

# RD-30

Receiver / Decoder

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## USER GUIDE

The RD-30 is an HD MPEG 2 / MPEG 4 4:2:0  
IRD for distribution, turn-around and monitoring applications.



10.29.14- v2.1.1

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## **Trademarks & Copyrights**

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# **Electrical Device Compliance Notices**

## **Safety Notices**

- Read these instructions
- Keep these instructions
- Heed all warnings
- Follow all instructions
- Do not use this apparatus near water
- Clean only with dry cloth
- Do not block any ventilation openings. Install in accordance with the manufacturer's instructions
- Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat
- Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong is provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
- Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
- Only use attachments/accessories specified by the manufacturer.
- Unplug this apparatus during lightning storms or when unused for long periods of time.
- Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.
- Do not expose this apparatus to dripping or splashing and ensure that no objects filled with liquids, such as vases, are placed on the apparatus.
- To completely disconnect this apparatus from the AC Mains, disconnect the power supply cord plug from the AC receptacle.
- The mains plug of the power supply cord shall remain readily operable.
- Damage Requiring Service: Unplug this product from the wall outlet and refer servicing to qualified service personnel under the following conditions:
  - When the power-supply cord or plug is damaged.
  - If liquid has been spilled, or objects have fallen into the product.
  - If the product has been exposed to rain or water.
  - If the product does not operate normally by following the operating instructions. Adjust only those controls that are covered by the operating instructions as an improper adjustment of the controls may result in damage and will often require extensive work by a qualified technician to restore the product

to its normal operation.

- If the product has been dropped or damaged in any way.
- The product exhibits a distinct change in performance.
- Replacement Parts: When replacement parts are required, be sure the service technician uses replacement parts specified by Sencore, or parts having the same operating characteristics as the original parts. Unauthorized part substitutions made may result in fire, electric shock or other hazards.

## **Safety Warnings and Cautions**

**There is always a danger present when using electronic equipment.**

*Unexpected high voltages can be present at unusual locations in defective equipment and signal distribution systems. Become familiar with the equipment that you are working with and observe the following safety precautions.*

**For your safety** and the proper operation of the device:

- Every precaution has been taken in the design of the product to ensure that it is as safe as possible. However, safe operation depends on you the operator.
- Always be sure your equipment is in good working order. Ensure that all points of connection are secure to the chassis and that protective covers are in place and secured with fasteners.
- Never work alone when working in hazardous conditions. Always have another person close by in case of an accident.
- Always refer to the manual for safe operation. If you have a question about the application or operation call Adtec for assistance.
- **WARNING** – To reduce the risk of fire or electrical shock never allow your equipment to be exposed to water, rain or high moisture environments. If exposed to a liquid, remove power safely (at the breaker) and send your equipment to be serviced by a qualified technician.
- To reduce the risk of shock the product must be connected to a mains socket outlet with a protective earthing connection.
- The mains plug is the main disconnect and should remain readily accessible and operable at all times.

- The product is equipped with an internal system battery. The product must be sent to Adtec service for replacement of this battery.

**CAUTION** – Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type.

- This unit must be installed and serviced by suitably qualified personnel only.
- Do not break the warranty seals on the device or open the lid. Only approved service technicians are permitted to service this equipment.
- Disconnect all power before servicing the unit.
- Clean only with a dry cloth.
- If not installed in an equipment rack, install the product securely on a stable surface.
- Install the product in a protected location where no one can step or trip over the supply cord, and where the supply cord will not be damaged.
- If a system is installed in a closed or multi-unit rack assembly, the operating ambient temperature of the rack environment may be greater than the room ambient temperature.
- Consideration should be given to installing the unit in an environment compatible with the maximum recommended ambient temperature of 50 degrees Celcius (122 degrees Fahrenheit).
- Install the unit in a rack so that the amount of airflow required for safe operation is not compromised.
  - The recommended clearance on the top and sides of the unit is at least ½ " (one half inch/one centimeter).
- Mounting of the unit in a rack should be such that no hazardous condition is achieved due to uneven mechanical loading.
- Use only a grounded electrical outlet when connecting the unit to a power source.
- Reliable earth grounding of rack-mount equipment should be maintained.
  - Particular attention should be given to supply connection other than direct connections to the branch circuit (e.g., use of power strips).

## Compliance Notices

### FCC Class A Information

The RD-30 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 equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. Operation of this equipment

in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his or her own expense.

Shielded cables must be used with this unit to ensure compliance with the Class A FCC limits.

