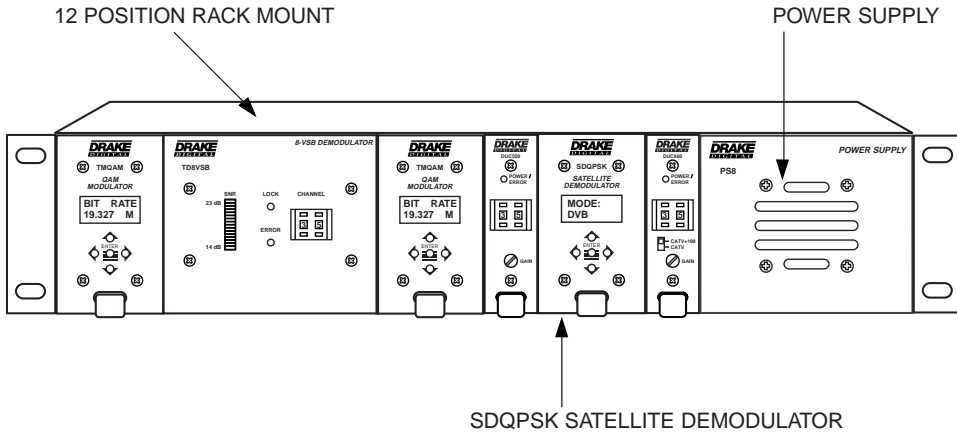


1 **DRAKE** SDQPSK SATELLITE DEMODULATOR



The R.L. Drake model SDQPSK Satellite Demodulator is a professional quality modular digital headend component designed to provide optimum performance with minimized rack space requirements. This demodulator receives a PSK modulated signal (usually it will be QPSK) in the L Band range of 950-2150 MHz and demodulates the signal providing an MPEG-2 transport stream digital output .

This output stream will be stripped of the Forward Error Correction (FEC) added to the stream before it was uplinked, but will still be "scrambled" with whatever scrambling algorithm that may have been utilized on the original MPEG-2 stream. If the original MPEG-2 stream was not scrambled or is not to be descrambled at the headend, the output is ready for further processing. The most common operations would be decoding (which includes decompression) into base band analog video & audio signals or remodulation for cable delivery using a QAM modulator.

The SDQPSK interfaces via an SPI, 25 conductor cable directly with the Drake TMQAM modulator or the Drake SDTV or HDTV decoder.

2 FRONT PANEL CONTROLS AND INDICATORS

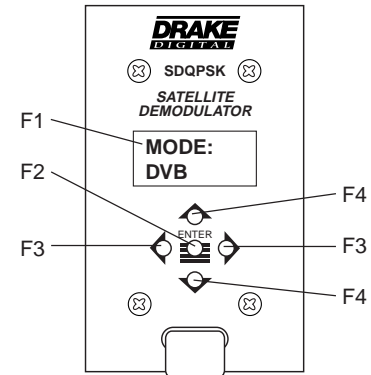


Figure 1

F1 - LCD Display
Displays the demodulator parameter and its setting.

F2 - ENTER
Use the ENTER button to enter the adjust mode or to save and load a new parameter value. Hold for 2 seconds to enter the adjust mode. After adjustment, press this button once to load and save the value.

F3 - Left and Right Button
Use the Left and Right buttons to select the parameter you desire to view or adjust.

F4 - Up and Down Buttons
Use the Up and Down buttons to adjust a parameter value when in the adjust mode. When not in the adjust mode, the UP button displays the version number. The Down button displays the incoming bit rate if the "AUTO" clock mode has been selected.

