

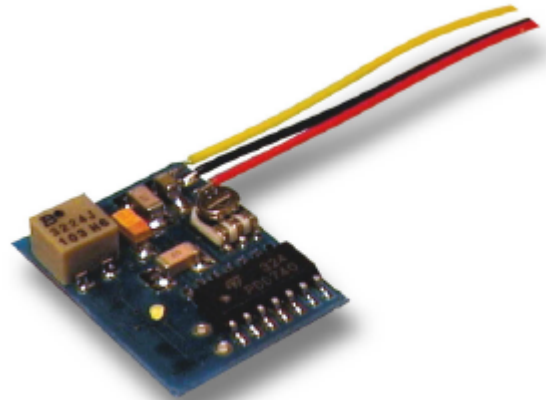
NC101 CTCSS ENCODER

The Model NC101 is the **smallest** CTCSS Encoder on the market today, through the use of thick film hybrid technology. **Micro-miniature** in design allows for installation in very confined areas. The NC101 is completely field tunable to any of the CTCSS tone frequencies (67Hz-254Hz) without changing components or using frequency determining elements.

FEATURES:

Size: 0.60"W x 0.80"L x 0.20"H

- Double sided adhesive mount - no need for mounting hardware
- Easy interfacing to most systems
- Immunity to RF
- Low current drain
- 12" colored flying leads
- Field tunable from 67Hz to 254Hz
- Adjustable encoder output level
- Operating voltage 5VDC to 15VDC



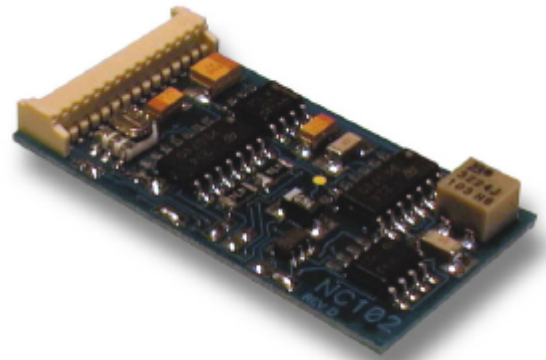
NC102 CTCSS ENCODER/DECODER

The Model NC102 is a high stability **micro-miniature** sub-audible CTCSS Encoder/Decoder especially designed for tone squelch application. Using surface mount components and thick film technology the NC102 has become the **smallest** CTCSS Encoder/Decoder available today!

FEATURES:

Size: 0.80"W x 1.5"L x 0.20"H

- Double sided adhesive mount - no need for mounting hardware
- Easy interfacing to most systems
- Immunity to RF
- Low current drain
- Push to talk and hang-up input controls
- Field tunable from 60Hz to 250Hz
- Built-in high pass filter
- Positive or negative squelch control
- Adjustable encoder output level
- Operating voltage 5.5VDC to 24VDC
- Voltage regulated circuitry
- Reverse polarity protection



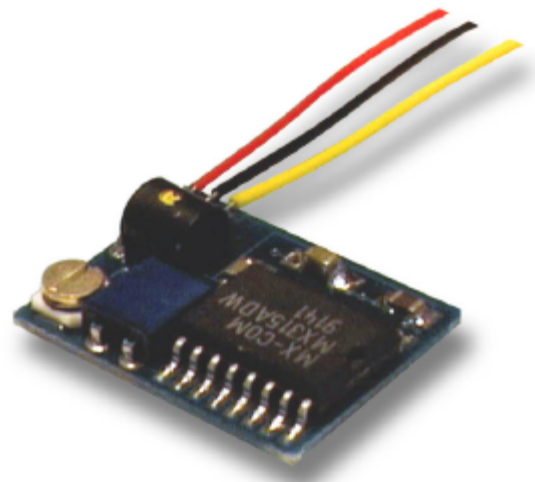
NC104 PROGRAMMABLE CTCSS ENCODER

The Model NC104 is a sub-miniature programmable CTCSS Encoder designed for ease in programming with solder bridging pads, allowing the user to field select on the P.C. Board or by remote switching any one of the standard 37 EIA CTCSS tones plus 69.37, 97.4 and 206.5 Hz without the need of tone measuring equipment. The NC104 is ideal for applications where tone selection is provided by use of radio's frequency switch or by other remote methods.

