MIDIAN
ELECTRONICS

Intermodulation Software

Voice Storage

Interoperability

Voice Security

Local Remotes

Simplex Repeater Makers

Tone Signaling

Paging

Interconnects

Tone Remotes

ANI Systems

Remote Monitoring & Control

About Midian Electronics

Midian Electronics was founded in 1975 by Chuck Soulliard when he introduced Pulse Tone and MTS/IMTS encoders and decoders for portable radiotelephones. In 1981 Midian Electronics developed the first voice scrambler small enough to fit inside of a two-way radio. Since then Midian has been a leader in voice security and tone signaling products for two-way radio systems.

Midian's product line has expanded to include tone remotes, interoperability, voting tone encoder, radiotelephone interconnects, paging terminals, repeater makers and Intermodulation study software.

We would like to thank you for your support over the last 36 years and look forward to working with you in the future.

Orders

To place an order please contact Midian at 1-800-MIDIANS (643-4267) or 520-884-7981. We may also be reached via e-mail at sales@midians.com or via fax at 520-884-0422.

Midian accepts Visa, MasterCard, American Express and Discover and wire transfers. Net 30 terms and COD Company Check terms are available upon approval.

Warranty

Midian offers one of the best warranties in the industry: 3 years on both parts and labor. This reflects our commitment to quality, reliability and customer satisfaction.

Customized Products

With our in-house software, hardware and CAD capabilities, Midian Electronics is able to create custom hardware and software designs to meet our customers' unique applications and to continue to support them after the sale.

For More Information

This catalog is an overview of the products Midian manufactures. If you need further technical information on any of our products, we have manuals and specifications available for you. Please contact our sales staff or visit our website at www.midians.com for additional product and technical information.

Features, options, specifications and product availability in Midian's catalog, brochures, manuals and website are subject to change without notice.

FleetSync is a trademark of Kenwood. G-Star is a trademark of Harris. MDC-1200, MOTOTRBO and Professional Series are marks of Motorola Solutions.

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GPS Speaker Microphones

Midian's GPS speaker microphone products operate as normal speaker microphones for portable two-way radios, but also offer the benefits of GPS location tracking and reporting. Midian's GPS Speaker Mic products offer the following features:

- Location reporting options:
  - PTT: Reports GPS coordinates when the user presses and/or releases the PTT button.
  - Man-Down: When the internal accelerometer detects a lack of motion the unit will send an Emergency ANI with the GPS coordinates.
  - Lone Worker: When the GPS Speaker Mic does not receive user interaction for a period of time the unit will send an Emergency ANI with the GPS coordinates.
- More than 16 million system ID's for system privacy of GPS data.
- Speaker can sound emergency locator tones to aid rescuers in locating users in distress.
- Decode Capabilities:
  - Polling (Query): The dispatcher can poll a GPS speaker mic to get a current location.
  - Selective Calling: The dispatcher can selectively call an individual unit, a group or all units.
  - Radio Disable: Misbehaving radio users or lost or stolen radios can be disabled, so they do not interfere with or eavesdrop on system communications.
  - Radio Enable: Disabled radios can be reenabled.
  - Remote Monitoring (Spy): Midian's Spy feature enables dispatchers to eavesdrop on field units.
  - Emergency Acknowledge: The dispatcher can send a command to cause a field unit to stop sending the Emergency ANI.
- Pre-made cables are available for Icom, Kenwood, Motorola and Vertex radios.

The following models of GPS speaker microphones are available:

- **TS-130-SM1G:** GPS Speaker Mic with Lone Worker/Man-Down (page 15)
- **VAE-1-SM1G:** Voice Alarm Encoder with Lone Worker/Man-Down & GPS Speaker Mic (page 15)
- **VS-1200-SM1G:** Frequency Domain Voice Scrambler & GPS Speaker Mic (page 4)
- **VS-115-SM1G:** Rolling Double Inversion Voice Scrambler & GPS Speaker Mic (page 6)
- **VS-1150-SM1G:** Double Inversion Voice Scrambler & GPS Speaker Mic (page 6)
- **VS-1050-SM1G:** Voice Inversion Scrambler with Multi-Format ANI & GPS Speaker Mic (page 7)

CAD-800

GPS Location Reporting

Midian's CAD-800 interfaces with Google Earth for displaying the GPS location data from Midian's GPS speaker microphones.

- Track a user's route throughout the course of the day.
- Receive and respond to emergency notifications from field users and know their location for faster response.
- Geo-Fencing zones can be created and the dispatcher can see when a unit is inside, on the edge or outside of their zone.
- Icons are programmable for the system or unique to each zone.
- The CAD-800 can encode the following commands to the GPS speaker mics: Polling (Query), Selective Call, Radio Disable, Radio Enable, Remote Monitoring (Spy) and Emergency Acknowledge

Frequency Domain Voice Scramblers
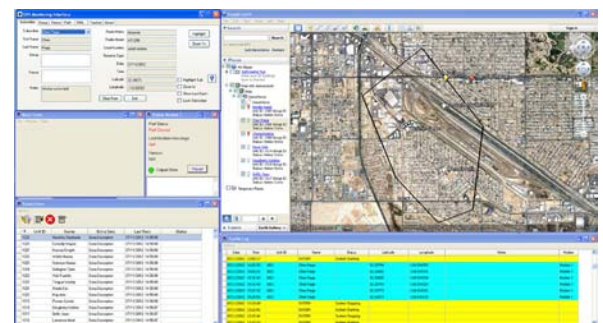
VS-1200
Frequency Domain Scrambler
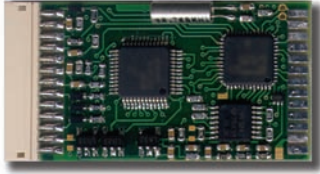
Shown: VS-1200

Shown: VS-1200-SM1

Midian's VS-1200 series is a Digital Signal Processor (DSP) based Frequency Domain voice scrambler offering a high level of voice privacy. This technology is comparable in security to rolling code scrambling, yet does not require synchronization.

The DSP converts the analog signal into quantitized digital 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, high security and enables the VS-1200 to be used in virtually any type of radio system. These systems include HF SSB, Conventional two-way, Trunking, and Voting.

The VS-1200 series has the following features:
- Total code combinations: ~6.2 x 10^23
- Actual code combinations: ~4 billion
- Number of selectable keys: 3
- 4 user-programmable levels of security including voice inversion
- Multi-Format ANI including Motorola's MDC-1200, Kenwood's FleetSync, Harris' G-Star (aka GE-Star), DTMF and 5-Tone
- Automatic detection of scramble
- Programmable audio levels
- Dimensions: 1.59" L x 0.83" W x 0.21" H
- Plug in modules are available for Icom, Kenwood, Motorola and Vertex.
- Available in a speaker microphone package and a GPS speaker microphone.
- Requires Midian's KL-4 Programmer

Below are some common applications for voice scramblers:

Military: Maintain tactical level classified information and the secrecy of planned tactical operations (TVS-2 and VS-1200).

Police: Keep criminals & news media from listening in on police communications. Criminals that eavesdrop may use the knowledge of police communications to avoid detection by police & plot activities. Protect sensitive information from being used by the news media or crime scenes from being interfered with prior to a police arrival.

Ambulance: Secure communications maintain the integrity of patients' information (HIPAA) from being intercepted when transmitted over the air.

Fleets: Taxi, towing and fishing competitors often use information intercepted over the air to take business from one another.

Industry: Some extreme activists eavesdrop on chemical and mining companies' communications. These activities can cause unnecessary harassment and litigation and may cost the companies financially.

Utilities: In an effort to protect a country's infrastructure, utilities are encrypting communications to prevent outsiders from learning information that could expose weaknesses in construction, operations, etc. that could make the site a more susceptible target.
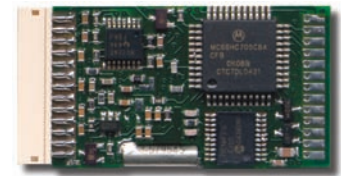
TVS-2
Hopping Code Scrambler

Midian's TVS-2 offers a high-level of voice security for two-way radio communications. By using the hopping code type of rolling code scrambling, Midian's TVS-2 offers a higher level of security versus other rolling code scramblers (see comparison below). The TVS-2 incorporates Midian's Kryptic signaling format which allows for greater control of fleet communications (see below) and the automatic detection of scrambled/clear audio. A Dual Mode option is available upon request for systems that require both rolling code and voice inversion scrambling for interoperability.

