BLONDER TONGUE
LABORATORIES, INC.

INSTRUCTION MANUAL

MDDM-860

Micro Digital Demodulator

Model	Stock No.	Description
MDDM-860	6273	Micro Digital Demodulator

Status	Date	Document No.	Issue No.	Author
Active	February 25, 2011	651223700C	3	KK
Obsolete	December 10, 2009	651223700B	2	KK
Obsolete	August 14, 2009	651223700A	1	KK

We recommend that you write the following information in the spaces provided below.

Purchase Location Name:	
Purchase Location Telephone Number:	
MDDM-860 Serial Number:	

Section 1 — General & Safety Instructions

STOP	The STOP sign symbol is intended to alert you to the presence of REQUIRED operating and maintenance (servicing) instructions that if not followed, may result in product failure or destruction.
⚠️	The YIELD sign symbol is intended to alert you to the presence of RECOMMENDED operating and maintenance (servicing) instructions.
⚡	The LIGHTNING flash symbol is intended to alert you to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electrical shock.

**TO REDUCE THE RISK OF ELECTRICAL SHOCK, DO NOT REMOVE COVER FROM THIS UNIT.
NO USER-SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.**

WARNING: TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS UNIT TO RAIN OR MOISTURE

NOTE TO CATV SYSTEM INSTALLER

This reminder is provided to call the CATV System Installer's attention to Article 820-40 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.
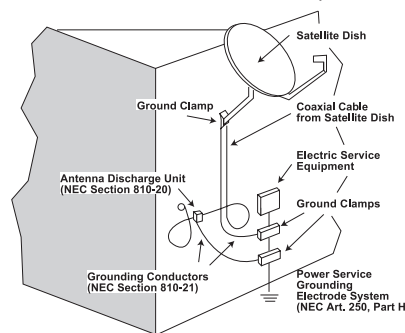
Safety Instructions

⚠️ **YOU SHOULD ALWAYS FOLLOW THESE INSTRUCTIONS TO HELP ENSURE AGAINST INJURY TO YOURSELF AND DAMAGE TO YOUR EQUIPMENT.**

➡ 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 per Section 2.3.

➡ 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.

➡ Mechanical Loading - Mounting of the equipment in the rack should be such that a hazardous condition is not achieved due to uneven mechanical loading.

➡ 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.

➡ 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).

➡ Read all safety and operating instructions before you operate the unit.

➡ Retain all safety and operating instructions for future reference.

➡ Heed all warnings on the unit and in the safety and operating instructions.

Safety Instructions - continued

➥ Follow all installation, operating, and use instructions.

➥ Unplug the unit from the AC power outlet before cleaning. Use only a damp cloth for cleaning the exterior of the unit.

➥ Do not use accessories or attachments not recommended by Blonder Tongue, as they may cause hazards, and will void the warranty.

➥ Do not operate the unit in high-humidity areas, or expose it to water or moisture.

➥ Do not place the unit on an unstable cart, stand, tripod, bracket, or table. The unit may fall, causing serious personal injury and damage to the unit. Install the unit only in a mounting rack designed for 19" rack-mounted equipment.

➥ Do not block or cover slots and openings in the unit. These are provided for ventilation and protection from overheating. Never place the unit near or over a radiator or heat register. Do not place the unit in an enclosure such as a cabinet without proper ventilation. Do not mount equipment in the rack space directly above or below the unit.

➥ Operate the unit using only the type of power source indicated on the marking label. Unplug the unit power cord by gripping the plug, not the cord.

➥ The unit is equipped with a three-wire ground-type plug. This plug will fit only into a ground-type power outlet. If you are unable to insert the plug into the outlet, contact an electrician to replace the outlet. Do not defeat the safety purpose of the ground-type plug.

➥ Route power supply cords so that they are not likely to be walked on or pinched by items placed upon or against them. Pay particular attention to cords at plugs, convenience receptacles, and the point where they exit from the unit.

➥ Be sure that the outdoor components of the antenna system are grounded in accordance with local, federal, and National Electrical Code (NEC) requirements. Pay special attention to NEC Sections 810 and 820. See the example shown in the following diagram:

➥ We strongly recommend using an outlet that contains surge suppression or ground fault protection. For added protection during a lightning storm, or when the unit is left unattended and unused for long periods of time, unplug it from the wall outlet and disconnect the lines between the unit and the antenna. This will prevent damage caused by lightning or power line surges.

➥ Do not locate the antenna near overhead power lines or other electric light or power circuits, or where it can fall into such power lines or circuits. When installing the antenna, take extreme care to avoid touching such power lines or circuits, as contact with them can be fatal.

➥ Do not overload wall outlets or extension cords, as this can result in a risk of fire or electrical shock.

➥ Never insert objects of any kind into the unit through openings, as the objects may touch dangerous voltage points or short out parts. This could cause fire or electrical shock.

