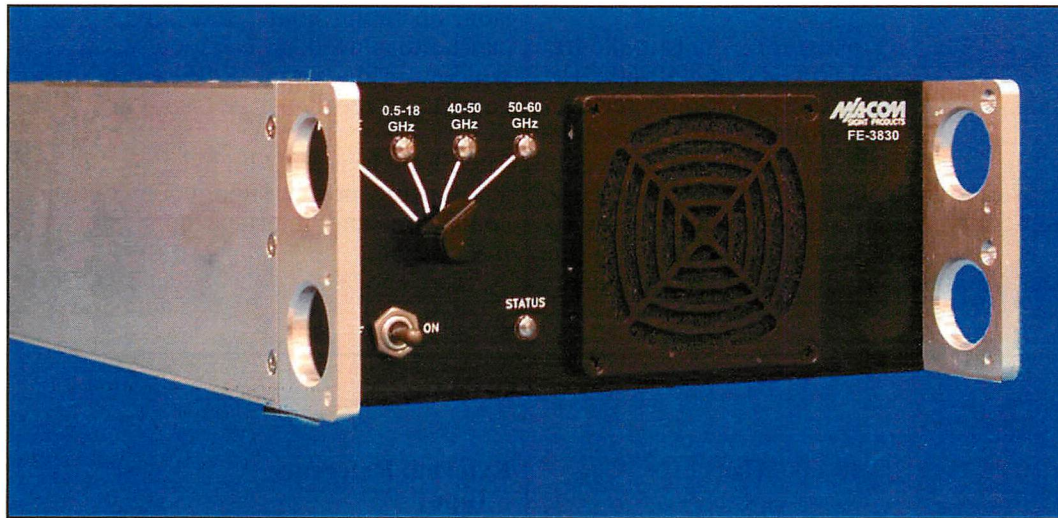




FE-3830 40-60 GHz FREQUENCY EXTENDER

DEVELOPMENTAL



FE-3830 FRONT PANEL

FEATURES

- **Companion Unit to SMR-3822 and SMR-5550i Receivers**
- **Frequency Range: 40 to 60 GHz**
- **Control Modes**
 - Remote from Companion Receiver
 - FE-3830 Front Panel
 - Remote via Ethernet or RS-232/RS-422
- **Low Noise Figure**
- **Low Phase Noise**
- **2U, Half-rack Chassis**
- **Will Work with Other Manufacturers Receivers**
- **Optional Preselection**

DESCRIPTION

The FE-3830 Frequency Extender is designed for use with the SMR-5550 and SMR-3822 series receivers to provide frequency coverage from 40 GHz to 60 GHz in addition to the coverage provided by the receiver.

Many existing systems can use the FE-3830 with no added switches and minor cable changes. A dedicated RF input to the FE-3830 covers 0.5 to 18 GHz. When the extended range is not selected, the 0.5 to 18 GHz signal is routed through the unit to the companion microwave tuner or receiver. This RF pass-through feature allows the FE-3830 to operate transparently with other manufacturers' equipment. Separate RF inputs accept 40-50 and 50-60 GHz, which are converted to the 2 to 18 GHz range for the companion tuner.

The FE-3830 has flexible and powerful control features. The primary control source is Ethernet 10/100base-TX using TCP/IP. ASCII commands and interrogations are handled by the internal microcontroller. An auxiliary serial port on the FE-3830 is designed for routing messages from the Ethernet remote controller to a companion receiver. This reduces the number of nodes required, and can provide a serial-to-Ethernet control upgrade. For example, if a M/A-COM SMR-5550 receiver is connected to the FE-3830 auxiliary serial port, a controller at the FE's Ethernet port can operate the receiver. The entire command set for any M/A-COM unit can be routed transparently through the FE-3830.

A different control method is recommended when the FE is used with an SMR-3822 scanning receiver. In this case, the SMR-3822 with Ethernet performs the routing function to the auxiliary serial port of the FE-3830. The SMR-3822 firmware automatically recognizes the presence of the FE in this configuration, and transparently operates through the millimeter wave spectrum including F1-F2 sweep mode.

For systems with limited resources, manual controls, or systems using other manufacturers' tuners, the FE frequency can be set using the built in local front panel. A second serial port is also provided for backup, monitoring or maintenance purposes.

Internally, the FE-3830 has RF paths for signals in the frequency range of 0.5-18 GHz, 40-50 GHz, and 50-60 GHz. The tuning frequency entered at the companion receiver front panel or from a remote controller determines which signal path is selected by internal switching. An SMA connector is provided for signals in the range of 0.5-18 GHz, an OS-50 2.4 mm connector for signals in the 40-50 GHz range, and a 1.9 mm V-connector for signals in the 50-60 GHz range. All signals in the 40-60 GHz range are

downconverted to an IF of 2-18 GHz.