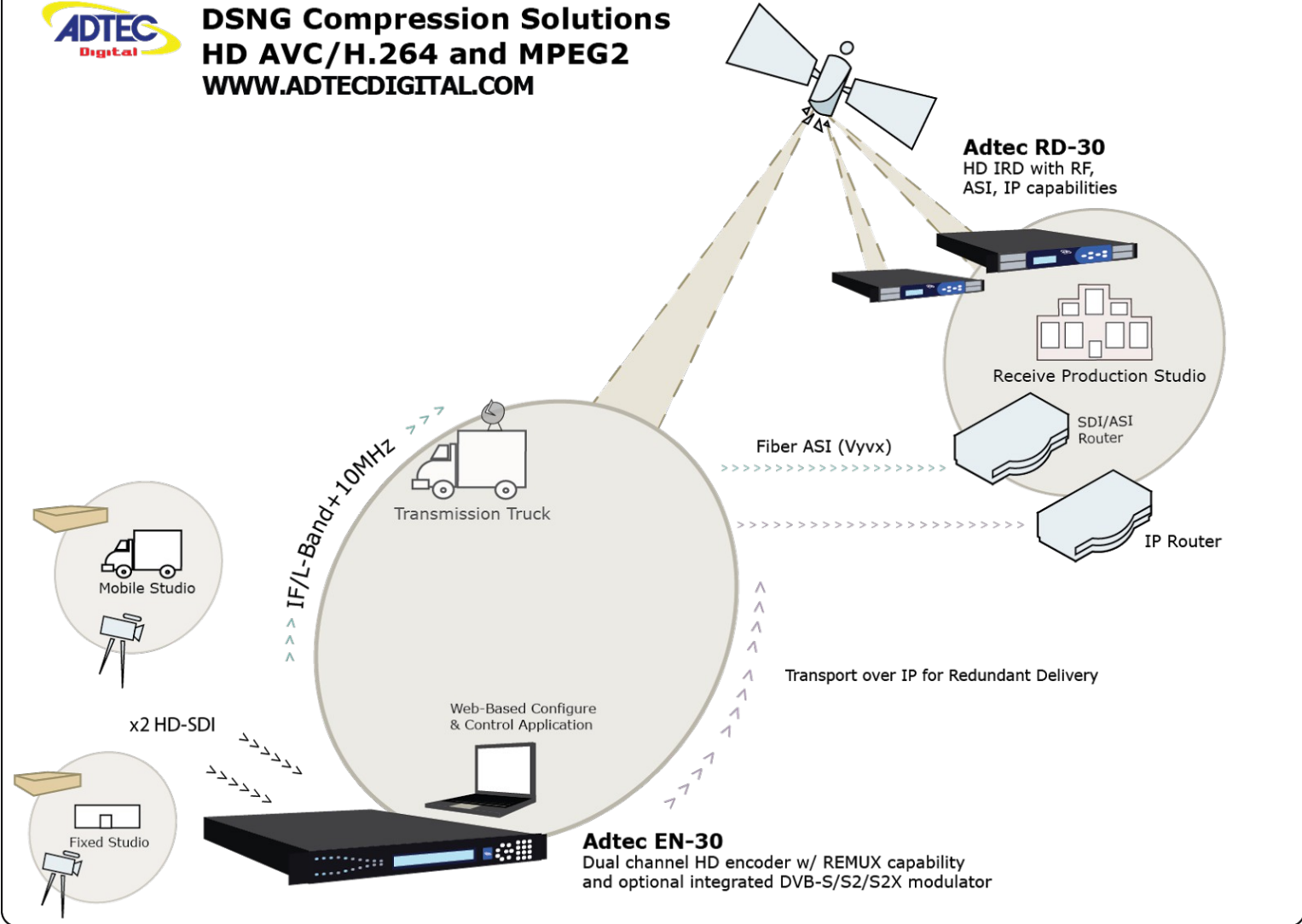
**Warning:** Changes or modifications to this device not expressly approved by Adtec Digital could void the user's authority to operate the equipment.

# **Chapter 1 - Product Introduction**





**DSNG Compression Solutions**  
**HD AVC/H.264 and MPEG2**  
**WWW.ADTECDIGITAL.COM**



## Covered Equipment

**RD-30 (RD30-01):** The RD-30 is an HD MPEG 2 / MPEG 4 4:2:0 capable IRD for distribution, turn-around and monitoring applications. Standard transport stream input/output includes ASI and GigE. Standard video outputs include SDI, Composite and Digital Video. Standard audio includes two (2) audio PIDs available for processing. Dolby E/Dolby D pass-through, MPEG 1 Layer 2, AAC-LC, AAC-HEv1, AAC-HEv2, Dolby Digital (AC-3) and Dolby Digital+ (EAC-3) downmix decode with an optional additional two (2) stereo pairs for a total of four audio PIDs. Genlock is standard on all models.

**RD-30 w/ L-Band Demodulator (RD30-01-LB):** RD-30 (as configured above) + Demodulator and CAM module support.

\* Software Key field upgradeable to 16/32APSK, VCM, ISI, MultiBISS, MultiCAM

## Available Software Options

**RD30-M2/M4-HD-KEY** - Adds the capability of MPEG 2 / MPEG 4 HD (1080i/720p)

**RD30-AUD-EXP-KEY** - Expands audio decode from 2 pairs to 4 pairs

**RD30-BISS-KEY** - Adds single BISS E/BISS 1 Descrambling capability

**RD30-16/32APSK-KEY** - Available for RD30-01-LB model. Adds 16/32APSK, VCM and Multistream

**RD30-CAM-KEY** - Adds DVB-CI multi-service and multi-BISS licenses (Decrypts multiple services. RD30-CAM-KEY is not required for a single DVB-CI service decrypt.)

**RD30-IP-OUT-KEY** - Adds SMPTE 2022 FEC Output capability.

## Front Panel

The front panel LCD and keypad can be used to configure and monitor your device.