➥ Do not attempt to service the unit yourself, as opening or removing covers may expose you to dangerous voltage and will void the warranty. Refer all servicing to authorized service personnel.

➥ Unplug the unit from the wall outlet and refer servicing to authorized service personnel whenever the following occurs:

    ❏ The power supply cord or plug is damaged;
    ❏ Liquid has been spilled, or objects have fallen into the unit;
    ❏ The unit has been exposed to rain or water;
    ❏ The unit has been dropped or the chassis has been damaged;
    ❏ The unit exhibits a distinct change in performance.

➥ When replacement parts are required, ensure that the service technician uses replacement parts specified by Blonder Tongue. Unauthorized substitutions may damage the unit or cause electrical shock or fire, and will void the warranty.

➥ Upon completion of any service or repair to the unit, ask the service technician to perform safety checks to ensure that the unit is in proper operating condition.

Returning Product for Repair (or Credit)

A Return Material Authorization (RMA) Number is required on all products returned to Blonder Tongue, **regardless if the product is being returned for repair or credit.** Before returning product, please contact the Blonder Tongue Service Department at 1-800-523-6049, Ext. 4256 or visit our website: **www.blondertongue.com** for further information.

MDDM Front Panel Controls & Indicators:

[1] ▲ (CH-UP) button: Increments major channel or minor channel to next higher channel in the database. Holding this button down will fast scroll through the channels. Channel display will blink to indicate displayed channel is in selection and has not been entered. Press **ENT** button to confirm. If 5 seconds pass without pressing the **ENT** button, the display will return to its last programmed state and stop blinking.

[2] ▼ (CH-DN) button: Decrements channel to next lower major channel in the database. Holding this button down will fast scroll through the channels. The minor channel always goes to the lowest found (typically 1). Channel display will blink to indicate displayed channel is in selection and has not been entered. Press **ENT** button to confirm. If 5 seconds pass without pressing the **ENT** button, the display will return to its last programmed state and stop blinking.

[3] Two Digit Channel Display: Used to identify program major channel. The decimal dot will always be lit. For channels above 99, the +100 LED will blink and the last two digits will be displayed. For example, channel 102 will have +100 LED blink and 02 on the display.

[4] One Digit Channel Display: Used to identify program's minor channel. Range is 1-9, 'A'=10, 'B'=11, 'C'=12, 'D'=13, 'E'=14, 'F'=15. For minor channel 16 or higher the display will read '0' and the actual minor channel can be viewed on a tv/monitor or through the PROG MON connector on a PC. For example, channel 78.2 will be displayed as 78 on the 2-digit display, and 2 on the 1-digit display.

[5] +100 LED: For channels above 99, the +100 LED will blink once for each increment of 100. For example, for channel 378.2, the +100 LED will blink 3 times, number 78 will display on the 2-digit display and digit 2 on the 1-digit display. The blinking will be continuous with small pauses for ease of counting.

[6] QAM LED: Lights when set for QAM input mode.

NOTE: If the unit is not locked to the incoming channel, the QAM led will flash.

[7] ENT/SCAN button: Must be pressed to confirm channel selection, picture size, and audio mode.

Scanning: Holding the ENT button for 10 seconds initiates the scan process. The 1-digit display will display 'swirling segments', the 2-digit LED will display number of channels found. At anytime, pressing the ENT and SNR button simultaneously will stop the scan. Scanning is done automatically in ascending RF frequency from channel center frequency 57 to 857 MHz (8VSB) or from 57 to 861 MHz (QAM) for specified channel range.

In the QAM mode, only the clear (unscrambled) programs will be included in the scan list. Programs having a VCT (virtual channel table) will be displayed as their virtual major - minor channel numbers.   Programs received without a VCT will be displayed by the received RF channel number as the major number. Minor numbers will be given in sequence as they appear in the PMT table.

> **!** **IF THE CHANNEL DATABASE IS EMPTY, THE 2-DIGIT DISPLAY WILL READ '03', THE 1-DIGIT DISPLAY WILL READ 'E' INDICATING A SCAN IS REQUIRED. ALERTS FOR MORE DETAILS.**

[8] PIC SIZE button: When pressed, the 2-digit and 1-digit LED will show the current picture size mode per table below. Each additional press of the **PIC SIZE** button will change the mode. The displays will blink to indicate picture size is in selection and has not been entered. Pressing the **ENT** button selects picture size and after a few seconds the displays will return to indicating channel numbers. If 5 seconds pass without pressing the **ENT** button, the display will return to its last programmed state and stop blinking.

Picture Size	2-digit LED	1-digit LED
AFD	AF	d
Center Cut	PI	C
Letterbox	PI	L
Full	PI	F
Zoom1	PI	1
Zoom2	PI	2

AFD – Active Format Description - uses AFD data and will automatically switch between Letterbox and Center Cut as defined by broadcaster. In the absence of AFD data or in the presence of any unsupported AFD codes, the unit defaults to Center Cut.

