Manual

DataTronix™
Managed Data Solutions

DT-QAM-AMM-1
User Manual

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1 General

1.1 Description

The DataTronix DT-QAM-AMM-1, High Definition (HD) Modulator, is the ultimate solution for adding local content seamlessly into a coaxial cable TV network. This innovative device boasts the ability to generate an MPEG-2 encoded signal in either QAM or ATSC format from an HDMI input. With its sleek design, it features one HDMI input, one RF output, and one LAN port for web management - making it the perfect addition to add locally generated content, such as digital signage and video surveillance.

This innovative unit can be effortlessly installed into an existing analog micro-modulator slot, making upgrading your system to HD an effortless process.

1.2 Specifications

Specifications	
Input	
Video Input	HDMI
Audio Input	HDMI
Video Input Format	480i/p, 576i/p, 720p, 1080i/p
Closed Captioning (CC)	Composite Video
RF Output	
Frequency Range	57-861 MHz
Output Level	41 dBmV
Channel Bandwidth	6 MHz
Channel Level Adjustment	0 dB - 30 dB Typically
MER	35 dB Typically
Attenuation Step	1 dB per step
Compression	
Video	MPEG 2
Video Resolution	1080p 25/30 Max
Video Bit Rate	18Mbit/sMax
Audio	MPEG - 1 Layer 2, AAC-LC, AC3

Connections	
HDMI IN	HDMI IN
Closed Captioning (CC)	RCA Female 75Ω (Yellow)
RF Out	1 RF Output, Type Female, 75Ω
LAN	Web Management
Button Control	UP/Down/OK
Micro USB-B	S/W Update
General	
Modulation	Standard QAM (J83 Annex B)/ ATSC A/53
	Constellation 256 QAM, 64 QAM/8VSB
	Bandwidth 6MHz
	Channel Type: STD
DC IN	5VDC, 12VDC
Display	OLED panel @ 64 x 32 Dots
Operating Limits	Temperature: 41-104°F (5-40°C)
	Relative Humidity 80% @ 86°F (30°C)
Dimensions	9.25" x 1.06" x 3.46" (235 x 27 x 88 mm)
Weight	0.6294 lbs (0.2855 kg)
Warranty	2 Year Warranty

2 Installation

2.1 Power Supply

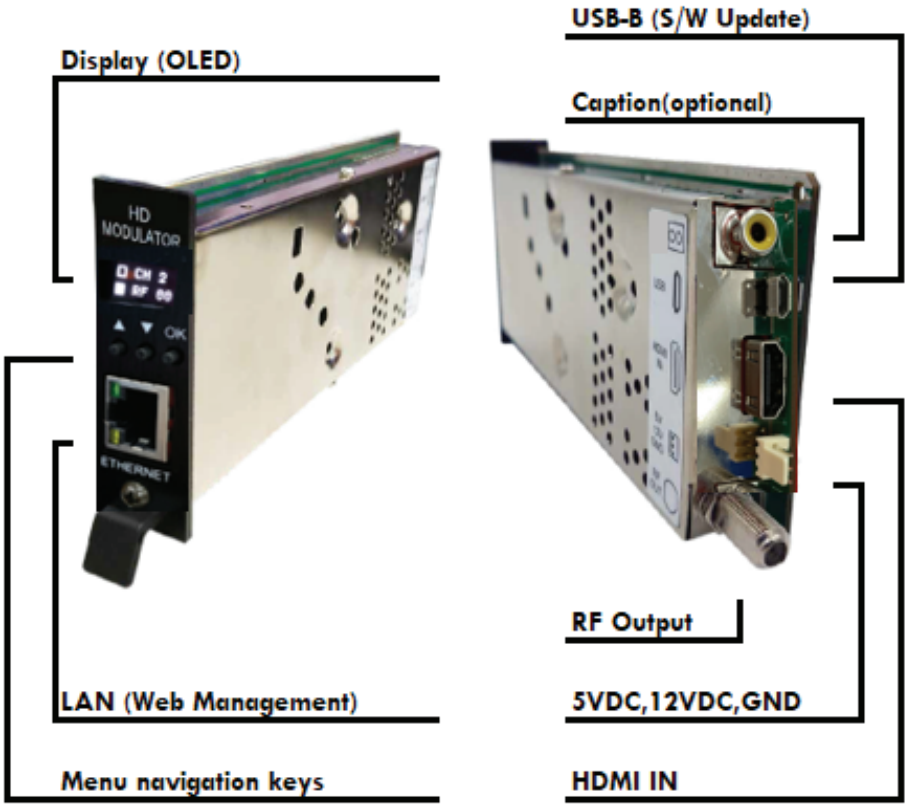
Once powered on, the DT-QAM-AMM-1 takes about 15 seconds to become operational.