Shown: TVS-2

The TVS-2 series has the following features:
- Number of possible codes: ~ 40 Trillion
- Number of selectable keys: 4
- 5 user-programmable levels of security
    - Level L4: 12-25 hops per second
    - Level L3: 6-12 hops per second
    - Level L2: 1.2-2.4 hops per second
    - Level L1: 0.8-1.2 hops per second
    - Voice Inversion
- **Midian's Kryptic signaling format for:**
    - ANI & Emergency ANI
    - Selective Calling
    - Radio Kill
    - Spy
    - Radio Check
    - Over-The-Air-Reprogramming (OTAR) of the security keys
- Dimensions: 1.64" L x 0.84" W x 0.2" H
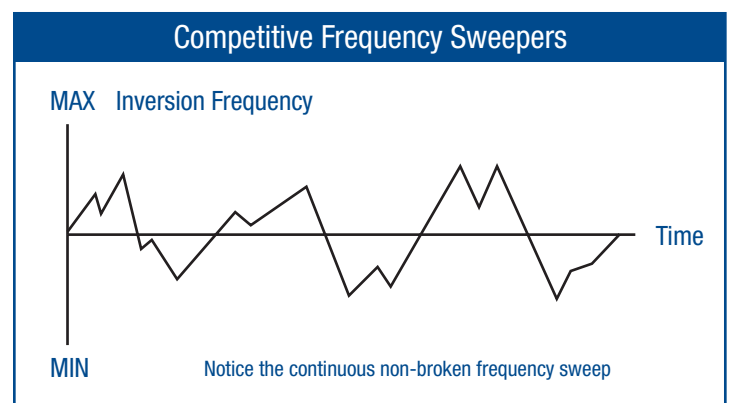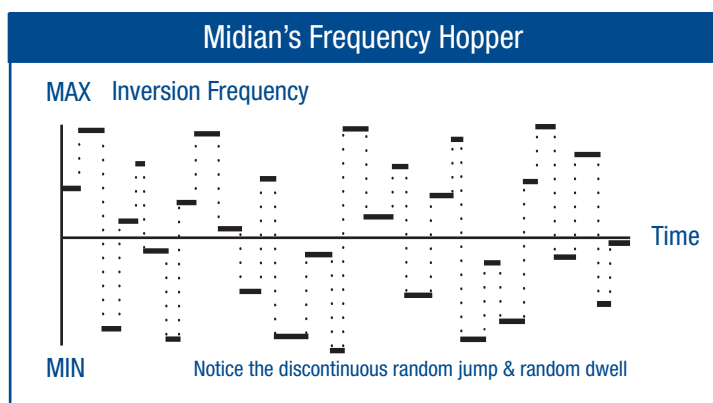- Requires Midian's KL-4 Programmer

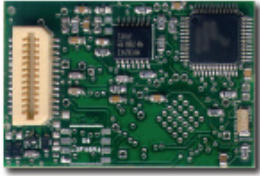**TVS-2 plug-in modules are available for Hytera, Icom, Kenwood, Motorola, Tait and Vertex.**

Shown: MOT-TVS-2-PRO

Hopping versus Sweeping Rolling Code Scramblers: Midian's TVS-2 uses the hopping type of rolling code scrambling, instead of the sweeping type, for higher security. Both types of scramblers claim a certain number of hops per second. Sweepers imply a higher level of security because they "hop" hundreds of times per second. However, it is the length of the hop that is important rather than the number of hops per second. Each "hop" of a sweeper is approximately 1 Hz in length whereas each hop of a true hopping scrambler is at least 300 Hz. Therefore it would take ~300 hops of a sweeper to equal the change of a true hopper in one hop. Because of the negligible frequency change of a sweeper, sweepers are susceptible to attack by tracking the sweeping with a phase lock loop (PLL) circuit.

Midian's Frequency Hopper
MAX   Inversion Frequency

Time

MIN   Notice the discontinuous random jump & random dwell

Competitive Frequency Sweepers
MAX   Inversion Frequency

Time

MIN   Notice the continuous non-broken frequency sweep

VS-110
## Rolling Double Inversion Scrambler

Shown: VS-110-KW1

Midian's VS-110 series is a rolling double inversion voice scrambler that is compatible with Icom's UT-110. The VS-110 matches the Icom UT-110 group and code numbers. The VS-110's codes can also be programmed for fixed double inversion voice scrambling (aka split-band voice scrambling) that is compatible with Midian's VS-1100 and VPU-6, Icom's UT-109/UT-112 and AIR/Inysa's XPTO.

- In rolling double inversion mode (Icom UT-110 mode) the unit can be programmed to match the 1020 codes of the UT-110 (4 groups with 255 codes per group).
- In fixed double inversion mode the unit can be programmed to match any of the 32 double inversion codes used by Midian's VS-1100 and VPU-6, Icom's UT-109/UT-112 and Inysa's XPTO.
- Programmable for up to 16 different codes (some versions may only support up to 4 codes)
- Plug-in modules available for Icom, Kenwood, Motorola and Vertex.
- Available in a speaker microphone package and a GPS speaker microphone.
- Requires Midian's KL-4 programmer

VS-1100
Double Inversion Scrambler

Shown: VS-1100-KW2

Midian's VS-1100 series is a double inversion voice scrambler (aka split-band scrambler) that is compatible with Midian's VPU-6, Icom's UT-109/UT-112 and AIR/Inysa's XPTO.

- The VS-1100 can be programmed to match any of the 32 double inversion codes used by Midian's VPU-6, Icom's UT-109/UT-112 and AIR/Inysa's XPTO
- Programmable for up to 16 different codes (some versions may only support up to 4 codes)
- Plug-in modules available for Icom, Kenwood, Motorola (including MOTOTRBO) and Vertex.
- Available in a speaker microphone package and a GPS speaker microphone.
- Requires Midian's KL-4 programmer
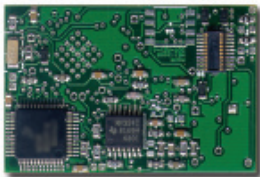
Common Questions About Encryption

Do I need digital voice encryption? Most likely not! Digital voice encryption tends to be very costly and the benefits do not outweigh this high cost. Most users only need their conversations secured for a tactical amount of time (i.e. days or weeks). Once this time period has passed the information is no longer important. Examples of this would be a military commander directing troop movements during a battle, police SWAT or Narcotics operations, a taxi company picking up a fare, etc. Once the troops have moved, the SWAT operation is over or the fare is picked up the information transmitted is no longer important to an eavesdropper, therefore most systems only need a tactical level of voice security such as Midian's TVS-2 or VS-1200. Digital voice encryption is typically only needed to secure conversations for a strategic time period (i.e. years).

Is voice inversion scrambling secure? Voice inversion scramblers will protect conversations from a casual listener. Many radio manufacturers are building voice inversion scramblers into the firmware of the radio and they tend to use the same or very similar inversion frequencies. If you buy a radio with the built in inversion scrambler, someone with a radio with a built in inversion scrambler could eavesdrop on your conversation if on the same channel. Adding a Midian voice inversion scrambler, such as the VPU-12A or VS-1000, on an inversion frequency different from what the radio manufacturers have built in can provide additional privacy.

Is it difficult to install a voice scrambler? Midian supports plug in modules for many popular radio manufacturers and models including Motorola, Kenwood, Vertex, Icom, Tait and Hytera. Midian also offers voice scramblers in a speaker microphone configuration. Many plug-in installations can be done in just a matter of minutes. For radios not supported with a plug in module, Midian offers many application notes which are instructions on how to wire in a wired module.

Which kinds of systems can scramblers be used in? Midian has installed voice scramblers in simplex radio systems, as well as repeater systems, trunking systems and voted systems. Scramblers can also be used with signaling such as CTCSS, DCS, DTMF and MDC-1200. On the transmit side the scrambler scrambles the audio prior to the signaling being encoded and on the receive side the scrambler descrambles the audio after the signaling has been decoded and filtered out.

Do the number of security codes matter? Only up to a point. Midian's TVS-2 offers 4.29 billion user programmable codes plus 10,000 Midian controlled system ID's for a total of 42.9 trillion codes. Midian's VS-1200 offers approximately 4 billion user programmable codes from 6.2×10^{23} total codes. To put this in perspective, it would take more than 30 years to test one billion codes at a rate of one code per minute. Some manufacturers claim to offer more codes alluding to higher security, but that is just marketing hype. It is no more practical to try and break a scrambler with a billion codes than a scrambler with a trillion codes.

1-800-MIDIANS or 520-884-7981

Voice inversion scramblers protect two-way radio communications from eavesdropping by casual listeners. For more sensitive communications Midian recommends using the TVS-2 or VS-1200.

VPU-12A
Voice Inversion Scrambler
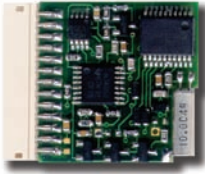
The VPU-12A is a user-programmable voice inversion scrambler with 16 different inversion frequencies that are selectable using 4-line binary. The VPU-12A offers the same features as the VPU-12 except the VPU-12A has mode indications.

