



INSTRUCTION MANUAL

651210100B

BAVM-860SAW
Audio/Video Modulator
Stock No. 5990



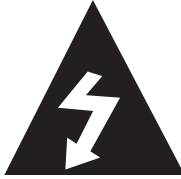
**BLONDER
TONGUE**
LABORATORIES, INC.

The Standard of Quality in TV Signal Distribution

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The lightning flash with arrowhead symbol within an equilateral triangle 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 persons.



CAUTION
RISK OF ELECTRIC SHOCK
DO NOT OPEN



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

**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 SHOCK HAZARD, DO NOT EXPOSE THIS UNIT TO RAIN OR MOISTURE

NOTE TO CATV INSTALLERS

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.

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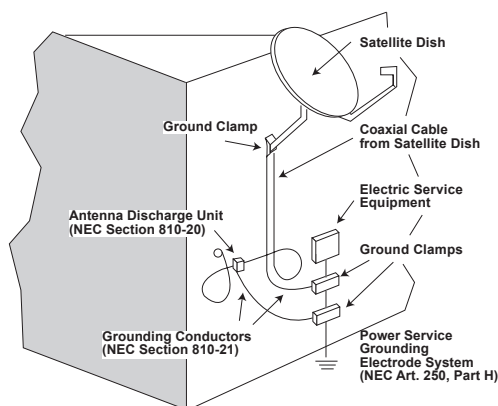
Safety Instructions

WARNING!



You should always follow these instructions to help ensure against injury to yourself and damage to your equipment.

- ◆ Read all safety and operating instructions before you operate the modulator.
- ◆ Retain all safety and operating instructions for future reference.
- ◆ Heed all warnings on the modulator and in the safety and operating instructions.
- ◆ Follow all installation, operating, and use instructions.
- ◆ Unplug the modulator from the AC power outlet before cleaning. Use only a damp cloth for cleaning the exterior of the modulator.
- ◆ 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 modulator in high-humidity areas, or expose it to water or moisture.
- ◆ Do not place the modulator on an unstable cart, stand, tripod, bracket, or table. The modulator may fall, causing serious personal injury and damage to the modulator. Install the modulator only in a mounting rack designed for 19" rack-mounted equipment.
- ◆ Do not block or cover slots and openings in the modulator. These are provided for ventilation and protection from overheating. Never place the modulator near or over a radiator or heat register. Do not place the modulator in an enclosure such as a cabinet without proper ventilation. Do not mount equipment in the rack space directly above or below the modulator.
- ◆ Operate the modulator using only the type of power source indicated on the marking label. Unplug the modulator power cord by gripping the plug, not the cord.
- ◆ The modulator 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:



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Safety Instructions - continued

- ◆ We strongly recommend using an outlet that contains surge suppression or ground fault protection. For added protection during a lightning storm, or when the modulator is left unattended and unused for long periods of time, unplug it from the wall outlet and disconnect the lines between the modulator 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 modulator 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 modulator 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 modulator 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 modulator;
 - The modulator has been exposed to rain or water;
 - The modulator has been dropped or the chassis has been damaged;
 - The modulator 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 modulator or cause electrical shock or fire, and will void the warranty.
- ◆ Upon completion of any service or repair to the modulator, ask the service technician to perform safety checks to ensure that the modulator is in proper operating condition.

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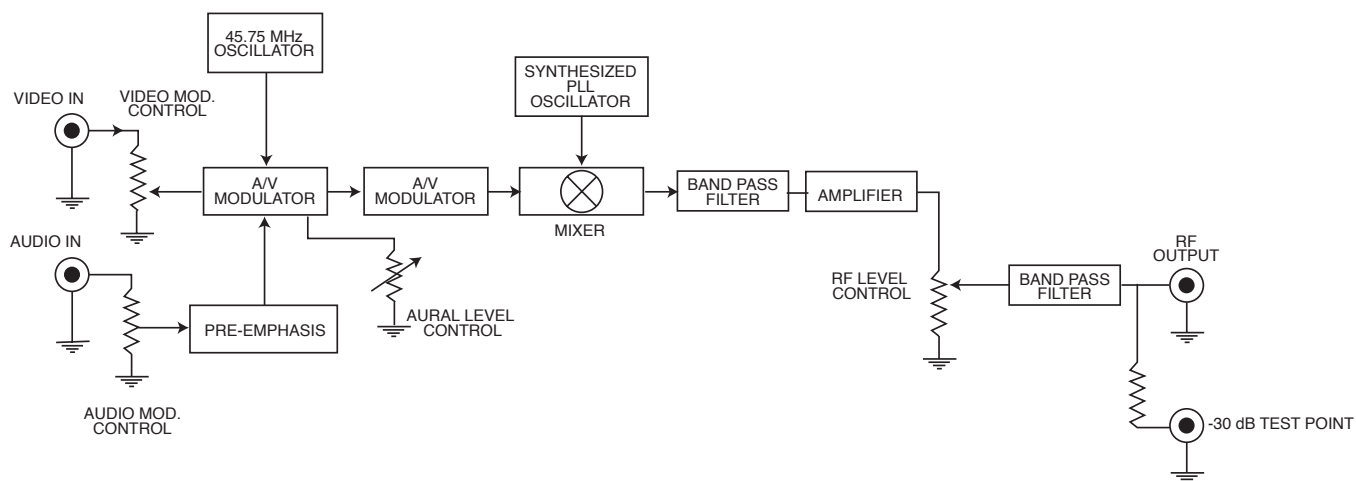
General

