



CT-ATSCQAM8-IP

8 channel QAM transcoder

Operation Manual



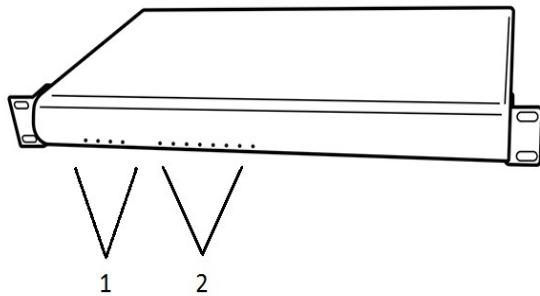
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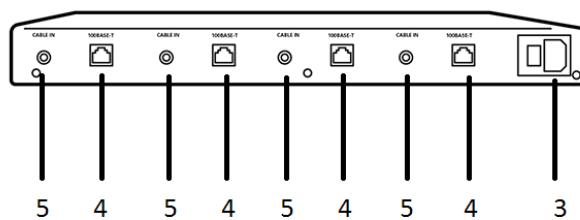
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Hardware

CT-ATSCQAM8-IP (8 tuner ATSC/QAM/DVB-T/DVB-C)



1. Power/Network
2. Tuner



3. Power
4. Ethernet
5. Coax in (ATSC/QAM/DVB-T/C)

Power

This device should be used with the included power cable.

Ethernet

Connect the Ethernet port(s) to a network switch. All ports must be connected in order for all tuners to be accessible. A single port can be directly connected to the network interface on a PC to access that specific device. All ports are auto-crossover so a standard Ethernet cable can be used.

Additional Tools and Software

Software Installation - CableTronix Powered by HDHomeRun

The latest HDHomeRun drivers, code, and firmware can be found on the factory's website:

<http://www.silicondust.com/downloads>

Windows

Download and install the latest Windows release of the HDHomeRun software.

The HDHomeRun Setup wizard is optional.

When the installation process is complete it is recommended that the HDHomeRun program directory be added to the PATH so that the `hdhomerun_config` utility can be run from a cmd prompt. The default program directory is “`C:\Program Files\SiliconDust\HDHomeRun\`”

Linux/*BSD/Solaris

Download and extract the `libhdhomerun` archive.

Run “make” to compile `hdhomerun_config` (systems that use a non-GNU make by default may need to install and use “`gmake`” instead).

Copy `hdhomerun_config` to `/usr/local/bin`

Using the Command Line Configuration Utility (`hdhomerun_config`)

Open a command prompt or terminal window and change directory to the HDHomeRun installation directory: "C:\Program Files\SiliconDust\HDHomeRun\"

The list of supported commands can be obtained by running `hdhomerun_config` without any parameters:

```
hdhomerun_config discover
hdhomerun_config <id> get help
hdhomerun_config <id> get <item>
hdhomerun_config <id> set <item> <value>
hdhomerun_config <id> scan <tuner> [<filename>]
hdhomerun_config <id> save <tuner> <filename>
hdhomerun_config <id> upgrade <filename>
```

Discover devices on the network

The `discover` command will find devices that are on the same subnet as the host:

```
hdhomerun_config discover
```

Sending commands to a specific device

The "`<id>`" shown above represents a unique identifier for a device, this can be either Device ID, or IP address:

```
hdhomerun_config <device id> get help
hdhomerun_config <ip address> get help
```

To address by Device ID the device must be on the same subnet as the host.

A Device ID of FFFFFFFF can be used as a wild card for the first device found on the network. Do not use this syntax if there are multiple devices on the network, as the device used will be random based on discovery order, which may change between commands.