The VPU-12A series has the following features:
- Number of Programmable Inversion Codes: 16
- Inversion Frequency Range: 2100 to 4100 Hz
- Dimensions: 1.0" L x 0.85" W x 0.15" H
- Requires Midian's KL-4 Programmer

VPU-15
Voice Inversion Scrambler with Kryptic Signaling

Midian's VPU-15 incorporates voice inversion scrambling with Midian's Kryptic signaling format. These signaling features allow for greater control of fleet communications and the automatic detection of scrambled/clear audio. (See below for Kryptic features)

The VPU-15 series has the following features:
- Total Inversion Codes Available: 37
- Number of Selectable Inversion Codes: 4
- Requires Midian's KL-4 Programmer
- Midian's Kryptic Signaling Format for:
  - ANI & Emergency ANI
  - Selective Calling
  - Radio Kill
  - Spy
  - Radio Check
  - Over-The-Air-Reprogramming (OTAR) of the Security Keys

Plug-in modules of the VPU-15 are available for Hytera, Icom, Kenwood, Motorola, Tait and Vertex.

Shown: VPU-15

VS-1000
Voice Inversion Scrambler

Midian's VS-1000 is a 16-code voice inversion scrambler that is KL-4 programmable to any inversion frequency between 2100 Hz and 4096 Hz.

VS-1050
Voice Inversion Scrambler with Multi-Format ANI

Midian's VS-1050 offers the same security features as the VS-1000, but offers ANI and Emergency ANI in the following signaling formats:
- Motorola's MDC-1200
- Harris' G-Star (aka GE-Star)
- 5-Tone (all formats)
- Kenwood's FleetSync
- DTMF

Plug-in modules of the VS-1000 & VS-1050 are available for Icom, Kenwood, Motorola (including MOTOTRBO) & Vertex. The VS-1050 is available in a speaker microphone package and as a GPS speaker microphone.

Shown: VS-1000-MT1 for MOTOTRBO

DDU Series
Local Remote Controllers with ANI Display Decoder

Local Remote Controller: The DDU can be used to locally control a base station radio for transmitting and receiving audio to and from the field radios. This helps reduce desktop clutter by eliminating the need to have both the base station radio and the ANI display decoder on the desktop. The DDU comes standard with a built-in microphone and speaker, or an optional gooseneck microphone or handset and cradle can be added.

Desktop Display Decoder: Midian's DDU will decode and display incoming ANI's and Emergency ANI's to provide the dispatcher with the radio user's identity. This assists in correctly identifying users, stopping system abuse or identifying users in distress.

- Decodes and displays ANI and Emergency ANI
- Alias database supports up to 135 user names
- 2-line LCD display shows ANI/ENI and Alias
- 10 number ANI memory recall with scroll buttons
- Repeater access control mode employing user ID validation

DDU-100: DTMF (encode & decode)
DDU-200: 5-Tone (encode & decode)
DDU-300: Midian's Kryptic (encode & decode)
DDU-400: Harris' G-Star (decode only)
DDU-500: Motorola's MDC-1200 (decode only)
DDU-600: Kenwood's FleetSync (decode only)

Shown with handset and cradle option

PDE-1
Local Remote Controller with Paging Encoder

Local Remote Control: The PDE-1 can be used to locally control a base station radio for transmitting and receiving audio to and from the field radios. This reduces desktop clutter, eliminating the need to have both the base station and the paging encoder on the desktop.

Paging & Dialing Encoder: The PDE-1 encodes multiple paging formats including POCSAG, 2-Tone (tone or tone & voice), DTMF, 5-Tone and Pulse Tone.

- 10 number memory dial
- Alias database supports up to 155 users with autodial
- Simultaneously supports multiple paging/signaling formats
- 2-line LCD display shows Pager Code and Alias
- POCSAG supports 512, 1200 & 2400 baud with "canned" alpha messages

Shown with optional gooseneck microphone

TRA
Telephone to Radio Adaptor

Local Remote Controller: The TRA can be connected between a regular telephone, a cordless phone or an unused extension on a KSU office phone system and a base station radio. An office worker may then communicate with the field radios simply by picking up a telephone and accessing the dedicated extension. Field units can ring the extension by multi-clicking the PTT or using DTMF to speak with someone in the office. The TRA also supports selective calling of field units and paging.

TRC Series
Tone Remote Controllers

Midian Electronics' Tone Remote Controllers enable the dispatcher to remotely control a base station radio via a dedicated phone line, microwave path or telemetry link to a tone remote adaptor such as Midian's TTC-1 or TTC-2. The TRC products use EIA and industry standard tone remote tones – guard, monitor and function tones (F1-F16 plus F17). Midian also offers the TRC-2 for simple tone remote control using F1 or F1-F2 only.

Additionally the TRC series offers tone signaling options for controlling and monitoring fleet communications for identifying and stopping system abusers. When the field user keys the radio, a PTT ID or ANI is transmitted. This ID can be displayed on Midian's TRC along with an alias and status (if applicable). An Emergency ANI can also be decoded and displayed to identify radio users in distress. The TRC-100 and TRC-200 can also be selectively called by other tone remote controllers or field units using DTMF or 5 tone. Parallel remote channel indication is available on TRC's on the liquid crystal display. Programmable speaker mute for parallel TRC's in the same room.

TRC-1: Deluxe tone remote controller with DTMF dialing (Optional LCD and paging encoder).

TRC-2: Basic F1 and F2 tone remote controller (Optional DTMF dialing).

TRC-100: Tone remote controller with **DTMF** ANI & ENI display decoding, as well as DTMF dialing for features such as Selective Calling, Radio Kill, and Spy.

TRC-200: Tone remote controller with **5-Tone** ANI & ENI display decoding, as well as 5-Tone dialing for features such as Selective Calling, Radio Kill, and Spy.

TRC-400: Tone remote controller with **Harris' G-Star** ANI & ENI display decoding.

TRC-500: Tone remote controller with **Motorola's MDC-1200** ANI & ENI display decoding.

TRC-600: Tone remote controller with **Kenwood's FleetSync** ANI & ENI display decoding.

TRC-700: Tone remote controller with **Pulse Tone (1500 Hz and 2805 Hz)** encoding and decoding for **hospital HEAR systems**.

TRC-1000: Tone remote controller with a multi-format paging encoder that supports 2-Tone, DTMF, 5-Tone and Pulse Tone.

TRC Options:
- TRC Option A: Gooseneck Microphone
- TRC Option C: Handset & Cradle
- TRC Option D: Serial printer cable
- TRC Option E: Line 2/Supervisor capability
- TRC Option F: 4-wire capability
- TRC Option H: 2-Tone, 5-Tone or Pulse Tone paging (TRC-1 only)
- TRC Option I: LCD Display (TRC-1 only)
- TRC Option J: DTMF Dialing (0-9, *, #) (TRC-2 only)

Shown: TRC-100 with optional
gooseneck microphone

TTC-2
F1-F2 Tone Remote Adaptor

Midian Electronics' TTC-2, tone termination panel, is used to control a remotely located base station radio from a dispatch point using a tone remote controller such as Midian's TRC series. The tone remote controller and TTC-2 are connected using a dedicated phone line, a microwave path or a telemetry link. The TTC-2 uses EIA and industry standard tone remote function (F1-F2), monitor and guard tones.

TTC-2 Options:
- TTC Option J: 4-wire capability
- TTC Option K: Optional enclosure
- TTC Option L: Optional relays for Monitor, PTT and F1/F2 Select

Shown: TTC-2 with Optional Enclosure

TTC-1
F1-F16 Tone Remote Adaptor

Midian Electronics' TTC-1, tone termination panel, is used to control a remotely located base station radio from a dispatch point using a tone remote controller such as Midian's TRC series. The tone remote controller and TTC-1 are connected using a dedicated phone line, a microwave path or a telemetry link. The TTC-1 uses EIA and industry standard tone remote function (F1-F16 for 16 channel control), monitor and guard tones. The TTC-1 offers unique features such as Voice Prompts and Station ID using Voice or Morse Code. Programmable using Midian's KL-4 and KL-4 Option A.

Voice Prompts: The TTC-1 can generate voice prompts back to the TRC at the dispatcher and/or over the air. The voice prompts can indicate a change of channel, emergency alerts, or a change of state on an input/output on the TTC Option A. Users can create their own wav files and use them as customized voice prompts.