The BAVM-860SAW is an all solid state audio/video modulator that provides a modulated visual and aural RF carrier output on any single CATV channel 2 to 135. The modulator can be used to put sound and color video on any of the above listed channels in a CATV, MATV or SMATV system.

The modulator accepts standard (sync negative) polarity video at a 0.7-2.5 V P-P level from sources such as a TV camera, video tape recorder, TV demodulator or satellite receiver.

The BAVM-860SAW features a +55 dBmV RF output level, and IF SAW filtering for adjacent channel operation. All aeronautical channels are offset positive with a tolerance of ± 5 kHz as required by FCC 21006. For ease of operation, all level controls are located on the front panel.

A block diagram of the BAVM-860SAW is shown below. The audio/video modulator accepts a baseband video and audio input and outputs an RF CATV channel. The RF level control provides up to +55 dBmV output. The video modulator control sets the depth of modulation to 87.5% over an input video level range from 0.7VP/P to 2.5VP/P. An audio modulation control permits adjustment for ± 25 kHz peak deviation of the aural carrier.



BAVM-860SAW Block Diagram

The BAVM-860SAW also provides a field-defeatable pre-emphasis network and an aural level control to ensure the proper aural/visual ratio. An six foot cord and a convenience AC outlet on each amplifier permits easy connections between racked units.

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Specifications

RF **Typical**

Frequency Range: CATV channels 2 to 135
Output Level: 55 dBmV
Output Level Range: 15 dB, continuously adjustable
by front panel Output Level Control
Audio/Video Carrier Ratio Control: -7 dB to -20 dB,
Frequency Tolerance: ± 10 kHz - standard channels
 ± 5 kHz FCC 21006 Offsets
Audio Carrier Frequency Setting: ± 1 kHz, Max
4.5 MHz above video carrier

RF to Video Response
from Fv -0.5 MHz to Fv +4.2 MHz: 1 dB P/V
Broadband Noise -90 dBc
Spurious Output in 50 – 860 MHz Range
@ +55 dBmV Output: -60 dBc
Output Match (Return Loss): 12 dBc
Vestigial Sideband Reponse:
@Channel Edge -20 dB
@Adjacent Channel -40 dB

Video

Input for 87.5% Modulation: 0.7V to 2.5 V P-P
Video Input Return Loss: 18 dB
Video Carrier-To-Noise Ratio in 4 MHz Bandwidth: 60 dB
P-P Video to 60 Hz RMS Hum Ratio: 60 dB
Differential Gain at 87.5% Modulation: $\leq 5\%$
Differential Phase at 87.5% Modulation: $\leq 5^\circ$
Group Delay 170 ± 50 nS

Audio

Input Impedance: 10K Ohms, Unbalanced
Input for 25 KHz Peak Deviation: 140 mV RMS
Audio Frequency Response: ± 1.0 dB
(50 Hz to 15 KHz ref to std 75 msec pre-emphasis)
4.5 MHz Inter-carrier Stability: ± 5.0 kHz

General

Power Requirements: 105-130 VAC, 60 Hz, 10.5 W
Temperature Range: 0 to 50 degrees C

Mechanical

Dimensions: $19 \times 1\frac{3}{4} \times 3$, WxHxD, inches
Mounting: 19" single rack space
Line Cord: 3 wire grounded, 3 wire convenience outlet
Finish: Plated
Shipping Weight: 4 lbs. (approx)

Connectors

Audio In: "F" Type
Video In: "F" Type
RF Out: "F" Type
RF Output Test - 30 dB: "F" Type

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Installation and Operation

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.

Unpacking and Handling

Each modulator is shipped with all equipment assembled, wired, factory tested, and then packaged in an appropriate shipping container.

Ensure that all accessories are removed from the container and packing material before they are discarded.

