



DATA SIGNALING

NORCOMM™

PRODUCT CATALOG

TOLL FREE SALES (800) 874-8663

Direct Line: (530) 477-8400

Fax: (530) 477-8403

e-mail: sales@norcommcorp.com

web-site: www.norcommcorp.com

Technical Assistance

(530) 477-8400

e-mail: tech@norcommcorp.com

About NorComm Corporation

Nearly 30 years ago NorComm Corporation introduced its first Data Signaling products to the Wireless Communications Industry. Founded by a user of two-way radios unable to obtain the quality and technology he knew was possible, NorComm has grown steadily over the years due to constant attention to incorporating the very latest technology available along with the high quality standards NorComm has become known for into our ever expanding product line.

NorComm offers a full line of American-made Data Signaling products for Two-Way Radio Systems combining innovation in design, sub-miniature size and competitive pricing. NorComm products have become known throughout the world for their reliability and wide range of applications.

NorComm also offers product application notes, technical assistance staff, as well as custom redesign of product P.C. Board and software configurations for nonstandard applications.

NorComm Corporation. Data signaling products for the Two-Way Radio Industry designed by users for users!

Contract Assembly

Meeting today's surface mount technology (SMT) assembly requirements doesn't have to be an expensive or time consuming undertaking. NorComm Corporation is an experienced SMT Assembler that can help you meet those requirements and can SAVE YOU MONEY doing it. NorComm utilizes proven equipment and techniques to deliver quality products.

We can provide quick turnaround on prototype or small production with on-time performance.

For further details contact us at: 800-874-8663!

Custom Engineering

NorComm Corporation provides Data Signaling products to OEM customers such as Kenwood, RELM, Maxon, Vertex, and Pacific Gas & Electric Corporations with either custom designed circuits, software reconfiguration or modified standard units. Our many years of custom designed products for specialized applications qualify NorComm as a leader in the Telecommunications Industry.

Let our technical staff help you with your design requirements. Call 800-874-8663 or 530-477-8400 Today!

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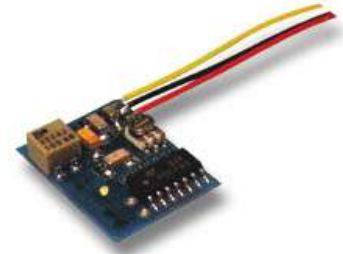
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NC101 C.T.C.S.S. Encoder

The Model NC101 is the **smallest** C.T.C.S.S. 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 C.T.C.S.S. tone frequencies (67Hz - 254Hz) without changing components or using frequency determining elements.



FEATURES:

Size: 0.64"W x 0.82"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 C.T.C.S.S. Encoder/Decoder

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



FEATURES:

Size: 0.80"W x 1.5"L x 0.30"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 67Hz 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



NC108 Single Tone Burst Decoder

The Model NC108 is a high stability Single Tone Burst Decoder used for tone control of repeater systems, alert paging, and 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 0.24"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
- Immunity to RF
- Voltage regulated circuitry
- Operating Voltage 5.5VDC to 24VDC

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 three versions: The NC109-A for high frequency formats (800Hz - 3000Hz), the NC109-B for low frequency formats (280Hz - 1500Hz), and the NC109-C for extremely low frequency formats (67-250Hz).



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
- 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 three versions: The NC110-A for high frequency formats (800Hz - 3000Hz), the NC110-B for low frequency formats (280Hz - 1500Hz), and the NC110-C for extremely low frequency formats (67Hz-250Hz).



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" flying colored leads
- High stability to prevent drift
- Selectable output impedance
- Operating voltage 5.5VDC to 24VDC
- Voltage regulated circuitry

NC111 Single Tone Burst Encoder

The Model NC111 is a high stability Burst Encoder used for selective signaling. 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" flying colored leads
- High stability to prevent drift
- Selectable burst duration or continuous tone
- Adjustable audio output
- Operating voltage 5.5VDC to 24VDC
- Voltage regulated circuitry



NC201 Two-Tone Decoder

The Model NC201 is a high stability, Two-Tone Sequential Decoder used primarily for selective calling system. Subminiature in size, it is ideal for use in portable radios as well as applications where there is limited space. There are two versions: The NC201-A for high speed formats (800Hz - 3000Hz) such as Reach and Plectron, and the NC201-B for slow speed formats (280Hz - 1400Hz) such as Motorola "Quick Call II", G.E. "Type 99" and RCA's "1 + 1".