2.1.1 Operation via external power supply

Use only the rack mount 5V/12V Power-Supply with the DT-QAM-AMM-1.

2.2 Connection

2.2.1 Connection diagram examples



CONNECTION DIAGRAM FOR SINGLE MODULE

Default Static IP address (192.168.1.99).
Default password: 0000

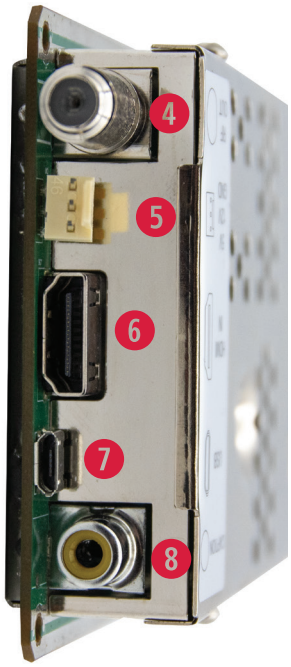
ATTENTION!
FOR PROPER CONFIGURATION YOU MUST USE OUTPUT FREQUENCIES DIFFERENT FROM THE ONES THAT YOUR TV IS CURRENTLY USING.

2.3 Navigation and edition of values.

The DT-QAM-AMM-1 is configured through its 3 keys and web control. In general, it is not necessary to configure the instrument to generate a **QAM/ATSC** signal compatible with any digital cable television receiver.

3 Operating Instructions

3.1 Description of controls and components



1. Display (OLED)
2. Menu navigation keys
3. LAN (Web Management)
4. RF Output
5. 5VDC,12VDC
6. HDMI In
7. Micro USB-B: S/W update
8. Caption (Closed Caption)

Indicates	HDMI Input
☐ CH 2	Disconnected
■ CH 2	Connected

Indicates	RF Output
☐ RF 00	OFF
■ RF 00	ON

3.2 Starting

1. Once powered on, the DT-QAM-AMM-1 takes about 15 seconds to become operational. You will then see the message “Initial Wait” appear on the display. After 30 seconds the message “CH 2 & RF 00 ” will show on the display.

2. Connect an Ethernet cable directly to the Web Management Port on the front panel of the digital modulator.

3. Using the Web application allows management of the device remotely via a network connection.

3.3 Menu

1. **Modulator:** Allows users to select either QAM or ATSC output
2. **Constellation** type used to transmit signal (256QAM, 64QAM)
3. **RF Level Adj:** Attenuates the power level of the output signal, in dB, from 0 to -30 dB.
4. **Frequency:** Sets the frequency value of the output signal. Important: Check that the selected frequency is not already being used by a current television distribution channel.
5. **Video Profile Settings:** The unit comes with a default setting called NORMAL, which provides generally accepted settings for the video profile. If you wish to customize these settings according to your preferences, you can switch to the USER DEFINE mode by clicking on the radio button next to USER DEFINED. 4.1 Min & Max Bitrate: Changes the output video bitrate. Allowed value is 2000 - 20000.

    5.2 **Latency:** Allows users to change the PCR delay time of video. Allowed value is 0-1000.

    5.3 GOP: This function Changes the Group of Pictures (GOP) value. The setting will specify the order in which intra- and inter-frames are arranged. If the video being processed does not have a lot of motion, this value should be set to a larger number. For fast motion video, the GOP should be set to a smaller number. However, if the GOP is set too small, the video may jitter. If the GOP is too large the video becomes smoother but may be blurred. The value can be set between 1 - 60

    5.4 Min & Max Quant: Changes the video detail. The lower the Quant value, the more detail the picture has, but higher relative encoded data rate. If Quant is too small the video may become jumpy. If Quant is too large the video becomes much smoother but may be a little blurred. Allowed value is 1 - 31.

- To improve video quality, you can reduce Min Quant and increase the Max Bitrate.
- To make video smoother, you can increase Max Quant and GOP and reduce the Max Bitrate.

