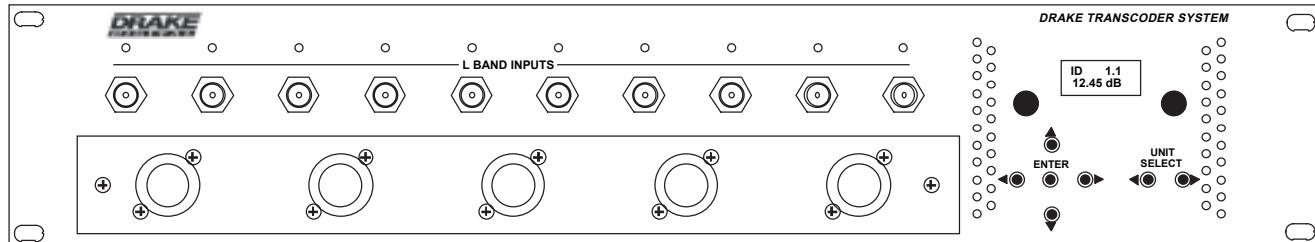


# SCT3860 General Description / Installation and Mounting



## GENERAL DESCRIPTION

The R.L. Drake model SCT3860 is a professional quality, modular, digital headend component providing QPSK or 8PSK input to QAM transmodulation and RF upconversion functions in a single module. Up to ten SCT3860 modules and a power supply module can be accommodated in the RMT150 rack mounting tray, occupying only a 2 unit (3.5") high rack space. The SCT3860 can transcode DigiCipher II or DVB digital satellite signals, included those with advanced turbo satellite FEC modes, outputting QAM modulation.

The SCT3860 accepts L band RF inputs between 950 and 2150 MHz from the LNB at the satellite dish. The transcoder demodulates the selected satellite QPSK or 8PSK signal. The forward error correction (FEC) imbedded in the data stream is used to help retrieve an error free digital transport stream containing the desired digital programming multiplex.

## INSTALLATION AND MOUNTING

Install the SCT3860 transcoders in the RMT150 rack mounting frame. Slide each module into the tray so that the "F" connector extends through the front panel hole, the LED is properly aligned behind its front panel hole, and the hook shaped projection on the bottom of the module engages the rear of the mounting tray. Secure the module with the supplied standard 1/2 inch "F" connector mounting nut and nylon washer.

Similarly, mount the PS151 power supply in the RMT150 tray, making sure that the LCD display and control buttons line up with their corresponding holes in the front panel, and that the hook shaped projections on the rear of the unit engage the rear of the mounting tray. Secure the unit in place, with the supplied Philips head black screws, from the front panel. Connect each SCT3860 to the PS151 with the cable included with the SCT3860. Each SCT3860 can connect to any one of the ten sockets on the power supply. However, to minimize confusion, it is suggested that the left most unit (as viewed from the front panel) be connected to power supply socket number 1, the second from the left to number 2, etc.

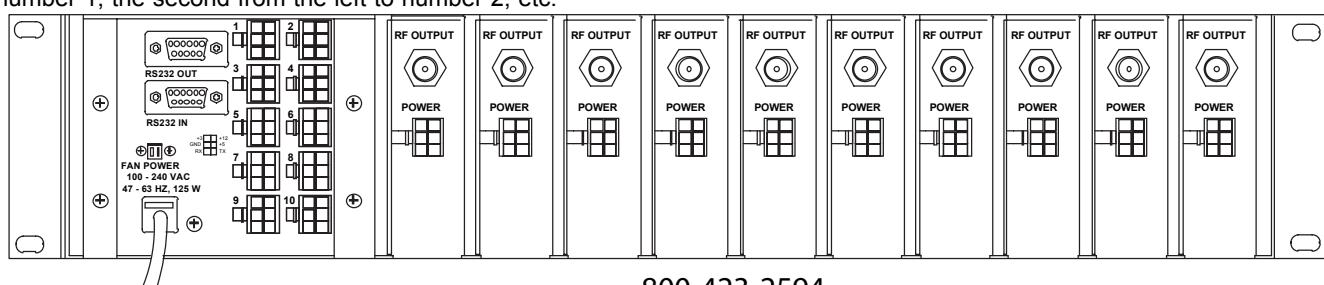
The transcoder then applies cable environment FEC to this stream and remodulates using QAM modulation that occupies a nominal 6 MHz wide cable channel slot. QAM modes up through 1024QAM are supported.

The RF upconverter then upconverts the IF QAM signal to the selected output channel - any standard EIA, IRC or HRC CATV channel or a broadcast off-air channel frequency in the range of 54 to 860 MHz.

