

DSE 2 PLUS

Dual HD Digital Signage Encoder

INSTRUCTION MANUAL



Model	Item #	Description
DSE 2 PLUS	1002583	HD Encoder with QAM Output

800-523-6049
www.rldrake.com

We recommend that you write the following information in the spaces provided below.

Purchase Location Name:	
Purchase Location Telephone Number:	
DSE 2 PLUS Serial Number:	

This product incorporates copyright protection technology that is protected by U.S. patents and other intellectual property rights. Reverse engineering or disassembly is prohibited.

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Caution Statements

Caution Statements:

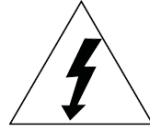
WARNING: TO PREVENT FIRE OR ELECTRICAL SHOCK, DO NOT EXPOSE TO RAIN OR MOISTURE.



A product and cart combination should be moved with care.

Quick stops, excessive force and uneven surfaces may cause the product and cart combination to overturn.

The lightning flash with arrow head symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.



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



CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER. NO USER-SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED PERSONNEL

WARNING: THE SOCKET-OUTLET SHALL BE INSTALLED NEAR THE EQUIPMENT AND SHALL BE EASILY ACCESSIBLE.

WARNING: TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS PRODUCT TO RAIN OR MOISTURE. DO NOT OPEN THE CABINET, REFER SERVICING TO QUALIFIED PERSONNEL ONLY.

CAUTION: TO PREVENT ELECTRIC SHOCK, DO NOT USE THIS (POLARIZED) PLUG WITH AN EXTENSION CORD RECEPTACLE OR OTHER OUTLET UNLESS THE BLADES CAN BE FULLY INSERTED TO PREVENT BLADE EXPOSURE.

ATTENTION: POUR PREVENIR LES CHOCS ELECTRIQUES, NE PAS UTILISER CETTE FICHE POLARISEE AVEC UN PROLONGATEUR, UNE PRISE DE COURANT OU UNE AUTRE SORTIE DE COURANT, SAUF SI LES LAMES PEUVENT ETRE INSEREES A FOND SANS EN LAISSER AUCUNE PARTIE A DECOUVERT.

Important Safety Instructions

- 1. Read Instructions:** All the safety and operating instructions should be read before the product is operated.
- 2. Retain Instructions:** The safety and operating instructions should be retained for future reference.
- 3. Heed Warnings:** All warnings on the product and in the operating instructions should be adhered to.
- 4. Follow Instructions:** All operating and use instructions should be followed.
- 5. Cleaning:** Unplug this product from the wall outlet before cleaning. Do not use liquid cleaners or aerosol cleansers. Use a damp cloth for cleaning.
- 6. Attachments:** Do not use attachments that are not recommended by the product manufacturer as they may cause hazards.
- 7. Water and Moisture:** Do not use this product near water—for example, near a bathtub, wash bowl, kitchen sink or laundry tub; in a wet basement; or near a swimming pool; and the like.
- 8. Accessories:** Do not place this product on an unstable cart, stand, tripod, bracket, or table. The product may fall, causing serious injury to a child or adult, and serious damage to the product. Use only with a cart, stand, tripod, bracket, or table recommended by the manufacturer, or sold with the product. Any mounting of the product should follow the manufacturer's instructions, and should use a mounting accessory recommended by the manufacturer.
- 9.** A product and cart combination should be moved with care. Quick stops, excessive force, and uneven surfaces may cause the product and cart combination to overturn.
- 10. Ventilation:** Slots and openings in the cabinet are provided for ventilation and to ensure reliable operation of the product and to protect it from overheating, and these openings must not be blocked or covered. The openings should never be blocked by placing the product on a bed, sofa, rug, or similar surface. This product should not be placed in a built-in installation such as bookcase or rack unless proper ventilation is provided or the manufacturer's instructions have been adhered to.
- 11. Power Sources:** This product should be operated only from the type of power source indicated on the marking label. If you are not sure of the type of power supplied to your home, consult your product dealer or local power company. For products intended to operate from battery power, or other sources, refer to the product's operating instructions.
- 12. Grounding or Polarization:** This product may be equipped with a polarized alternating-current line plug (a plug having one blade wider than the other). This plug will fit into the power outlet only one way. This is a safety feature. If you are unable to insert the plug fully into the outlet, try reversing the plug. If the plug should still fail to fit, contact your electrician to replace your obsolete outlet. Do not defeat the safety purpose of the polarized plug. Alternate Warnings – If this product is equipped with a three-wire grounding-type plug, a plug having a third (grounding) pin, the plug will only fit into a grounding-type power outlet. This is a safety feature. If you are unable to insert the plug into the outlet, contact your electrician to replace your obsolete outlet. Do not defeat the safety purpose of the grounding-type plug.

Safety Instructions continued...