6. **Encode Feature:** Changes the encoder feature settings.
   5.1 1080P to I: 1080p video input to 1080i video output.
   5.2 Interlace Enc: Changes the video encoder method. For 1080i and progressive video input, “I Field” is suggested. For 480i/576i video input, please use I Frame Mode.
7. **Audio Codec:** It can change the audio codec between MP1 Layer II, AAC-LC and AC3.
8. **PMT PID:** Changes the PMT (Program Map Table) PID. Allowed value is 0001~8191.
9. **Video PID:** Changes the Video PID. Allowed value is 0001 - 8191.
10. **Audio PID:** Changes the Audio PID. Allowed value is 0001 - 8191.
11. **PSIP TSID:** PSIP TSID edit.
12. **Channel Mode:** Changes the channel between DTV channel (two-part channel number) and Loop channel (one-part channel number).
13. **Major No.:** Major no. edit.
14. **Minor No.:** Minor no. edit.
15. **Short Name:** Short name edit.
16. **Long Name:** Long name edit.
17. **Source ID:** Source ID edit.
18. **Setup Date & Time & Weekday:** Changes the date, time and weekday of the DT-QAM-AMM-1. Time will be shown on the display. Note: this setting is not saved to non-volatile memory. If the instrument loses power, the user has to correct it manually.
19. **FW Version:** Shows the firmware version installed in the DT-QAM-AMM-1. This option is not editable.
20. **Reboot Device:** Select “Reboot “ to reboot the DT-QAM-AMM-1. Select “Reboot to DEF” to return the DT-QAM-AMM-1 to default values.
21. **Device Related**:
    19.1 **Device name:** Changes the device name. Allows 1~7 characters including letters, underline, space and dash.
    19.2 **Time out (sec.):** Changes the display timeout setting. Display becomes brighter when the front panel is pressed. If no more keys are pressed after this duration, the display becomes darker. Allowed value is 10 ~ 180 seconds.

22. **Upgrade:** Downloading firmware from a USB device. FAT32 formatted USB storage is recommended.
23. **Auto RF Tune:** Factory use only. DO NOT CHANGE!
24. **Save Changes:** Saves the current configuration on the non-volatile memory of the DT-QAM-AMM-1.

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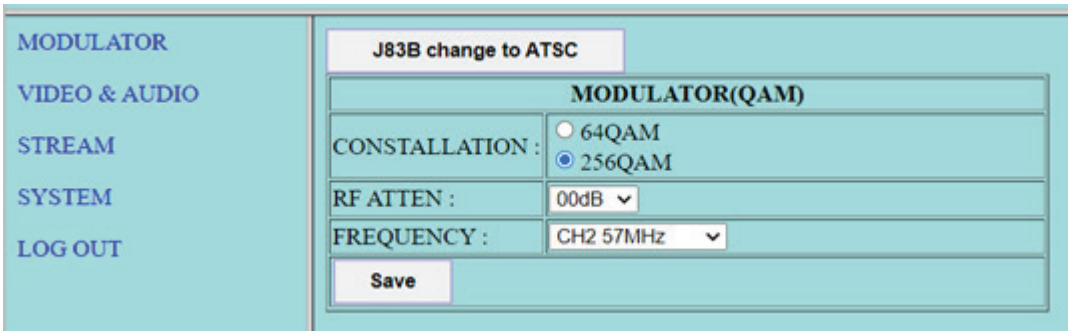
3.4 Menu Tree

1	Modulator	1	Modulator	QAM	QAM, ATSC
		1.1	Constellation	256 QAM	64 QAM, 256 QAM
		1.2	RF Attenuation	00 dB	00 - 30 dB
		1.3	Frequency	CH2 57 MHz	CH2 57- CH135 861 MHz
		2.1	RF Level Adjust	00 dB	00 - 30 dB
		2.2	Frequency	CH2 57 MHz	CH2 57- CH69 803MHz
		4	Save Changes	No	Yes, No
2	Video & Audio	1	Video Profile	Normal	Normal, User Define
			Video Profile (User Define)	Min Bitrate: 2000	2000 - 50000
				Max Bitrate: 18000	2000 - 50000
				Latency: 500	0 - 1000
				GOP: 16	1 - 60
				Min Quant: 5	1 - 31
				Max Quant: 12	1 - 31
		2	Encode Features	1080P to I (Disable)	Disable, Enable
				Interlace ENC. (I Field)	I Field MO, DE, IFrame Mode
		3	Audio Codec	AC-3	MPI Layer II, AC-3, AAC-LC
3	Stream	1	PMT PID	32	1 - 8191
		2	Video PID	33	1 - 8191
		3	Audio PID	36	1 - 8191
		4	PSIP TSID	100	1 - 65535
		5	Channel Mode	DTV Channel	DTV Channel, Loop Channel
		6	Major No.	2	1 - 99
		7	Major No.	1	1 - 99
		8	Short Name	ShoName	1 - 7 Characters
		9	Long Name	LongName	1 - 15 Characters
		10	Source ID	2	1 -4095
5	System	1	MAC Address	b8-87-1e-16-XX-XX	
		1	FW Version	HW: 0 Rxx SW: 220XXX R-O: JBAT-80-XXXX	Change per the Firmware in device
		2	DHCP	Disable	Disable, Enable
		3	IP Address	192.168.1.99	
		4	Subnet Mask	255.255.255.0	
		5	Default Gateway	192.168.1.1	
		7	Saves Changes	No	Yes, No
		8	Reboot Device	No	Yes, No
		9	Default	No	Yes, No
		10	SW Update	Yes	Please check upgrade file!