Center Cut – manual setting to ignore AFD data and to display Center Cut. Expands the picture image to fit screen while cropping some image on the left and right without displaying any bars on the screen.

Letterbox – manual setting to ignore AFD data and always display Letterbox. Displays the original picture and aspect ratio while fitting to the screen by applying black bars to the top and bottom.

Full – manual setting to display entire image while fitting the picture to the screen by stretching the image vertically. Black bars are present on the sides and there may be slight distortion of the picture.

Zoom 1 – manual setting to partially expand the image to fit screen after horizontally cropping the image. This mode will still show very thin black bars.

Zoom 2 – manual setting to expand the image to fit screen while cropping the image on the left and right. This mode will display no black bars.

> **!** **IT IS RECOMMENDED TO USE AFD OR CENTER CUT FOR MAXIMUM SCREEN USAGE WHEN CONVERTING 16:9 ASPECT RATIO SIGNALS FOR VIEWING ON 4:3 TELEVISIONS, WHICH IS THE INTENDED USE OF THE MDDM.**

[9] **AUD MODE button:** When pressed, the 2-digit LED will display 'AU'. The 1-digit display will show the current audio mode. Each additional press of the **AUD MODE** button will change the mode. The display will blink to indicate audio mode is in selection and has not been entered. Pressing the **ENT** button selects audio mode and after a few seconds the displays will return to indicating channel numbers. If 5 seconds pass without pressing the **ENT** button, the display will return to its last programmed state and stop blinking.

   AU 1 - Mono – outputs the same mono audio program on both left and right ports. Closed captioning (CC) is off.
   AU 2 - Stereo – outputs left and right stereo audio program. CC is off.
   AU 3 - SAP – outputs only the mono secondary audio program on both left and right ports. CC is off.
   AU 4 - Mono with Closed Captioning – outputs same mono audio program on both left and right ports. CC is on.
   AU 5 - Stereo with Closed Captioning – outputs left and right stereo audio program. CC is on.
   AU 6 - SAP with Closed Captioning – outputs only the mono secondary audio program on both left and right ports. CC is on.

[10] **SNR button:** When pressed the 2-digit LED display will change to show input channel SNR. The 1-digit LED display will show 'D' for dB. After 5 seconds, the display will return to show current program channel.

[11] **PROG MON mini-usb connector:** Used to interface to a computer in order to reprogram the unit with firmware or software changes. Can also be used to display various mode and status parameters that the unit is set for. Requires a custom interface cable.

MDDM Power-up & Operation:

[1] **Firmware/Software:** Following unit power-up or reset, the boot-up routine will begin. First, the 2-digit LED will display the internal microcontroller firmware revision. After a few seconds, all three LED digits will display the internal HD decoder software revision. Upon completion of the boot-up routine, a previously configured unit will retain and display its last programmed channel, while a new or updated unit will alert a scan requirement.

[2] **8VSB/QAM mode:** Holding the SNR button in for 10 seconds will change modes from Off-air 8VSB input to CATV QAM input or vice versa. When in QAM input mode, the QAM LED will light. In 8VSB input mode, the QAM LED will be off. Typically, a new scan will be needed when the input mode has been changed.

[3] **Power-save mode:** After approximately 3 minutes of no interaction, the unit will enter into its power-save mode by turning off all front-panel LEDs and displays. The dot of the 2-digit LED will remain lit to indicate unit is powered and operating normally. Pressing any button will bring the unit out of power-save mode and current channel and modes will be displayed.

[4] **Unit Reset:** Holding the **PIC** and **AUD** buttons simultaneously for 5 seconds will reset the unit. All three digits of the unit will display a countdown from 5 to 0 and then reset. After reset, the unit will return to its last programmed state. A reset is required after a firmware or software update. In this instance, the unit will need to be rescanned and picture size and audio mode will need to be set again to restore the unit to operate as configured previously.

[5] **Alerts:** The MDDM has 7 alerts to indicate a non-typical condition or error in operation. The 1-digit LED will display 'E'. The 2-digit LED will display the condition number '01' thru '07', as described below.

   01 E – Internal communication error between microcontroller and decoder. Perform a Unit Reset or disconnect/reconnect the power to correct this.
   02 E – No signal error. TV/monitor screen will display 'No signal'. Verify that incoming RF is connected and desired/undesired channels are at recommended levels. Press the SNR button and confirm that signal-to-noise ratio is greater than 20 for 8VSB, 25 for QAM 64, 30 for QAM 256.
   03 E – Channel database error. In 8VSB mode, TV/monitor screen will display 'No terrestrial channels found, Please scan to add channels'. In QAM mode, TV/monitor screen will display 'No cable channels found, Please scan to add channels'. Perform a scan to correct this.
   04 E – No program alert. Indicates the channel currently has no program. TV/monitor screen will display 'No program'.
   05 E – Audio only alert. Indicates the channel is an audio only program. TV/monitor screen will display 'Audio only'.
   06 E – Video only alert. Indicates the channel has video only program.
   07 E – Scrambled alert. Indicates the channel has a scrambled program.