Mechanical Inspection

Inspect the front and rear of the equipment for shipping damage. Make sure the equipment is clean, and no wires, cables, or connectors are broken, damaged or loose.

Damage in Shipment

Should any damage be discovered after unpacking the unit, immediately file a claim with the carrier. A full report of the damage shall be made and a copy forwarded to Blonder Tongue Laboratories Inc. The company will then advise what disposition is to be made of the equipment.

Precautions

Adherence to the initial installation precautions outlined in the Table below will help prevent problems arising during the

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.

Table 1 - Installation Precautions Table

PRECAUTIONS	REQUIREMENTS
Avoid Heat Buildup	Allow (1) EIA rack space (1 ^{3/4} ") between powered headend products in the equipment racks.
Ensure easy access to rack wiring.	Allow a minimum of 18 inches behind the equipment rack(s)
Facilitate servicing and maintenance.	Allow a minimum of 36" of clearance in front of the equipment rack(s).
Avoid direct heating or air conditioning.	If unavoidable, use deflector plates.
AC power source outlets.	Locate equipment near sufficient outlets to provide power for test equipment and power tools.
Rack Support.	Make certain rack supports are sufficiently rigid to support racks.
Building leakage.	Beware of dripping water onto equipment from leaky roofs, waveguide roof entries, and cold water pipe condensations.

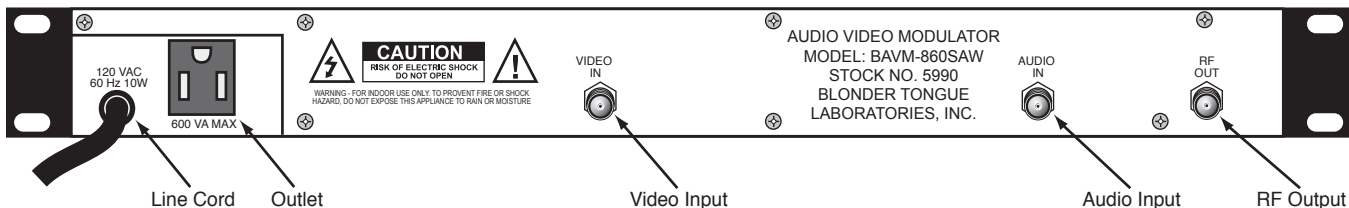
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Unit Mounting

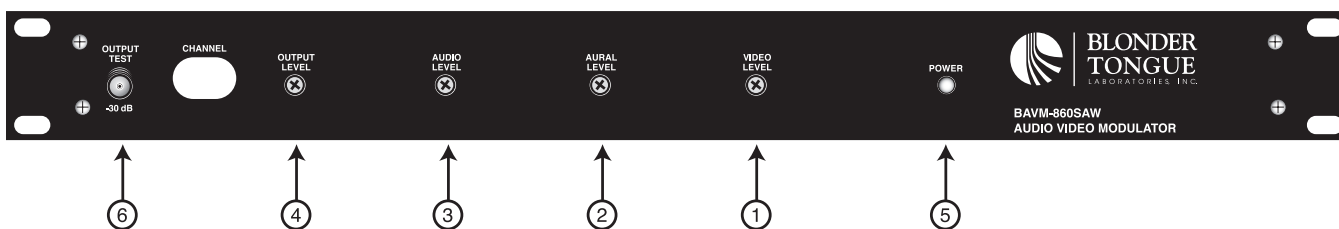
The BAVM-860SAW is designed with an integral mounting bracket and is supplied with the necessary screws for installing the unit in a standard 19" EIA rack.

Modular Connections

All the connectors on the BAVM-860SAW are located on the rear panel.



BAVM-860SAW Rear Panel



BAVM-860SAW Front Panel

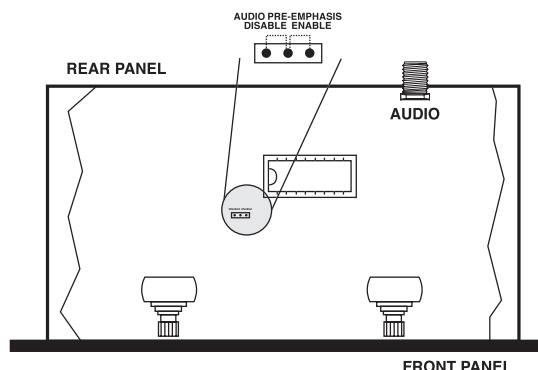
Operating Controls

All operating controls are located on, or are accessible from the front panel.

