



INSTRUCTION MANUAL

AQC

Model	Stock No.	Description
AQC	6274	Agile QAM Converter

Accessories

Model	Stock No.	Description
MIPS-12C	7722C	Power Supply
MIRC-12V	7715	Chassis

Status	Date	Document No.	Issue No.	Author
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We recommend that you write the following information in the spaces provided below.

Purchase Location Name:	
Purchase Location Telephone Number:	
AQC Serial Number:	

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Correspondence regarding this publication should be addressed directly to:

Blonder Tongue Laboratories, Inc.

One Jake Brown Road

Old Bridge, NJ 08857

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Section 1 — 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

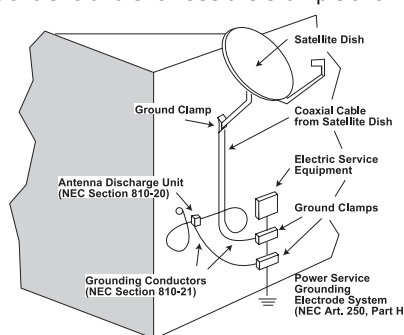


**YOU SHOULD ALWAYS FOLLOW THESE INSTRUCTIONS TO HELP ENSURE
AGAINST INJURY TO YOURSELF AND DAMAGE TO YOUR EQUIPMENT.**

- 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 per product specifications.
- 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.

Section 2 - Product Summary

2.1 Description

The AQC is a HE-12 Series QAM upconverter intended for data over cable and digital video-on-demand (VOD) applications. The modular design allows from one to six independent single IF upconverter modules to be housed in one 3.5" rack space. An easy to read back-lit LCD is used to display all of the module information. The unit features an advanced menu system based on a flash upgradable microcontroller. This facilitates programming information to be easily entered with front panel accessible push button navigation switches.

2.2 Features

- Modular Design Allows One to Six Single Upconverter Modules in Two Rack Spaces. (MIRC-12/MIPS-12)
- Fully Agile Output Frequency Range of 54-864 MHz, Std., HRC, IRC and 12.5 KHz Increment Tuning Supported.
- Back-Lit LCD Display Panel with Front Panel Accessible Push Button Controls, Provide Access to All Vital Unit Information.

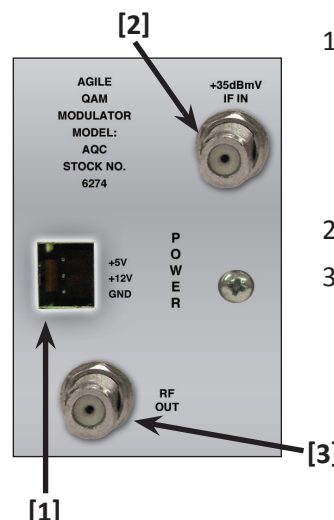
Section 3 - The AQC Unit

3.1 Front Panel



1. **LCD Display - 2 line**
Liquid Crystal Display screen used to interact with user to display unit information.
2. **Push Button Navigation Controls** - Buttons used to navigate between menus and enter unit information.

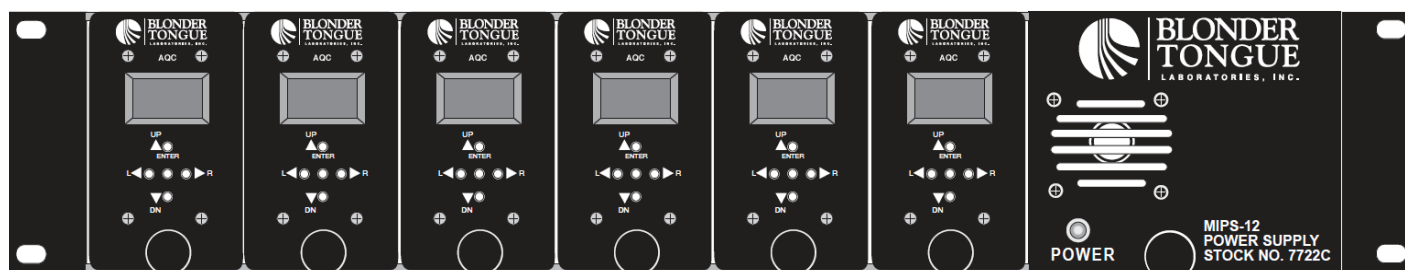
Rear Panel



1. **Power** - 3 pin female connector used to plug-in cable for respective modulator to deliver power.
2. **IF IN** - F connector
3. **RF OUT** - 75 ohm QAM RF Output.