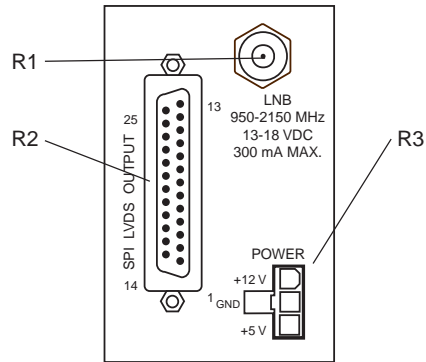


Figure 2

R1 - LNB Connector

This is the L band input from the LNB. The level must be between -65 and -25 dBm. If selected, a 13 - 18 VDC and/or 22 kHz tone will also be present for powering and selecting polarity at the LNB.

R2 - 25 Pin SPI LVDS OUTPUT Connector

This is the MPEG2 transport stream output - DVB Synchronous Parallel Interface. The levels comply with low voltage differential signalling specifications.

R3 - DC Power Connector

This is the power input connector. Connect to a Drake PS8 or equivalent power supply.

CONNECTIONS AND CONTROLS

All connections to and from each modulator are made through the rear panel. Refer to Figure 4 for correct cable and wiring connections.

RACK MOUNTING

Adequate ventilation is very important in multichannel installations. The DRMM12 frames should be spaced apart vertically by at least

1 3/4" wherever possible. Air movement is mandatory in enclosed rack cabinets. Excessive heat will shorten component life and modulator performance will be degraded without proper cooling.

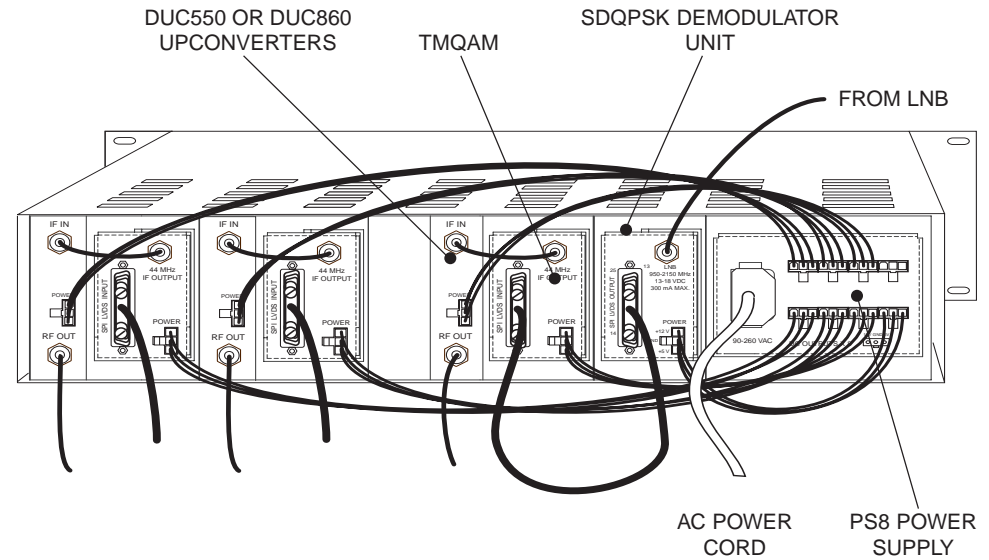
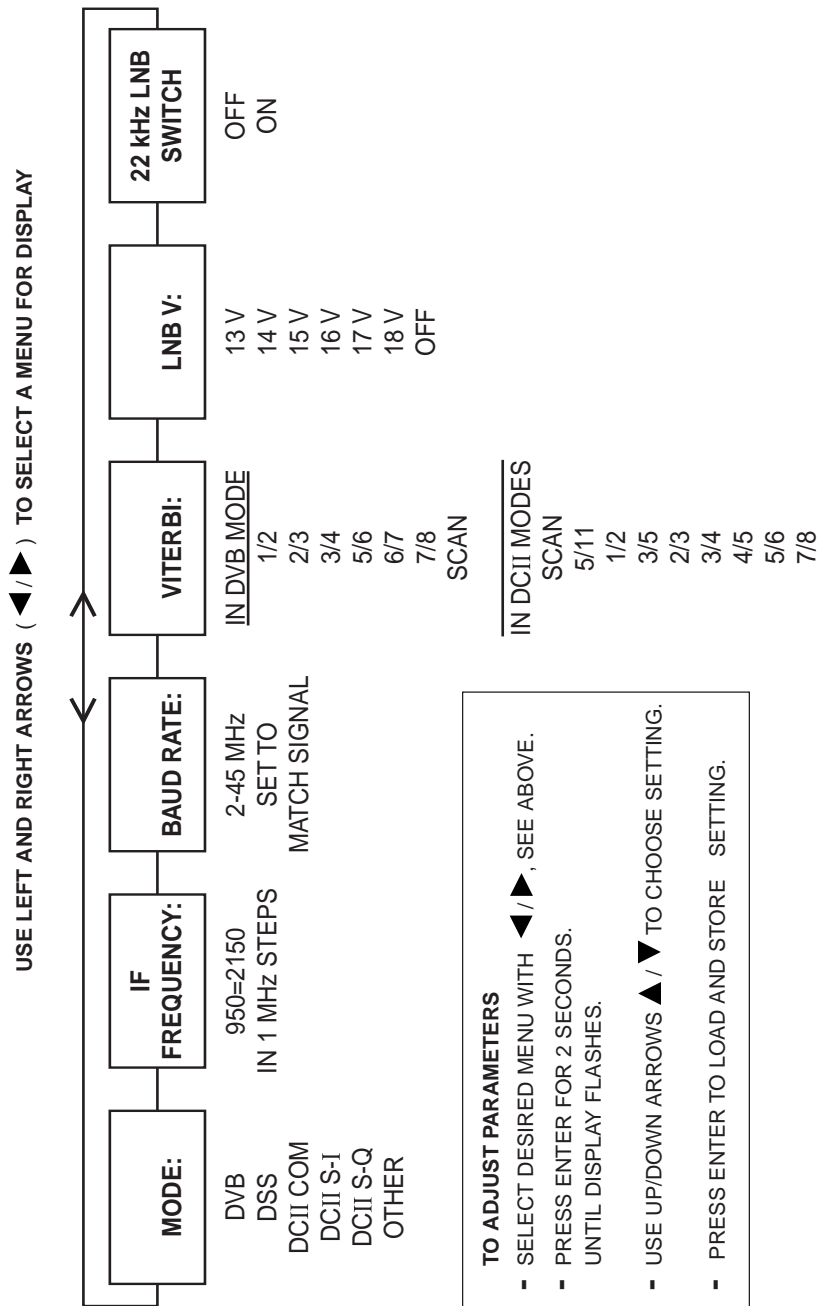