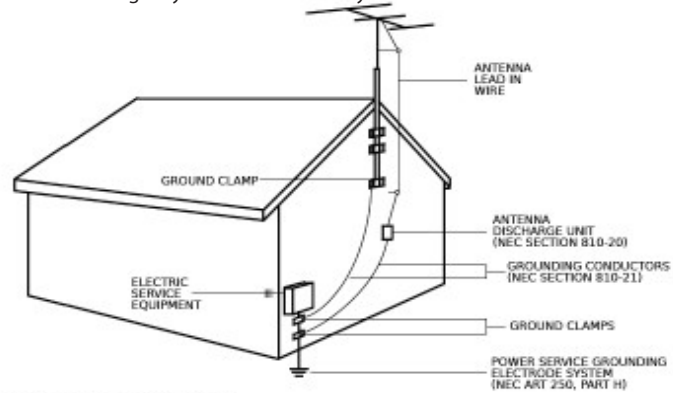
13. **Outdoor Antenna Grounding:** If an outside antenna or cable system is connected to the product, be sure the antenna or cable system is grounded so as to provide some protection against voltage surges and built-up static charges. Article 810 of the National Electrical Code, ANSI/NFPA 70, provides information with regard to proper grounding of the mast and supporting structure, grounding of the lead-in wire to an antenna discharge unit, size of grounding conductors, location of antenna-discharge unit, connection to grounding electrodes, and requirements for the grounding electrode.
14. **Power-Cord Protection:** Power-supply cords should be routed so that they are not likely to be walked on or pinched by items placed upon or against them, paying particular attention to cords at plugs, convenience receptacles, and the point where they exit from the product.
15. **Lightning:** For added protection for this product during a lightning storm, or when it is left unattended and unused for long periods of time, unplug it from the wall outlet and disconnect the antenna or cable system. This will prevent damage to the product due to lightning and power-line surges.
16. **Power Lines:** An outside antenna system should not be located in the vicinity of overhead power lines, other electric light or power circuits, where it can fall into such power lines or circuits. When installing an outside antenna system, extreme care should be taken to keep from touching such power lines or circuits as contact with them may be fatal.
17. **Overloading:** Do not overload wall outlets, extension cords, or integral convenience receptacles as this can result in a risk of fire or electric shock.
18. **Object and Liquid Entry:** Never push objects of any kind into this product through openings as they may touch dangerous voltage points or short-out parts that could result in a fire or electric shock. Never spill liquid of any kind on the product.
19. **Servicing:** Do not attempt to service this product yourself as opening or removing covers may expose you to dangerous voltage or other hazards. Refer all servicing to qualified service personnel.
20. **Damage Requiring Service:** Unplug this product from the wall outlet and refer servicing to qualified service personnel under the following conditions:
 - a) When the power-supply cord or plug is damaged,
 - b) If liquid has been spilled, or objects have fallen into the product,
 - c) If the product has been exposed to rain or water,
 - d) 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 other controls may result in damage and will often require extensive work by a qualified technician to restore the product to its normal operation, e. If the product has been dropped or damaged in any way, and f. When the product exhibits a distinct change in performance—this indicates a need for service.

21. **Replacement Parts:** When replacement parts are required, be sure the service technician has used replacement parts specified by the manufacturer or have the same characteristics as the original part. Unauthorized substitutes may result in fire, electric shock or other hazards.
22. **Safety Check:** Upon completion of any service or repairs to this product, ask the service technician to perform safety checks to determine that the product is in proper operating condition.
23. **Wall or Ceiling Mounting:** The product should be mounted to a wall or ceiling only as recommended by the manufacturer.

NOTE TO CABLE 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.



NEC = NATIONAL ELECTRIC CODE

Example of antenna grounding as per National Electrical Code, ANSI/NFPA 70

Specifications

ENCODER - VIDEO (Specifications are per Encoder)	
Video Inputs:	VGA (with pass-through to monitor), HDMI (non-HDCP Copy Protected), Component (Y-Cr-Cb), Composite (via Y-Input for 480i)
Video Resolution Modes:	480i (640x480 / 720x480 @ 30 fps), 480p (640x480 / 720x480 @ 60 fps), 720p (1280x 720 @ 60 fps), 1080i (1920x1080 @ 30 fps)
Video Input Resolution Detection:	Yes, automatic
Video Compression Format:	MPEG2 or MPEG4 / H.264
Video Adjustments:	Brightness, Contrast, Hue, Saturation, Sharpness
MPEG4 / H.264 Profiles Supported:	Simple, Advanced Simple, High
Bitrate:	0.000 to 19 Mbps (depending on format)

ENCODER - AUDIO (Specifications are per Encoder)	
Audio Inputs:	HDMI-embedded audio, 32 - 192 kHz sample rate PCM RCA-type L + R 1 x 1 Vrms nominal 3.5 Vrms max supports +/- 15 dB gain adjustment
Audio Compression Formats:	Dolby® Digital or MPEG1, Layer 2

