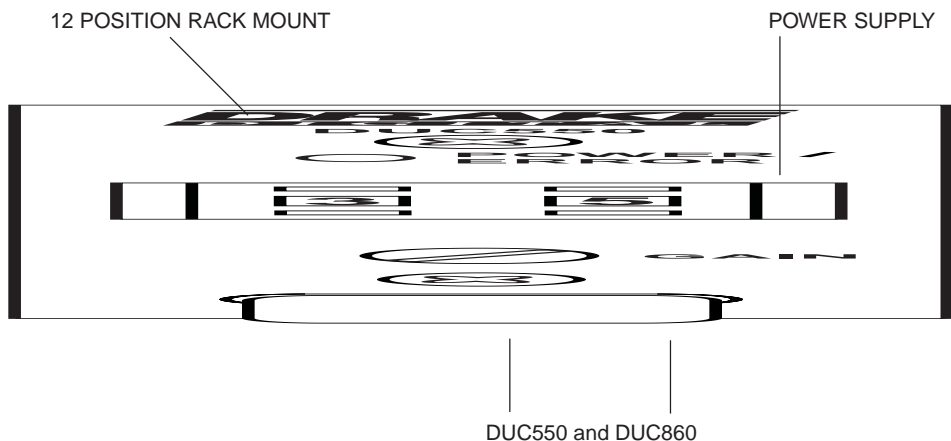


1 **DRAKE**™ DUC860 and DUC550 DIGITAL UPCONVERTER



The R.L. Drake DUC550 and DUC860 are low noise upconverters used to translate the 44 MHz digital IF signal from the TMQAM modulator or DDC806 downconverter to the desired CATV output channel. Both modules feature low phase noise and can be used for QAM modulation up to 256 QAM. The DUC550 is used for output frequencies between 54 MHz and 550 MHz. The DUC860 is used for output frequencies between 550 MHz and 860 MHz. This one-unit wide module can be rack mounted using the DRMM12 rack mount. The PS8 power supply module is required with the DRMM12.

2 FRONT PANEL CONTROLS and INDICATORS

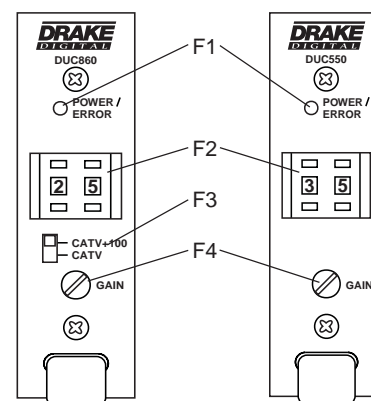


Figure 1

F1 - POWER/ERROR Indicator

Lights when the unit is connected to the required source of DC power via the rear panel DC INPUT connector. A flashing condition indicates an invalid channel setting or other conditions that would cause the unit to operate on an invalid channel. The RF output is switched off for flashing (ERROR) conditions.

F2 - Channel Number Switch

Sets the desired operating channel for standard CATV channels. See also Item F3 which sets the type of channel (CATV or Broadcast TV) and sets the leading "1" for CATV channels 100 through 125.

Channels 02-78, 95-99 (DUC550), or 78-134 (DUC860).

NOTE: Broadcast TV channels 02-69 can be selected after moving an internal jumper (jumper not included).

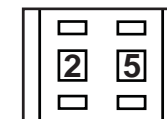
Broadcast channels are:
2-27 (DUC550),
27-69 (DUC860).

F3 - Channel Mode Switch (DUC860 only)

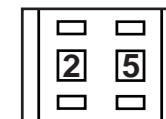
Sets the type of channel, CATV or CATV +100. The CATV +100 mode sets a leading "1" for CATV channels 100 through 134.

For example:
Setting for CATV
channel "125"-

For example:
Setting for CATV
channel "25"-



- CATV+100
 - CATV



- CATV+100
 - CATV

F4 - GAIN Control

This control sets the output level. The full clockwise setting is a minimum output of +45 dBmV (clockwise mode).