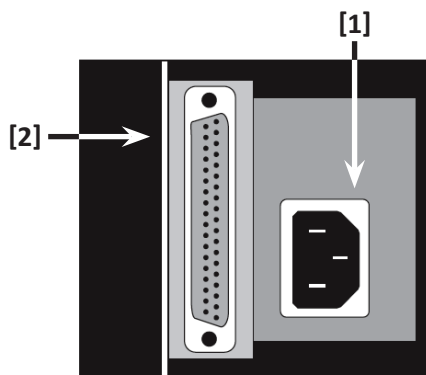
Micro-modulator Rack Chassis and Power Supply Units

3.2 MIRC-12V Chassis with MIPS-12C Power Supply



3.3 MIPS-12C Power Supply Connections

All the connectors on the power supply are located on the rear panel.



1. **AC Input** - The power supply accepts standard 100 to 250 VAC inputs.
2. **DC Output** - The polarized D connector provides 12 sets of +12 Vdc, +5 Vdc and ground cables for the modules. 12 sets are only required when single slot HE series modules are used.

Drawings are samples for illustration purposes only and are not to scale

Section 4 - Specifications (Typical)

IF Input

Frequency Range: 44 MHz (Channel Center)

Input Level: +35 dBmV

RF Output

Frequency Range: 54-864 MHz Agile

NTSC Channel Range: CATV 2 to 135

NTSC Frequency Step: 6 MHz (Channel Center)

Frequency Mode Step: 12.5 kHz (Channel Center)

Frequency Stability: ± 10 kHz

Output Level: +40 dBmV

Output Impedance: 75 Ohm

Phase Noise @ 10 kHz Offset: -98 dBc

Spurious (54-1000 MHz): -60 dBc min.

Broadband Noise: -75 dBc min.

(@ +40 dBmV Output, 4 MHz BW)

Controls & Connectors

Liquid Crystal Display (LCD): 5 Interactive
Navigation/Enter Push Buttons

IF Input: "F" Type Female

RF Output: "F" Type Female

Power Headers: 3 Pin +5/+12 VDC, GND

General

Power Requirements:

Voltage: +5 / + 12 VDC

Power (Max): 5 W

Operating Temperature Range: 0 to +50° C

Humidity: 0 to 90 % RH

Mechanical

Dimensions:

2.3 x 3.5 x 7.50 Inches

58 x 89 x 191mm

Weight: 2.0 lbs.

4.1 MIPS-12C Power Supply Specifications

General

Power Requirements: 100 VAC to 250 VAC, $\pm 10\%$

Temperature Range: 0° to +50° C

Output: +5 VDC @5.5 Amps, +12 VDC @4 Amps

Mechanical

Dimensions (WxHxD) : 4.16" x 3.5" x 7.50"

Weight: 1.10 lbs (0.50 kg)

Section 5 - Installing the AQC

5.1 Installing the AQC in a Rack

Mounting

The unit is designed to be installed in the MIRC-12V Series rack chassis. The chassis can support 6 units utilizing 2 standard single slots each. The AQC can function seamlessly with other HE series products.

The MIRC-12V chassis is 3.5 inches tall, 19 inches wide.

You can mount the chassis in a standard EIA, 24 inch (610 mm) deep, enclosed rack. Secure the rack chassis front panel to the rack by inserting four machine screws, with cup washers, through the four mounting holes in the front panel.



DO NOT BLOCK THE UNIT'S VENTILATION HOLES

When installing one or more chassis in a headend rack, it is recommended to leave a 1 rack unit space (1.75" high) between units to maximize air flow, but it is not required. This space helps to reduce heat build-up in a headend rack and will help to extend the product life span.