Limited Warranty

Blonder Tongue Laboratories, Inc. (BT) will at its sole option, either repair or replace (with a new or factory reconditioned product, as BT may determine) any product manufactured by BT which proves to be defective in materials or workmanship or fails to meet the specifications which 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 (or such shorter period of time as may be set forth in the license agreement specific to the particular software being licensed), with respect to iCentral™ (hardware and software) and all other software products (including embedded software) licensed from BT, (ii)) for a period of one (1) year from the date of original purchase, with respect to all MegaPort™, IPTV products, and fiber optics receivers, transmitters, couplers and integrated receiver/distribution amplifiers (including TRAILBLAZER™, RETRO-LINX™ and TWIN STAR™ products) as well as for DigiCipher ® satellite receivers, and (iii) for a period of three (3) years from the date of original purchase, with respect to all other BT products. Notwithstanding the foregoing, in some cases, the warranty on certain proprietary sub-assembly modules manufactured by third-party vendors and contained in BT products and on certain private–label products manufactured by third-parties for resale by BT are of shorter duration or otherwise more limited than the standard BT limited warranty. In such cases, BT's warranty with respect to such third-party proprietary sub-assembly modules and private-label products will be limited to the duration and other terms of such third-party vendor's warranty. In addition, certain products, that are not manufactured but are resold by BT, carry the original OEM warranty for such products. The limited warranty set forth in this paragraph does not apply to any product sold by BT, which at the time of sale constituted a Refurbished/Closeout Product.

(b) BT will at its sole option, either repair or replace (with a new or factory-reconditioned product, as BT may determine) any product sold by BT which at the time of sale constituted a refurbished or closeout item ("Refurbished/Closeout Product"), which proves to be defective in materials or workmanship or fails to meet the specifications which are in effect on the date of shipment or such other specifications as may have been expressly agreed upon in writing, for a period of ninety (90) days from the date of original purchase. Notwithstanding the foregoing, in some cases the warranty on third party software and on certain proprietary sub-assembly modules manufactured by third-party vendors and contained in BT products and on certain private–label products manufactured by third-parties for resale by BT are of shorter duration or otherwise more limited than the BT limited warranty for Refurbished/Closeout Products. In such cases, BT's warranty for Refurbished/Closeout Products constituting such third party software, third-party proprietary sub-assembly modules and private-label products will be limited to the duration and other terms of such third-party vendor's warranty. In addition, notwithstanding the foregoing, (i) certain Refurbished/Closeout Products that are not manufactured (but are resold) by BT, carry the original OEM warranty for such products, which may be longer or shorter than the BT 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 or other satisfactory proof of purchase and a brief description of the defect, must be shipped freight prepaid to: Blonder Tongue Laboratories, Inc., One Jake Brown Road, Old Bridge, New Jersey 08857.

This warranty does not cover 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) lack of reasonable care or (vi) wind, ice, snow, rain, lightning, or any other weather conditions or acts of God.

OTHER THAN THE WARRANTIES SET FORTH ABOVE, BT 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 SUPERSEDE ANY ORAL OR WRITTEN WARRANTIES OR REPRESENTATIONS MADE OR IMPLIED BY BT OR BY ANY OF BT'S EMPLOYEES OR REPRESENTATIVES, OR IN ANY OF BT'S BROCHURES MANUALS, CATALOGS, LITERATURE OR OTHER MATERIALS. IN ALL CASES, BUYER'S SOLE AND EXCLUSIVE REMEDY AND BT'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 BT IN ITS SOLE DISCRETION SHALL DETERMINE. BT 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 BT.

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 BT, the customer shall ship such allegedly non-conforming or defective goods, freight prepaid to BT for examination by BT's inspection department and verification of the defect. BT, at its option, will either repair, replace or issue a credit for products determined to be defective. BT'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 BT 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 BT. Under no circumstances are products to be returned to BT without BT's prior written authorization. BT reserves the right to scrap any unauthorized returns on a no-credit basis. Any actions for breach of a contract of sale between BT and a customer must be commenced by the customer within thirteen (13) months after the cause of action has accrued. A copy of BT's standard terms and conditions of sale, including the limited warranty, is available from BT upon request. Copies of the limited warranties covering third-party proprietary sub-assembly modules and private-label products manufactured by third-parties are also available from BT on request. DigiCipher ® is a registered trademark of Motorola Corp. (**Rev 0509**)