TTC-1 Options:
- TTC Option A: Remote control & monitoring card (4 opto-isolated inputs, 4 relay outputs)
- TTC Option C: Radio-telephone interconnect
- TTC Option G: Rolling code voice scrambler (TVS-2) option
- TTC Option H: Voice Inversion scrambler (VPU-15) option
- TTC Option J: 4-wire capability
- TTC Option N: Frequency domain voice scrambler (VS-1200 option)

PTA-16
Parallel Tone Remote Adaptor

Midian's PTA-16 is a tone remote adaptor that allows control of up to 16 radios in parallel on one dedicated line by a tone remote controller. The 16 radios can be addressed individually or in simulcast. The radio's COR causes the PTA-16 to send 2175 Hz followed by the radio's unique function tone to identify the radio to the tone remote controller, which is automatically displayed on the controller's LCD. Optionally, the PTA-16 can also change channels on each radio using DTMF signaling from the tone remote controller.
- Useful in subways, railroads, etc.
- 2 wire or 4-wire capability
- Depending on the actual number of parallel units and line length/condition, a telco line amp may be required to offset loading.
- Requires Midian's KL-4 Programmer & KL-4 Option A

TRE-2
F1-F12 Tone Remote Encoder

Midian's TRE-2 can convert a DC remote into a tone remote or upgrade an existing tone remote controller to have more functions tones. The TRE-2 can be added to a Telco Butt-In Test Set to use as a test instrument for tone remote lines. The TRE-2 generates the high level 2175 Hz, followed by the desired function tone and the continuous low-level guard tone.

- 12 selectable function tones (F1-F12) using Midian's Keypad Option D
- Dimensions: 1.38" L x 0.85" W x 0.34" H

TRE-3
F1-F8 Tone Remote Encoder with 600-Ohm Line Driver

The TRE-3 is a tone remote encoder with a built in 600-ohm line driver that supports F1-F8 with 8 discrete inputs. When an input is taken low the TRE-3 will generate high-level 2175 Hz, followed by the associated function tone and finally by continuous low-level 2175 Hz keying tone. The TRE-3 will then pass voice from an audio source such as a microphone through a compressor to a 600-ohm balanced line driver to the dedicated line, telemetry link or microwave to a tone remote adaptor at a remote site.

TRE-10
F1 Tone Remote Encoder with 600-Ohm Line Driver

Midian's TRE-10 is a tone remote encoder that encodes high-level 2175 Hz, followed by the F1 function tone and finally by continuous low-level 2175 Hz keying tone. The TRE-10 has a mic audio input to pass voice from an audio source such as a microphone or paging terminal through a compressor to a 600-ohm balanced line driver to the dedicated line, telemetry link or microwave to a tone remote adaptor at a remote site. Midian's TRE-10 can be used with Midian's tone remote adaptors (TTC-1 and TTC-2).

RIC-2
Repeater Interoperability Controller

The RIC-2 is a tone remote adaptor that allows two repeaters connected by a dedicated phone line, telemetry link or microwave to key one another. For instance when Repeater A receives a signal from a portable or mobile radio, the repeater gives a COR signal to the RIC-2. The RIC-2 will generate 2175 Hz high-level guard tone, function tone and low-level guard tone to Repeater B's RIC-2 to key Repeater B and re-transmit the audio coming from Repeater A. Function tone F4 is used to have Repeater A key Repeater B and function tone F5 to have Repeater B key Repeater A.

Additionally, a tone remote controller can be connected to the two RIC-2 units for steering control mode. In addition to the scenario above, the tone remote controller can transmit to Repeater A using function tone F1, Repeater B using function tone F2 or simulcast to both Repeaters A and B using function tone F3.

RIC-8
Repeater Interoperability Controller

A DTMF equipped tone remote controller that can control up to eight RIC-8 units in parallel over a single dedicated line. The tone remote controller sends DTMF commands to allow the RIC-8 units and their associated repeaters to interoperate. The RIC-8 is a special tone remote adaptor that generates 2175 Hz keying tone when the radio's COR is present. The 2175 Hz keying tone activates only the radios that have received a DTMF activation code from a tone remote controller or a mobile or portable radio equipped with DTMF dialing. All others ignore the 2175 Hz keying tone.

- Allows up to 8 radios to interoperate over a dedicated line
- Programmable Time Out Timer to limit interoperability time
- 2-wire or 4-wire capability
- Simulcast control from a tone remote or DTMF equipped field radio
- Requires Midian's KL-4 Programmer & KL-4 Option A

IS-1
Interoperability Switch / Cross-Band Repeater Maker

Midian Electronics' IS-1 is an interoperability switch or a cross-band repeater maker for allowing 2 radio systems on different channels, different bands or different protocols to communicate with one another. For example a UHF radio and a DMR radio can interoperate or a VHF radio can interoperate with a UHF P25 radio. This is ideal for interagency cooperation in emergency situations such as search & rescue, emergency relief, hostage situations, etc.

When the IS-1 sees COR or VOX from radio 1, the IS-1 will give a PTT output to radio 2 and pass the audio from radio 1 to radio 2 and vice versa. The IS-1 can be powered by a 9 Volt battery up to 40 hours, or can get the power from an external source such as a mobile radio or the wall power adaptor. A monitor output is available for monitoring the radio traffic or connecting to a voice recorder.

Available options include:
- **IS-1 Option A:** Preconfigured cables for simple installation for some radios
- **IS-1 Option C:** Optional DTMF, 5-Tone, Pulse Tone or 2-Tone decoder for remote enable/disable

IS-2
Interoperability Switch with Trunking Capabilities

Midian Electronics' IS-2 is an interoperability gateway that allows 2 radio systems on different channels, protocols or bands to communicate with one another. For example a Motorola MotoTRBO system and a Kenwood NEXEDGE system can interoperate or a VHF radio system can interoperate with a UHF P25 radio system. This is ideal for interagency cooperation in emergency situations such as search & rescue, emergency relief, hostage situations, etc.

When the IS-2 detects COR or VOX from radio system 1, the IS-2 will give a PTT output to radio system 2 and pass the audio from radio 1 to radio 2. If the second radio system is trunked the IS-2 will wait for a channel acquisition from radio 2 before transmitting. During the channel acquisition delay the IS-2 buffers the audio, so that words are not lost.

- DTMF enable and disable feature, so the interoperability gateway can be used only when needed.
- The IS-2 is powered from the connected radios or the 110-220 VAC wall power adaptor (included).
- Requires Midian's KL-4 Programmer and KL-4 Option A.

Voting Tone Encoder

VTE-1
Voting Tone Encoder

Midian Electronics' VTE-1, voting tone encoder (also known as a pilot tone generator or status tone generator) with a 600-ohm line driver, pairs with a radio receiver to create an analog satellite voting receiver or auxiliary receiver. Satellite voting receivers are spread out over a geographic area to provide greater radio coverage and are connected via a dedicated line, telemetry link or microwave to a voting comparator. The voting comparator looks at the signal to noise ratio from multiple voting receivers and passes the best quality signal to the dispatcher/repeater.

When the radio's COR is inactive the VTE-1 generates a pilot tone to the voting comparator. When the receiver's COR is active the tone is no longer generated and the audio from the radio is sent through the line driver to the voting comparator.

Midian's VTE-1 is compatible with the following types of voting systems:
- Motorola Spectra-TAC
- JPS Communications (Raytheon) SNV-12
- GE Mastr II
- RF Technologies Eclipse
- Other systems using 1950 Hz, 2175 Hz, 1600 Hz or 2700 Hz as the voting tone.
- Custom tones are available

Shown: VM-3-MPP1

VM-3
Voice Storage for Radio

Midian's VM-3 is a voice storage module for use in two-way radios. The VM-3 can record approximately 3 minutes of voice messages. Recording of messages occurs based on a COR/CTCSS/Talk Group indication from the radio or from an indication in the radio that a selective call has occurred (if available). A button on the radio can then be used to play back what was recorded. Plug-in versions of the VM-3 are available for Icom, Kenwood, Motorola and Vertex radios. Also available in a speaker microphone configuration. Requires Midian's KL-4 Programmer.

Shown: SVR-1-VX1

SVR-1
Simplex Repeater Maker

The SVR-1 is a module that installs in mobile or portable two-way radios, after deteceing COR it stores incoming audio messages (up to 3 minutes) and then retransmits the stored audio after loss of COR. Plug-in versions of the SVR-1 are available for Icom, Kenwood, Motorola and Vertex radios. Also available in a speaker microphone configuration. Requires Midian's KL-4 Programmer.

PR-10
Simplex Repeater Maker with Selective Repeat

Paging Regenerator with Voice: The PR-10 decodes and records a paging sequence in 2-Tone, DTMF or 5-Tone and then records the voice page following the paging sequence. When COR drops the PR-10 regenerates the paging sequence followed by the recorded voice page.