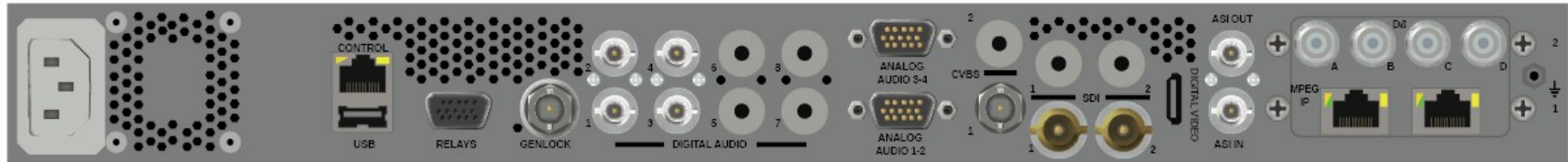


## Controls

Using the **Enter**, **Back** and **directional buttons (up, down, left, right)**, the user can control the unit via the front panel.

Control	Function
Enter Button	Will enter menus and confirm selections.
Back	Will back out of menus and escape from item entries.
Up, Down, Left, Right	Arrows are used for menu navigation and for editing configuration fields within the unit.

## Back Panel



Connector	Description
<b>Processor</b>	
Power	AC Power, Standard 3 pin computer power plug (Auto range 100-240 VAC Input)
Ethernet	10/100 BASE-T ethernet interface (Monitoring/Management)
DB9 Relay	9-pin interface for alarms
<b>Decoder</b>	
Genlock	Bi-level / Tri-Level sync input used for decoder reference
AES Audio Out 1-4	x4 75 Ohm AES-3/EBU BNC
Analog Audio Out	x2 DB15 Audio outputs, 2 pairs per DB15 connector
CVBS Out	75 Ohm BNC Standard Definition Composite Video Output (SMPTE 170M-2004, NTSC, PAL-B/G/I/D/M/N)
SDI Out	x2 mirrored SD-SDI/HD-SDI outputs from decoder. Video/Audio/VBI (SMPTE 259M - SD, SMPTE 292M - HD).

Digital Video	Digital Video Output connector
ASI In	75 Ohm BNC input.
ASI Out	75 Ohm BNC output.
RF 1, 2, 3 & 4	x4 L-Band inputs, 75 Ohm F-Connector (RD30-01-LB option)
GigE In/Out	x2 10/100/1000 GigE ports for UDP or RTP transport ingress/egress

## Cooling

The RD-30 is cooled via forced induction through the front of the unit and exhausted through the vents in the rear of the chassis. The RD-30 is equipped with a temperature controlled status indicator. If the temperature inside the unit exceeds 60° C the red "Error" text will illuminate on the front panel and a description of the error will appear in the "Error List."

## Rack Information

The RD-30 is intended to be mounted in a standard 19" rack. It occupies 1RU of rack space and the connections are all on the rear of the unit.

## **Chapter 2 - Installation**

### **Rack Installation**

To install the RD-30 into a rack use the following steps:

<b>Step</b>	<b>Description</b>
1	Determine the desired position in the rack for the RD-30 making sure that the air intake on the front of the unit and the exhausts on the sides of the unit will not be obstructed.
2	Insert the rack mount clips into place over the mounting holes in the rack.
3	Slide the RD-30 into position in the rack.
4	Secure the RD-30 to the rack by installing the four supplied screws through the front mounting holes and tightening.
5	If needed, secure a grounding wire use the grounding location on the rear panel of the RD-30. See Section 1.3 for grounding location.

### **AC Power Connection**

Using the proper power connections is vital to the safe operation of the RD-30. Only use the supplied 3-prong power connector or one with equal specifications. NEVER tamper with or remove the 3rd – prong grounding pin. This could cause damage to the RD-30, personnel, or property.

The RD-30 is intended for use on either 120V or 240V systems. The power supply will automatically detect the system it is connected to. To hook up the power use the following steps:

<b>Step</b>	<b>Description</b>
-------------	--------------------

1	Locate the AC power cord that was included with the RD-30.
2	Plug the female end of the power cord (end with no prongs) into the back of the unit.
3	Locate a protected outlet (usually inside of the rack) to plug the male end of the power cable into.

## **Maintenance**

The RD-30 is virtually a maintenance-free piece of equipment. There are no user serviceable parts on the inside of the unit.

## **Chapter 3 - Getting Connected**

### **Introduction to the Control Application**

A web-based control software application comes pre-installed on the RD-30.

#### **Compatible browsers**

Firefox (recommended)

MS Internet Explorer

Safari

Chrome

#### **Ethernet Access**

To begin, you will need to connect to your RD-30 via Ethernet directly, or by adding the RD-30 to your local area network. The default address for all Adtec devices is 192.168.10.48.

To connect directly to the device, make sure that your computer and the device have IP addresses within the same IP class range.

(ex. 192.168.10.48 for the device and 192.168.10.49 for your computer).

If you need to change the IP address of the device, this can be done via the front panel, System > Network menu. Using a CAT 5 crossover cable, connect one end to your computer and the other to the Ethernet port found on the processor section of the back panel. (Some computers can auto negotiate the connection and a crossover may not be necessary.)

To add the device to a LAN, connect a standard CAT 5 Ethernet cable to your network router and then to the Ethernet port on the back of the device. If your network is DHCP enabled and you prefer that over a static IP, you can turn on DHCP for the device via the front panel, Admin > Network menu.