QAM (Quadrature Amplitude Modulation) MODULATOR / MULTIPLEXER (per chassis)	
QAM Output Modes:	64 QAM or 256 QAM, ITU Annex B
Frequency Coverage:	5 - 1002 MHz
Channel Plans:	Standard CATV, HRC, IRC, Broadcast and T Channels
Maximum Output Power Level:	+ 45 dBmV
Level Adjustment Range:	15 dB
Phase Noise:	- 95 dBc @ 10 kHz offset
Broadband Noise:	- 75 dBc @ > +/- 12 MHz
MER:	> 40 dB equalized
Channel Frequency Response:	< 1 dB
Carrier Suppression:	> 40 dB
I/Q Inbalance:	< 1 degree
Output Level Accuracy:	+/- 1 dB

QAM (Quadrature Amplitude Modulation) MODULATOR / MULTIPLEXER (per chassis)	
Form Factor:	1RU 19" rack mountable
Control:	On-board Ethernet Connection
Power Requirements:	+5 V @ 3.5A via supplied external power supply
Dimensions:	10.5" D x 2.0" H x 19" W
Weight:	4.5 lbs.
Temperature Rating:	0 - 50° C ambient

Specifications, price, and availability are subject to change without notice or obligation.

Installation & Power-Up

Unpacking

You will find the following items in the box:

- DSE 2 PLUS Encoder Unit (QTY = 1)
- Power Adapter (QTY = 1)

Installation

The DSE 2 PLUS is designed to be 1RU 19" rack mountable in the close proximity to a 120 VAC – 60 HZ power plug.



For safe and reliable operation, do not place objects within 1 inch of the unit that block airflow.

Power-Up

Plug the Power Adapter into a power plug (120 VAC – 60 HZ). Plug the power pin into the back of the DSE unit at the input marked “DC Power”.



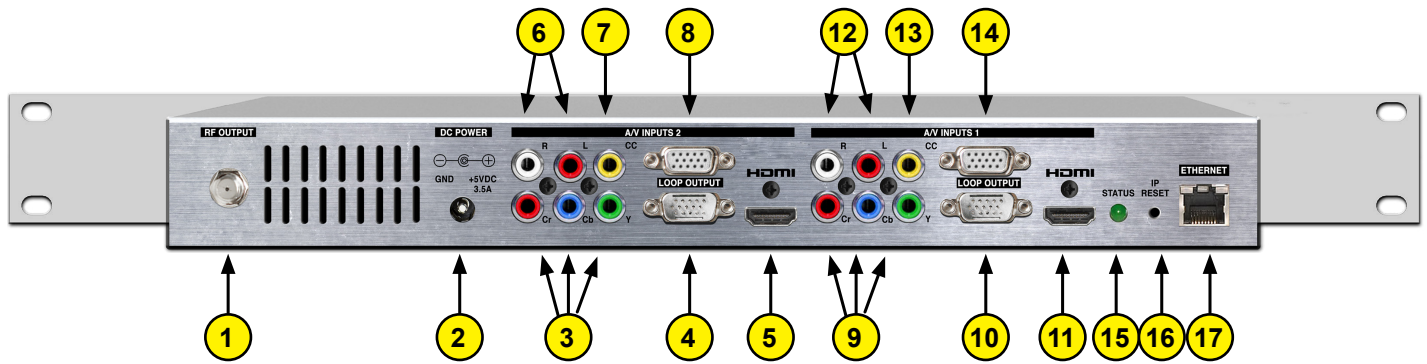
For safe and reliable operation, only use the power adapter supplied with the encoder.

General Description & Features

The DSE 2 PLUS encodes up to two uncompressed programs from devices with HDMI (non HDCP encrypted), High-Resolution Component Video, Composite or VGA outputs. The DSE 2 PLUS encodes the incoming programs to MPEG-2 or MPEG-4/H.264 compressed video. An internal multiplexing QAM modulator and low-noise upconverter allows programs to be combined with existing digital and or analog programming.