Simplex Repeater Maker: When the PR-10 sees a COR indication from the radio it records the incoming voice or tone and voice (up to 3 minutes). When the COR indication drops the PR-10 keys the radio and retransmits the recorded audio message.

- Continuous loop message playback
- Timed voice ID
- Useful tool for testing radio coverage at potential radio sites by listening to the quality of the repeated audio.
- Requires Midian's KL-4 Programmer & KL-4 Option A

TS-120
Multi-Format ANI Encoder with Man-Down/Lone Worker

Midian's TS-120 series is a multi-format ANI encoder and Emergency ANI encoder that supports Man-Down and Lone Worker operation. The Man-Down operation uses an accelerometer to detect motion. If no motion is detected for a programmed amount of time the unit will send the Emergency ANI. The Lone Worker operation expects user interaction with the radio (PTT or Lone Worker Reset) within programmed intervals. If no interaction is detected within this programmed interval the unit will send the Emergency ANI.

- Supports ANI in Motorola's MDC-1200, Kenwood's FleetSync, Harris' G-Star (aka GE-Star), DTMF and 5-Tone
- Plug in versions available for Icom, Kenwood, Motorola (including MOTOTRBO) and Vertex. Also available in a speaker microphone configuration.
- Requires Midian's KL-4 Programmer

Shown: TS-120-MPP1

VAE-1
Voice Alarm Encoder with Man-Down / Lone Worker

Midian's VAE-1 is a voice alarm encoder that supports Man-Down and Lone Worker operation. The VAE-1 can have a voice message stored in it and when the emergency is activated the VAE-1 will transmit an emergency ANI and/or the prerecorded voice message. The following are some common applications:

Emergency Location and Lone Worker: The VAE-1 is ideal for providing voice location messages for Public Safety (firefighters and police) or for lone workers in areas where GPS location is not available. For example, firefighters can store a custom voice message into the VAE-1 as their location changes while fighting a fire in a building. If there is a fire in a ten story building and the firefighter is working on the second floor in room 215, the firefighter can record "Second floor room 215". If the emergency input is activated (by a button press, Man-Down or Lone Worker) the VAE-1 will send the emergency ANI to identify who is in trouble and the voice message will follow to inform the last recorded location. This enables the rescuers to concentrate their search efforts in one area of the building rather than splitting their search efforts between ten stories. Locator tones can also be generated to the radio speaker to provide an audible alert to the searchers.

Equipment Failure Notification: The emergency input of the VAE-1 can be connected to equipment such as tower lights or a backup generator, so that when the tower light goes out it can send a voice message stating "Mount Lemmon tower 3 light is off". This warning can be sent periodically multiple times or continuously until reset. For backup power, when the backup is activated a message such as "Backup power is on".

Emergency Alert: Public safety dispatchers do not want field radio users to talk on the channel without need during an emergency. The dispatcher can have the VAE-1 send a voice message such as "Emergency alert keep channel clear". This message can be sent periodically until reset.

- Supports ANI in Motorola's MDC-1200, Kenwood's FleetSync, Harris' G-Star (aka GE-Star), DTMF and 5-Tone
- Plug in versions available for Icom, Kenwood, Motorola and Vertex. Also available in a speaker microphone configuration.
- Requires Midian's KL-4 Programmer

Shown: VAE-1-VX1

Shown: VAE-1-SM1

ANI-F Series
Automatic Number Identification

Midian's ANI-F series encodes ANI and Emergency ANI in Motorola's MDC-1200, Kenwood's FleetSync, DTMF, 5-Tone (all formats) and Harris' G-Star. The ANI-F also supports paging in POCSAG and 2-Tone (all formats) and the encoding of Emergency Alert Tones. ANI modules send a unique ID when keyed to identify which field radio is transmitting. This is used to identify system abusers, accurately identify emergency conditions and allow dispatchers to know who he or she is talking to and to assign calls fairly. Common users of ANI systems are Public Safety and Fleets (i.e. Taxi, Towing, Buses).

- Sends ANI and Emergency ANI
- Supports the following formats:
    - Motorola's MDC-1200
    - Kenwood's FleetSync
    - DTMF
    - 5-Tone
    - Harris' G-Star (aka GE-Star)
    - Emergency Alert and Custom Tones
- Leading ANI, Trailing ANI or Both
- Compatible with Trunking Systems (most models)
- Requires Midian's KL-4 programmer
- Dimensions: 0.73" L x 0.82 W x 0.16 H

Plug-in modules of the ANI-F are available for Icom, Kenwood and Vertex.

ADD Series
ANI & Emergency ANI Display Decoder

Midian's ADD multi-format ANI display decoders work with Midian's ANI-F or an ANI equipped radio to enable the dispatcher to monitor fleet communications to identify system abusers and emergency conditions. The ADD can decode and display ANI and Emergency ANI in DTMF, 5-Tone (all formats), Harris' G-Star, Motorola's MDC-1200 or Kenwood's FleetSync. The ADD-MF can decode and display ANI and ENI simultaneously in all of the above formats for interoperability. The large LED display makes it easy to view incoming ID's.

- Scroll through the last 6 ID's
- Emergency ANI alert
- Format digit for identifying the signaling format
- Infrared remote controller for scrolling the display and silencing alert tones
- Requires Midian's KL-4 programmer and KL-4 Option A
- Serial output option for Moducom and Orbacom consoles

ADD-100:	DTMF	**ADD-500:**	Motorola's MDC-1200
ADD-200:	5-Tone	**ADD-600:**	Kenwood's FleetSync
ADD-400:	Harris' G-Star (aka GE-Star)	**ADD-MF:**	Multi-Format Decoder

Midian's ADD, CAD and DDU series products work with Midian's ANI-F or an ANI equipped radio to display ANI and Emergency ANI to identify which field unit is being keyed. This enables the dispatcher to determine who keyed a radio, identify system abusers and take the necessary action to stop the behavior or to accurately identify which field radio has an emergency condition. When used with Midian's UED series encoders and decoders or a radio with DTMF or 5-Tone signaling, the DDU-100/200 and CAD-100/200 can display DTMF or 5-Tone ANI and ENI, but can also encode to Midian's UED for selective calling, Radio Kill and Spy. Common users of radio dispatch encoders and decoders are Public Safety and Fleets (i.e. Taxi, Towing, Buses).

CAD Series
Computer-Based ANI Display Decoder & Encoder

Midian's CAD series display decoders enable the dispatcher to monitor fleet communications, to identify emergency conditions and system abusers. The CAD can decode and display ANI and Emergency ANI in DTMF, 5-Tone, Midian's Kryptic, Harris' G-Star, Motorola's MDC-1200 or Kenwood's FleetSync. The CAD-MF can decode and display ANI and ENI simultaneously in all of the above formats (except Kryptic).

The CAD products (except the CAD-MF) can encode commands such as Selective Call, Radio Kill, Query, etc.

- Creates traffic log files that can be exported to Microsoft Excel or Access for reports
- View the entire day's traffic
- Displays ID, Alias, Time, Date and Statuses
- Audible and visual indications for Emergency conditions

CAD-100: DTMF (encode & decode)
CAD-200: 5-Tone (encode & decode)
CAD-300: Midian's Kryptic (encode & decode)
CAD-400: Harris' G-Star (encode & decode)
CAD-500: Motorola's MDC-1200 (encode & decode)
CAD-600: Kenwood's FleetSync (encode & decode)
CAD-MF: Multi-Format Decoder (decode only)
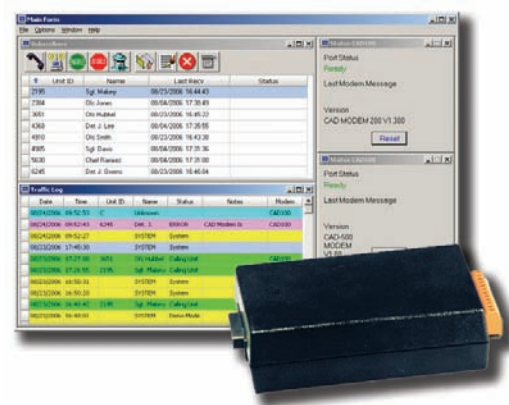
DDU Series
Desktop Dispatch Unit/Local Remote Controllers

Desktop Display Decoder: Midian's DDU will decode and display incoming ANI's and Emergency ANI's to provide the dispatcher with the radio user's identity. This assists in correctly identifying users, stopping system abuse or to identifying users in distress.