#### **Login**

Once you reach the default login page for the web-based application, you will be prompted for a username and password. The default username is 'admin'. There is no default password. Leave the password field empty and click login to enter the web-based application.

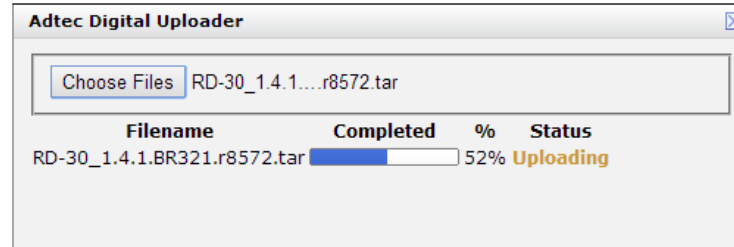


The screenshot displays the RD-30 web user interface. At the top left, the text "RD-30" is shown in a large, blue, stylized font. At the top right, the ADTEC Digital logo is visible. Below the logo, there is a "Quick Links" section with a link for "Documentation & Technical Support" pointing to "www.adtecdigital.com". In the center of the page, there is a login form with two input fields: "Username:" containing the text "admin" and "Password:". Below these fields is a button labeled "Proceed to Login".

The left-hand panel of the application will report current status while the right panel tabs will allow you to configure your device.

### Upgrading Via Web User Interface

Periodically, we will provide firmware updates to our products via our website, <http://www.adtecdigital.com>. To upgrade your device, download the firmware file from our website and store it locally. Login to the web-based application and navigate to the Admin > Firmware tab. Click on the upload button located at the top right of the application. Select the firmware file from your local machine and wait for it to upload.



Once it has finished uploading, it will appear in the Available Versions list. Click on the Select button associated with the new file to reboot into the new version.

**RD-30**

Version 1.4.1.BR321.r8516

Temperature: 51.3(C)

**Encoder Status:** ●

Input: ASI

Stream Rate: 125.000592(Mb/s)

Service ID-Name: 3 - MHH68

**RF Status:** ●

RF Port 1: Unlocked

Carrier Level: -70 dBm

SNR Margin: -- NA --

[Upload](#)
[Logout X](#)

Input | Video | Audio | CAS | VBI | TS Output | Admin | Help

System | Networking | Features | Firmware

**Installed Firmware Versions**

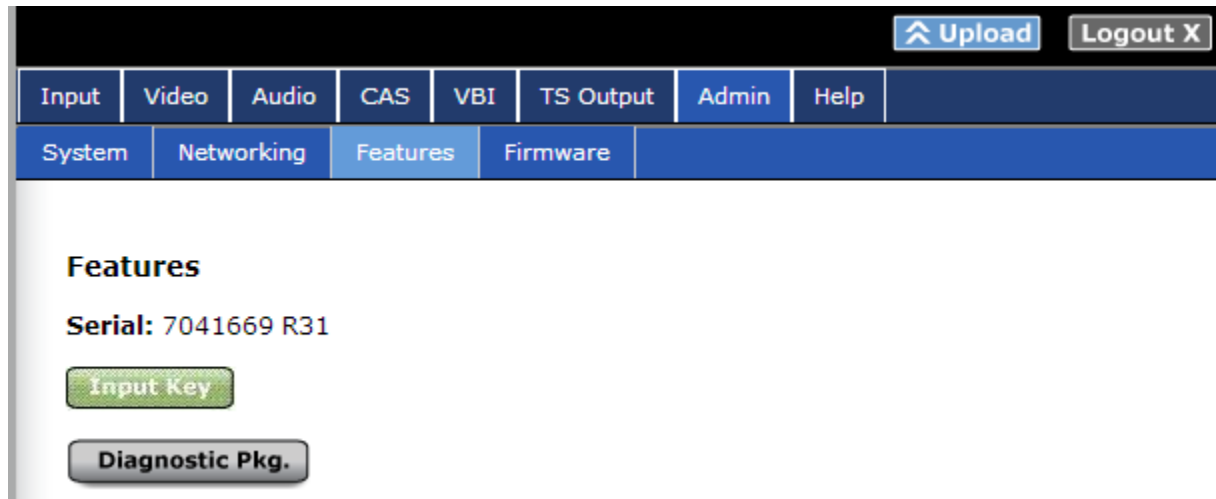
Current Version	Previous Version
1.4.1.BR321.r8516	1.4.1 <a href="#">Rollback</a>

**Available Firmware Versions**

Uploaded Versions	Update	Delete
1.4.1.BR321.r8572	<a href="#">Select</a>	<a href="#">Delete</a>

## In Field Feature Upgrades

Unit features can be upgraded in the field via the web user interface. To purchase a permanent key, please provide your unit serial number from the Admin -> Features tab to your sales representative.



### Key Instructions



An unlock key can be provided via email or verbally if internet access is not available. To enter the unlock key:

Step	Action
1	Click on the 'Input Key' button.
2	Enter the supplied key into the pop-up dialog box and click OK.
3	The feature status should change from 'Un-licensed' to 'Licensed'.
4	In some cases, a reboot of the unit may be required after enabling a feature key.

## Chapter 4 - WebUI overview

### WebUI Status Panel

The left-hand panel of the web application will report current device status while the right-hand panel will allow you to configure your device. This section will cover what each part of the status panel represents. Each panel may be collapsed or expanded

by clicking on the icon with the 'double up'  or 'double down'  arrows. The heading of each status may contain an LED that summarizes the current state of the individual status box. Green represents, OK, Yellow represents, Potential Warning, and Red represents an alarm.