Supported Commands

The get/set options supported by a specific device can be queried using the `get help` command:

```
hdhomerun_config <id> get help
```

Example output:

<code>/card/status</code>	Get status of CableCARD (6CC only)
<code>/oob/channel <modulation>:<freq></code>	Get/set out of band channel (6CC only)
<code>/oob/debug</code>	Get out of band channel debug info (6CC only)
<code>/oob/status</code>	Get out of band channel status info (6CC only)
<code>/sys/boot <config></code>	Get/set boot configuration
<code>/sys/copyright</code>	Get copyright information
<code>/sys/debug</code>	Get/set system debug information
<code>/sys/features</code>	Get system feature information
<code>/sys/hwmodel</code>	Get system hardware model string
<code>/sys/ipaddr dhcp <ip> <mask> <gw> <dns>"</code>	Get/set system IP address
<code>/sys/model</code>	Get/set model string
<code>/sys/restart <resource></code>	Restart device/component
<code>/sys/version</code>	Get firmware version
<code>/tuner<n>/channel <modulation>:<freq ch></code>	Get/set channel
<code>/tuner<n>/channelmap <channelmap></code>	Get/set channelmap
<code>/tuner<n>/debug</code>	Get tuner debug information
<code>/tuner<n>/filter "0x<nnnn>-0x<nnnn> [...]"</code>	Get/set tuner PID filter
<code>/tuner<n>/lockkey</code>	Get/set tuner locking
<code>/tuner<n>/plotsample</code>	Get raw plotsample data from tuner
<code>/tuner<n>/program <program number></code>	Get/set MPEG program
<code>/tuner<n>/streaminfo</code>	Get list of programs on current channel
<code>/tuner<n>/status</code>	Get tuner status
<code>/tuner<n>/target <ip>:<port></code>	Get/set stream target
<code>/tuner<n>/vchannel <vchannel></code>	Get/set virtual channel number (6CC only)
<code>/tuner<n>/vstatus</code>	Get/set subscription/protection status (6CC only)

Channel scan

To run a channel scan:

Format: `hdhomerun_config <id> scan /tuner<n> [log filename]`
Example: `hdhomerun_config FFFFFFFF scan /tuner0 scan0.log`

This command will scan all channels on the selected channel map plus any additional channel maps associated with the selected channel map. All standard modulation types for the selected channel map are tested.

When a digital channel is found it will identify the programs on the channel.

The log filename is optional; if included it will log to the given filename.

Tuning a physical channel

To set a channel use the set channel command:

Format: `hdhomerun_config <id> set /tuner<n>/channel <modulation>:<frequency>`
Format: `hdhomerun_config <id> set /tuner<n>/channel <modulation>:<channel>`
Example: `hdhomerun_config FFFFFFFF set /tuner0/channel auto:651000000`
Example: `hdhomerun_config FFFFFFFF set /tuner0/channel auto:60`

To auto-detect the modulation type use “auto” for the modulation.

Supported modulation types can be queried with the get sys-features command:

```
hdhomerun_config <id> get /sys/features
```

Checking the signal strength

The basic signal information can be obtained by using the get status command:

Format: `hdhomerun_config <id> get /tuner<n>/status`
Example: `hdhomerun_config FFFFFFFF get /tuner0/status`

Example output:

```
ch=qam:33 lock=qam256 ss=83 (-10dBmV) snq=90 (29dB) seq=100 bps=38807712 pps=0
```

- ch = channel requested
- lock = actual modulation detected
- ss = signal strength.
- snq = signal to noise quality (MER).
- seq = symbol error quality (based on the number of uncorrectable digital errors detected).
- bps = raw channel bits per second.
- pps = packets per second sent through the network.

More advanced information can be obtained by using the get debug command:

Format: `hdhomerun_config <device id> get /tuner<n>/debug`
Example: `hdhomerun_config FFFFFFFF get /tuner0/debug`

Example output:

```
tun: ch=qam:33 lock=qam256 ss=84 snq=88 seq=100 dbg=22081-6930
dev: resync=0 overflow=0
ts: bps=38809216 ut=94 te=0 miss=0 crc=0
flt: bps=38809216
net: pps=0 err=0 stop=0
```

Each line contains a prefix to indicate the type of data, followed by the values.