- Encodes a HD & SD stream of the same content in either MPEG-2 or H.264 formats
- Receives High-Resolution Component, VGA, or HDMI (non-HDCP content-protection) from two separate video sources.
- Video encodes to MPEG-2 or MPEG-4/H.264
- Supports 480i, 480p, 720p, or 1080i video resolution
- Audio encoding to Dolby Digital® or MPEG1-Layer 2
- Supports Closed Captioning
- High-level (+45 dBmV) agile output programmable from 5 to 1,000 MHz using STD, HRC, IRC, and Broadcast channel plans
- GUI-based Remote Network Control and Monitoring

Rear Panel Operation



- 1 **RF Output:** This type “F” connector is a high level (+29.5 dBmV to +45 dBmV), agile 5 to 1002 MHz, multiplexed output from the DSE2 Plus RF output section.
- 2 **DC Power Connector:** This connector provides the means for connection to the 5 VDC output of the supplied external power supply.
- 3 **Component Input 2:** These three color coded RCA connectors, Cr (red), Cb (blue), and Y (green), provide the means to input component video. To input composite video, use the green ‘Y’ connector.
- 4 **VGA Input 2:** This VGA type connector provides the means to input VGA video from a computer or other device with VGA output.
- 5 **HDMI Input 2:** This connector provides the means to input HDMI video (without HDCP) with optional embedded audio.
- 6 **Audio Input 2:** These two color coded RCA vtype connectors provide baseband audio Left (white) and Right (red) inputs to the DSE2 Plus.
- 7 **Closed Caption Input 2:** This connector provides the means to input closed captioning. It requires analog composite video that contains closed captioning.
- 8 **VGA Loop Output 2:** This connector provides VGA video output to a monitor or other equipment requiring VGA input. It is only active when VGA is input on R4.
- 9 **Component Input 1:** These three color coded RCA connectors, Cr (red), Cb (blue), and Y (green), provide the means to input component video. To input composite video, use the green ‘Y’ connector.
- 10 **VGA Input 1:** This VGA type connector provides the means to input VGA video from a computer or other device with VGA output.
- 11 **HDMI Input 1:** This connector provides the means to input HDMI video (without HDCP) with optional embedded audio.
- 12 **Audio Input 1:** These two color coded RCA type connectors provide baseband audio Left (white) and Right (red) inputs to the DSE2 Plus.
- 13 **Closed Caption Input 1:** This connector provides the means to input closed captioning. It requires analog composite video that contains closed captioning.
- 14 **VGA Loop Output 1:** This connector provides VGA video output to a monitor or other equipment requiring VGA input. It is only active when VGA is input on R10.
- 15 **Status LED:** Ethernet Link indicator.
- 16 **IP Reset:** When pushed and held for about 10 seconds, resets the IP address, Usernames, and Passwords to Factory default values.
- 17 **Ethernet Connection:** This connector provides the means to connect the DSE2 Plus to an Ethernet local area network or computer for remote control, monitoring, and/or firmware update. It is not recommended that this port be connected directly to a wide-area network without external access controls, like a VPN or firewall.

Login Screen

First, connect the appropriate input and output video cables and plug in the DSE 2 PLUS power cable.

ETHERNET ACCESS:

Local or remote communication with the unit is only possible through a GUI-based menu via any standard web browser (Chrome or Firefox recommended). Before you can communicate with the unit you must configure your computers Local Area Network connection to confirm with the DSE 2 Plus default IP of 172.16.80.1. To do so, follow these steps:

Connect an Ethernet cable from your computer to the Ethernet connection on the rear panel of the DSE 2 Plus.

1. The following steps explain how to do this for a computer with **windows XP** operating software:

- a) On your computer, open the "Control Panel"
- b) Double-click on "Network Connections"
- c) Right-click on the "Local Area Connection", and then click on the "properties".
- d) A dialog box entitled "Local Area Connection Properties" will appear. In this box, double-click on the "Internet Protocol (TCP/IP)".
- e) A dialog box entitled "Internet Protocol (TCP/IP) Properties" will appear. Select the "Use the following IP address" option and enter the following addresses:

IP address: 172.16.80.2

Subnet mask: 255.255.255.0

No need to enter a value for the **Default Gateway**.

Click OK to close the dialog box. Now your computer is ready to communicate with the unit.

2. The following steps explain how to do this for a computer with **windows 7** operating software:

- a) On your computer, open the "Control Panel"
- b) Click on "Network and Internet"
- c) Click on the "View network status and tasks"
- d) Click on "Change Adapter Settings" on left hand side of the window
- e) Right-click on the "Local Area Connection", and then click on the "Properties".
- f) A dialog box entitled "Local Area Connection Properties" will appear. In this box, double-click on the "Internet Protocol Version 4 (TCP/IPv4)".
- g) A dialog box entitled "Internet Protocol Version 4 (TCP/IPv4) Properties" will appear. Select the "Use the following IP address" option and enter the following addresses:

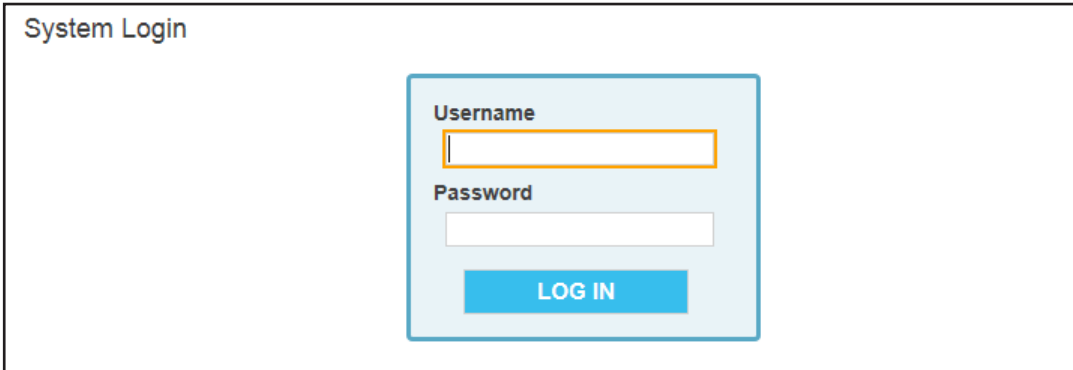
IP address: 172.16.80.2

Subnet mask: 255.255.255.0

No need to enter a value for the **Default Gateway**.

Click OK.

Open a web browser on your computer (Internet Explorer 7 or higher is recommended) and enter the following URL address (<http://172.16.80.1>). Once the DSE 2 Plus web server has been loaded from your browser, you should see the login dialog (see Figure 1). Enter the username and password and click LOG IN. The default username is "admin" (in lower case letters) and the default password is "pass" (in lower case letters).



The image shows a screenshot of a web browser displaying a login page. The page has a white background with a light blue border. At the top left, the text "System Login" is displayed in a dark blue font. In the center, there is a light blue rectangular box containing the login form. The form has two input fields: "Username" and "Password". The "Username" field is currently empty and has a yellow border. The "Password" field is also empty and has a white border. Below the input fields is a blue button with the text "LOG IN" in white capital letters.

Status Tab

The status tab provides the following information (View only):

DRAKE DIGITAL™ DSE 2 Plus Control Panel

Logged in as: [admin](#) [LOG OUT](#)

Status Encoders Output System Firmware Update

System Information and Status

System Information

- 1 • Version: 1.01_20140630
- 2 • Uptime: 0 days, 01:19:22

Reference

[DSE 2 Plus Product Information](#)
[RF Channel Lists](#)

- 1 The hardware version indicates the hardware version of the DSE 2 Plus
- 2 The Uptime of the unit (days, hours, minutes, and seconds), which can be set on the System tab under Unit Description.

Encoders Tab

The Encoders tab allows you to set each encoder's individual parameters. Select an encoder module from the drop-down menu and the appropriate setting selections will be displayed.

The screenshot shows a web interface for configuring an encoder. At the top, there are tabs for 'Status', 'Encoders', 'Channels', 'Output', and 'Firmware Update'. The 'Encoders' tab is active. Below the tabs is the 'Encoder Configuration' section. A dropdown menu labeled 'Select Encoder Module' is set to 'Encoder 1'. The configuration is divided into four sections: Encoder Information, Video Settings, Picture Settings, and Audio Settings. Each section contains several settings, most of which are dropdown menus.

Section	Setting	Value
Encoder Information	Module Type	Encoder
	Firmware Version	1
Video Settings	Resolution	1080i @ 60 Hz
	Video Source	Component
	Video Encoder Format	MPEG-2
	Video Bitrate (Mbps)	15.0
Picture Settings	Brightness	2
	Contrast	3
	Saturation	5
	Hue	4
Audio Settings	Audio Encoder Format	AC3
	Audio Source	Analog
	Audio Bitrate	320 kbps
	Audio Input Limit	10
	Audio Gain	0

At the bottom right of the configuration area, there are two buttons: 'Revert' and 'Apply'.

Channels Tab

The Channels tab provides an interface to configure the virtual channel mappings for this encoder host. If PSIP is enabled, this page will display a screen that looks as shown below; for each encoder output, the MPEG program number can be modified, along with the Major and Minor channel numbers. If one-part virtual channel numbers are desired, the PSIP Mode must be set to CVCT and the Minor number for each channel should be set to 0.

Status Encoders **Channels** Output Firmware Update

MPEG and Virtual Channel Number Configuration

PSIP Mode

PSIP Mode

Select the type of VCT or disable PSIP data completely. One-part program numbers can only be used with a CVCT.

Enable User-Defined Numbers

PSIP Tables will either include the user defined MPEG and channel numbers as defined in the channel setup table below or system defaults. When user-defined numbers are disabled, the MPEG number and minor channel number will be set to the encoder ID. The major channel number will reflect the RF output channel.

