BELAR PRECISION DIGITAL FM SCA MODULATION ANALYZER SCMA-1

DESCRIPTION

The Belar SCMA-1 Digital FM SCA Modulation Monitor and Analyzer is a DSP based precision SCA monitor designed to operate in conjunction with the Belar FMMA-1 or FMM-2 Modulation Monitor or other source of wideband composite.

The SCMA-1 digitizes the composite and decodes the selected subcarrier signal using digital signal processing techniques. Unlike an analog design, a DSP based design is not subject to variations due to temperature, component aging, or component tolerances. The resulting circuit requires no adjustments, but can achieve extremely tight tolerances. In addition, the DSP design allows the use of FIR linear phase filters whose bandwidth can be varied via the front panel. The use of variable bandwidth filters allow the user to optimize the subcarrier BPF and detector LPF cutoff frequencies for a particular SCA modulation scheme. The use of DSP processing also eliminates the need for separate crystal oscillators for each subcarrier frequency, instead all available frequencies are synthesized from a common system clock.

The SCMA-1 implements all its metering and measurement functions using DSP processing. Therefore, the SCMA-1's calibration does not depend on any adjustable circuit components or their tolerances. This guarantees the calibration of the unit will remain stable over time. By digitizing the measurements the user can display modulation peaks, injections, and dB readings directly. As an added benefit, all readings can be viewed remotely using an IBM compatible personal computer.

Specifications are subject to change without prior notice.

All Belar products are Y2K compliant.

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Where Accuracy Counts . . . Count on Belar **Manufactured in the U.S.A.**

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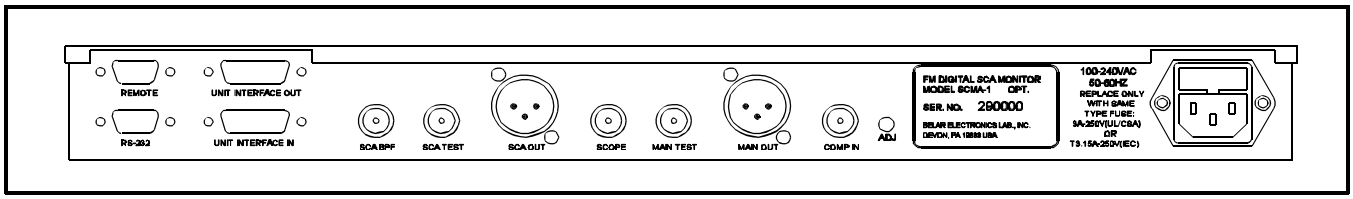

SPECIFICATIONS

Metering

Total, Main (L+R), Subcarrier modulation . . . . 0-150%, 1% increments, peak reading

Main (L+R), Subcarrier Modulation . . . . +3.5 to –99 dB, 0.5 dB steps, autoranged RMS reading

Subcarrier injection . . . . . 0.0-25.5%, 0.1% increments

Subcarrier

Frequency Range . . . . . 41.0-100.0 kHz, 0.5 kHz steps

BPF Bandwidth . . . . . 1-16 kHz, 1 kHz steps

Detector Bandwidth . . . . . 1-8 kHz, 1 kHz steps

Deviation Sensitivities . . . . . 100%=1.0-7.0 kHz , 0.1 kHz steps

Internal Calibrator . . . . . 67 kHz, 6 kHz dev, 1 kHz mod @ 10.0%

Input

Composite . . . . . 1.0 - 2.0 Vrms (2.8V - 5.7V P-P), 100 kΩ, unbalanced, BNC Connector

Outputs

Main (L+R) Audio . . . . . +10 dBm, 600 Ω, balanced, XLR connector

Main (L+R) Test . . . . . 5 Vrms, 75 Ω, unbalanced, BNC connector

Scope . . . . . 2.5 Vrms auto-ranged, 75 Ω, unbalanced, BNC connector

Subcarrier Audio . . . . . +10 dBm, 600 Ω, balanced, XLR connector

Subcarrier Test . . . . . 5 Vrms, 75 Ω, unbalanced, BNC connector

Subcarrier BPF . . . . . 0.1414 Vrms @ 10.0%, 75 Ω, unbalanced, BNC connector

Interface

Serial RS-232

Unit . . . . . Wizard Standard Interface

Remote Meter Outputs

Subcarrier Analog Modulation Meter

Open collector and relay closures for subcarrier presence and subcarrier peak modulation indicators.

Main (L+R) Specifications (20 Hz to 15 kHz)

Frequency Response . . . . . ± 0.1 dB

Distortion (THD + Noise) 0.01%

SNR . . . . . 80 dB

Subcarrier Specifications
(BPF BW = 16 kHz, Det BW = 8 kHz)

Frequency Response (20Hz to 8 kHz, 6 kHz Dev)

BPF In . . . . . +0.1, –1.75 dB

BPF Out . . . . . ± 0.1 dB

Distortion (THD + N) @ 1 kHz, 6 kHz dev, 150 μsec

BPF In 0.25%

BPF Out 0.05%

SNR, 150 μsec de-emphasized . . . . . 80 dB

Crosstalk

Sub to Main 80dB

Main to Sub 80dB

Stereo to Sub 80dB

Dimensions . . 1.75"H x 14.5"D x 19"W (1 EIA Rack Unit)

Power Requirements . . . 17 Watts, 100-240VAC, 50-60 Hz

Net Weight . . . . . 7 lbs.

Shipping Weight . . . . . 11 lbs.

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