

SONATA III

E1 HIGH-DENSITY ECHO CANCELLATION AND VOICE ENHANCEMENT SYSTEM WITH *STUDIO SOUND*

The NMS Communications Sonata™ III is the latest high-density E1 echo cancellation system with *Studio Sound*® designed to improve the overall voice quality of any network. Sonata III combines all of NMS' industry-leading echo cancellation and voice enhancement features — acoustic echo control, noise compensation, noise reduction, automatic gain control, dynamic speech restoration, and adaptive flat tail delay — into one high-density shelf for the E1 long distance and digital wireless (GSM and CDMA) markets.

Sonata III's user-friendly interface runs on a PC under Microsoft Windows®. The EchoScan™ element management system is available as an option for administering large-scale installations. Economical hardware and software upgrades and customization are available at minimum cost and minimal disruption to the network.

The system decreases power consumption to as little as 0.12 watts/ channel and incorporates two fully redundant, load-sharing power supplies.

Sonata III is fully G.168 (2000) compliant and can be configured for installation on the A-interface in GSM networks. Sonata III provides all the features required for seamless, distortion-free transmission at a customer's fingertips.



FEATURES

- **Tandem Free Operation (TFO, or vocoder bypass) compatible:** Ready for wireless operators who will be implementing TFO capability in their networks.
- **Dynamic Speech Restoration (DSR):** Enhances the voice quality of mobile-to-mobile calls by reversing the effect of degradation encountered during the coding and decoding process. It is a less expensive solution than TFO because the network provider does not need to have new equipment installed.
- **Adaptive Flat Delay (AFD):** Constantly adapts to changes in the echo path delay for echo removal over extreme distances; Extends the standard 96 ms tail window up to an additional 8 seconds.

- **Remote Management:** Optional EchoScan element management system allows users to monitor, provision, and upgrade (via software downloading) the Sonata echo cancellation system from anywhere in the world.

VALUE DESCRIPTION

The newest version of Sonata III brings leading-edge voice enhancement features to NMS' advanced product portfolio. Improved echo cancellation algorithms and improved *Studio Sound* features go a step further to turn wireless calling into a wireline voice-quality experience.



TECHNICAL SPECIFICATIONS

Physical Characteristics

- **Shelf dimensions**
 - Height: 279 mm (11 in), 393 mm (15.5 in) with I/O panel
 - Width: 481 mm (19 in) including mounting brackets
 - Depth: 260 mm (10.25 in)
 - Weight (fully loaded shelf): 37 lb (16.7 kg)
- **Seismic network bay dimensions**
 - Height: 2133 mm (84 in)
 - Width: 660 mm (25.9 in)
 - Depth: 260 mm (10.3 in)
 - Weight (fully loaded bay): 256 lb (116 kg)
- **Shelves per bay**
 - Up to 4 (or 8 with back-to-back mounting)
- **Capacity:** 48 E1s per shelf
- **Power consumption:** 0.12 watts per channel
- **Power supply input voltage:** -36 to -72 VDC
- **Operating ambient temperature:** +45 °C
- **Operating relative humidity:** 5% to 95% non-condensing

Performance

- **Hybrid echo tail length capacity:** Up to 96 ms standard with an 8-second adaptable flat delay window on 2 E1s per quad circuit pack
- **Echo return loss enhancement:** >35 dB with NLP disabled with G.168 composite source signal; >65 dB with NLP enabled
- **Acoustic echo control:** Better than 18 dB of non-linear acoustic echo elimination
- **Residual echo control:** Soft non-linear processing via gradual loss insertion for minimizing clipping of speech
- **Comfort noise:** Spectrum noise matching
- **Audio transparency:** Prevents clipping of background music and music-on-hold during speech pauses
- **Near end speech detection:** Patented intelligent double talk detector for optimal performance under varying speech power levels

- **Convergence speed:** Industry's fastest; revolutionary non-NLMS algorithm employing Continuously Adaptive Gain, accommodating >25 dB ERLE in less than 1 second with G.168 composite source signal (G.168 requires just 16 dB of ERLE in 1 second)
- **Convergence time:** Less than 50 ms on white noise for combined ERL and ERLE of 35 dB
- **Convergence stability:** Most stable performance in the industry; does not diverge under low ERL and wide dispersion hybrids; no divergence during double-talk
- **Studio Sound Noise reduction:** Up to 20 dB, provisionable
- **Studio Sound Noise compensation:** Up to 12 dB (dynamic gain)
- **Automatic gain control:** Bi-directional; either positive or negative smooth adjustment for optimal listening
- **Dynamic Speech Restoration:** New patent-pending algorithm designed to reverse coding/decoding voice degradation
- **Standards compliance:** Full compliance with ITU/T G.164, G.165, G.168 (2000), G.169; ETSI 101 504; TIA/EIA IS-839
- **EC signal processing delay:** Transmit channel <0.6 ms; receive channel <0.25 ms
- **Tandem-Free Operation (or vocoder bypass):** Ready for implementation if required
- **Timing and alarm processing:** Software-selectable — repeater or terminal mode

Network Interface

- **Interface:** 2.048 Mbps CEPT E1
- **Line coding:** AMI, HDB3
- **Impedance:** 75 or 120 ohms

Maintenance and Administration

- **Equipment alarms:** PBF, LMA, AIS, A16, RAI, RMA.
- **Diagnostics:** In-service and out-of-service
- **Control and communications:** Serial interface for external PC using RS-232 COM port

- **Network management:** Graphical user interface, Windows 95, 98, and NT4 workstation; EchoScan Element Management System (optional)
- **Signaling:** Common Channel Signaling (SS7); Channel Associated Signaling; C5 Signaling
- **Disabling tones:** 2100 Hz G.164, G165; 2000 Hz VPA, and an additional provisionable maintenance tone

For the latest information on supported features and operating systems, refer to our web site at www.nmscommunications.com.

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