FEATURES:

Size: .625"W x 0.80"L x 0.17"H

- Double sided adhesive mount - no need for mounting hardware
- Easy interfacing to most systems
- Field programmable via solder bridging of numbered pads
- Low current drain
- Immunity to RF
- 12" colored flying leads
- Field selectable from 67Hz to 250Hz
- Operating voltage 7.5VDC to 24VDC
- Reverse polarity protection
- Voltage regulated circuitry



NC105 DIGITAL CODED SQUELCH ENCODER/DECODER

The Model NC105 is a micro-miniature field programmable D.C.S. Encoder/Decoder compatible with most **FM** commercial communications equipment. The Model NC105 is a highly versatile CMOS Micro-Processor controlled unit providing user friendly programming of input and output functions and up to 176 D.C.S. codes. Compatible with Motorola's DPL and G.E.'s DCG, programmed via an on-board miniature dip switch or the Optional NC500 Universal P.C. Programmer (see Accessories). All programming can be performed with power on and is retained in a nonvolatile E2Prom memory.

FEATURES:

Size: 0.80"W x 1.60"L x 0.30"H
(.20"H with sip switch removed)

Encoder:

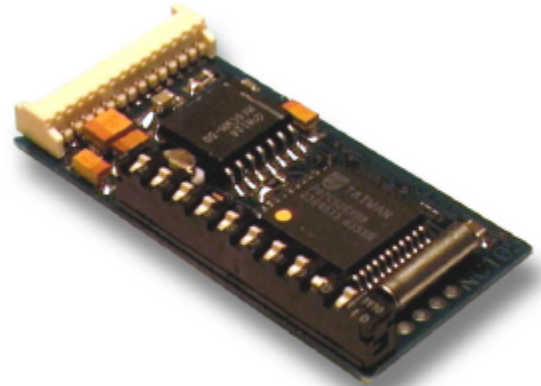
- CODE SELECTION: 176 preset codes plus no code
- CODE DATA POLARITY: normal or inverted
- OUTPUT LEVEL: 0 to 850mVRMS
- OUTPUT IMPEDANCE: >5k OHM, AC coupled
- OUTPUT DISTORTION: <2.0% THD
- TURN-OFF CODE: 134.4Hz sine wave for 180ms
- TK KEY OUTPUT: sinks to ground
- PTT INPUT: above or to ground
- PTT/TX KEY: common or following

Decoder:

- CODE SELECTION: 176 preset codes plus no code
- CODE DATA POLARITY: normal or inverted
- DECODE DETECT: 171.1ms (one word)
- DECODE DROP OUT: <500mS signal fade
- DECODE RELEASE: <35mS with turnoff codes
- DECODE OUTPUT: above or to ground
- INPUT SENSITIVITY: <10mVRMS
- INPUT S/N RATIO: <7dB sinad
- INPUT IMPEDANCE: >60K OHM, AC coupled

General:

- SIGNALLING FORMAT: 23 bit binary coded word.
- OPERATING VOLTAGE: 5.5VDC to 20VDC
- OPERATING CURRENT: <10mA
- OPERATING TEMPERATURE: -30EC to +70EC
- BUSY LOCK-OUT INPUT: Above or to ground (± 1.5 VDC threshold)
- TX TIME-OUT TIMER: 0 to 150 sec.
- B.L.O./T.O.T. ALERT TONE: 900/1800Hz, pulsating at 125mS.
- MONITOR INPUT: Above or to ground.
- AUTOMATIC DEFAULT: Resets all features to factory presents and code to "023".
- PROGRAM VERIFICATION: "Features" verified by an 1800Hz tone and "codes" by a 900Hz tone. Pulsating tone indicates valid entry and steady tone invalid entry.
- PROGRAMMING METHODS: Field programmable by use of 10 position sip switch or optional Model NC500 Universal P.C. Programmer.
- HIGH PASS FILTER: Three pole filter removes tone data from receiver audio.
- MEMORY STORAGE: Programmed data is stored in nonvolatile E2Prom memory and will remain regardless of power interruptions. Requires no batteries.



This product comes complete with 12" colored flying lead plug assembly.

General (cont.)