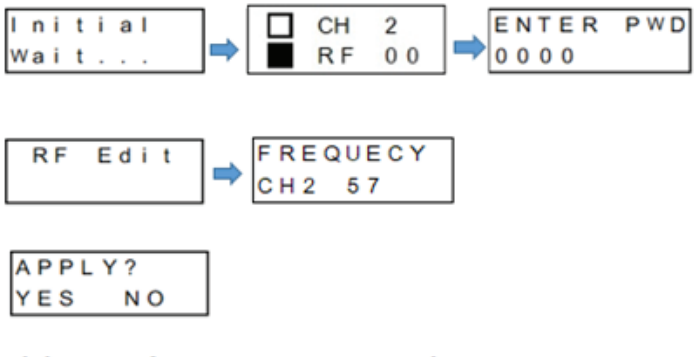
3.5 Accessing the DT-QAM-AMM-1 Admin Settings

Adjust the settings listed below using the front panel buttons as described on the previous page. You must login as described below to edit settings.

3.5.1 Modular Settings:

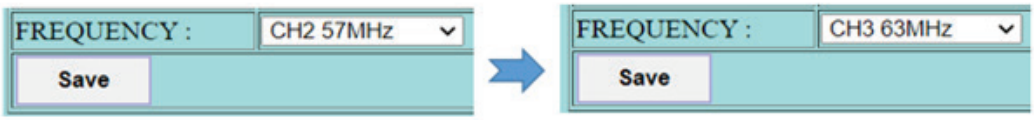


3.5.2 Frequency Settings:

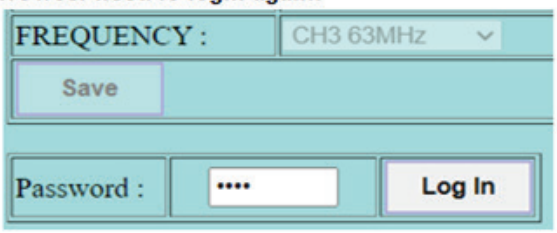


1. Once powered on, the DT-QAM-AMM-1 takes about 15 seconds to become operational. You will then see the message “Initial Wait” appear on the display. After 30 seconds the message “CH 2 & RF 00 ” will show on the display.
2. Press the **OK** button twice and enter **0000** as the password.
3. Use the **UP/DOWN** button to display **RF EDIT, SYSTEM, DEFAULT, REBOOT** mode selection.