- Decodes and displays ANI and Emergency ANI
- Alias database supports up to 135 user names
- 2-line LCD display shows ANI/ENI and Alias
- 10 number ANI memory recall with scroll buttons
- Repeater access control mode employing user ID validation

DDU-100: DTMF (encode & decode)
DDU-200: 5-Tone (encode & decode)
DDU-300: Midian's Kryptic (encode & decode)

DDU-400: Harris' G-Star (decode only)
DDU-500: Motorola's MDC-1200 (decode only)
**DDU-600:** Kenwood's FleetSync (decode only)

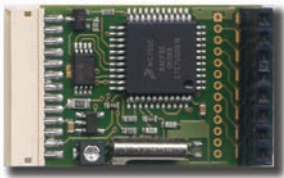# Multi-Format Encoders & Decoders

Midian's UED series decodes, dials and sends ANI in DTMF, 5-Tone, 2-Tone or Pulse Tone (1500 & 2805 Hz). Common uses for these products include selective calling and ANI for fleet management, HEAR System encode and decode for ambulances and hospitals, fire station alerting and remotely controlling equipment and storm warning sirens. The UED series programs using Midian's KL-4.
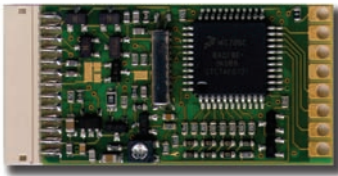
UED-1B
Multi-Format Encoder & Decoder
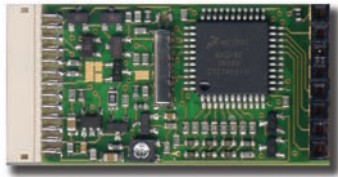
- Decode up to 3 different sequences
- Dial encoding from an optional keypad with a 10 number memory dial
- ANI and Emergency ANI encode
- Transpond upon decoding of the first sequence
- Momentary and latched outputs
- Supports Radio Kill and Spy features for fleet management
- Dimensions: 1.7" L x 0.84" W x 0.35" H

UE-1
Multi-Format Encoder

- Dial encoding from a keypad with a 10 number memory dial
- Add Midian's Keypad Option D for dialing
- ANI and Emergency ANI encode
- Dimensions: 1.38" L x 0.85" W x 0.34" H

UD-1B
Multi-Format Decoder

- Decode up to 3 different sequences
- ANI and Emergency ANI encode
- Transpond upon decoding of the first sequence
- Momentary and latched outputs
- Supports Radio Kill and Spy features for fleet management
- Dimensions: 1.7" L x 0.84" W x 0.23" H

UD-1B-DMH
Multi-Format Decoder

- Same features as UD-1B above
- Metal dashmount enclosure

UED-1B-DMV & UED-1B-BEZEL
Multi-Format Encoder & Decoder

- Same features as UED-1B above
- DMV is in a metal dashmount enclosure with backlit keypad
- Bezel can be mounted to a rack, panel or console

TTD-4
DTMF Decoder

- 1-8 digit DTMF decoder with transpond
- Dipswitch programmable
- Decodes all 16 DTMF tone pairs (0-9, *, #, A-D)
- Invalid digit reset & group call
- Momentary and latched outputs
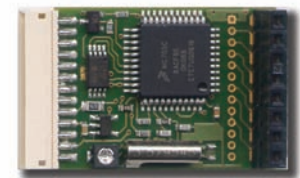- Dimensions: 2.0" L x 1.35" W x 0.29" H
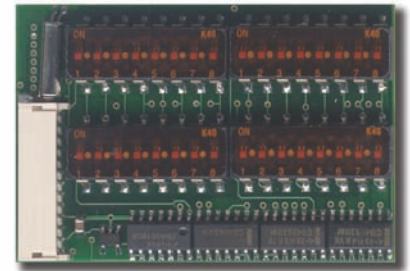
TTD-5
DTMF Decoder

- Single digit DTMF decoder
- Decodes all 16 DTMF tone pairs (0-9, *, #, A-D)
- 16 momentary or latched outputs
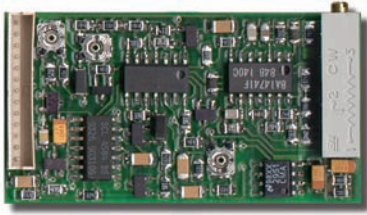- Dimensions: 1.35" L x 0.85" W x 0.25" H
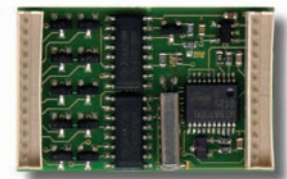
TT-8
DTMF Encoder

- 12 digit DTMF encoder
- Keypad Option D (12 button keypad) for 0-9, *, #
- Automatic PTT when dialing with sidetone
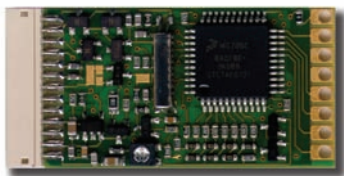- Dimensions: 1.38" L x 0.85" W x 0.34" H

TT-9
DTMF Encoder

- 12 digit DTMF encoder
- Supports 0-9, *, #
- Automatic PTT when dialing with sidetone
- Dimensions: 2.4" L x 1.9" W x 0.39" H

BTD-1
Tunable Burst Tone Decoder

- Version A: 1200-2600 Hz
- Version B: 700-3000 Hz
- Adjustable decode time or continuous decode
- Momentary and latched outputs
- Dimensions: 1.87" L x 1.0" W x 0.34" H

BTD-2
Programmable Burst Tone Decoder

- Programmable for any burst tone frequency from 300 – 3000 Hz
- Momentary and latched outputs with programmable hang timer
- Requires Midian's KL-4 programmer
- MOD-1272 Option: Mutes incoming Motorola MDC-1200 ANI packets
- Dimensions: 1.38" L x 0.85" W x 0.34" H

ANI-F
Programmable Burst Tone Encoder

- Burst Tone Frequency Programmable from 300 – 3600 Hz
- 2-Line binary input to select 4 different tones
- Programmable for momentary burst or continuous tone
- Requires Midian's KL-4 programmer
- Dimensions: 0.73" L x 0.82 W x 0.16 H

Notch Filter/Band Pass Filter

NFBF-10
## Tunable Notch Filter with 600-Ohm Balanced Input & Output

- **Notch Filter**: The unit will remove an undesired tone while passing voice. Commonly used to notch 2175 Hz tone remote tones from voice recording systems.
- Adjustable line audio amplifier.
- Version A: 1200 – 2600 Hz, Version B: 700 – 3000 Hz, Version C: 80 – 200 Hz
- Dimensions: 3.6" L X 2.25" W X 1.52" H

NFBF-1
Tunable Notch Filter/Band Pass Filter

- **Notch Filter**: The unit will remove an undesired tone while passing voice. Commonly used to notch 2175 Hz tone remote tones from voice recording systems.
- **Band Pass Filter**: The unit will pass the desired tone while removing all other tones.
- Version A: 1200 – 2600 Hz, Version B: 700 – 3000 Hz, Version C: 80 – 200 Hz
- Dimensions: 0.85" L x 0.78" W x 0.29" H

TDS-1
CTCSS & DCS Encoder/Decoder

Midian's TDS-1 can be used to equip a repeater or a radio with CTCSS and DCS signaling. While most repeaters and radios come equipped with CTCSS and DCS signaling some are not equipped or do not support custom codes.

- Supports the 38 standard CTCSS tones, 13 split tones and custom CTCSS tones
- Supports any of the 512 (85 recommended) DCS codes (000 – 777)
- Encodes reverse burst for CTCSS or invert & shut-off code for DCS
- Can encode/decode up to 64 different CTCSS/DCS tones using 6-line binary
- Requires Midian's KL-4 programmer
- Dimensions: 1.8" L x 0.84" W x 0.22" H
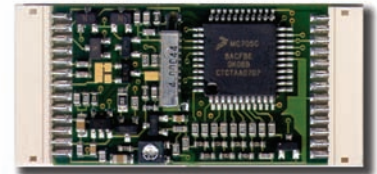
TDS-3
CTCSS & DCS Encoder

Midian's TDS-3 is used to equip a repeater or a radio with CTCSS and DCS encoding. The TDS-3 can add CTCSS, DCS and custom codes to a radio or repeater.

- Supports the 38 standard CTCSS tones, 13 split tones and custom CTCSS tones
- Supports any of the 512 (85 recommended) DCS codes (000 – 777)
- Encodes reverse burst for CTCSS or invert & shut-off code for DCS
- Can encode up to 4 different CTCSS/DCS codes using 2-line binary
- Requires Midian's KL-4 programmer
- Dimensions: 0.73" L x 0.82 W x 0.16 H

Intermodulation Calculator

InterMod
Intermodulation Calculation Software

Midian's InterMod calculator predicts the possible occurrence of intermodulation products that may cause receiver interference. It does this by testing for odd and/or even order products caused by the mixing of multiple transmitters at a given site in a non-linear device. An un-modulated signal may not produce a direct hit. However, Midian's InterMod calculator takes into account combined modulated signals that may sweep across the channel of interest and may be multiplied/mixed.