Channel Setup

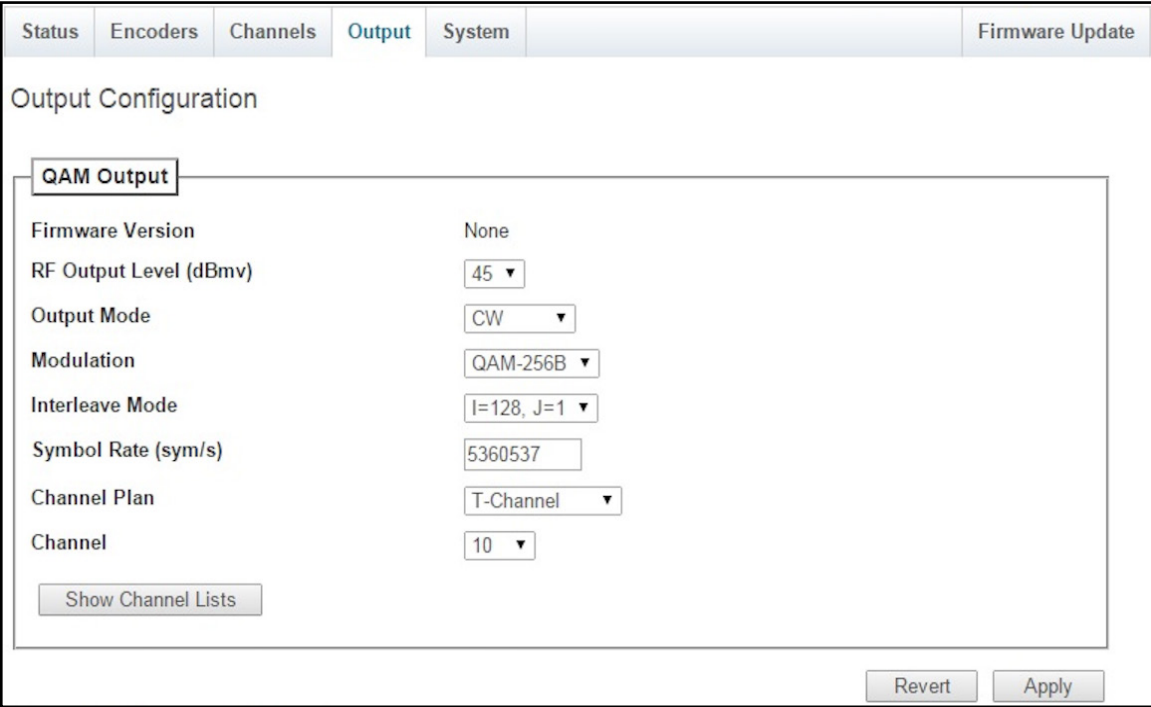
Encoder	MPEG Number	Use One-Part VCN	Major / One-Part Number	Minor Number	Name
1	<input type="text" value="1"/>	<input type="checkbox"/>	<input type="text" value="3"/>	<input type="text" value="1"/>	<input type="text" value="1"/>
2	<input type="text" value="2"/>	<input checked="" type="checkbox"/>	<input type="text" value="4"/>	<input type="text" value="2"/>	<input type="text" value="2"/>

Show Help

Revert Apply

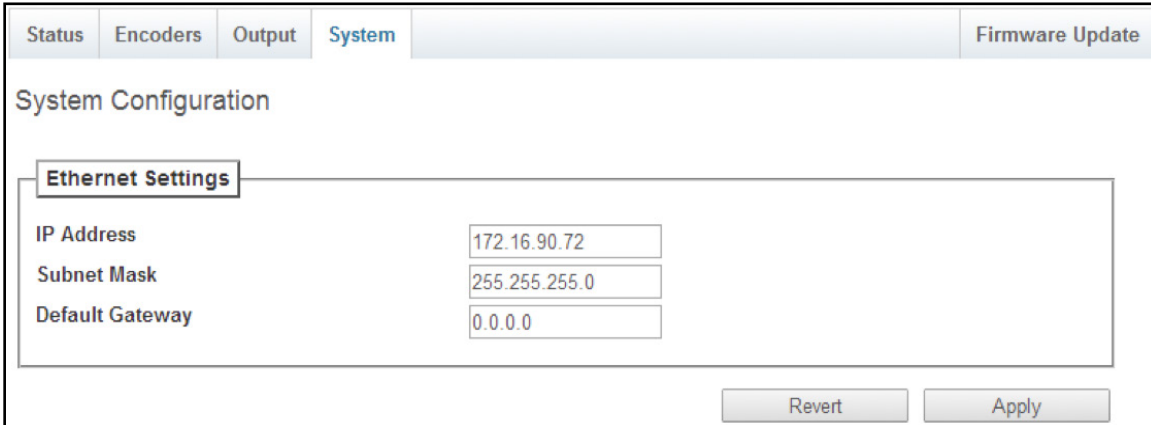
Output Configuration Tab

The Output tab provides an interface to set all modulator output settings for the unit.