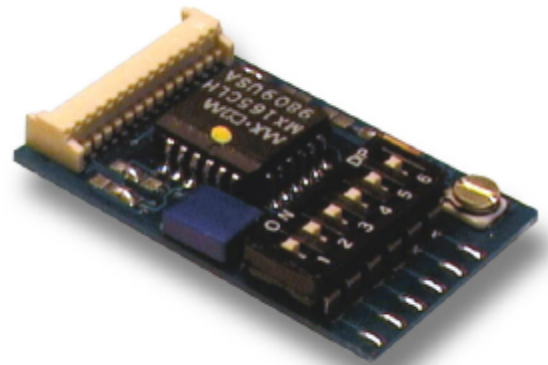
- 16 EXCLUSIVE MEMORIES: Programmed configurations can be stored in up to 16 memory locations and are selected by a 4 line binary input for external access of pre-programmed codes.
- SIMULTANEOUS ENCODE/DECODE: Encode output is separate from the decoder. This feature allows both encoding and decoding at the same time. **This feature is ideal for repeater applications.**
- CODING: Independent code selection of Encoder or Decoder can be programmed.
- SINGLE LINE PTT: Combines both PTT input and TX keying output into one line. This method eliminates the need to break the transceivers PTT circuitry.
- TIME BASE: Crystal controlled (3.5795MHz)
- INTERFACING: Micro-miniature 14 pin mox header and 12" color coded cable assembly.
- MOUNTING: Double sided adhesive tape and sleeved tubing.
- **AND MANY MORE ...too numerous to list in the limited space. Ask us to send the complete specifications, programming and installation information.**

NC106 PROGRAMMABLE CTCSS ENCODER/DECODER

The Model NC106 is a sub-miniature crystal controlled digital CTCSS Encoder/Decoder employing capacitor switching and digital period measuring techniques for discrete tone assignments. The NC106 has been designed to meet the CTCSS requirements of most commercial communication equipment and provides dip switch programming, allowing the user to field select any one of 37 CTCSS tones plus 97.4Hz without the need of tone measuring equipment.

FEATURES:

- Size: 0.85"W x 1.35"L x 0.28"H (0.24"H without dip switch)
- Field programmable
 - Crystal Controlled
 - Dip switch programmable to any one of 37 EIA CTCSS tones (67.0Hz to 250.3Hz plus 97.4Hz)
 - No tone measuring equipment needed to set frequency
 - Dip switch may be removed for remote switching matrix
 - Voltage regulated circuitry
 - Reverse polarity protection
 - Double sided adhesive mount - no need for mounting hardware
 - Miniature edge connector
 - Operating voltage 6VDC to 24VDC
 - Built-in high pass filter



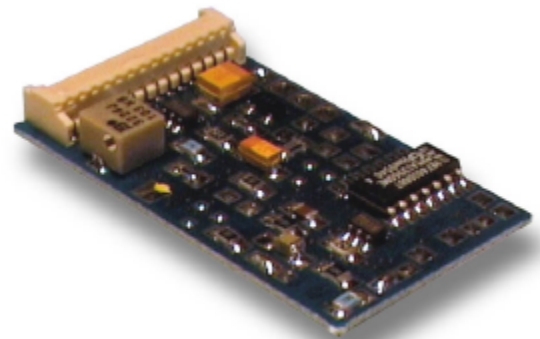
This product comes complete with 12" colored flying leaded plug assembly.

NC108 SINGLE TONE BURST DECODER

The Model NC108 is a stability Single Tone Burst Decoder used for tone control of repeater systems, alert paging, selective calling or for control of remote applications using radio, microwave or voice grade wire line systems. There are two versions: The NC108-A for high frequency formats (800Hz-3000Hz), and the NC108-B for low frequency formats (280Hz-1500Hz).

FEATURES:

- Size: 0.825"W x 1.425"L x 0.20"H
- Double sided adhesive mount - no need for mounting hardware
 - Field tunable over its frequency range
 - Low current drain
 - Selectable high or low, sink or source latched output for squelch control circuitry
 - Selectable high or low input for Monitor/ Reset functions
 - Momentary output
 - PTT Input function
 - Reverse polarity protection
 - Immunity to RF
 - Voltage regulated circuitry
 - Operating Voltage 5.5VDC to 24VDC