- Create a single site or multiple site profiles
- Merge capability between multiple sites
- Reports are easy to read using different colors to highlight results and the report can be edited using a text editor that supports rich text files (.rtf)
- Reports can be exported in .csv format
- Software displays a status bar during calculations. Calculations are cancellable, but are maintained for viewing calculations already done
- Support for internet-based mapping applications through scripting
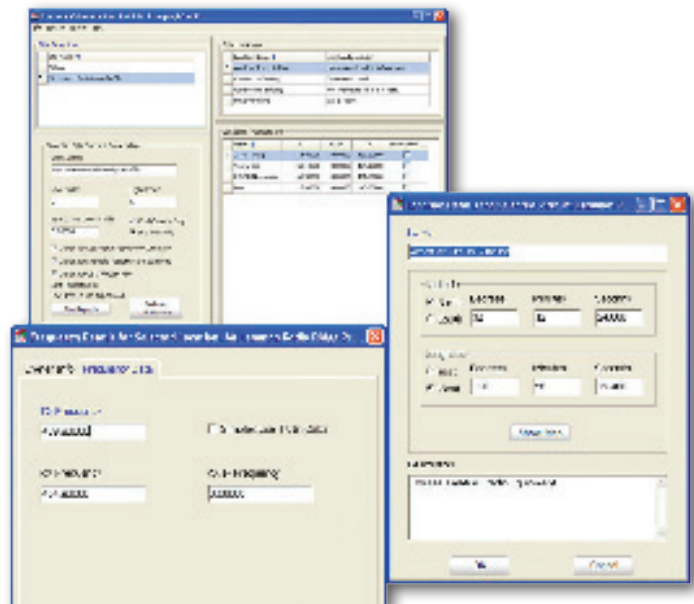
PR-10
Simplex Repeater Maker with Selective Repeat

Paging Regenerator with Voice: The PR-10 decodes and records a paging sequence in 2-Tone, DTMF or 5-Tone and then records the voice page following the paging sequence. When COR drops the PR-10 regenerates the paging sequence followed by the recorded voice page.

Simplex Repeater Maker: When the PR-10 sees a COR indication from the radio it records the incoming voice or tone and voice (up to 3 minutes). When the COR indication drops the PR-10 keys the radio and retransmits the recorded audio message.
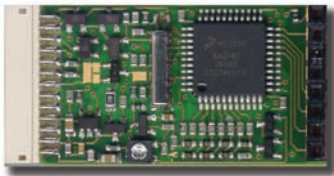
PR-1
Paging Tone Regenerator

The PR-1 paging tone regenerator will decode a paging sequence and then regenerate the same tones (predictive & non-predictive modes) or a different set of tones (predictive mode only) immediately upon decode or 0-9 seconds after a loss of carrier. This allows for regenerating pages into dead spots.

- Formats include **DTMF, 5-Tone** and **2-Tone**
- **Predictive Mode:** Decode up to 3 specific paging sequences and then regenerate the same tones or a different set of tones
- **Non-Predictive Mode:** Decode and regenerate unlimited 2-Tone, 5-Tone or DTMF paging sequences
- Requires Midian's KL-4 programmer
- Dimensions: 1.7" L x 0.84" W x 0.37" H
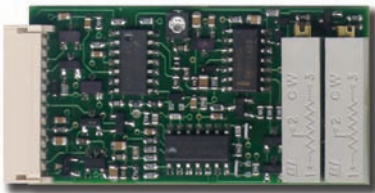
MTSD-3
2-Tone Paging Decoder

2-Tone decoders are used for fire station alerting & storm warning sirens. Two MTSD-3 modules may be "anded" together to decode Motorola QuickCall 1 & AvCall pages (2 + 2).

- Programmed using on board tuning pots
- Momentary & latched outputs
- Version A: 280 – 1600 Hz
- Version B: 500 – 2800 Hz
- Dimensions: 1.9" L x 0.9" W x 0.3" H

RT-2
2-Tone Paging Decoder

- Decodes up to three 2-Tone sequences
- Frequencies are programmable from 300-3000 Hz
- Momentary & latched outputs
- Programmable using Midian's KL-4 or Keypad Option D
- Dimensions: 1.9" L x 0.9" W x 0.3" H

On-Site Paging Applications

Hospitals & Nursing Homes – Schools & Universities – Airports – Security – Factories

Retail Stores – Buildings & Warehouses – Pickup & Delivery Services

DPT Series
Dial Access Paging Terminal

Midian's DPT series dial access paging terminals connect between a PBX or a regular landline and a base station radio or repeater. This enables a telephone caller to dial into the paging terminal and page users in POCSAG, 2-Tone, DTMF and 5-Tone. There are 100 available pre-canned messages for use with POCSAG paging and the Talk-Back paging feature allows paged portable and mobile radios to talk back to the caller.

- Supports up to 835 subscribers
- Tone only or Tone and Voice paging
- Delinquent Account Disable/Re-enable
- DPT-1: 19" rack mountable
- DPT-2: Desktop box
- Requires Midian's KL-4 programmer and KL-4 Option A

Shown: DPT-2

PDE-1
Paging & Dialing Encoder/Local Remote Controller

Paging & Dialing Encoder: The PDE-1 encodes multiple paging formats including POCSAG, 2-Tone (tone only or tone & voice), DTMF, 5-Tone and Pulse Tone.

- 10 number memory dial
- Alias database supports up to 155 users with autodial
- Simultaneously supports multiple paging/signaling formats
- 2-line LCD display shows Pager Code and Alias
- POCSAG supports 512, 1200 & 2400 baud with "canned" alpha messages

CAD-POCSAG
Computer Based POCSAG Paging Encoder

Midian's CAD-POCSAG is an easy to use and cost-effective alphanumeric paging encoder. Simply select a pager or multiple pagers, type an alphanumeric message and click send. The page will be sent to the selected pager(s). The CAD-POCSAG can also poll a predetermined network folder for a text file and automatically generate a POCSAG message from the text file. The CAD modem box connects between a PC and a true FM base station radio.

- Call single or multiple pagers
- Alphanumeric POCSAG paging
- Supports 512, 1200 or 2400 baud
- Automated POCSAG message generation
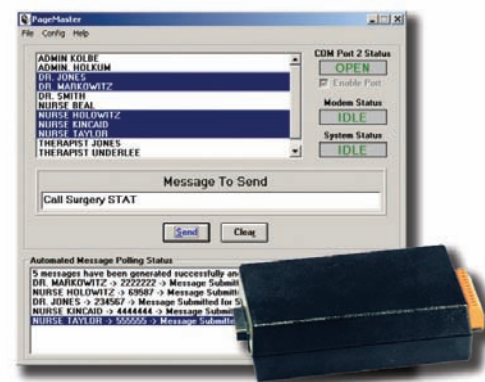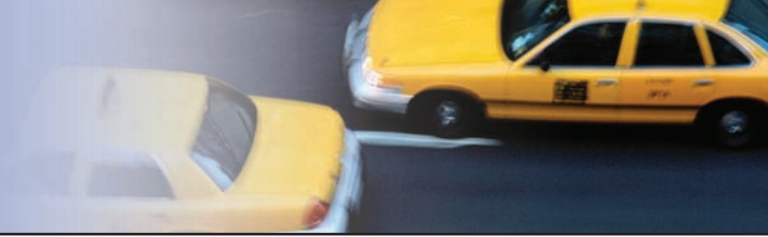
Interconnects

STI Series
Standard Radio-Telephone Interconnect

Midian's STI series of phone patches connect between a telephone line and a base station radio or repeater to allow mobile and portable radio users to make and receive telephone calls. The STI can also be used with Midian's TRA for use as a phone-line extender.

- Supports up to 100 users
- Simplex, Half Duplex and Full Duplex operation
- Toll Restrictions, Call Limit Timers and Overrides
- Delinquent Account Disable/Re-enable
- STI-1: 19" rack mountable
- STI-2: Desktop box
- Requires Midian's KL-4 programmer and KL-4 Option A
- STI Option A: Control box for HF SSB

Shown: STI-2

DTI Series
Deluxe Radio-Telephone Interconnect

In addition to acting as a phone patch or a phone-line extender, Midian's DTI series can act as a repeater maker by connecting it between two mobile radios to form a repeater. The DTI supports CTCSS/DCS validation with DTMF ANI connect and disconnect. A voice scrambler option is available to allow systems with radio encryption to talk over the air in secure mode with the telephone caller.

