your computer. This file should have “.fw” or “.FW” for the file extension.
- 2 Upload File:** Click the “Upload” button to transfer to the firmware update file to the MRT1000 unit. Once the file has been uploaded, the unit will automatically update.



Note: The user must refresh the page to get update status. It is recommended to click the “Firmware Update” tab to force the refresh.

5.5 Technical Support

For additional technical support please contact us at 1-800-523-6049 between the hours of 8am and 5pm EST.

Extended Warranty Program

STANDARD TERMS & CONDITIONS OF THE EXTENDED WARRANTY

A. THE EXTENDED WARRANTY AGREEMENT (EWA)

If during the period following the expiration of the Blonder Tongue Manufacturers' Standard Warranty (Copy Included) the products which constitute the subject matter of the extended warranty, manifest any manufacturing or similar such defects then Blonder Tongue shall at its option repair or replace the product. It is emphasized that the extended warranty is in effect an extension of the Blonder Tongue Warranty and covers the items stipulated in Paragraph B to the exclusion of the terms in Paragraph C of this agreement. Eligibility to purchase EW is limited to 90 days following initial shipment on selected products of sufficient value.

The product/products included in this extended warranty agreement are listed in the invoice that accompanies the EWA. Term of the extension will be _____ year(s). Purchase Order is required for extended warranty coverage.

B. WHAT IS COVERED?

1. If a product has been determined to have failed, which falls within the Terms & Conditions of this EWA, Blonder Tongue Inc. may at its sole discretion repair, modify or replace its component parts that are defective at 100% coverage for parts and labor.
2. A loaner unit may be available on request; PO required.
3. Product is manufactured by Blonder Tongue.
4. Extended warranty period is up to and not to exceed 24 months and sold in increments of 12 months. Order # 9981 for 1 year and #9982 for 2 year extensions.
5. Return of repair or replaced product shipping costs for ground shipments.
6. Firmware upgrades at no charge with automatic notification.

C. WHAT IS NOT COVERED?

1. The warranty does not cover any defects caused by foreign objects /connection errors .
2. Use other than by the customer at the declared address appearing in this document.
3. Failure by the end user to comply with the manufacturers' instructions for installation, maintenance or use.
4. The use of accessories which have not been approved by Blonder Tongue.
5. The application and/or use of any incorrect or abnormal electrical supply to the product.
6. Any defect in wiring or electrical connections which does not form part of the product at the time of the original purchase.
7. Neglect, misuse, or willful abuse of the product.
8. Any repairs or attempted repairs of the product by any person other than Blonder Tongue Service Department.
9. Any modification of the product by any person other than Blonder Tongue Service Department.
10. Fire, flood, war, civil disturbance, industrial action, acts of God or any other causes beyond the reasonable control of Blonder Tongue.
11. Any defect caused by lightning strike or power surges.
12. Shipping costs to return products to Blonder Tongue for warranty service.
13. Blonder Tongue will not in any circumstances be liable for any consequential loss or damages suffered by the customer whether directly or in directly related defect in the product to the extent permissible by law.
14. Repairs may not be effected without prior authorization from Blonder Tongue Laboratories.

D. GENERAL

1. The customer shall notify Blonder Tongue Laboratories in writing within ten days of any change of his or her address.
2. Customer must provide original **purchase receipt** and **serial number** to initiate extended warranty coverage.
3. The fee paid for the warranty is not refundable under any circumstances unless cancelled within seven days of purchase.
4. The customer shall take all reasonable precautions to maintain the product is maintained in good working order.
5. The warranty contract ceases to exist if the product is replaced or a credit is given to the customer. Any monies paid for the warranty contract are forfeited and not refundable. This is only applicable when the product is out of the manufacturer's warranty.
6. The extended warranty period as stated on the Extended Warranty Agreement shall be the governing period notwithstanding any additional supplier warranty on specific components.
7. The warranty shall in no way effect the terms and conditions of the sale agreement in terms of which the customer bought the product.
8. The extended warranty is limited to the terms and conditions herein contained
9. No agreement, varying, adding to, amended, deleting, or cancelling this warranty shall be effective unless given in writing (email is acceptable) and signed by or on behalf of both parties.
10. The cost of the extended warranty is 8% of the purchase price for a 1 or 2 year extension beyond the Blonder Tongue standard warranty. e.g. A product price of \$1000 will be \$80 for the 1st year (12 mos) and additional \$80 for 2 year (24 mos) extension for a total of \$160.
11. Warranty product return postage paid to: Blonder Tongue Laboratories, Inc.