Bandpass flatness and phase noise are very closely controlled in the SCT3860 to insure a high MER and S/N ratio of the output signal. This insures that the transcoder will not introduce a source of errors into the distribution process. Because the MPEG2 transport stream information is not modified by the transcoder, all encryption, authorization, and program guide information is passed on to the CATV set top box, unchanged.

Connect the LNB signal to each SCT3860 module at the front panel connector. Connect each SCT3860 RF output "F" connector on the rear of the unit to the output combiner. The Drake model LBS2250 is a combination LNB L band multiswitch/amplified splitter in addition to a CATV output combiner. It provides these functions in only 1 RU of rack space. Also, plug the cable from the front panel fan module into the FAN POWER receptacle on the rear of the power supply. Plug the line cord from the PS151 into the AC power source. SCT3860s can be mixed with SCT1860s, SCT2860s, or SCT4860s and one PS151.

When installing the RMT150 tray of transcoders, it is not necessary to leave a vertical airspace between the transcoder tray and other equipment unless that other equipment specifies that a space should be left open. The air flow through the transcoders and power supply has been designed to allow immediate adjacent mounting of multiple RMT150 trays with SCT3860 transcoders and PS151 power supplies installed. Of course, air spaces may be left in between RMT150s if desired.



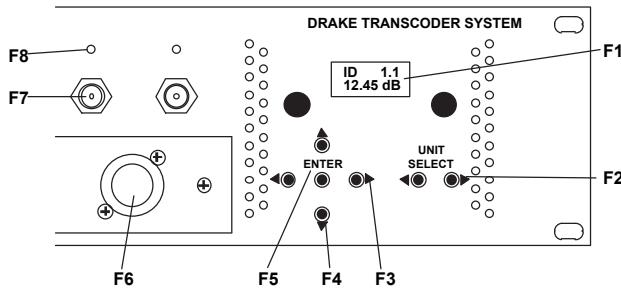
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# SCT3860 Controls and Connections



## FRONT PANEL CONTROLS AND INDICATORS

**F1 - LCD Display** - This displays the PS151 or selected transcoder parameter and its setting.

### F2 - UNIT SELECT ◀ (Left) and ▶ (Right) Buttons

These select either the PS151 power supply or one of ten SCT3860 transcoders. Information from the selected unit will be displayed on the LCD display for parameter adjustment. When either button is pressed once, the LED of the selected transcoder will blink for about 3 seconds, but the unit selected will not change. The second press within 3 seconds will increment (▶) or decrement (◀) to the next higher or lower numbered unit. The PS151 power supply menu falls between transcoder numbers 10 and 1.

**F3 - ◀ (Left) and ▶ (Right) Buttons** - Use the left or right buttons to navigate from screen to screen to view a parameter setting. This will not alter any settings. If in the adjust mode, stop at the parameter you wish to adjust and use the ▲ (up) and ▼ (down) buttons to adjust.

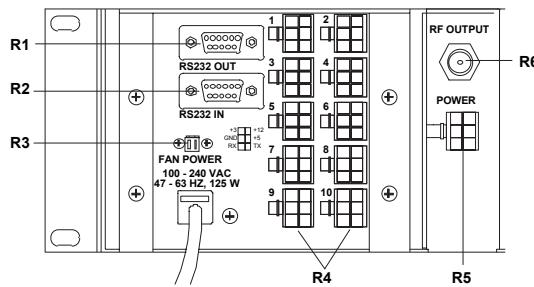
**F4 - ▲ (Up) and ▼ (Down) Buttons** - Use the up and down arrows to adjust a parameter value when in the adjust mode. When not in the adjust mode, pressing the ▲ (up) button will display the software version readout, and pressing the ▼ (down) button will display the QAM modulation output baud rate readout.

**F5 - ENTER** - Use the ENTER button to enter the adjust mode or to save and load a new setting or settings. Hold for 2 seconds until the display flashes to enter the adjust mode. After adjustment using the up or down arrow buttons, press again to save and load the new settings. You may save one parameter at a time after it is adjusted or wait until all adjustments are made and press to save and load all at once.

**F6 - FAN** - One of five front panel cooling fans. To ensure proper cooling, do not block these openings.

**F7 - L BAND INPUTS** - These are the L band inputs from the LNB. The level must be between -70 and -25 dBm. The L band frequency range will be in the 950 to 2150 MHz range.

**F8 - LED** - The LED on each SCT3860 will blink on and off for approximately 3 seconds when that unit is selected. When in the adjust mode, it will blink continuously. When in the normal mode, it will be lit continuously whenever power is applied.



