



## VS-1200 Frequency Domain Scrambler

Midian's VS-1200 Series is a new Digital Signal Processor (DSP) based Frequency Domain voice scrambler offering multiple levels of voice privacy. Unlike rolling code voice scramblers the VS-1200 does not require synchronization.

The DSP converts the analog signal into quantized data. It then converts the "Time Domain" signal into the "Frequency Domain". This results in an audio "frequency spectrum", which is then partitioned into bins that are encrypted by the non-linear key generator. The digitized data is converted back to the analog realm using a digital to analog converter.

The above technique and the lack of synchronization result in excellent audio quality and security, and enables the VS-1200 to be used in virtually any type of radio system.

### Applications

Midian's voice scramblers can be used to protect communications for:

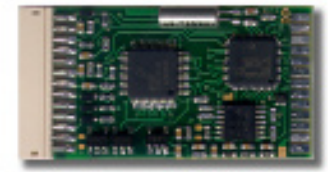
**Public Safety:** Police, Fire and Ambulance

**Government:** Armed Forces and Homeland Security

**Fleets:** Taxi, Towing, Fishing, etc

**Utilities:** Electrical, Water and Gas

**Industrial:** Mining, Chemical, etc.



Shown: VS-1200

### Features

**Security:** The VS-1200 offers 4 user-programmable levels of security.

- High - 64 bins
- Medium - 32 bins
- Low - 16 bins
- Voice Inversion

**Multi-Format ANI:** The following formats are available in the VS-1200:

- Motorola's MDC-1200
- Kenwood's FleetSync
- Harris' G-Star (aka GE-Star)
- DTMF
- 5-Tone (all formats)

**Voice Quality:** Midian's VS-1200 provides excellent voice quality and speaker recognition between scrambled and clear audio.

**Plug-In Modules:** Plug-in versions of the VS-1200 are currently available for Kenwood and Vertex radios. Midian is in the process of developing plug-in modules for other radio OEM's. For the wire in version, Midian offers many application notes for installation into various radios.

**Use in Most Systems:** Midian's VS-1200 can be used in conventional, trunked, simulcast, voted and even HF SSB systems. Rolling code scramblers may have difficulties in simulcast, voting and HF SSB systems because of the requirement of synchronization. Since the VS-1200 does not require sync, it does not have these issues.

**Planned Feature:** Midian plans to add it's Kryptic signaling to the VS-1200 for ANI, Emergency ANI, Radio Kill, Spy, Selective Calling and Over-The-Air-Reprogramming (OTAR) of the security keys.

**Product Quality:** Midian believes in and adheres to a strict quality program. This is backed up by Midian's 3-year warranty on parts & labor.



| VS-1200: General Specifications   |                          |
|-----------------------------------|--------------------------|
| Operating Voltage                 | 4.75 - 15.5 VDC          |
| Operating Current                 |                          |
| Power Save Mode (COR Operation)   | 2.5 mA typical           |
| Power Save Mode (VOX Operation)   | 10 mA typical            |
| Clear or Inversion Operation      | 29 mA typical            |
| FFT Scrambling Operation          | 83 mA typical            |
| Average (80-10-10 cycle)          | <17 mA*                  |
| Average (90-5-5 cycle)            | <10.5 mA*                |
| Operating Temperature             | -30 to +60 C             |
| RX Input/Output Level             | Programmable             |
| TX Input/Output Level             | Programmable             |
| VS-1200: Security Specifications  |                          |
| Total Code Combinations           | ~6.2 x 10 <sup>23</sup>  |
| Actual Code Combinations          | ~4 Billion               |
| # of Selectable Keys              | 3                        |
| Encryption Type                   | Frequency Domain         |
| Export Controls                   | Minimal                  |
| VS-1200: Signaling Specifications |                          |
| MDC-1200 ANI Range                | 0000-FFFF                |
| MDC-1200 Timing                   | ~180 msec                |
| FleetSync Fleet ID Range          | 100-349                  |
| FleetSync Unit ID Range           | 1000-3999                |
| G-Star ANI Range                  | 0001-16,383              |
| G-Star Timing                     | 320 msec                 |
| DTMF ANI Length                   | 8-digits (maximum)       |
| DTMF Timing                       | 60/40 std (programmable) |
| 5-Tone ANI Length                 | 8-digits (maximum)       |
| 5-Tone Timing                     | Varies per format        |
| Emergency ANI                     | Yes                      |

\* - The transmit and receive cycles are based on scrambled mode. When using clear mode, the consumption will decrease.