- tun = tuner status
 - see above section
- dev = device status
- ts = transport stream
 - bps = bits per second
 - ut = utilization percentage (100% is filled to capacity)
 - te = transport error counter (uncorrectable reception error)
 - miss = missed packet counter (jump in sequence numbers)
 - crc = crc error counter
- flt = results after pid filtering
 - bps = bits per second
- net = network status
 - pps = packets per second
 - err = packets or TS frames dropped before transmission.

- stop = reason for stopping the stream

The counters are reset to zero upon a channel change, but may indicate a small number of errors caused before the tuner locks on the channel. As a result, diagnostics should be based on the change in values over time, and not the initial values.Detecting the programs on a physical channel:

The device will detect the programs (sub-channels). Use the get streaminfo command to query the detected programs:

```
Format: hdhomerun_config <id> get /tuner<n>/streaminfo
Example: hdhomerun_config FFFFFFFF get /tuner0/channel streaminfo
```

The output format is:

```
<program number>: <virtual major>.<virtual minor> [<name>] [(<flags>)]
```

Example output:

```
3: 20.1 KBWB-HD
4: 20.4 AZTECA
```

Digital cable does not always provide the channel name or virtual channel number:

```
1: 0.0
2: 0.0 (encrypted)
3: 0.0 (control)
```

It may take several seconds after setting the channel for the stream information to be fully populated (depending on how long the channel takes to lock and how often the stream information is sent by the broadcaster/cable provider).

Filtering by program (sub-channel)

ATSCQAM supports automatic PID filtering by program number or virtual channel number:

```
Format: hdhomerun_config <id> set /tuner<n>/program <program number>
        hdhomerun_config <id> set /tuner<n>/program <virtual channel number>
```

```
Example: hdhomerun_config FFFFFFFF set /tuner0/program 3
        hdhomerun_config FFFFFFFF set /tuner0/program 11.2
```

When filtering by program the MPEG TS tables are generated by the device. The result is a valid single-program transport stream.

The program filter is cleared when a set channel or a set filter command is received.

Advanced: By default the PAT and PMT are generated. To also generate a ATSC-style TVCT use:

```
hdhomerun_config <id> set /tuner<n>/program "<program number> tvct_from_pmt=<virtual major>.<virtual minor>(<name>)"
```

```
Example: hdhomerun_config <id> set /tuner0/program "3 tvct_from_pmt=11.2(TEST)"
```

Filtering by PID

The ATSCQAM supports arbitrary hardware PID filtering:

```
Format: hdhomerun_config <id> set /tuner<n>/filter <filter>
Example: hdhomerun_config FFFFFFFF set /tuner0/filter "0x0000-0x1FFF"
        hdhomerun_config FFFFFFFF set /tuner0/filter "0x0000 0x0030-0x0033 0x1FFB"
```

When filtering by PID the stream is filtered but otherwise unmodified.

The filter is cleared to pass-all (0x0000-0x1FFF) when a set channel command is received.

Saving a stream

The hdhomerun_config command can be used to automate the process of saving to the local filesystem:

```
Format: hdhomerun_config <id> save /tuner<n> <filename>
Example: hdhomerun_config FFFFFFFF save /tuner0 capture.ts
```

While saving the stream, a single period “.” will be displayed every second. Errors will be indicated by a letter.

Example output:

```
.....n.....n.....ts.....
-- Video statistics --
23323 packets received, 2 network errors, 1 transport errors, 1 sequence errors
```

Advanced: A filename of “null” indicates no file should be created, allowing the use of the save command as a diagnostic tool.