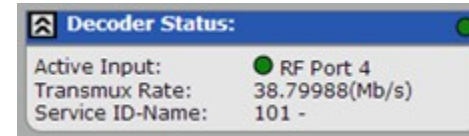
### Firmware and Temperature

The top left hand status displays a logo of the product, Firmware version and operating temperature of the IRD



### Decoder Status

The Active Input LED will be green if the decoder is actively decoding a program from the input. The selected input data rate (Transmux Rate) is displayed as well as the Service ID (Program Number) and Program Name if available.

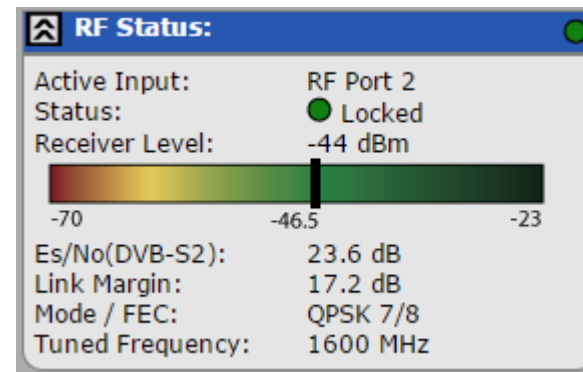


## RF Rx Status

The Active Input will display the last actively selected RF port. It does not represent the active input for the decoder (refer to Decoder status for Decoder input).

Status provides an indication of tuner lock along with the receive level (dBm), Eb/No or Es/No (dB) and Link Margin (dB).

The modulation and coding mode detected will be displayed under the Mode / FEC title along with the tuners acquired L-Band frequency (MHz).



## IP-Rx Status

The IP-Rx1 and IP-Rx2 status display information about the two potential IP-Rx profiles that can be configured.

Sync Status will be green if a transport stream is detected. The current IP-Rx configuration is also displayed for IP Addr./Port and Buffer Mode/Level. The IRD automatically detects protocol and FEC parameters if enabled.

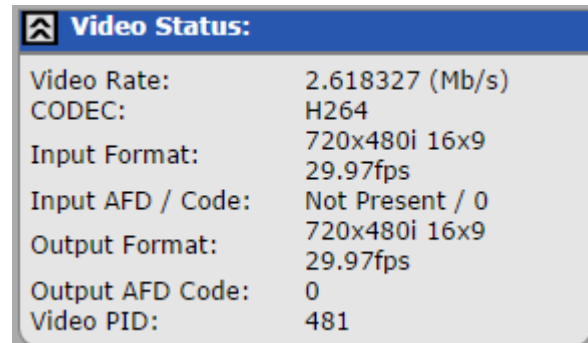


## Video Status

This window shows statistics about the decoded incoming (video elementary stream) and outgoing (processed) video.

Input transport stream information includes video rate (Mb/s), codec detected, resolution, frame rate, AFD information and PID.

Output baseband information includes resolution, frame rate and AFD information.



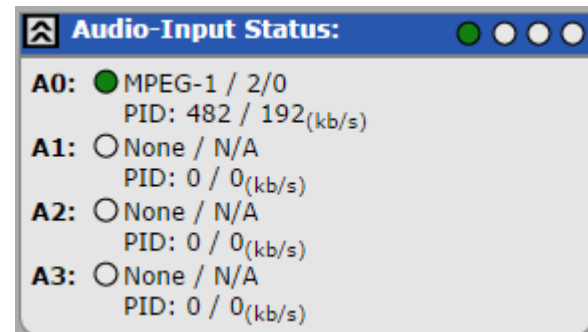
The screenshot shows a window titled "Video Status" with a blue header bar. The content is a list of key-value pairs:

Video Rate:	2.618327 (Mb/s)
CODEC:	H264
Input Format:	720x480i 16x9 29.97fps
Input AFD / Code:	Not Present / 0
Output Format:	720x480i 16x9 29.97fps
Output AFD Code:	0
Video PID:	481

## Audio Status

This window shows statistics about the decoded incoming audio elementary streams.

Input transport stream information includes audio type, channel configuration, PID (decimal) and the encoded audio rate (kb/s).



The screenshot shows a window titled "Audio-Input Status" with a blue header bar and standard window controls. The content lists audio streams A0, A1, A2, and A3:

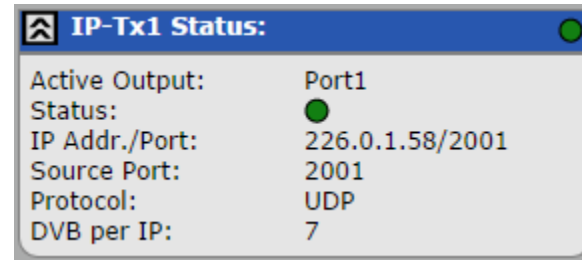
<b>A0:</b>	<input checked="" type="radio"/> MPEG-1 / 2/0 PID: 482 / 192(kb/s)
<b>A1:</b>	<input type="radio"/> None / N/A PID: 0 / 0(kb/s)
<b>A2:</b>	<input type="radio"/> None / N/A PID: 0 / 0(kb/s)
<b>A3:</b>	<input type="radio"/> None / N/A PID: 0 / 0(kb/s)

## IP-Tx Status

The IP-Tx1 and IP-Tx2 status windows display information about the two potential IP-Tx profiles that can be configured.