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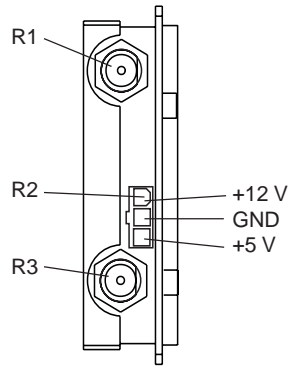


Figure 2

R1 - IF INPUT Connector

This is the 44 MHz IF input. The required level is +30 dBmV (from TMQAM or DDC860).

R2 - DC INPUT Connector

This 3-pin connector (Male) accepts the appropriate mating DC power cable. Observe proper orientation and wiring.

R3 - RF OUTPUT Connector

This is the upconverter output.

CONNECTIONS AND CONTROLS

All connections to and from each upconverter are made through the rear panel.

DESCRIPTION

Figure 4 shows a typical installation utilizing 4 DUC550 or DUC860 upconverters used with 4 TMQAM modulators. A PS8 power supply module is used to power all units.

RACK MOUNTING

Adequate ventilation is very important in multichannel installations. Units should be spaced apart by at least one panel height wherever possible, and some air movement is mandatory in enclosed rack cabinets. Excessive heat will shorten component life and modulator performance will be degraded without proper cooling.

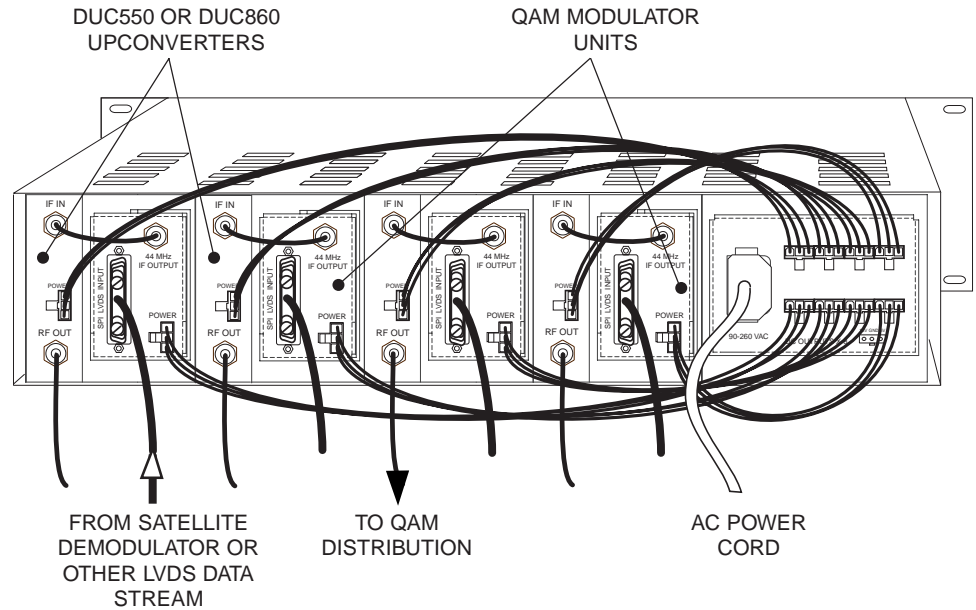


Figure 4

5 CHANNEL FREQUENCIES

DUC550

CABLE TV CHANNELS		
Channel Number	Center of Channel	
BAND	EIA/NCTA Numeric Equivalent	Frequency in MHz
LOW	2	57
	3	63
	4	69
	5	79
	6	85
	MID	95
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
HIGH	7	177
	8	183
	9	189
	10	195
	11	201
	12	207
SUPER	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	

CABLE TV CHANNELS		
Channel Number	Center of Channel	
BAND	EIA/NCTA Numeric Equivalent	Frequency in MHz
HYPER	37	303
	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	

DUC860

CABLE TV CHANNELS		
Channel Number	Center of Channel	
BAND	EIA/NCTA Numeric Equivalent	Frequency in MHz
HYPER	78	549
	79	555
	80	561
	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	
126	807	
127	813	
128	819	
129	825	
130	831	
131	837	
132	843	
133	849	
134	855	

6 CHANNEL FREQUENCIES, continued

Broadcast TV channels 02-69 can be selected after moving an internal jumper (jumper not included).