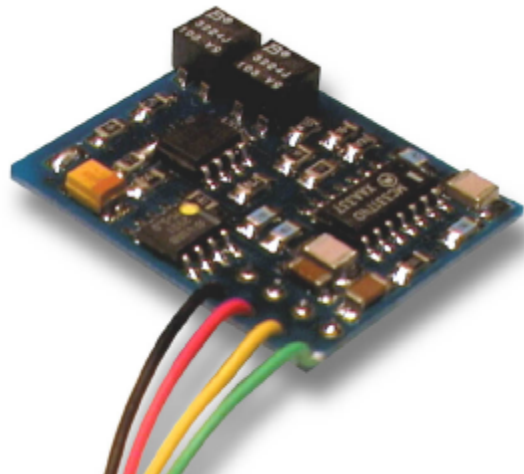
This product comes complete with 12" colored flying leaded plug assembly.

NC109 NOTCH FILTER

The Model NC109 is a high stability, audio notch filter and is designed to suppress a single frequency and pass all others. The NC109 is used where it is desired to reject a single tone from modulating a transmitter during the presence of voice and other tones in a voice plus tone control system. The NC109 comes in two versions: The NC109-A for high frequency formats (800Hz-3000Hz), and the NC109-B for low frequency formats (280Hz-1500Hz).

FEATURES:

- Size: 0.92"W x 1.12"L x 0.185"H
- Field tunable over its frequency range
 - Immunity to RF
 - Low current drain
 - 12" colored flying leads
 - High stability to prevent drift
 - Selectable output impedance
 - Operating voltage 6VDC to 24VDC
 - Reverse polarity protection
 - Voltage regulated circuitry

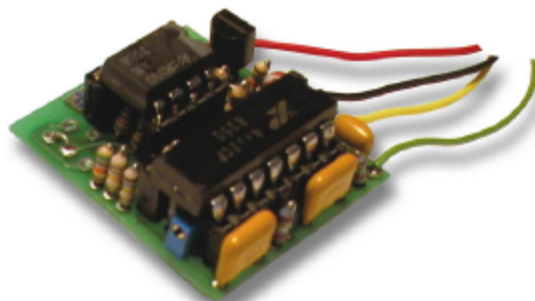


NC110 BAND PASS FILTER

The Model NC110 is a high stability audio band pass filter and is designed to pass a narrow band of frequencies and reject all others. The NC110 is used where it is desired to isolate a tone for decoding during the presence of voice and other tones on a voice plus tone control system. The NC110 comes in two versions: The NC110-A for high frequency formats (800Hz-3000Hz) and the NC110-B for low frequency formats (280Hz-1500Hz).

FEATURES:

- Size: 1.06"W x 1.15"L x 0.45"H
- Field tunable over its frequency range
 - Immunity to RF
 - Low current drain
 - 12" colored flying leads
 - High stability to prevent drift
 - Selectable output impedance
 - Operating voltage 6VDC to 24VDC
 - Reverse polarity protection
 - Voltage regulated circuitry

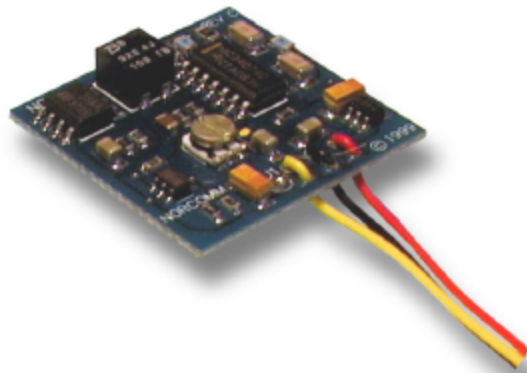


NC111 SINGLE TONE BURST ENCODER

The Model NC111 is a high stability Burst Encoder used for selective signalling. The NC111 is compatible for use with all single (burst or continuous) tone requirements. There are two versions: The NC111-A for high frequency formats (800Hz-3000Hz), and the NC111-B for low frequency formats (280Hz-1500Hz).

