



FEATURES

- High Dynamic Range (70db)
- Provides Eight IF Bandwidths (0.2, 0.5, 1.0, 2.0, 5.0, 10, 20 & 40 MHz)
- Small Size
- Low IF Differential Group Delay
- Built-In-Test (BITE)
- Simultaneous 250 MHz (or 160 MHz) and 21.4 MHz IF outputs.
- AM (linear and log), FM and Audio Demodulation on Selected Channel

DESCRIPTION

The SMR-1638 is one of two high performance IF demodulators available for use with the SMR-1600 system. It is capable of accepting up to eight tuner IF outputs and, simultaneously, supplying log video for the digital scan display, 21.4 MHz IF and 160 MHz or 250 MHz IF. Additionally, any of the inputs may be selected for processing through a wideband IF with eight bandwidth selections providing AM video, FM video, log video, and switched AM/FM/Log video outputs. Each of these outputs has a varying bandwidth. The selected channel also has a wideband IF output, two 21.4 MHz outputs and an audio output.

Two IF frequencies are available with the SMR-1638. 160 MHz or 250 MHz may be specified.

PERFORMANCE

The SMR-1638 IF demodulator provides exceptional performance consistent with the rest of the SMR-1600 System in maintaining low differential group delay. The IF differential group delay is typically 15 nsec in a 20 MHz IF bandwidth.

Noise Power Ratio (NPR) quantizes circuit performance related to circuit linearity and local oscillator phase noise. The SMR-1638 provides high NPR (typically 35 dB) essential to receiver usage for high data rate channels.

CONTROL

The operator may utilize the front panel controls on the SMR-1638 or control the desired functions via the SMR-1611 controller or with an external computer over the controller RS-232C or IEEE-488 bus. Operator convenience is provided with the ability to observe the front panel display to verify selections under operator control or computer control. Front panel controls include the following:

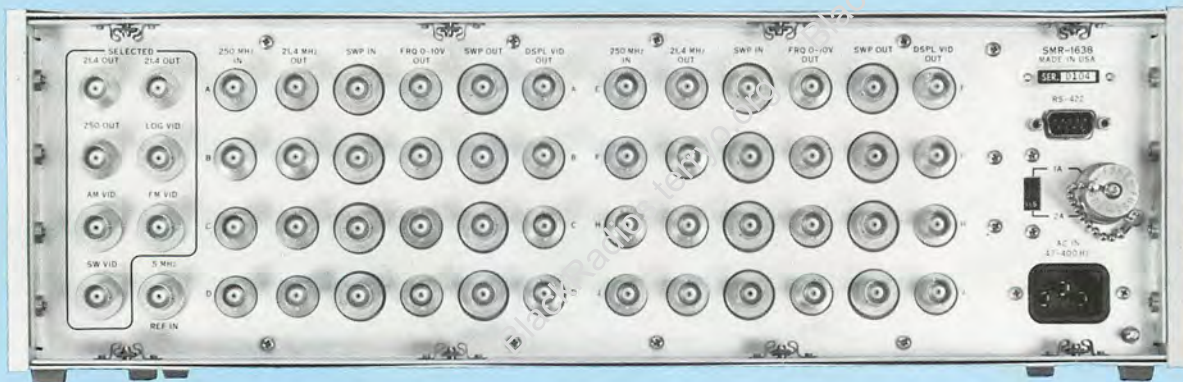
- Power On/Off
- Channel Selection
- IF Gain
- Local/Remote Selection
- AGC On/Off
- Bandwidth Selection
- AM/FM/Log Video selection

Channel addressing is accomplished easily from the front panel thus eliminating the need to gain access to the SMR-1638 chassis to alter dip switch positions.

SERVICEABILITY

The SMR-1638 Analysis Demodulator was designed for optimum reliability and serviceability. Extensive use of Built-In-Test (BITE) permits expeditious instrument checkout and provides for easy fault isolation in the event of an instrument failure.

Another built-in feature provides the ability to monitor and log actual operating hours through the resident microprocessor. This permits easy verification of usage and system reliability data.