Attn: Warranty Service Dept.
1 Jake Brown Road
Old Bridge, NJ 08857

Contact Blonder Tongue at 800-523-6049 ext. 555 to order extended warranty service.

Limited Warranty

Seller will at its sole option, either repair or replace (with a new or factory reconditioned product, as Seller may determine) any product manufactured or sold (or in the case of software, licensed) by Seller which is defective in materials or workmanship or fails to meet the applicable specifications that are in effect on the date of shipment or such other specifications as may have been expressly agreed upon in writing: (i) for a period of one (1) year from the date of original purchase for all stock hardware products (other than those specifically referenced herein below having a shorter warranty period); (ii) for a period of one (1) year from the date of original purchase, with respect to all MegaPort™, IPTV products, test equipment and fiber optics receivers, transmitters, couplers and integrated receiver/distribution amplifiers; (iii) for a period of one (1) year from the date of original purchase (or such shorter period of time as may be set forth in the license agreement specific to the particular software being licensed from Seller) with respect to all software products licensed from Seller (other than Core Product Software) that is (a) developed for a specific function or application, (b) complimentary to and does not function without the Core Product Software, and (c) listed with a specific model number and stock number in Seller's Price List ("**Non-Core Software**"); (iv) for a period of ninety (90) days from the date of original purchase, with respect to non-serialized products and accessories, such as parts, sub-assemblies, splitters and all other products sold by Seller (other than Core Product Software and Refurbished/Closeout Products) not otherwise referred to in clauses (i) through (iii) above. The warranty period for computer programs in machine-readable form included in a hardware product, which are essential for the functionality thereof as specifically stated in the published product specifications ("**Core Product Software**") will be coincident with the warranty period of the applicable hardware product within which such Core Product Software is installed.

Software patches, bug fixes, updates or workarounds do not extend the original warranty period of any Core Product Software or Non-Core Software.

Notwithstanding anything herein to the contrary,

(i) Seller's sole obligation for software that when properly installed and used does not substantially conform to the published specifications in effect when the software is first shipped by Seller, is to use commercially reasonable efforts to correct any reproducible material non-conformity (as determined by Seller in its sole discretion) by providing the customer with: (a) telephone or e-mail access to report non-conformance so that Seller can verify reproducibility, (b) a software patch or bug fix, if available or a workaround to bypass the issue if available, and (c) where applicable, replacement or damaged or defective external media, such as CD-ROM disk, on which the software was originally delivered;

(ii) Seller does not warrant that the use of any software will be uninterrupted, error-free, free of security vulnerabilities or that the software will meet the customer's particular requirements; and the customer's sole and exclusive remedy for breach of this warranty is, at Seller's option, to receive (a) suitably modified software, or part thereof, or (b) comparable replacement software or part thereof;

(iii) Seller retains all right, title and interest in and to and ownership of all software (including all Core Product Software and Non-Core Software) including any and all enhancements, modifications and updates to the same; and

(iv) in some cases, the warranty on certain proprietary sub-assembly modules manufactured by third-party vendors and contained in Seller's products, third party software installed in certain of Seller's products, and on certain private-label products manufactured by third-parties for resale by Seller, will be of shorter duration or otherwise more limited than the standard Seller limited warranty. In such cases, Seller's warranty with respect to such third-party proprietary sub-assembly modules, third-party software and private-label products will be limited to the duration and other terms of such third-party vendor's warranty, if any. In addition, certain products, that are not manufactured by Seller, but are resold by Seller, may carry the original OEM warranty for such products, if any. The limited warranty set forth above does not apply to any product sold by Seller, which at the time of sale constituted a Refurbished/Closeout Product, the limited warranty for which is provided in the following paragraph.