Figure 4

The following chart shows all choices that are available for each parameter.



NOTES:
 COM = COMBINED
 S - I = SPLIT, I ONLY
 S - Q = SPLIT, Q ONLY

TO VIEW OPERATING PARAMETERS

Refer to the chart on page 5. Use the left or right arrow buttons to navigate among the available displays. Use these buttons to view current settings.

TO ADJUST OPERATING PARAMETERS

Use the left or right arrow buttons to select the parameter to be adjusted. Press the ENTER button for 2 seconds until the display flashes. Use the Up or Down arrow buttons to scroll through the available settings. Stop adjusting when the desired setting is displayed. To load and save the new setting, press the ENTER button again. NOTE: When adjusting a parameter, the operation of the demodulator does not change to a new setting until the load and save (press ENTER) operation is completed.

The Left and Right arrows can be used to go to another screen while still in the adjust mode (flashing screen) - before storing. Any or all parameters can be changed this way. Press ENTER to load and save all changes at once.

To make more adjustments after loading and saving parameters, press ENTER for 2 seconds to enter the adjust mode again.

SETTING PARAMETERS

The following paragraphs describe how to set parameters in each screen. To access each screen and set required parameters, refer to the " TO ADJUST OPERATING PARAMETERS" procedure above.

MODE: Select the choice that matches the signal to be demodulated. The program supplier can recommend the appropriate choice to use.
 NOTE: DCII COM is Digicipher II with I and Q combined. DCIIS- is Digicipher split mode, I only. DCII S - Q is Digicipher split mode, Q only.

- IF FREQ:** Set this to the center frequency of the signal to be received.
- BD RATE:** Set this to match the incoming signals symbol rate.
- VITERBI:** Set to match the Viterbi mode used by the service to be demodulated. In Digicipher modes, if SCAN is selected, the SDQPSK will search and automatically set the parameter.
- LNB V:** If the SDQPSK is not going to be the power source for the LNB, set this to OFF. If a single polarity LNB is to be powered, usually 18 V is the required setting. If the LNB has polarity settings, the proper setting for the desired polarity can be set.
- 22 kHz:** If the LNB uses a 22 kHz tone switched polarity switch, set the tone ON or OFF to select the desired polarity. If not used, set this to OFF.

RFTUNER

Receiving Frequency: 950 - 2150 MHz.
 Tuning Increment: 1 MHz.
 Acquisition Range: ± 3.5 MHz minimum.
 Input Level: -65 to -25 dBm.
 Input Impedance: 75 Ohms, return loss of 10 dB typical.
 Input Connector: Type F female.
 I/Q Level Imbalance: ± 1 dB.
 I/Q Phase Error: ± 3 Degrees maximum.

Demodulation

Modes: BPSK, QPSK, OQPSK.
 Forward Error Correction: ITU-T J.83 Annex A (DVB) or ITU-T J.83 Annex B (Digicipher II).
 DVB Viterbi Modes: 1/2, 2/3, 3/4, 5/6, 6/7, 7/8, Scan.
 DCII Viterbi Modes: Auto Scan, 5/11, 1/2, 3/5, 2/3, 3/4, 4/5, 5/6, 7/8.
 Input Data Rate: 2 to 45 Msps.

Output

Transport Stream: Parallel Output according to DVB SPI, (Synchronous Parallel Interface).
 Connector: DB25 Female.
 Levels: LVDS, (Low Voltage Differential Signaling).

LNB

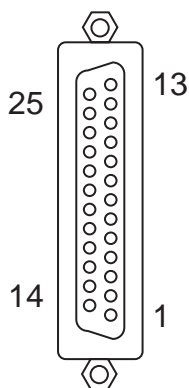
Supply Voltage: Programmable, 13 to 18 VDC in 1 V increments or Off.
 Supply Current: 300 mA Max.
 22 KHz Tone: Programmable ON or OFF.

General

Size: 2.06" W x 3.5" H x 9.25" D, (5.23 cm W x 8.9 cm H x 23.5 cm D).
 Weight: 1 lb.10 oz. (0.49 Kg).

Specifications subject to change without notice or obligation.

The SDQPSK is designed to mount into the DRMM12 rack mounting enclosure.
 The SDQPSK is two units wide. Power for the SDQPSK should be supplied by the model PS8 power supply module which also mounts into the DRMM12.



Pin Out DVB SPI Interface

- | | |
|----------------------|----------------------|
| 1 Data Clk + | 14 Data Clk - |
| 2 GND | 15 GND |
| 3 Data 7 + | 16 Data 7 - |
| 4 Data 6 + | 17 Data 6 - |
| 5 Data 5 + | 18 Data 5 - |
| 6 Data 4 + | 19 Data 4 - |
| 7 Data 3 + | 20 Data 3 - |
| 8 Data 2 + | 21 Data 2 - |
| 9 Data 1 + | 22 Data 1 - |
| 10 Data 0 + | 23 Data 0 - |
| 11 Data Valid + | 24 Data Valid - |
| 12 Start of Packet + | 25 Start of Packet - |
| 13 GND | |

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.



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