REAR VIEW

SMR-1638 ANALYSIS DEMODULATOR SPECIFICATIONS

Input Channels	
Number	4 (8 with Option 1)
Frequency	250 or 160 MHz
Simultaneous Outputs	
21.4 MHz IF Gain	3 dB, nominal, referenced to the IF input
Bandwidth	10 MHz at 3 dB
Video (log)	
Dynamic Range	70 dB, linear within 2 dB
Video Baseband	5 MHz
Level	0 to 2 V into 50 ohms
Switched Outputs	
250 or 160 MHz IF Gain	6 dB, nominal, referenced to the IF input
Bandwidth	Limited by the SMR-1629 or SMR-1660 tuner bandwidth
21.4 MHz IF (two) Gain	6 dB, nominal, referenced to the IF input
Bandwidth	10 MHz at 3 dB
Log Video: Dynamic Range	70 dB, Linear within 2 dB
Video Baseband	½ the IF bandwidth selected
Level	0 to 2 V into 50 ohms
AM Video: Level	1.0 Vp-p, nominal, into 50 ohms with 90% AM modulation
Baseband	½ the IF Bandwidth selected
Distortion	2%, maximum, for 50% AM modulation, 50 kHz sinewave
FM Video: Level	1.0 Vp-p, nominal, into 50 ohms with peak-to-peak frequency deviation equal to ⅔ of the IF bandwidth selected
Baseband	½ the IF bandwidth selected
Distortion	2%, maximum, for peak-to-peak deviation of ⅔ the IF bandwidth, 50 kHz sinewave modulation frequency
Switched Video: (AM/FM/Log)	Same specifications as AM, FM and Log above
Audio	5 mW, minimum, into 600 ohms
IF Gain Control Range	60 dB, minimum
IF Differential Group Delay (measured over 80% of bandwidth)	
IF BW: 0.2 MHz	1 µsec
0.5 MHz	140 nsec
1.0 MHz	100 nsec
2.0 MHz	50 nsec
5.0 MHz	30 nsec
10 MHz	20 nsec
20 MHz	15 nsec
40 MHz	15 nsec
System Interface	RS-422 (Serial)
External Reference	
Frequency	5MHz
Level	1.0 Vp-p sinusoidal or TTL
Temperature, operating	0 to 50°C
Cooling	Forced Air
AC Power: Voltage	115/230 Vac ± 10%; 47-420 Hz; 150 watts maximum
Size	5¼" (H) x 17" (W) x 22" (D)
Weight	35 lbs. nominal

ORDERING INFORMATION

SMR-1638 Analysis Demodulator (4 Channels)
Option 1 provides 8 Channels of Demodulation
Option 20 or Option 21 must be specified
Option 20 indicates 160MHz IF Output
Option 21 indicates 250MHz IF Output

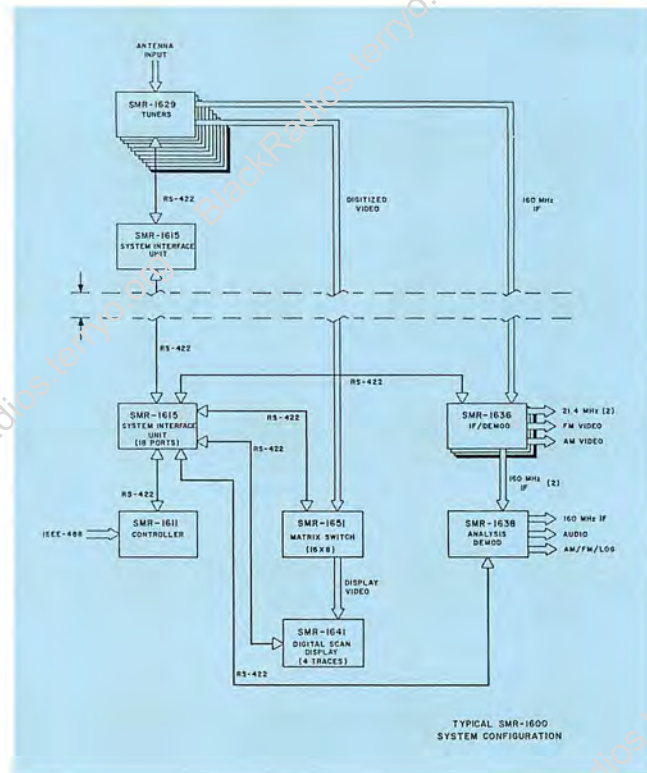
SMR-1600 SYSTEM OVERVIEW

The SMR-1600 Broadband Microwave Receiving System incorporates the latest in technologies to provide previously unavailable performance and flexibility. The SMR-1600 system may include up to seven different instruments, each containing a Motorola 68000 sixteen Bit Microprocessor.

The figure represents a typical SMR-1600 multi-channel receiver configuration. This configuration includes multiple tuners which are located close to the antenna to provide for maximum sensitivity, multiple controllers for multiple users (each having access to the full system) and a variety of demodulation and display capabilities. The system may be expanded to handle up to 64 channels consisting of tuners, demodulators and digital displays.

SMR-1600 FAMILY OF INSTRUMENTS

SMR-1611 Large Screen Controller
SMR-1615 System Interface Unit
SMR-1629 Tuner 100 MHz to 18 GHz
SMR-1660 Tuner 0.5 to 18 GHz
SMR-1635 IF/Demodulator Tray
SMR-1636 IF/Demodulator Mainframe
SMR-1638 Analysis Demodulator
SMR-1641 Digital Scan Display
SMR-1651 Video Switch Matrix



WARRANTY

All Micro-tel products are unconditionally warranted for a period of one year except for physical damage, provided the equipment is returned to the plant in Hunt Valley.

Adams Russell
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