Seller will at its sole option, either repair or replace (with a new or factory-reconditioned product, as Seller may determine) any product sold by Seller which at the time of sale constituted a refurbished or closeout item ("**Refurbished/Closeout Product**"), which is defective in materials or workmanship or fails to meet the applicable specifications that are in effect on the date of shipment of that product or fails to meet such other specifications as may have been expressly agreed upon in writing between the parties, for a period of ninety (90) days from the date of original purchase. Notwithstanding the foregoing, in some cases the warranty on certain proprietary sub-assembly modules manufactured by third-party vendors and contained in Seller products, third party software installed in certain of Seller's products, and on certain private-label products manufactured by third-parties for resale by Seller will be of shorter duration or otherwise more limited than Seller limited warranty for Refurbished/Closeout Products. In such cases, Seller's warranty for Refurbished/Closeout Products constituting such third party proprietary sub-assembly modules, third party software, and private-label products will be limited to the duration and other terms of such third-party vendor's warranty, if any. In addition, notwithstanding the foregoing, (i) certain Refurbished/Closeout Products that are not manufactured (but are resold) by Seller, may carry the original OEM warranty for such products, if any, which may be longer or shorter than Seller's limited warranty for Refurbished/Closeout Products. All sales of Refurbished/Closeout Products are final.

To obtain service under this warranty, the defective product, together with a copy of the sales receipt, serial number if applicable, or other satisfactory proof of purchase and a brief description of the defect, must be shipped freight prepaid to Seller at the following address: One Jake Brown Road, Old Bridge, New Jersey 08857.

This warranty does not cover failure of performance or damage resulting from (i) use or installation other than in strict accordance with manufacturer's written instructions, (ii) disassembly or repair by someone other than the manufacturer or a manufacturer-authorized repair center, (iii) misuse, misapplication or abuse, (iv) alteration, (v) exposure to unusual physical or electrical stress, abuse or accident or forces or exposure beyond normal use within specified operational or environmental parameters set forth in applicable product specifications, (vi) lack of reasonable care or (vii) wind, ice, snow, rain, lightning, or any other weather conditions or acts of God.

OTHER THAN THE WARRANTIES SET FORTH ABOVE, SELLER MAKES NO OTHER WARRANTIES OR REPRESENTATIONS OF ANY KIND, EXPRESS OR IMPLIED, AS TO THE CONDITION, DESCRIPTION, FITNESS FOR A PARTICULAR PURPOSE, MERCHANTABILITY, OR AS TO ANY OTHER MATTER, AND SUCH WARRANTIES SET FORTH ABOVE SUPERSEDE ANY ORAL OR WRITTEN WARRANTIES OR REPRESENTATIONS MADE OR IMPLIED BY SELLER OR BY ANY OF SELLER'S EMPLOYEES OR REPRESENTATIVES, OR IN ANY OF SELLER'S BROCHURES MANUALS, CATALOGS, LITERATURE OR OTHER MATERIALS. IN ALL CASES, BUYER'S SOLE AND EXCLUSIVE REMEDY AND SELLER'S SOLE OBLIGATION FOR ANY BREACH OF THE WARRANTIES CONTAINED HEREIN SHALL BE LIMITED TO THE REPAIR OR REPLACEMENT OF THE DEFECTIVE PRODUCT F.O.B. SHIPPING POINT, AS SELLER IN ITS SOLE DISCRETION SHALL DETERMINE. SELLER 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 SELLER.

All claims for shortages, defects, and non-conforming goods must be made by the customer in writing within five (5) days of receipt of merchandise, which writing shall state with particularity all material facts concerning the claim then known to the customer. Upon any such claim, the customer shall hold the goods complained of intact and duly protected, for a period of up to sixty (60) days. Upon the request of Seller, the customer shall ship such allegedly non-conforming or defective goods, freight prepaid to Seller for examination by Seller's inspection department and verification of the defect. Seller, at its option, will either repair, replace or issue a credit for products determined to be defective. Seller's liability and responsibility for defective products is specifically limited to the defective item or to credit towards the original billing. All such replacements by Seller shall be made free of charge f.o.b. the delivery point called for in the original order. Products for which replacement has been made under the provisions of this clause shall become the property of Seller. Under no circumstances are products to be returned to Seller without Seller's prior written authorization. Seller reserves the right to scrap any unauthorized returns on a no-credit basis. Any actions for breach of a contract of sale between Seller and a customer must be commenced by the customer within thirteen (13) months after the cause of action has accrued. A copy of Seller's standard terms and conditions of sale, including the limited warranty, is available from Seller upon request. Copies of the limited warranties covering third-party proprietary sub-assembly modules and private-label products manufactured by third-parties may also be available from Seller on request. (Rev 1021)



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