Status will be green if the Tx profile is set to ENABLED *and* if link is detected on the configured output. Each output profile can share the same GigE port if needed, they can also share the same port as the configured Rx profiles.

The configured IP destination parameters IP Address/Port, Source Port, Protocol and DVB TS Packets per IP Packet can be viewed in this status.



## **Chapter 5 - Operational Information**

### **DVB-S2 - Recommended use of Pilots**

The use of DVB-S2 pilots within the modulated carrier are recommended under certain conditions. With the following configurations, Pilots are recommended:

- High order modulation schemes: 16APSK and 32APSK
- Low code rates QPSK: 1/4, 1/3, 2/5, 1/2, and 3/5
- Low code rates 8PSK: 3/5, 2/3, 3/4, and 5/6
- Low symbol rates: < 5 Mbaud for free running DRO LNB
- Low symbol rates: < 3 Mbaud for Phase Locked DRO LNB

### **UDP / RTP / FEC IP Rx**

The RD-30 supports a number of IP based protocols for the reception of transport streams via private and public networks. The RD-30 will automatically determine if an IP stream is UDP or RTP.

UDP ( User Datagram Protocol ) multicast/unicast streams are commonly used for broadcast transport streams in local or private networks that contain little to no packet loss. UDP offers no protection against dropped packets or packets received out of order (usually due to packets taking a different amount of time to traverse network devices). Due to the low reliability of UDP, it is generally not recommended to be used over the public internet or in environments where the potential of packet loss, increased jitter, or out of order packets is high. If packets are lost or received out of order, service anomalies will occur.

RTP ( Real-time Transport Protocol ) is another type of multicast/unicast stream that is better to use than UDP in some environments. RTP is built upon the building blocks of UDP, but adds packet sequence identification. Packet sequencing gives a receiver the information needed to detect and correct packets that were received 'out of order'. RTP is highly recommended when timely delivery of each consecutive packet may not be guaranteed.

RTP + FEC or SMPTE-2022 is an additional method used in dealing with lost packets, where RTP alone can only tolerate packets received out of order. FEC ( Forward Error Correction ) streams add overhead to the overall data rate, but add protection in case of a lost packet. FEC ( detection and correction of lost packets ) adds latency and data overhead as opposed to UDP where no protection mechanisms exist. The amount of packet redundancy and overhead can be configured at the RTP/FEC transmitter. Each multicast/unicast FEC stream is transmitted on base port N and two FEC streams are sent on N+2 and N+4 respectively. When receiving FEC streams behind firewalls, please bear in mind that two additional ports ( N+2 and N+4 ) must be allowed through for proper error recovery to occur.

The RD-30 supports both unicast (point to point) and multicast (broadcast) streams. How to setup IP addressing and networking equipment is outside the scope of this document. Please verify that IP addresses and gateways are configured properly at transmit and receive ends for proper stream reception.

## **Multicast Reception - Address**

To receive a multicast (UDP/RTP/SMPTE2022) stream, place the IP Rx mode to 'multicast' and insert a multicast address desired to receive in the 'Address' field. This address must match the same address used on the multicast transmitter. Multicast IP address ranges are 224.10.xxx.xxx to 239.xxx.xxx.xxx, where  $0 \leq xxx \leq 255$ . If you are new to multicast and attempting a first time connection, 226.0.1.1 is a common address to start with. Please verify transmitter address configuration.



## **Unicast Reception - Address**

To receive a unicast (UDP/RTP/SMPTE2022) stream, place the IP Rx mode to 'unicast'. The unit will be 'listening' for any streams sent directly to it. Refer to your IP transmitter documentation for proper configuration of the transmitter.

## **Unicast/Multicast Reception**

Enter the port number in the 'port' field. The port number must match the port number used on the transmitter where the range is 1 to 65535. If you are new to multicast and attempting a first time connection, 2000 is a common port to start with. Lower port numbers are usually reserved for other network services. Please verify transmitter port configuration.

Choose the IP Rx 'Connector' dependent upon your network setup. There are two available GigE cards available for receiving network streams.

Once IP Rx is configured, click Apply.

## RD-30

Version 1.4.1.337

Temperature: 51.3(C)

- Decoder Status:** ●
- RF Status:** ●
- IP-Rx1 Status:** ●

Sync Status: ● Locked

IP Addr./Port: 226.0.1.58:2000

Buffer Mode/Level: 500 (ms)

Protocol: UDP

FEC L/D: 0/0
- IP-Rx2 Status:** ●
- Video Status:** ●
- Audio-Input Status:** ●●
- IP-Tx1 Status:** ●
- IP-Tx2 Status:** ●

Input	Video	Audio	CAS	VBI	TS Output	Admin	Help
RD Services		RF Rx Params		IP Rx Params			

### IP Rx Params (Stream 1)

---

IP Rx State:	<input type="text" value="ENABLED"/>	Connector:	<input type="text" value="Port 1"/>
IP Rx Mode:	<input type="text" value="Multicast"/>	FEC Mode:	<input type="text" value="DISABLED"/>
Address:	<input type="text" value="226.0.1.58"/>	Port:	<input type="text" value="2000"/>

---

Buffer Mode:	<input type="text" value="Delay (ms)"/>	Latency <sub>(ms)</sub> :	<input type="text" value="500"/>
Null Stripped:	<input type="text" value="DISABLED"/>	Size <sub>(kB)</sub> :	<input type="text" value="500"/>

Visit the Input -> Service tab and Select the appropriate IP input (Port 1 or Port 2) from the drop down to select IP for decoding. IP service names will populate in the service list.