- Supports up to 350 users
- Simplex, Half Duplex and Full Duplex operation
- ANI validation for repeater access
- DTI-1: 19" rack mountable
- DTI-2: Desktop box
- Requires Midian's KL-4 programmer and KL-4 Option A

Shown: DTI-1

Telephone to Radio Adaptor

TRA
Telephone to Radio Adaptor

Telephone Line Extender: Midian's TRA can be used to extend a phone line via two-way radio into remote areas or to vehicles with no landline or cellular coverage. The phone patch (such as Midian's DTI or STI series) connects between a regular landline and a two-way radio or repeater. At the remote site a second two-way radio would be connected to the TRA and a regular telephone, answering machine, fax or low speed modem. The remote site can then make and receive telephone calls.

Local Remote Controller: The TRA can be connected between an unused extension on a KSU office phone system and a base station radio. An office worker may then communicate with the field radios simply by picking up any telephone in the building and accessing the dedicated extension. Field units may also ring the extension by DTMF dialing or fast multi-clicking of the PTT or using DTMF to speak with someone in the office. The TRA also supports selective calling of field units and paging.

IS-1
Interoperability Switch / Cross-Band Repeater Maker

IS-2
Interoperability Switch / Cross-Band Repeater Maker

Midian's IS-1 and IS-2 are interoperability switches that allow two radio systems on different channels, protocols or bands to communicate with one another. For example a Motorola MotoTRBO system and a Kenwood NEXEDGE system can interoperate or a VHF radio system can interoperate with a UHF P25 radio system. This is ideal for interagency cooperation in emergency situations such as search & rescue, emergency relief, hostage situations, etc.

When the IS-1/IS-2 detects COR or VOX from radio system 1, the unit will give a PTT output to radio system 2 and pass the audio from radio 1 to radio 2. If the second radio system is trunked the IS-2 will wait for a channel acquisition from radio 2 before transmitting. During the channel acquisition delay the IS-2 buffers the audio, so that words are not lost.

Shown: IS-2

RM-1
Repeater Maker

Midian's RM-1 connects between 2 two-way radios to make them into a cost-effective repeater. This product is ideal for use as a permanent low cost repeater by public safety and amateur radio operators or for use as a temporary repeater for search and rescue operations. The RM-1 also incorporates a DTMF decoder to provide for authorized access and/or closure of the repeater if desired. Two RM-1 modules can be used to create a cross-band repeater.

- Includes Morse Code station identification (2 selectable messages)
- Programmable hang time and ID repeat time
- Programmable using Midian's KL-4 or the keypad
- Dimensions: 2.4" L x 1.9" W x 0.39" H

ID-1
Morse Code Station Identifier

The ID-1 is a programmable CW ID module and is ideal for use in Public Safety, amateur radio and commercial applications including repeaters and base stations.
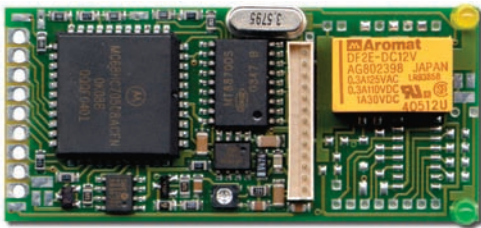
- Includes Morse Code station identification (2 selectable messages)
- Programmable hang time
- Programmable ID repeat time and speed
- Programmable using Midian's KL-4 or Keypad Option D
- Dimensions: 1.38" L x 0.85" W x 0.34" H
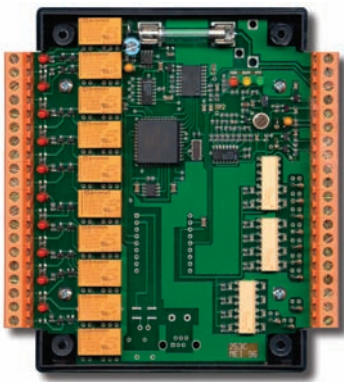
Remote Monitoring & Control Applications

Pump & Well Control – Alarm Systems – Ventilation – Irrigation Systems – Lighting Control

RD-1
Remote Monitoring & Control

Midian's RD-1 can receive DTMF commands from a DTMF equipped two-way radio, Midian's RC-10, RD-10 or another RD-1. The RD-1 can also transpond and encode alarm conditions to an RC-10.

- 1 relay output (Dual form C rated for 0.3 Amp at 120 VAC)
- Momentary or latched output can be turned on until reset or for a period of time (up to 24 hours)
- Requires Midian's KL-4
- Dimensions: 2.5" L x 1.11" W x .37" H

RD-10
Remote Monitoring & Control

Midian's RD-10 can receive DTMF commands from a DTMF equipped two-way radio, Midian's RC-10, RD-1 or another RD-10. The RD-10 can transpond and encode alarm conditions to an RC-10.

- 10 relay outputs (Dual form C rated for 0.3 Amp at 120 VAC)
- 10 opto-isolated inputs for status monitoring
- Momentary or latched outputs can be turned on until reset or for a period of time (up to 24 hours)
- Requires Midian's KL-4

RC-10
Remote Monitoring & Control Console

The RC-10 monitors and controls up to 10 RD-1 units or a single RD-10. The RC-10 can turn the outputs of the RD-1 & RD-10 on and off, as well as receive and acknowledge alarm status conditions.

- Polling of remote sites
- Alarm indicator LEDs with audible tone
- Power, PTT and channel busy LED's
- Requires Midian's KL-4
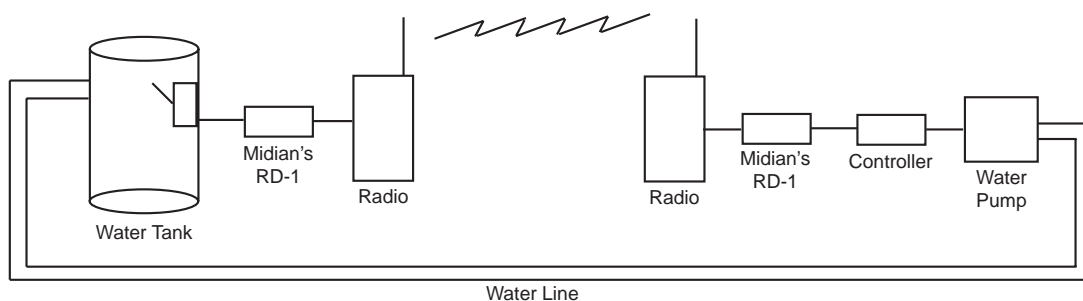
VAE-1
Voice Alarm Encoder

VAE-10
Voice Alarm Encoder

Shown: VAE-1

Midian's VAE-1 and VAE-10 are voice alarm encoders that can store a voice message and when the emergency input is grounded the VAE-1 will transmit an emergency ANI and/or the prerecorded voice message. The following are some common applications:

Equipment Failure Notification: The emergency input of the VAE-1/VAE-10 can be connected to equipment such as tower lights or a backup generator, so that when the tower light goes out it can send a voice message stating "Mount Lemmon tower 3 light is off". This warning can be sent periodically multiple times or continuously until reset. For backup power, when the backup is activated a message such as "Backup power is on".

Emergency Alert: Public safety dispatchers do not want field radio users to talk on the channel without need during an emergency. The dispatcher can have the VAE-1/VAE-10 send a voice message such as "Emergency alert keep channel clear". This message can be sent periodically until reset.
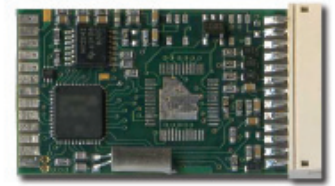
Shown: VAE-10

AE-1
Alarm Monitoring Encoder

Midian's AE-1 has 8 status inputs for reporting alarm conditions. Each input has a high and low indication for sending 2 status messages per input. This is ideal for monitoring remote locations via two-way radio for intrusion detection, equipment failures, fire alarms, tank overflows, etc.

- Supports signaling in DTMF, 5-Tone and 2-Tone
- Report alarm conditions to a tone pager or an ANI display decoder such as Midian's CAD, ADD or DDU series
- Requires Midian's KL-4 Programmer
- Dimensions: 1.3" L x 0.85" W x .0.23"

ANI-F
POCSAG Paging Encoder

The ANI-F (POCSAG) has 3 status inputs for reporting up to 6 alarm conditions. Each input has a high and low status for sending 2 unique alphanumeric POCSAG pages via a two-way radio. The page can be transmitted to a numeric or alphanumeric pager to alert the user to the alarm. Applications include intrusion alarms, fire alarm reporting, tank overflow warnings, report equipment failures, etc.

- Supports 512, 1200 and 2400 baud
- 3 separate paging addresses, each with 2 programmable messages
- Requires Midian's KL-4 Programmer
- Dimensions: 0.73" L x 0.82 W x 0.16 H

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