## REAR PANEL CONNECTIONS

**R1 - RS232 OUT** - This RS232 serial connector can connect to the RS232 IN connector on another rack containing a PS150, PS151, or PS100 power supply (included transcoders could be SCT860, SCT1860, SCT2860, SCT3860 or SCT4860 transcoders), thus allowing computer control of multiple racks of these units with the same PC connection.

**R2 - RS232 IN** - Connecting this RS232 serial connector to the serial port of a personal computer equipped with Drake RS232 remote control software, allows remote monitoring and programming of each transcoder. Alternatively, can be connected to the Drake SCTeci. No connection is required for front panel control.

**R3 - Fan Power** - Connect the two conductor cable from the front panel fans to this connector.

**R4 - Power Out** - These connectors are for connecting the power cables from each individual SCT3860 to the PS151 power supply. The other end of each cable can be plugged into any one of the ten transcoders. However, to minimize confusion, it is strongly suggested that the left most unit (as viewed from the front panel) be connected to power supply socket number 1, the second from the left to number 2, etc. Do not attempt to use any power supply other than this Drake supplied model.

**R5 - Power In** - This connector supplies power and program control to the SCT3860. Connect a cable from this connector to the appropriate connector on the PS151 power supply (see R4 above).

**R6 - RF Output** - This is the QAM output channel RF output. The frequency range is between 54 and 864 MHz depending upon the channel selected. The output level is +25 to +40 dBmV, nominal, adjustable in 1 dB steps.

**NOTE:** Although the above discussions refer to the SCT3860 transcoder modules, other Drake transcoders may be mixed with SCT3860s in the same RMT150 rack mounting tray. These include the SCT1860, SCT2860, and SCT4860. The PS151 power supply/control module will recognize each type of transcoder.

Also, SCT860 transcoders, although controlled by a different power supply model, the PS100, can have the RS232 control 'daisy chained' with the PS150 and PS151 controlled transcoders.

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# SCT3860 Specifications

## SPECIFICATIONS

### SATELLITE INPUT

Frequency Range: 950 MHz to 2150 MHz.  
Tuning Increment: 500 kHz.  
Acquisition Range: ±5.0 MHz minimum.  
Input Level: -25 dBm to -70 dBm.  
Input Impedance: 75 Ohms, return loss of 10 dB minimum.  
I/Q Phase Imbalance: <1 Degree.  
I/Q Amplitude Imbalance: <1dB.  
Mode: QPSK, 8PSK.  
FEC: DCII, DVB, advanced Turbo modes  
VITERBI Autoscan: 1/2, 2/3, 3/4, 5/6, 6/7, 7/8 - DVB  
5/11, 1/2, 3/5, 2/3, 3/4, 4/5, 5/6, 7/8 - DCII  
Turbo QPSK modes: 1/2, 3/4, 2/3, 5/6, 7/8  
Turbo 8PSK modes: 2/3, 5/6, 8/9, 3/4, 4/5  
Input Data Rate: 2 Mbaud to 30 Mbaud.

### QAM OUTPUT

Output Impedance: 75 Ohms, return loss of 10 dB minimum.  
Output Level: +25 to +40 dBmV, displayed.  
Display Error: ±2 dB maximum.  
Level Adjustment Increment: 1 dB, nominal.  
Frequency Range: 54 MHz to 864 MHz.  
Frequency Plan: Standard, IRC, or HRC CATV channels  
or off-air broadcast channels.  
Broadband Spurious: -60 dB, 5 MHz to 900 MHz.  
Broadband Noise: -75 dBc, 6 MHz bandwidth.  
Phase Noise: -103 dBc/Hz @ 10 kHz offset.  
Frequency Stability: ±5 kHz.  
QAM I/Q Phase Error: <1 degree.  
Channel Amplitude Error: <1 dB.  
Carrier Suppression: 45 dB.  
MER: >40 dB, with blind equalizer.  
Mode: 16, 32, 64, 128, 256, 512, 1024 QAM.  
Symbol Rate: 1 Mbaud to 7 Mbaud.  
FEC: ITU-T J.83 Annex A or Annex B.

### RS232 CONTROL

Data Link: 4800 baud interface to PS151 via power  
supply cable.  
RS232 Input: DB-9 connector on PS151 for connection  
to modem or PC.  
RS232 Output: DB-9 connector on PS151 for connection  
to additional transcoders.

### GENERAL

Operating Temperature Range: 0° C to +50° C, ambient.  
Size: 1.1" W x 3.4" H x 13.25" D.  
Weight: 1 lb. 6 oz.  
Power Requirement: All voltages are provided by the Drake  
model PS151 power supply. PS151  
power requirement: 90 to 260 VAC / 150  
W, maximum w. 10 transcoders powered.

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