# RD-30

Version 1.4.1.337

Temperature: 51.5(C)

**Decoder Status:** ●

Active Input: ● MPEG/IP Port 1

Transmux Rate: 19.39968(Mb/s)

Service ID-Name: 1 - AdtecHDTV1

**RF Status:** ●

**IP-Rx1 Status:** ●

Sync Status: ● Locked

IP Addr./Port: 226.0.1.58:2000

Buffer Mode/Level: 500 (ms)

Protocol: UDP

FEC L/D: 0/0

Input
Video
Audio
CAS
VBI
TS Output
Admin
Help

RD Services
RF Rx Params
IP Rx Params

Primary Input: MPEG/IP Port 1 Advanced Input Sel.

**Service Selection**

Active Input Service List		
Select	Service ID	Service Name
1	1	AdtecHDTV1

## Chapter 6 - Appendix

### **Appendix A - GNU General Public License**

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## Appendix B - Technical Specifications

### Base Model (RD30-01)

#### Inputs

##### **DVB-ASI Input**

Use: Input available for decode.

Standard: Asynchronous Serial Interface per EN500083-9

Input TS Rate: 250 Kb/s to 200 Mb/s

Packet Size: 188/204 byte

Connector: BNC (75 Ohm)

##### **IP Input**

Use: Input available for unicast/multicast decode. TS input/output can share the same connector as required.

Standard: UDP or RTP

Supports 1 to 7 TS packets per IP packet

IGMP v1, v2 and v3 support

Input TS Rate: 250 Kb/s to 200 Mb/s

Connection speed: GigE (10/100/1000 Auto-Negotiate)

Receiver capability: 2 simultaneous MPEG over IP transport streams

Connector: x2 RJ45

#### Outputs

##### **SD-SDI / HD-SDI**

Two mirrored SDI outputs from Decoder

Standard: Video & Audio SMPTE 259M - SD, SMPTE 292M - HD

Up to 8 Channels of Embedded audio

SDI Ancillary support for:

Closed Captioning (CEA-708), AFD (SMPTE 2016), OP-47 (SMPTE RDD-08), SMPTE RDD-11, SCtE 127 (SMPTE 2031), EN301775 (SMPTE 2031), Time Code (SMPTE 12M-2)



SDI VBI waveform support:

Line 21 captions (CEA-608), TVG2x, AMOL-48/96 (SCTE 127), Teletext/WSS/VPS (EN301775)

Connector: Two BNC (75 Ohm)

### **CVBS**

SD NTSC, PAL-M, PAL-B/G, PAL-N Composite Video Output

NTSC Pedestal selection: Black at 7.5 IRE or Black at 0 IRE

VBI waveform support:

Line 21 captions (CEA-608), TVG2x, AMOL-48/96 (SCTE 127), Teletext/WSS/VPS (EN301775)

Connector: BNC (75 Ohm)

### **DVB-ASI**

Standard: Asynchronous Serial Interface per EN500083-9

ASI Mirrored from DVB-ASI Input, IP Input, or RF Input with purchase of optional tuner package.

Connector: BNC (75 Ohm)

### **AES Audio**

Standard: AES3/EBU

4 pairs of decoded/passthrough audio

Connector: Four BNC (75 Ohm)

### **Analog Audio**

Four balanced pairs via two DB15 connectors. (2 pair per DB15)

Connector: Two DB15

## Communications

### **Ethernet Port**

Use: ethernet port used for network management

Format: Ethernet 10/100BaseT auto-negotiating

Communication Methods: WebUI, SNMP

Connector: RJ45

### **DB9 Relay Connector**

Use: DB9 port used for alarm triggering / integration

Connector: DB9 Male

## Video and Audio

### **Video Decode**

MPEG-2 SD (ISO/IEC 13818-2) Decode:

Format: 480i59.94, 576i50

Profiles: MP@ML

MPEG-2 HD (ISO/IEC 13818-2) Decode:

Format: 720p50, 720p59.94, 720p60, 1080i50, 1080i59.94, 1080i60, 1080p23.97, 1080p24, 1080p25, 1080p29.97, 1080p30

Profiles: MP@HL

MPEG-4 SD (ISO/IEC 14496-10) Decode:

Format: 480i59.94, 576i50

Profiles: Up to MP@L3

MPEG-4 HD (ISO/IEC 14496-10) Decode:

Format: 720p50, 720p59.94, 720p60, 1080i50, 1080i59.94, 1080i60, 1080p23.97, 1080p24, 1080p25, 1080p29.97, 1080p30

Profiles: Up to HP@L4.2

### **Audio Processing**

MPEG 1 Layer 2 audio (4 pairs)

AAC-LC, AAC-HEv1, AAC-HEv2 (4 pairs)

Dolby Digital AC3 / Dolby Digital+ EAC3 stereo downmix and passthrough (4 pairs)