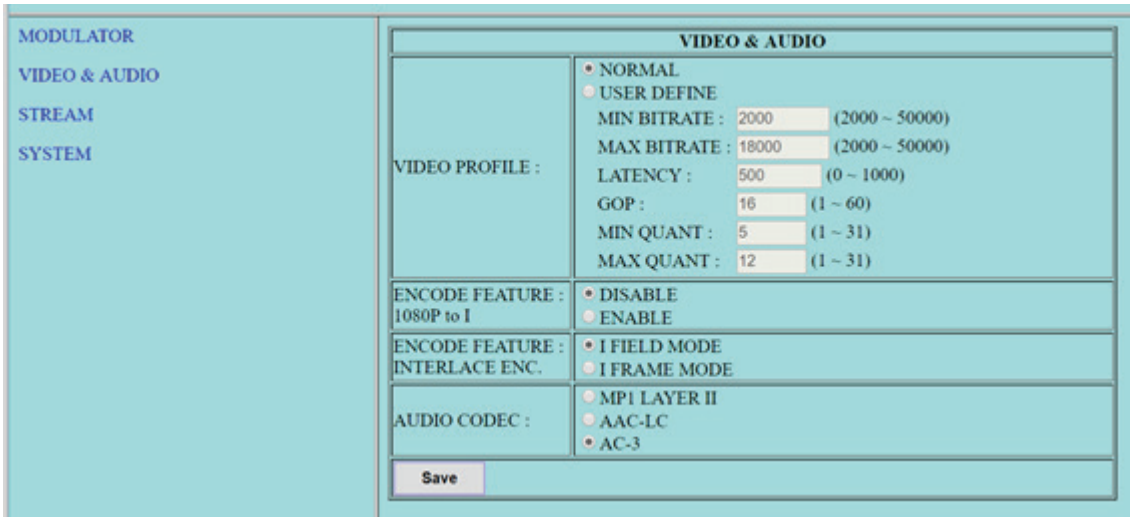
Modulator Configuration via Web UI



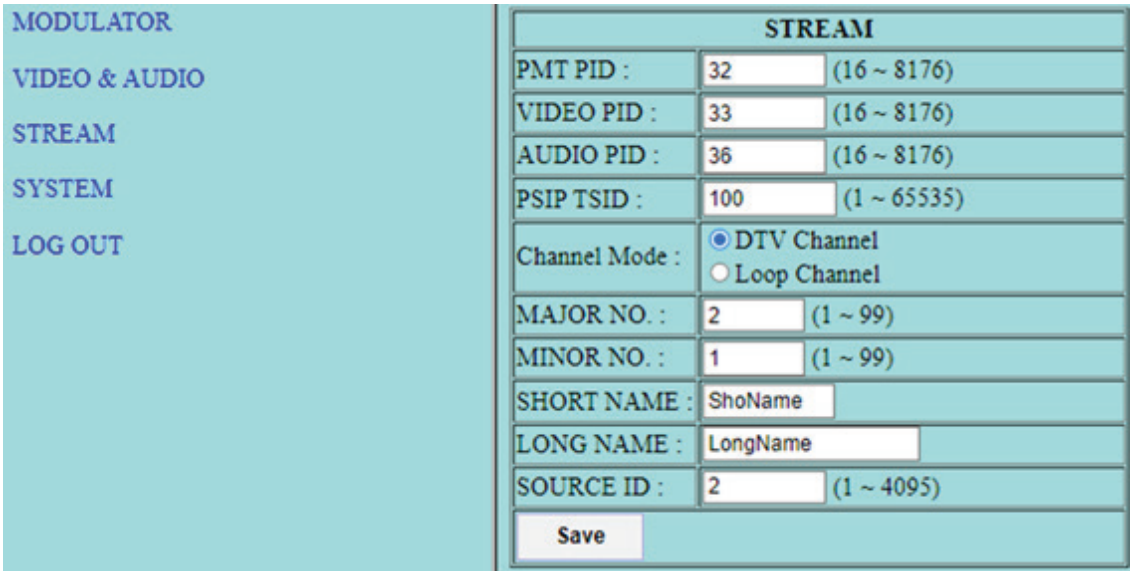
After Updating your browser need to login again.



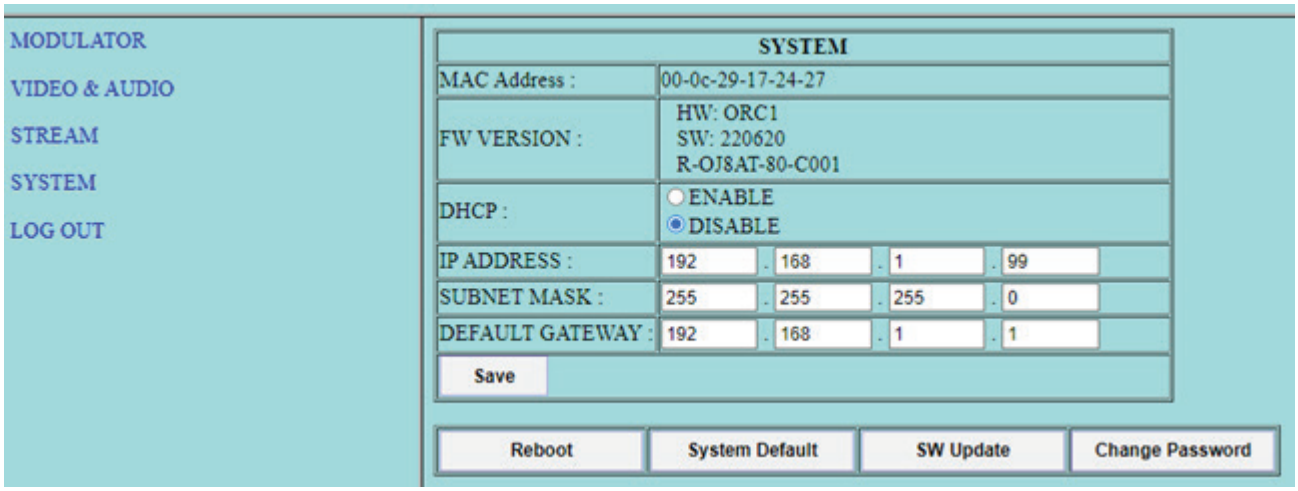
3.5.3 Video & Audio Settings:



3.5.4 Stream Settings:



3.5.5 System Information:



4 Warranty

DATATRONIX 1-Year Limited Warranty

DATATRONIX. (the “Company”) warrants to the Original Purchaser that the item purchased is free from defects in workmanship or material under normal use. This warranty starts on the date of shipment of the hardware to the Original Purchaser.

During the warranty period, the Company agrees to repair or replace, at its sole option, without charge to Original Purchaser, any defective component. To obtain service, the Original Purchaser must return the item to the Company properly packaged for shipping. All defective products must be returned to the Company within thirty (30) days of failure. Products must be returned with a description of the failure and Return Merchandise Authorization (RMA) number supplied by the Company. To receive a RMA number and a return shipping address on where to deliver the hardware, call 610-429-1821. The shipping, and insurance charges incurred in shipping to the Company will be paid by Original Purchaser, and all risk for the hardware shall remain with the Original Purchaser until such time as Company takes receipt of the hardware. Upon receipt, the Company will promptly repair or replace the defective unit, and then return said unit to Original Purchaser, shipping prepaid. The Company may use reconditioned or like-new parts or units, at its sole option, when repairing any hardware. Repaired products shall carry the same amount of outstanding warranty as from original purchase. Any claim under the warranty must include dated proof of purchase or invoice. In any event, the Company’s liability for defective hardware is limited to repairing or replacing the hardware.

This warranty is contingent upon proper use of the hardware by Original Purchaser and does not cover: if damage is due to Acts of God (including fire, flood, earthquake, storm, hurricane or other natural disaster), accident, unusual physical, electrical, or electromechanical stress, modifications, neglect, misuse, operation with media not approved by the Company, tampering with or altering of the hardware, riot, war, invasion, act of foreign enemies, hostilities (regardless of

whether war is declared), civil war, rebellion, revolution, insurrection, military or usurped power or confiscation, terrorist activities, nationalization, government sanction, blockage, embargo, labor dispute, strike, lockout or interruption or failure of electricity, air conditioning, or humidity control, Internet, network, or telephone service.

The warranties given herein, together with any implied warranties covering the hardware, including any warranties of merchantability or fitness for a particular purpose, are limited in duration to one year from the date of shipment to the Original Purchaser. Jurisdictions vary with regard to the enforceability of warranty limitations, and you should check the laws of your local jurisdiction to find out whether the above limitation applies to you.

The Company shall not be liable to your for loss of data, loss of profits, lost savings, special, incidental, consequential, indirect, or other similar damages arising from breach of warranty, breach of contract, negligence, or other legal action even if the Company or its agent has been advised of the possibility of such damages, or for any claim brought against your by another party. Jurisdictions vary with regard to the enforceability of provisions excluding or limiting liability for incidental or consequential damages. You should check the laws of your local jurisdiction to find out whether the above exclusion applies to you.

This warranty allocates risks of product failure between Original Purchaser and the Company. The Company's hardware pricing reflects this allocation of risk and the limitations of liability contained in this warranty. The warranty set forth above is in lieu of all other express warranties, whether oral or written. The agents, employees, distributors, and dealers of the Company are not authorized to make modification to this warranty, or additional warranties binding on the Company. Accordingly, additional statements such as dealer advertising or presentations, whether oral or written, do not constitute warranties by the Company and should not be relied upon.
This warranty gives you specific legal rights. You may also have other rights which vary from one jurisdiction to another.