1. **VIDEO MODULATION** - Adjusts depth of video modulation.
2. **AURAL LEVEL** - Controls amplitude of aural RF carrier to change aural/visual ratio.
3. **AUDIO MODULATION** - Adjusts for 25 kHz peak deviation.
4. **OUTPUT LEVEL** - Simultaneously adjusts amplitude of aural and visual carriers.
5. **"POWER-ON" INDICATOR LIGHT**
6. **TEST POINT** - -30dB Output test point

Stereo Operation

When using the BAVM-860SAW with a stereo encoder it may be necessary to disable the audio pre-emphasis circuit. Refer to your stereo encoder's instruction manual for required modulator settings. Should the audio pre-emphasis need to be disabled, move the jumper according to the diagram at the right. **NOTE:** *Blonder Tongue's SE Series of stereo encoders do not require the audio pre-emphasis to be disabled.* When it comes to using the SE Series with a BAVM-860SAW, keep the jumper as it comes from the factory in the enable position.



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Preparation for Use and Typical Application

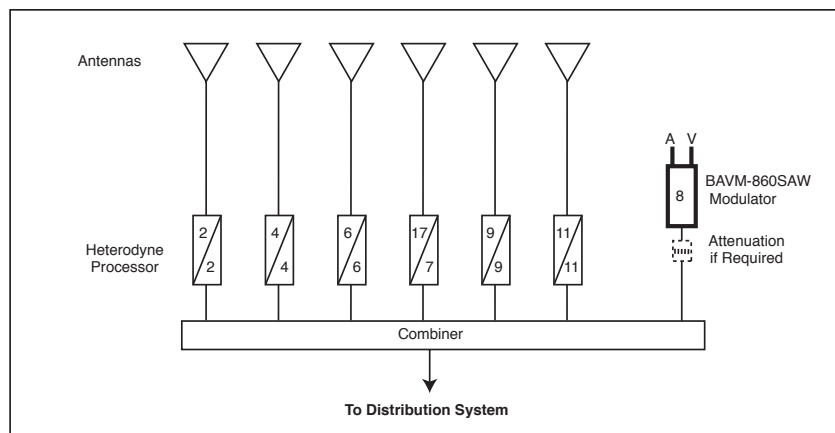
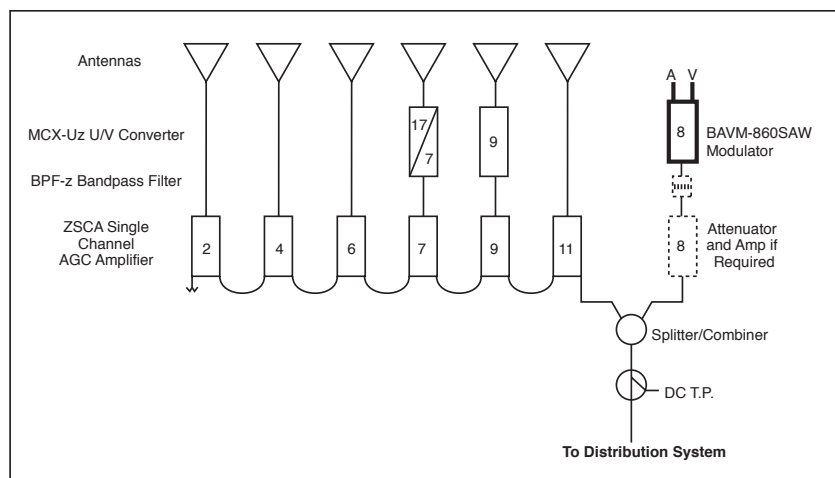
After installing the unit, make the following adjustments:

Audio Modulation

With audio source connected, adjust Audio Modulation control for 25 kHz deviation. In lieu of an audio modulation meter, use a TV set and adjust for equal volume as compared to a known off-air broadcast. Monitor for a few minutes to assure the maximum volume does not over modulate, which can cause picture distortion.

Video Modulation

With a nominal 1 volt P-P video source connected, adjust the Video Modulation control for 85% depth of modulation. If a spectrum analyzer is not available, a TV set can be used to check for proper picture contrast.



Typical Application

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 receivers/distribution amplifiers (including TRAILBLAZER™, RETRO-LINX™ and TWIN STAR™ products) as well as for VideoCipher® & 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 that product. 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 Closeout Product.

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 items ("Refurbished Product" and "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 Closeout Products. In such cases, BT's warranty for 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 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 or Closeout Products. All sales of Refurbished or 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 Buyer 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 Buyer. Upon any such complaint, Buyer shall hold the goods complained of intact and duly protected, for a period of up to sixty (60) days. Upon the request of BT, Buyer shall ship such allegedly nonconforming 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 this contract must be commenced by Buyer 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. VideoCipher® & DigiCipher® are registered trademarks of Motorola Corp.

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