BLONDER TONGUE LABORATORIES, INC.

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INSTRUCTION MANUAL

MDDA-860

Micro Digital Demod to ASI

Model	Stock No.	Description
MDDA-860	6277	Micro Digital Demod ASI

Status	Date	Document No.	Issue No.	Author
Active	July 19, 2010	651224800A	1	KK

MADE IN USA

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

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

The information contained herein is subject to change without notice. Revisions may be issued to advise of such changes and/or additions.

Correspondence regarding this publication should be addressed directly to:

Blonder Tongue Laboratories, Inc.

One Jake Brown Road

Old Bridge, NJ 08857

Document Number: USA 651224800A

Printed in the United States of America.

General & Safety Instructions

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.

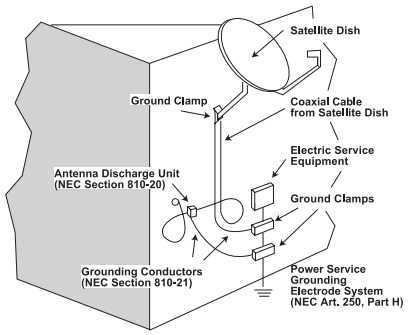
Safety Instructions

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.
- 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.

Product Specification

Input

Connector:	"F" Female
Standards	
8VSB:	ATSC Digital Television Standard A/53E
QAM:	ITU-T J.83 (64 and 256 QAM)
8VSB Mode	
Tuning Range:	UHF (NTSC Ch. 14-78), VHF (NTSC Ch. 2-13)
Symbol Rate:	10.762 Msymbols/sec
Bandwidth:	6 MHz
QAM Mode	
Tuning Range:	CATV (NTSC Ch. 2-135)
Symbol Rate:	5.3606 Msymbols/sec (QAM 256); 5.057 Msymbols/sec (QAM 64) – Auto Detect
Bandwidth:	6 MHz
Single Channel Power Level:	-32 to +45 dBmV
8VSB Power Level:	-20 to +30 dBmV
QAM Power Level:	-20 to +20 dBmV
Return Loss:	12dB
Impedance:	75 Ω

Output

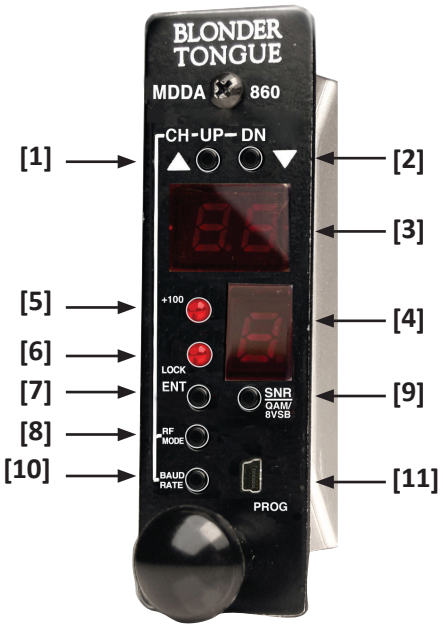
Connectors:	
ASI:	1 x F (equipped with F-to-BNC adapter)
ASI	
Standard:	DVB-ASI; 50083-9
Data Bit Rate:	270 Mbps

General

Dimensions (W x D x H)	
MDDA Modules:	1.0 x 7.78 x 3.5 inches (25 x 198 x 89 mm)
MIPS-12C Power Supply:	4.6 x 7.5 x 3.5 inches (106 x 191 x 89 mm)
MIRC-12V Chassis:	19 x 12.0 x 5.25 inches (483 x 305 x 133 mm)
Power	
MIPS-12C Power Supply:	100-240 VAC; 50/60 Hz
Power Dissipation:	5 W (max. per MDDA Module) 5 VDC @ 370 mA; 12 VDC @ 200 mA
Weight	
MDDA Module:	0.8 lbs (0.36 kg)
Fully Loaded Chassis:	15.8 lbs (7.2 kg)
Operating Temperature:	32 to 122 °F (0 to 50 °C)
Storage Temperature:	-13 to 158 °F (-25 to 70 °C)
Operating Humidity:	0 to 95% RH @ 35 °C max, non-condensation
Storage Humidity:	0 to 95% RH @ 35 °C max, non-condensation

Alarms/Monitoring/Control

Front-Panel Indicators:	RF channel (2-digit LED display) Frequency/channel plan (1-digit LED display) +100 Channel (Red LED) SNR (2- & 1-digit LED displays) Lock LED (solid LED) No Lock (flashing LED) RF Mode (2- & 1-digit LED displays) Baud Rate (2- & 1-digit LED displays) Firmware revision (2-digit LED display) Software revision (2- & 1-digit LED displays) Unit reset (2- & 1-digit LED displays)
Front-Panel Control:	CH UP/DN push-buttons (increment major or minor channel up/down) ENT push-button (enters or confirms selection) RF Mode push-button (adjusts RF frequency plans) Baud Rate push-button (adjusts baud rates) SNR push-button (measures input signal-to-noise ratio) QAM/8VSB push&hold-button (toggles between QAM & 8VSB) RF Mode & Baud Rate simultaneously (unit reset) PROG (mini USB connector for software upgrades)



MDDA Front Panel Controls & Indicators:

[1] ▲ (CH-UP) button: Increments current tuned channel to the next higher channel. 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. 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.

