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.
**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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