FOR SAFE AND RELIABLE OPERATION, THE POWER SUPPLY REQUIRES A PROPER GROUND CONNECTION FOR THE THIRD PRONG OF THE UNIT'S POWER CORD PLUG

Section 6 - Operating Interface Instructions

6.1 Introduction

The Blonder Tongue AQC uses an easy to read LCD (Liquid Crystal Display) and push button switches to control and monitor the unit. The following information describes the LCD methodology and approach.



Micro-modulator Rack Chassis and Power Supply Units

6.2 Main Interactive Sequence

The main interactive sequence is where all the core module programming is performed. This sequence is accessed anytime a user depresses one of the ◀(L) or ▶(R) and ▲(UP) ▼(DN) arrow navigation keys. The following diagram depicts the LCD screens available in the main interactive sequence.

RF OUT NTSC 100	OUTPUT 509.0875	OUT LVL 40 dBmV
NTSC MHz (NTSC RANGE IS CH 2-135, 6 MHz STEPS) (FREQ RANGE IS 54-864 MHz, 12.5 kHz STEPS)	NTSC 134 509.0875 (NTSC MODE DISPLAYS CH #) (MHz MODE DISPLAYS ACTUAL CENTER FREQ)	RANGE IS 28-42 dBmV

6.3 Programming a Variable

1. When a user arrives at a screen whose variable needs to be changed, the user depresses the **ENTER** button until the blinking cursor is displayed.
2. After the blinking cursor is displayed the user simply presses the ▲(UP) or ▼(DN) arrow buttons to increment or decrement to the appropriate desired value.
3. When the user reaches the desired setting the ENTER button is pressed again to save the change, then the AQC module stores the new information.

6.4 RF OUT

The unit presents an up-converted QAM RF output. There are two modes that determine the upconversion programming.

NTSC: The NTSC mode permits programming the RF output using a standard NTSC channel number.

MHz: The MHz or Frequency Tuning mode permits programming the RF output to the desired frequency.

6.5 Output

In the NTSC Mode it can be upconverted in 6 MHz increments to any NTSC standard channel, 2-135 (center frequency).

See Appendix A for Frequency details.

In the MHz or Frequency Mode it can be upconverted to any desired frequency in 12.5 kHz increments.

Press the ▲(UP) or ▼(DN) arrow buttons to increment or decrement to the appropriate desired value for each digit, press and hold the button to quickly scroll.

6.6 Output Level

The AQC features electronic output level control.

The output level range is +28 dBmV to +42 dBmV.

NOTE: For optimum noise performance, output level for each module should be set nominally at +40 dBmV.

Section 7 - Appendix A

EIA Chan.	Center Frequency MHz
2	57
3	63
4	69
5	79
6	85
95	93
96	99
97	105
98	111
99	117
14	123
15	129
16	135
17	141
18	147
19	153
20	159
21	165
22	171
7	177
8	183
9	189
10	195
11	201
12	207
13	213
23	219
24	225
25	231
26	237
27	243
28	249
29	255
30	261
31	267
32	273
33	279
34	285
35	291
36	297
37	303
38	309
39	315
40	321

EIA Chan.	Center Frequency MHz
41	327
42	333
43	339
44	345
45	351
46	357
47	363
48	369
49	375
50	381
51	387
52	393
53	399
54	405
55	411
56	417
57	423
58	429
59	435
60	441
61	447
62	453
63	459
64	465
65	471
66	477
67	483
68	489
69	495
70	501
71	507
72	513
73	519
74	525
75	531
76	537
77	543
78	549
79	555
80	561
81	567
82	573
83	579
84	585

EIA Chan.	Center Frequency MHz
85	591
86	597
87	603
88	609
89	615
90	621
91	627
92	633
93	639
94	645
100	651
101	657
102	663
103	669
104	675
105	681
106	687
107	693
108	699
109	705
110	711
111	717
112	723
113	729
114	735
115	741
116	747
117	753
118	759
119	765
120	771
121	777
122	783
123	789
124	795
125	801
126	807
127	813
128	819
129	825
130	831
131	837
132	843
133	849
134	855
135	861

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.

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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)



**BLONDER
TONGUE**
LABORATORIES, INC.

One Jake Brown Road
Old Bridge, NJ 08857-1000 USA
(800) 523-6049 • (732) 679-4000 • FAX: (732) 679-4353
www.blondertongue.com