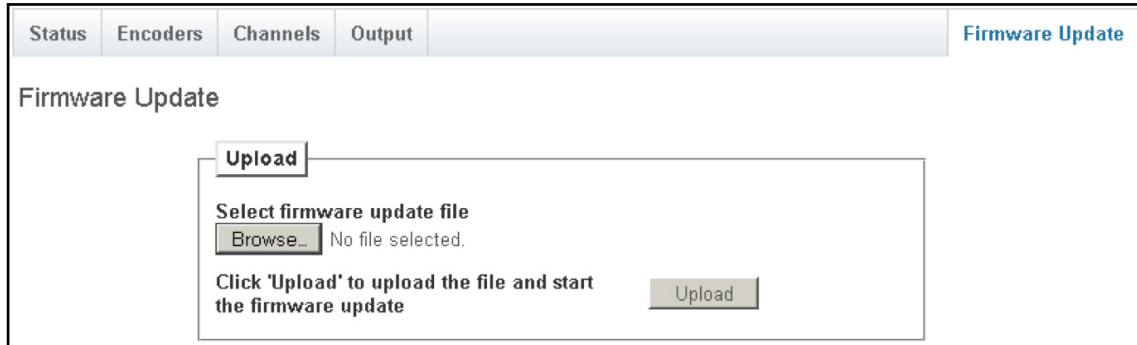
System Configuration Tab

The System Tab allows you to set a unique IP address for remote access and monitoring. Pressing the rear panel IP reset button will enable the default IP 172.16.80.1. The unique IP address previously set will also be retained.



Firmware Update Tab

This tab uploads the newest available firmware for the DSE 2 PLUS and deploys firmware to the unit. While the firmware update tab is actively updating; the logging information and instructions are provided. When the update is completed, the unit will automatically reboot.



CATV Channel Frequencies

CABLE TV CHANNELS	
Channel Number EIA/NCTA Equivalent	Center of Channel 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

CABLE TV CHANNELS	
Channel Number EIA/NCTA Equivalent	Center of Channel Frequency (MHz)
38	309
39	315
40	321
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

CABLE TV CHANNELS	
Channel Number EIA/NCTA Equivalent	Center of Channel Frequency (MHz)
81	567
82	573
83	579
84	585
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

CABLE TV CHANNELS	
Channel Number EIA/NCTA Equivalent	Center of Channel Frequency (MHz)
126	807
127	813
128	819
129	825
130	831
131	837
132	843
133	849
134	855
135	861
136	867
137	873
138	879
139	885
140	891
141	897
142	903
143	909
144	915
145	921
146	927
147	933
148	939
149	945
150	951
151	957
152	963
153	969
154	975
155	981
156	987
157	993
158	999

Broadcast TV & T Channel Frequencies

VHF BROADCAST CHANNELS	
Channel Number	Center of Channel Frequency (MHz)
2	57
3	63
4	69
5	79
6	85
7	177
8	183
9	189
10	195
11	201
12	207
13	213

T CHANNELS	
Channel Number	Center of Channel Frequency (MHz)
7	8.75
8	14.75
9	20.75
10	26.75
11	32.75
12	38.75
13	44.75
14	50.75

UHF BROADCAST CHANNELS	
Channel Number	Center of Channel Frequency (MHz)
14	473
15	479
16	485
17	491
18	497
19	503
20	509
21	515
22	521
23	527
24	533
25	539
26	545
27	551
28	557
29	563
30	569
31	575
32	581
33	587
34	593
35	599
36	605
37	611
38	617
39	623
40	629
41	635
42	641
43	647
44	653
45	659
46	665
47	671
48	677
49	683
50	689
51	695
52	701
53	707
54	713
55	719
56	725
57	731
58	737
59	743
60	749
61	755
62	761
63	767
64	773
65	779
66	785
67	791
68	797
69	803

Service

A Return Material Authorization (RMA) Number is required on ALL PRODUCT RETURNS (regardless of whether the product is being returned for repair or for credit). Product that is received at the factory without an RMA Number will be returned to the Sender, unopened.

RMA Numbers must be used when returning product for credit or repair. Use of RMA Numbers will ensure efficient processing. When needing to return your product to R.L. Drake Holdings, LLC., please follow these simple steps listed below (in the order that they appear).

SERVICE REPAIRS ONLY

1. Contact R.L. Drake Holdings, LLC.'s Service Department in one of three ways:

- A. Phone: 800-523-6049
- B. Email: information@blondertongue.com
- C. Fax: 732-679-4353

2. Request from Drake Service a copy of the Product Return Authorization Form.

3. Complete the Product Return Authorization Form fully.

4. Return the completed Product Return Authorization Form to the Drake Service Department using one of the contact methods listed in Step 1.

5. After completing Steps 1 through 4, an RMA Number will be assigned to you.

6. Securely pack the product and mark the box with your RMA Number. If shipping multiple boxes, all boxes must be mark-ed with the RMA Number. Place the RMA Number near the return address **in large, bold print** (approx. 2" in height).