NOTE: The MDDA-860 requires the actual RF Channel setting, not the virtual channel number.

Most broadcasters maintain their analog channel identity by utilizing the new digital channel's PSIP (Program and System Information Protocol) feature. It may also be referred to as the "tune to" (NAB) or as a "virtual" channel. Digital TV's along with digital demodulators such as Blonder Tongue's MDDM-860 and AQD use the virtual channel number to tune to the particular program that in most cases is transmitted over a completely different channel number. This is not the case with the MDDA-860. To find the actual RF channel, use the following website:

www.antennaweb.org

[3] Two Digit Channel Display: Used to identify program channel. The decimal point will always be lit. For channels above 99, the +100 LED will be lit.

[4] One Digit RF Channel Display: Indicates the current frequency/channel plan.

S = STD (CATV)

I = IRC (CATV)

H = HRC (CATV)

A = Off Air (Broadcast UHF/VHF)

[5] +100 LED: For channels above 99, the +100 LED will be lit. For example, for standard CATV channel 125 the +100 LED will on and number 25 will display on the 2-digit display "S" on the 1-digit display.

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

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

[7] ENT button: Must be pressed to confirm channel selection, RF mode, and baud rate.

[8] RF Mode button: When the RF button is pushed, the module will switch from the sleep mode to the frequency plan editing mode. The LED display will indicate current Channel number and RF frequency plan.

Pressing the RF button while in the frequency plan editing mode, will step through the RF frequency plans on the LED display in the following sequence:

S = STD (CATV)

I = IRC (CATV)

H = HRC (CATV)

A = Off Air (Broadcast UHF/VHF)

The display will blink when the display plan does not match the current program plan. Use the ENTER button once the desired plan is displayed to make any changes. If no buttons are pushed within 5 seconds, the MDDA will revert back to its previously saved setting.

[9] SNR/QAM-8VSB button: Pressing the SNR button once will switch the MDDA out of sleep mode and into the SNR display mode. While displaying the current SNR, pressing the SNR button again will switch to the input modulation edit mode. The display will now indicate the current modulation setting (xxxQAM or xxVSB).

Pressing the SNR button once more, the MDDA will begin to scroll through the different modulation modes available. Input modulation modes will show on the LED display in the following sequence:

_8 U	-8VSB mode
64 B	- 64QAM-B
56 B	-256QAM-B
64 A	- 64QAM-A
28 A	- 128QAM-A
56 A	-256QAM-A

Should the indicated input modulation mode not match the current mode, the LED display will blink. To exit the editing mode use the ENTER button to invoke any changes or if no buttons are pushed within 5 seconds, the MDDA will revert back to its previously saved state.

[10] Baud Rate button: Industry standard default baud rates based upon the modulation mode selected above are preloaded. For ITU-T J.83 Annex B, the North American digital cable standard, the default rates are:

64 QAM - 5.056941 Mbd

256 QAM - 5.360537 Mbd

If a different baud rate is required follow the directions below.

When the Baud Rate button is pushed the MDDA will switch from sleep mode to the baud rate editing mode. The LED display will then indicate the baud rates current most significant digit and decimal multiplier.

Pushing the Baud Rate button again while in the editing mode will sequence through the baud rate settings. The digits and decimal multipliers will be indicated on the LED display as follows for a 5.360537 Mbd example.

56 - 5*1,000,000

35 - 3*100,000

64 - 6*10,000

03 - 0*1,000

52 - 5*100

31 - 3*10

70 - 7*1

When the baud rate digit with multiplier is displayed, pushing either the UP or DN buttons will change the digit in sequence (0-1-2-3-4-5-6-7-8-9-0…). If the digit doesn't match the current baud rate in memory, the LED display will blink (digit and multiplier). If the baud rate does not match the current baud rate, the LED display will blink (digit only).

To exit the baud rate editing mode, either push the ENTER button which will invoke any changes made, or if no buttons are pushed within a 5 second period the MDDA will revert back to its memory settings.

[11] PROG MON MINI-USB CONNECTOR: Used to interface to a computer in order to reprogram the unit with firmware or software changes.

MDDA Operation:

[1] 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.

[2] Unit Reset: Holding the **RF Mode** and **Baud Rate** 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.

[3] Alerts: The MDDA has 2 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 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. Also confirm that the correct frequency plan, modulation and baud rate have been set.

Notes

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)**

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