Advanced: “-” may be used as a filename to indicate standard output, allowing the save command to be used as a pipe on supported platforms.

```
Example: hdhomerun_config FFFFFFFF save /tuner0 - | vlc -
```

Streaming to a target machine

Set the target IP address and port number using the set target command:

```
Format: hdhomerun_config <id> set /tuner<n>/target udp://<ip>:<port>
Format: hdhomerun_config <id> set /tuner<n>/target rtp://<ip>:<port>
Example: hdhomerun_config FFFFFFFF set /tuner0/target udp://192.168.1.100:5000
Example: hdhomerun_config FFFFFFFF set /tuner0/target rtp://192.168.1.100:5000
```

The target machine must be listening on the given UDP port. The ATSCQAM will automatically clear the target if a ICMP port unreachable message is received when sending to a unicast address. To override this, add no_clear to the target.

```
Format: hdhomerun_config <id> set /tuner<n>/target "udp://<ip>:<port> no_clear"
Format: hdhomerun_config <id> set /tuner<n>/target "rtp://<ip>:<port> no_clear"
Example: hdhomerun_config FFFFFFFF set /tuner0/target "udp://192.168.1.100:5000 no_clear"
Example: hdhomerun_config FFFFFFFF set /tuner0/target "rtp://192.168.1.100:5000 no_clear"
```

A global broadcast (255.255.255.255), subnet broadcast, or multicast target can be specified however care must be taken to ensure that the traffic will not cause problems with other devices on the network. If the local network is bridged to a wireless network then the AP will typically transmit at a low broadcast speed saturating the wireless network.

The time-to-live (TTL) defaults to 64. To configure a lower TTL use the following format (quotes required):

```
Format: hdhomerun_config <id> set /tuner<n>/target "udp://<ip>:<port> ttl=<n>"
Format: hdhomerun_config <id> set /tuner<n>/target "rtp://<ip>:<port> ttl=<n>"
Example: hdhomerun_config FFFFFFFF set /tuner0/target "udp://192.168.1.100:5000 ttl=8"
Example: hdhomerun_config FFFFFFFF set /tuner0/target "rtp://192.168.1.100:5000 ttl=8"
```

Example: Streaming to VLC

Run VLC: Media, Open Network Stream. Select UDP/RTP. Specify port 5000.

Discover the device:

```
hdhomerun_config discover
```

Run a channel scan:

```
hdhomerun_config FFFFFFFF scan /tuner0 scan0.log
```

Set the physical channel:

```
hdhomerun_config FFFFFFFF set /tuner0/channel auto:651000000
```

Check sub-programs:

```
hdhomerun_config FFFFFFFF get /tuner0/streaminfo
```

Select a sub-program:

```
hdhomerun_config FFFFFFFF set /tuner0/program 3
```

Set the target:

```
hdhomerun_config FFFFFFFF set /tuner0/target udp://<ip address of pc>:5000
```

Datacast operation

ATSCQAM units support Datacast TCP/IP over OTA broadcast. Datacasting often provides news, weather, traffic, stock market, and other information which may or may not relate to the program[s] it is carried with. An electronic program guide is usually included. Datacast TCP-IP packets are reassembled and then routed to the LAN port.

Example:

Discover the device:

```
hdhomerun_config discover
```

Set the physical channel:

```
hdhomerun_config FFFFFFFF set /tuner0/channel auto:651000000
```

Set the datacast PID:

```
hdhomerun_config FFFFFFFF set /tuner0/filter 0x0A00
```

Set the target:

```
hdhomerun_config FFFFFFFF set /tuner0/target datacast
```

Using /sys/boot

The /sys/boot variable allows the ATSCQAM unit to automatically set variables at startup, allowing you to preserve settings across power outages or simply set the power on defaults.