The translated 2-18 GHz IF output from the FE-3830 is automatically gain linearized using stored data in the firmware. The linearization data can be uploaded to the associated receiver when in the frequency extender mode or to a remote PC via the control interface.

An internal crystal reference allows the FE-3830 to be used independently of other equipment. The unit automatically senses an external 10 MHz reference signal and will lock to it. Built in test (BIT) provides front panel summary indication of a fault. Power supply voltages, phase lock status, internal temperature, reference status (internal or external), RS-232 configuration, unit serial number, firmware version, operating hours, and power on self-test error codes can be displayed on a remote controller or as a separate window in the Graphical User Interface software for the companion receiver.

The FE-3830 is a 2U high, half-rack device powered by an autosensing power supply. Power, RF input and output connectors and interface connectors are located on the front panel.

SPECIFICATIONS

RF Input	40-60 GHz	External Reference Input	
RF Input Connectors		Frequency	10 MHz
0.5-18 GHz	SMA	Level	0 dBm \pm 3 dB
40-50 GHz	OS-50 2.4 mm	Waveform	Sine
50-60GHz	1.9 mm V connector	IF Output	2-18 GHz
Input VSWR	2.0:1, maximum	Output Impedance	50 ohms
Input Impedance	50 ohms	RF to IF Gain	15 dB, nominal
LO Radiation at RF Input	-90 dBm	Gain Linearity	1.5 dB
LO Phase Noise	<1° rms, integrated phase noise	IF Output Connector	SMA
LO Spurious	-40 dBc, minimum	RS-232/422	9-pin subminiature-D
Noise Figure	12 dB, typical; 15 dB, maximum	Ethernet 10/100Base-TX	RJ45
1 dB Compression Point	-10 dBm	Band Switching Speed	<1 ms
Image Rejection	70 dB, typical	Built-In-Test (BIT)	Power supply voltages, temperature, phase lock status
Third Order Input Intercept Point	>-10 dBm, minimum	EMI Shielding	Per MIL-STD-461B, CE03 RE02
Internal Reference		Temperature Range Operating	-20° to 60° C
Short Term Drift	0.25 ppm over temp.	AC Power Input	95 - 130 Vac, 47 - 400 Hz
Long Term Drift Accuracy	0.5 ppm/year		190 - 269 Vac, 47 - 400 Hz autosensing, 50 W