Dolby E / Linear PCM Passthrough (4 pairs)

## Physical and Operational

### **Physical / Environmental**

1 RU - 14.6"D X 17.2"W X 1.72"H

### **Power**

Input Voltage: 100VAC - 240VAC 50/60Hz

Idle base unit power draw: 38-40W

Base unit with active ASI input: 54-55W

DVB-S/S2 model with active LNB 19V @ 500ma and active CAM adds: 10-12W

### **Operational**

- Ambient operating temperature: 0C to 50C.
- Ambient storage temperature: -40C to 65C.
- Non-condensing relative humidity range: < 95%

### **Certification / Compliance**

RoHS Compliant

## **DVB-S/S2 Model (RD30-01-LB)**

The LB option is a hardware option. This unit contains the same features as RD30-01 model listed above plus:

### Inputs

#### **DVB-CI Descrambling module**

Interface: Adds two DVB-CI CAM slots

Use: Descrambles decoded service only without purchase of RD30-CAM-KEY. RD30-CAM-KEY provides up to maximum amount of decryptable services supported by CAM module.

#### **DVB-S/DVB-S2 tuner**

**note:** Software key required to unlock full hardware support.

Use: Four switched L-Band inputs available for decode

Connector: F Type, Female

DVB-S EN 300 421 and DVB-S2 EN 302 307

Modulation Scheme support: QPSK / 8PSK / 16APSK / 32APSK

DVB-S2 symbol rate range: 1 - 45Msym/s

DVB-S symbol rate range: 1 - 45Msym/s

frequency range: 950 - 2150MHz

LNB Power and Control:

0, 13, 14, 18 and 19VDC @ 450mA

22kHz (band selection according to universal LNB for ASTRA satellites)

VCM Demodulation Support

Multistream Support (Single ISI)

## Appendix C - Adtec Digital Support & Service

Technical Support and Customer Service includes troubleshooting product/system functional operations concerning Adtec equipment, embedded systems and single device issues; Service Order generation, processing and tracking; Warranty claim processing; and on-site system evaluation and maintenance. Technical Support plans do not include customer training programs. Programs incorporating customer training are defined in the Training Services Policy. Customer Services technicians provide limited instruction during a support call/email/fax in order to facilitate checking for proper equipment operation.

### Telephone and Email Support

- **Telephone:** 615-256-6619 ext. 166
- **Email:** support@adtecinc.com
- **Internet:** <http://adtecdigital.com/support/support-request>

Adtec Digital offers telephone, email and fax support, warranty and service related inquiries during normal business hours: 9:00am to 5:00pm Central Standard Time (CST), Monday through Friday, holidays excepted. Support Requests can also be submitted on-line. All inquiries will be processed in the order in which they are received and by the criteria outlined in the Call Response Order. Inquiries and inquiry responses made after 5:00 PM (CST) weekdays, Saturday, Sunday or on an Adtec-recognized holiday will be processed the next business day in the order received.

Callers on hold and returned calls will be prioritized by the following criteria:

- Priority-24 Subscription Customers
- Standard-Priority Subscription Customers
- All customers that have purchased Installation & Training, within 90 days of the installation.
- Adtec Certified Operators (ACO)
- Limited Level Support, Warranty & Service Requests
- Multi-device system installations that have purchased Installation & Training from Adtec
- Distributors
- System Integrators
- Multi-device systems
- Single device users

## Preparing for Support

To help expedite the troubleshooting process, please be prepared to provide the following information to the support representative:

- **Product(s) affected:** Please provide a list of the Adtec Products involved including the Revision Number for each affected product.
- **Description of the Problem:** Please include a detailed description of the problem. Include the approximate time and day the problem occurred, the spot ID of the material being inserted and what the operator reported about the incident. It is also helpful to note any recent changes to the system. More information is always better than too little information.
- **Your Contact Data:** Please include contact information so we can reach you to discuss how to fix the problem, additional troubleshooting steps that are required or to gather more complete information regarding the problem. Please include your facility name (or call letters), your name, title, email address, telephone number, hours of work, and other contact persons if you are not available.

## SLA Options

Effective January 1, 2014

For questions, please email [slaquestions@adtecinc.com](mailto:slaquestions@adtecinc.com)

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Technical support M-F 8AM-8PM (EST)  
Firmware and software upgrades  
Includes repair expenses\*\*  
Includes ground shipping within US  
International shipping is extra  
Fees: Free for one year after purchase
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Services: SLA Extended Warranty plus...  
Technical support 24x7x365  
Expedited shipping is extra
- **SLA PREMIUM 24\***  
Services: SLA Priority 24 plus...  
Next business day advance loaners
- **SLA EXTENDED WARRANTY\***  
Services: Extends warranty after year one  
Includes repair expenses  
Expedited shipping is extra

- **SLA LEGACY**  
Services: Includes initial product orientation  
Technical support M-F 8AM - 8PM (EST)  
Firmware and software upgrades  
Includes Duet, Soloist 2/ 2S, Mirage, edge1013/1015/2000/2100/2110.  
Most legacy products cannot be repaired
- **SLA SESSION SUPPORT**  
Services: Technical support M-F 8AM - 8PM (EST)  
Includes support for 5 days after first call
- **SE SUPPORT**  
Services: Event based on-site technical representation

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