The syntax for the /sys/boot consists of multiple lines of text; a variable name followed by a single space and then the value: (there should not be any space before the variable name)

```
<variable1> <value of variable1>
<variable2> <value of variable2>
...
<variableN> <value of variableN>
```

Example (save as boot.txt):

```
/tuner0/channelmap us-cable
/tuner0/channel 103
/tuner0/program 4
```

To store the configuration to the device:

Format: hdhomerun_config <id> set /sys/boot - < filename
Example: hdhomerun_config FFFFFFFF set /sys/boot - < boot.txt

Changes will be applied the next boot; to execute the new /sys/boot immediately:

Format: hdhomerun_config <id> execute
Example: hdhomerun_config FFFFFFFF execute

Static IP assignment

A static IP address can be configured using the following command (the quotes are required as shown):

Format: hdhomerun_config <old ip> set /sys/ipaddr "<new ip> <subnet> <gateway>"
Example: hdhomerun_config 169.254.34.98 set /sys/ipaddr "10.10.20.43 255.255.255.0 10.10.20.1"

Note: The TECH requires a gateway when used to stream multicast, even if on the same subnet.

Reverting to DHCP

The ATSCQAM can be configured for DHCP operation (default) using the following command:

Format: hdhomerun_config <old ip> set /sys/ipaddr dhcp
Example: hdhomerun_config 169.254.34.98 set /sys/ipaddr dhcp

Setting the channel map

The channel map is a non-volatile configuration option that is used to set the channel to frequency table, to configure the channel scan table, and to optimize the auto-modulation detection.

GUI: The channel map can be set for each tuner by running HDHomeRun Config (GUI).

Command line: The channel map can be set for each tuner using the following command:

Format: `hdhomerun_config <ip|id> set /tuner<n>/channelmap <channelmap>`

Example: `hdhomerun_config 10001000 set /tuner0/channelmap us-cable`

Example: `hdhomerun_config 10001000 set /tuner1/channelmap us-cable`

Channel maps supported by HDHR-TECH-US hardware:

Name	Description	Location
us-bcast	Digital Antenna (ATSC).	US, Canada
us-cable	Digital Cable - Normal frequency layout.	US, Canada
us-hrc	Digital Cable - HRC frequency layout.	US, Canada
us-irc	Digital Cable - IRC frequency layout.	US, Canada

Channel maps supported by HDHR-TECH-EU hardware:

Name	Description	Location
au-bcast	Digital Antenna (Australia).	Australia
au-cable	Digital Cable (Australia).	Australia
eu-bcast	Digital Antenna (Europe).	Europe, New Zealand
eu-cable	Digital Cable (Europe).	Europe, New Zealand
tw-bcast	Digital Antenna (Taiwan).	Taiwan
tw-cable	Digital Cable (Taiwan).	Taiwan

Multicast

ATSCQAM supports multicast streaming within a network.

- 1) Using HDHomeRun Config GUI or hdhomerun_config choose a desired channel and program number for each tuner. In this example we will use channel 19 program 3 on tuner 0 and channel 30 program 1 on tuner 1.
- 2) Choose a multicast IP address for each stream. As a general rule the multicast address should be in the range of 239.255.0.0 to 239.255.255.255. In this example we will use 239.255.1.1 and 239.255.1.2
- 3) Choose a destination (client) port number. The port should be outside the well-known ports range (we recommend 50000+) and should be unique for each stream. In this example we will use 59001 and 59002.
- 4) Write the boot script (text file):

```
/tuner0/channelmap us-bcast  
/tuner0/channel 19  
/tuner0/program 3  
/tuner0/target rtp://239.255.1.1:59001 ttl=64  
  
/tuner1/channelmap us-bcast  
/tuner1/channel 30  
/tuner1/program 1  
/tuner1/target rtp://239.255.1.2:59002 ttl=64
```

- 5) Write the boot script to the device:

```
hdhomerun_config 10010003 set /sys/boot - < boot.txt
```

- 6) Execute the boot script:

```
hdhomerun_config 10010003 execute
```

- 7) Check the tuner status and target for each tuner. The packets-per-second “pps” number should be non-zero indicating that the device is sending the stream.

```
hdhomerun_config 10010003 get /tuner0/debug  
hdhomerun_config 10010003 get /tuner0/target  
hdhomerun_config 10010003 get /tuner1/debug  
hdhomerun_config 10010003 get /tuner1/target
```