Frequencies shown are the center of each 6 MHz wide channel.

DUC550 OFF-AIR

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

OFF-AIR

OFF-AIR		
	UHF BROADCAST CHANNELS	
	Channel Number	Center of Channel Frequency (MHz)
DUC550	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
DUC860	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	

IF INPUT

Frequency: 44 MHz.
 Input Level: +30 dBmV, ± 2 dB.
 Input Impedance: 75 Ohms, return loss >12 dB.

OUTPUT

Frequency Range-

DUC860: 550 MHz to 860 MHz;
 CATV channels 78 to 134,
 Broadcast TV channels 27 to 69
 (internal jumper set to BC position).

DUC550: 50 MHz to 550 MHz;
 CATV channels 2 to 78, 95 to 99,
 Broadcast TV channels 2 to 27
 (internal jumper set to BC position).

Output level: +45 dBmV minimum, 15 dB adjustment range.

Broadband Noise: -73 dBc (6 MHz bandwidth) @ +45 dBmV output level.

In Channel C/N: -63 dB (6 MHz bandwidth) @ +45 dBmV output level.

Spurious Outputs (5 MHz to 900 MHz): -60 dBc @ +45 dBmV output level.

Output Impedance: 75 Ohms, return loss >10 dB typical.

Amplitude Flatness Over

6 MHz Channel: ± 0.4 dB maximum.

SSB Phase Noise: -95 dBc @ 10 kHz offset, -65 dBc @ 1 kHz offset.

Frequency Stability: ± 5 ppm.

MER: 30 dB minimum (unequalized),

38 dB minimum (with blind equalizer).

GENERAL

DC Power Input: +12 V $\pm 5\%$ at 230 mA typical, 250 mA maximum.

+5 V $\pm 5\%$ at 280 mA typical, 325mA maximum.

Operating Temperature: 0°C to +50°C, ambient.

Size: 1" W x 3.5" H x 9.25" D (2.5 cm W x 8.9 cm H x 23.5 cm D).

Weight: 1 lb.1 oz. (0.45 Kg).

Specifications subject to change without notice or obligation.

JUMPER SETTINGS

To configure the DUC860 and DUC550 for broadcast channel operation, first, **disconnect the unit from its power source.**

Next, remove the screws on the top and sides of the cover and then remove the cover. Make the jumper settings as shown in Figure 5.

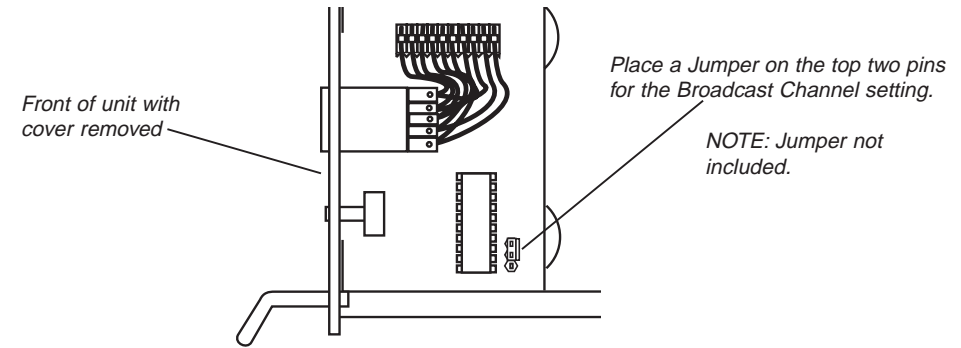


Figure 5

THREE YEAR LIMITED WARRANTY

R.L. DRAKE COMPANY 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 COMPANY 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 COMPANY may replace a defective unit.

To obtain such 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 COMPANY 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 COMPANY 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 necessary 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 COMPANY 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 COMPANY'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.

DRAKE®

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