FEATURES:

- Size: 1.0"W x 1.0"L x 0.18"H
- Field tunable over its frequency range
 - Immunity to RF
 - Low current drain
 - 12" colored flying leads
 - High stability to prevent drift
 - Selectable burst duration or continuous tone
 - Adjustable audio output
 - Operating voltage 6VDC to 24VDC
 - Reverse polarity protection
 - Voltage regulated circuitry

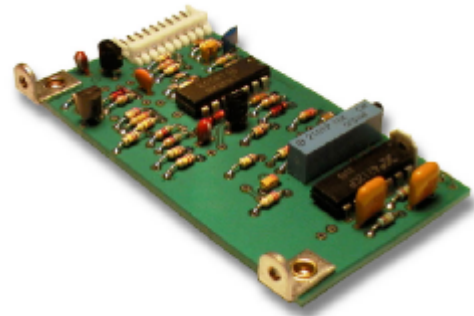


NC103-10 CTCSS ENCODER/DECODER FOR RELM RADIOS

The Model NC103-10 is a high stability, sub-audible CTCSS Encoder/Decoder designed as a direct replacement for RELM Communications Model MA-165 Encoder/Decoder. The Model NC103-10 comes complete with wiring harness, screws and instruction for interfacing with RELM Communication Models: MCL, MCH, TRH, MCCB, MCB, MCU and MCE series radios.

FEATURES:

- Continuous tunable 60Hz to 280Hz (no jumpers)
- Reverse polarity protection
- Voltage regulated circuitry
- High Stability
- Miniature edge connector
- Complete with mounting hardware and instructions
- Built-in high pass filter
- Low current drain
- Immunity to RF



This product comes complete with 12" colored flying leaded plug assembly.

NC112 CTCSS ENCODER/DECODER REPEATER TONE BOARD

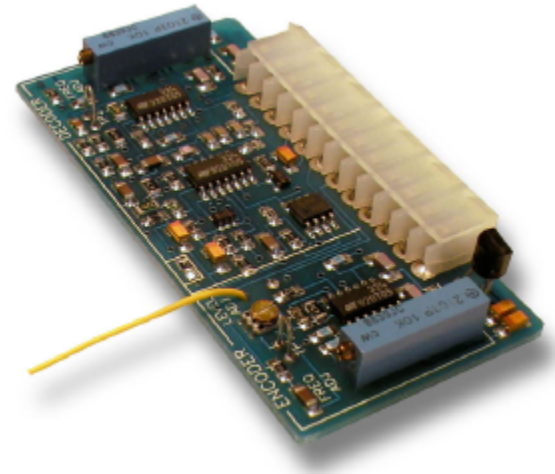
The Model NC112 is a field tunable CTCSS Encoder/Decoder designed as a single P.C. Board for direct plug-in compatibility with RELM'S Repeater Models; U-10R, WH-100R, WU-451R and earlier Models U-10 and U-14 Series Repeaters.

The NC112 CTCSS Encoder/Decoder provides the unique ability to simultaneously encode and decode separate tone frequencies thus allowing the user the option to encode one tone frequency while decoding a different tone frequency.

By use of our popular hybrid thin-film active filters the Model NC112 CTCSS Encoder/Decoder provides excellent frequency stability and ease of programming.

FEATURES:

- Size: 1.6"W x 3.0"L x .4"H
- Field tunable
 - 12 pin Molex header plug for direct plug-in
 - Frequency stability at $\pm 0.5\%$
 - Frequency range 62Hz to 280Hz (no jumpers)
 - High pass filter
 - Immunity to RF
 - Simultaneous encode/decode with separate frequencies
 - Operating voltage 6VDC to 24VDC



NC113 DIGITAL CODED SQUELCH ENCODER/DECODER REPEATER TONE BOARD

The Model NC113 is a field programmable D.C.S. Encoder/Decoder engineered for simultaneous encoding and decoding of up to 176 pre-programmed D.C.S. codes for direct plug-in compatibility with RELM's Models U-10R, WH-100R, WU-415R and earlier models U-10 and U-14 Series Repeaters. The Model NC113 is compatible with Motorola's DPL and General Electric's DCG signalling formats. Programming is provided by an on-board sip switch or the optional Model NC500 Universal P.C. Programmer (see Accessories).

FEATURES:

- Size: 1.6"W x 3.0"L x .47"H
- Simultaneous encode/decode
 - Independent code selection of Encoder or Decoder can be programmed
 - On-board high pass filter
 - 176 Digital Coded Squelch codes
 - Turn off code
 - 171mS detect time (one word)
 - Adjustable output level
 - Normal or inverted data polarity

(See Model NC105 Digital Coded Squelch Encoder/Decoder for more detailed information on features and specifications)