7. Ship your "SERVICE REPAIR ONLY" return to:

R.L. Drake Holdings, LLC.
Attn: Product Service Returns
One Jake Brown Road
Old Bridge, NJ 08857

CREDIT RETURNS ONLY

1. Contact R.L. Drake Holdings, LLC.'s Service Department in one of three ways:

- A. Phone: 800-523-6049
- B. Email: information@blondertongue.com
- C. Fax: 732-679-4353

2. Request from Drake Service a copy of the Product Return Authorization Form.

3. Complete the Product Return Authorization Form fully.

4. Return the completed Product Return Authorization Form to the Drake Service Department using one of the contact methods listed in Step 1.

5. After completing Steps 1 through 4, an RMA Number will be assigned to you.

6. Securely pack the product in its **original undamaged box** (returning the product without its original packaging in good, new condition may cause the incursion of additional fees). Pack this box within another shipping container or box. Mark the shipping box or container with your RMA Number. Place the RMA Number near the return address **in large, bold print** (approx. 2" in height).

7. Ship your "CREDIT RETURNS ONLY" return to:

R.L. Drake Holdings, LLC.
Attn: Product Credit Returns
One Jake Brown Road
Old Bridge, NJ 08857

***NOTE: All Credit Returns are subject to a 15% Restock Fee**

***NOTE: All shipments are to be PRE-PAID by the sender. NO COD's will be accepted.**

IF YOU NEED TECHNICAL HELP

Call our Customer Service/Technical Support line at 800-523-6049 between 8:00 A.M. and 4:00 P.M. Eastern Standard Time, weekdays. Please have the unit's serial number available. We will also need to know the specifics of any other equipment connected to the unit. When calling, please have the unit up and running, near the phone if possible. Our technician(s) will likely ask certain questions to aid in diagnosis of the problem. Also, have a voltmeter handy, if at all possible.

DRAKE also provides technical assistance by Email: information@blondertongue.com
Fax: 732-679-4353

Many of the products that are sent to us for repair are in perfect working order when we receive them. For these units, there is a standard checkout fee that will be charged. Please perform whatever steps are applicable from the product's Instruction Manual before calling or writing - this could save unnecessary phone charges. Please do not return the product without calling Drake Service and following the steps above first; it is preferred to help troubleshoot the problem over the phone (or by Email) first, saving you both time and money.

Limited Warranty

R.L. DRAKE LLC warrants to the original purchaser this product shall be free from defects in material or workmanship for three (3) years from the date of original purchase.

During the warranty period the R.L. DRAKE LLC or an authorized Drake service facility will provide, free of charge, both parts and labor necessary to correct defects in material and workmanship. At its option, R.L. DRAKE LLC may replace a defective unit.

To obtain such a warranty service, the original purchaser must:

- (1) Retain invoice or original proof of purchase to establish the start of the warranty period.
- (2) Notify the R.L. DRAKE LLC or the nearest authorized service facility, as soon as possible after discovery of a possible defect, of:
 - (a) the model and serial number,
 - (b) the identity of the seller and the approximate date of purchase; and
 - (c) A detailed description of the problem, including details on the electrical connection to associated equipment and the list of such equipment.
- (3) Deliver the product to the R.L. DRAKE LLC or the nearest authorized service facility, or ship the same in its original container or equivalent, fully insured and shipping charges prepaid.

Correct maintenance, repair, and use are important to obtain proper performance from this product. Therefore carefully read the Instruction Manual. This warranty does not apply to any defect that R.L. DRAKE LLC determines is due to:

- (1) Improper maintenance or repair, including the installation of parts or accessories that do not conform to the quality and specifications of the original parts.
- (2) Misuse, abuse, neglect or improper installation.
- (3) Accidental or intentional damage.

All implied warranties, if any, including warranties of merchantability and fitness for a particular purpose, terminate three (3) years from the date of the original purchase.

The foregoing constitutes R.L. DRAKE LLC's entire obligation with respect to this product, and the original purchaser shall have no other remedy and no claim for incidental or consequential damages, losses or expenses. Some states do not allow limitations on how long an implied warranty lasts or do not allow the exclusions or limitation of incidental or consequential damages, so the above limitation and exclusion may not apply to you.

This warranty gives you specific legal rights and you may also have other rights which vary from state to state. This warranty shall be construed under the laws of Ohio.

For Service, contact:

R. L. DRAKE HOLDINGS LLC

Customer Service and Parts:	800-523-6049
Fax:	732-679-4353
Email:	information@blondertongue.com
Web Site:	www.rldrake.com



R.L. DRAKE HOLDINGS, LLC

Sales and Support: **800-523-6049** • Fax: **732-679-4353**

www.rldrake.com