Example Boot Script Configurations

Tuning 2 ATSC channels and streaming to multicast addresses using RTP:

```
/tuner0/channelmap us-bcast  
/tuner0/channel 31  
/tuner0/program 3  
/tuner0/target rtp://239.255.1.1:59001  
/tuner1/channelmap us-bcast  
/tuner1/channel 8  
/tuner1/program 1  
/tuner1/target rtp://239.255.1.2:59002
```

Tuning 3 digital cable channels using a CableCARD and streaming to multicast addresses using RTP:

```
/tuner0/vchannel 702  
/tuner0/target rtp://239.255.1.1:59001  
/tuner1/vchannel 740  
/tuner1/target rtp://239.255.1.2:59002  
/tuner2/vchannel 771  
/tuner1/target rtp://239.255.1.3:59003
```

Tuning 2 DVB-T channels in Australia and streaming to multicast addresses using UDP:

```
/tuner0/channelmap au-bcast  
/tuner0/channel 5  
/tuner0/program 20121  
/tuner0/target udp://239.255.1.1:59001  
/tuner1/channelmap au-bcast  
/tuner1/channel 44  
/tuner1/program 28753  
/tuner1/target udp://239.255.1.2:59002
```

Tuning 2 DVB-C channels in Europe and streaming to a single PC, ignoring rejection messages from the PC due to a closed port:

```
/tuner0/channelmap eu-cable  
/tuner0/channel 646  
/tuner0/program 231  
/tuner0/target udp://192.168.0.22:59001 no_clear  
/tuner1/channelmap eu-cable  
/tuner1/channel 770  
/tuner1/program 24112  
/tuner1/target udp://192.168.0.22:59002 no_clear
```

HDHomeRun QuickTV (Windows)

HDHomeRun QuickTV is a lightweight viewer suitable for playing multicast video from the ATSCQAM. HDHomeRun QuickTV is installed with the full HDHomeRun software or can be installed stand-alone using the separate HDHomeRun QuickTV installer.

HDHomeRun QuickTV uses a “.qtv” channel file to support friendly selection between multicast channels. This file would typically be placed on a file server or intranet download page where it can be accessed by users.

File format (example):

```
<?xml version="1.0" standalone="yes"?>
<QtvLineup>
  <Program>
    <Name>KOFYDT</Name>
    <Number>20.1</Number>
    <Url>hdhomerun://239.255.1.1:59001/current</Url>
  </Program>
  <Program>
    <Name>KQEDDT</Name>
    <Number>9.1</Number>
    <Url>hdhomerun://239.255.1.2:59002/current</Url>
  </Program>
</QtvLineup>
```

Name the file with a “.qtv” extension and then double-click to launch QuickTV.

QuickTV should display the channel list and start playing when a channel is selected.

VideoLAN VLC

VideoLAN VLC is a third party video player suitable playing unicast and multicast for use with the ATSCQAM:

<http://www.videolan.org/vlc/>

Using VLC

- Run VLC and select Media, Open Network.
- Set the protocol to RTP.
- Set the address to 239.255.1.1 and the port to 59001.
- Click play.

TSReader

TSReader is a third party Transport Stream analyzer for Windows that works with the ATSCQAM:

<http://www.coolstf.com/tsreader/>

FCC Notice:

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: 1) This device may not cause harmful interference. 2) This device must accept any interference received, including interference that may cause undesired operation.

This product has been tested and found to comply with the limits for a Class A digital device pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This product generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the manufacturer's instruction manual, may cause harmful interference with radio communications. Operation of this product in a residential area is likely to cause harmful interference, in which case you will be required to correct the interference at your own expense.

Trademarks:

HDHomeRun is a registered trademark of Silicondust USA Inc.

HDRACK is a trademark of Silicondust USA Inc.

CABLETRONIX 1-Year Limited Warranty

CABLETRONIX. (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 you 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.