FE-3830

DEVELOPMENTAL

DC Power Output for External Amplifier

12 Vdc @ 750 ma, BNC connector

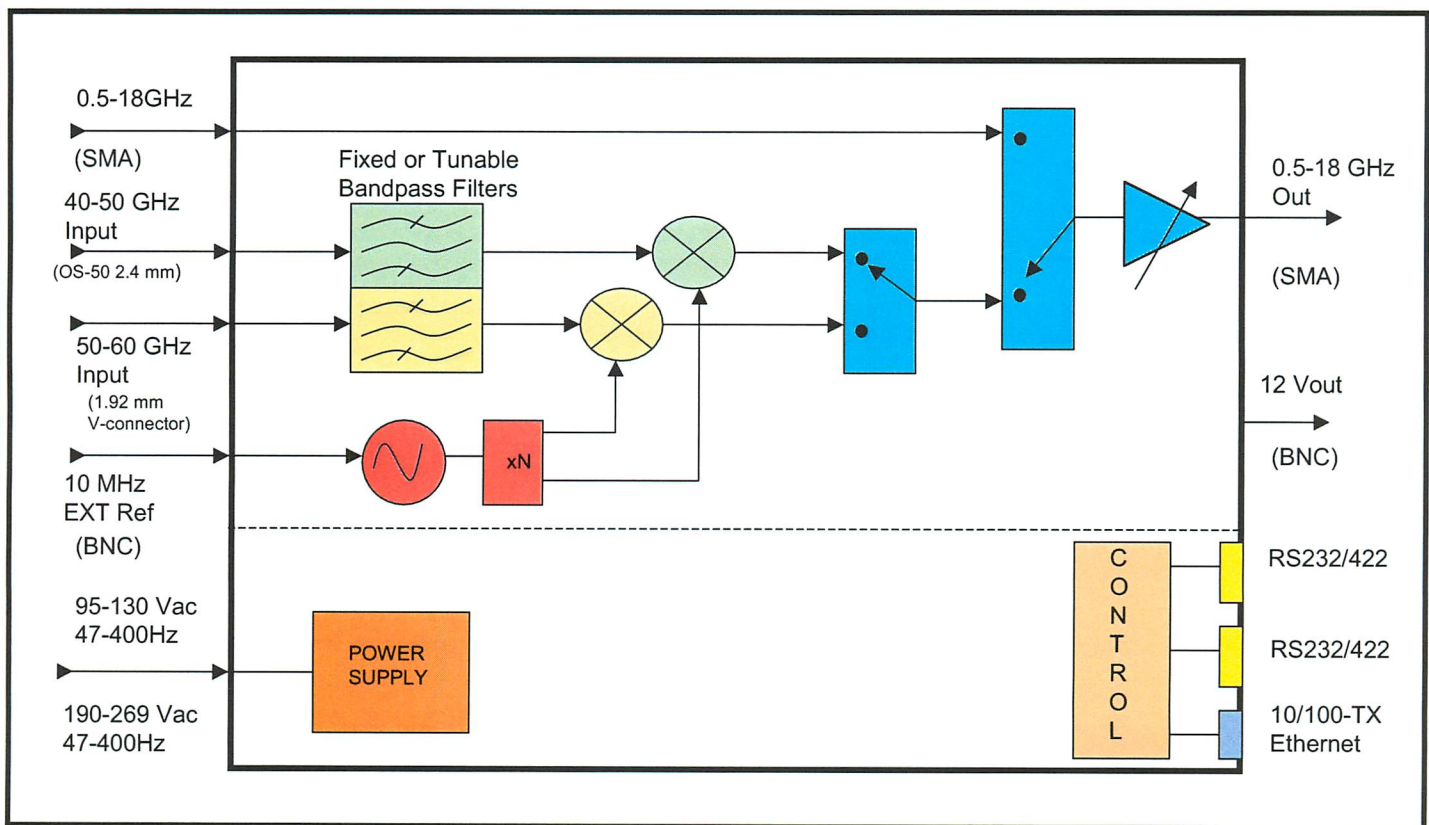
Size

3.5 H x 8.5 W x 18 D inches (8.9 H x 21.6 W x 45.7 D cm)

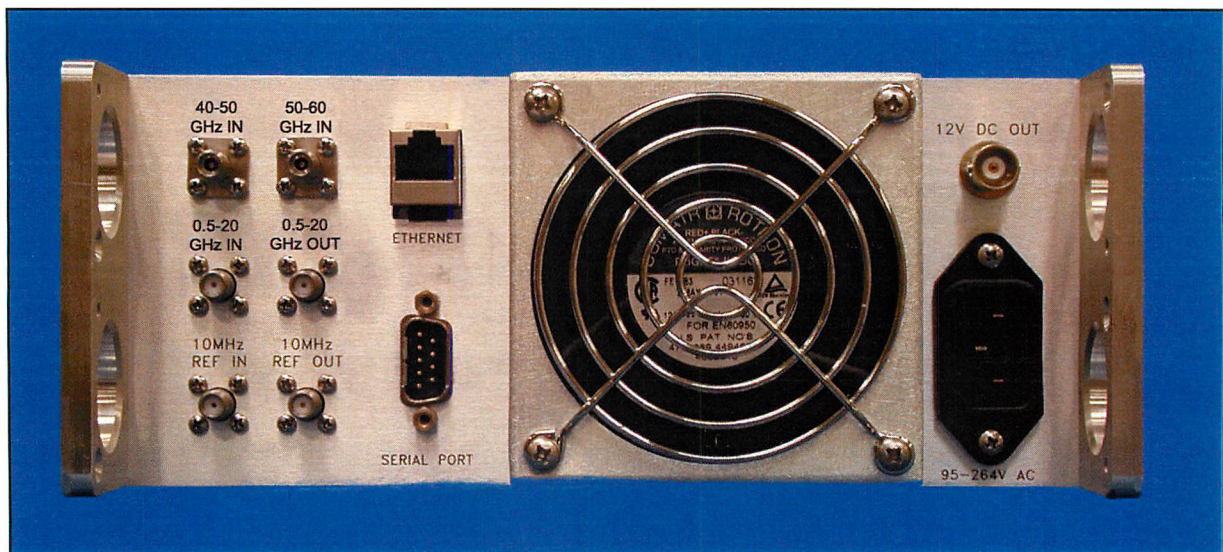
Weight

10 lb (4.5 kg)

Specifications are subject to change without notice.



FE-3830 Block Diagram



FE-3830 REAR PANEL

WARRANTY

All M/A-COM SIGINT Products equipment is warranted for one year, except for damage caused by accident or misuse, provided the equipment is returned for repair to the plant in Hunt Valley, Maryland U.S.A.



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