FEATURES:

Size: 0.825"W x 1.63"L x 0.26"H

- Double sided adhesive mount - no need for mounting hardware
- Field tunable over its frequency range
- Immunity to RF
- Low current drain
- Leaded 14 pin cable assembly
- High stability to prevent drift or falsing
- Selectable high or low input for Monitor/Reset functions
- Selectable high or low, sink or source latched output for squelch control
- Wide dynamic input signal range (no level to adjust)
- PTT input function
- Momentary output
- Operating voltage 5.5VDC to 24VDC
- Voltage regulated circuitry

NC221 Comm Call™ Mobile Dash Mount Two-Tone Sequential Decoder

The Model NC221 is a miniature mobile dash-mount two-tone sequential decoder designed for selective calling of fleet dispatched vehicles. The NC221 features tone "A" or tone "B" group calling, busy lock-out, relayed momentary output for horn control, transmit time-out timer and microphone hang-up monitor/reset. The NC221 is enclosed in a smartly styled high impact plastic enclosure, providing front panel membrane switching with panel illumination of call, horn and monitor control functions.



FEATURES:

Size: 2.4"W x 3.8"L x 0.925"H

- Field tunable over its frequency range:
 - Model NC221-A=800 - 3000Hz
 - Model NC221-B=280 - 1400Hz
- High stability filters to prevent frequency drift or falsing
- Momentary output (Horn) via 1 Amp @ 60VDC single form "C" relay
- Pulsating tone alert



NC400 D.T.M.F. Multi-Function Decoder with Relay Outputs

The Model NC400 is a unique miniature D.T.M.F. Decoder, using relayed outputs for selective control of remote applications. The NC400 combines three distinct, multi-addressable D.T.M.F. Decoders in one highly versatile unit, offering multiple user-configurable functions through microcontroller technology and NorComm's custom software. The NC400 decodes all 16 standard D.T.M.F. characters, with address lengths of 1 to 14 digits and features E2Prom memory for non-volatile storage of programmed codes, input and output functions, remote programming, deadbeat disable, user output plus Default Reset.



The Model NC400 is easily programmed by means of a conventional D.T.M.F. Encoder or the Model NC500 Universal/P.C. Field Programmer. All information programmed remains intact regardless of power interruptions. Coupled with a unique software design and integrated D.T.M.F. filter/detector, the NC400 equips your communications network with a stable dynamic D.T.M.F. Decoder that is totally user friendly.

FEATURES:

Size: 2.0"W x 2.4"L x 0.52"H

Primary Decoder

- Latched Relay Output
- Call Light Output
- Momentary Relay Output
- Tone Alert Output
- Decode Delay
- Transponder Functions
- Timed Latch Reset
- Call Reset
- Group Call
- All Call
- Group Call reset
- All Call Reset
- PTT Input
- Transmit Time-out Timer
- Busy Lock-out
- Monitor/Reset Input
- PTT/TX Keying Select

Secondary Decoder "User" Mode

- Latched Relay Output
- Transponder Functions
- Call Reset

Secondary Decoder "Deadbeat Disable" Mode

- Latched Relay Output
- Transponder Functions
- Deadbeat Disable Check

Third Decoder "Remote Programming"

- Distinct from Primary and Secondary Decoders and responds to a separate three (3) digit address.



NC401 D.T.M.F. Sub-Miniature Multi-Function Decoder

The Model NC401 is a unique micro-miniature Touch-Tone Decoder designed for selective signaling of fleet dispatched vehicles, mobile telephone systems, or for control of remote applications. The NC401 combines three distinct, separately addressable D.T.M.F. Decoders in one highly versatile unit, offering multiple user-configurable output functions through microcontroller technology and NorComm's custom software. The NC401 decodes all 16 standard D.T.M.F. characters with an address length of 1 to 14 characters and features E2Prom memory for non-volatile storage of programmed codes, input and output functions, remote programming, deadbeat disable and user outputs. The NC401 is easily programmed by means of a conventional D.T.M.F. Encoder or the Model NC500 Universal P.C. Programmer.



FEATURES:

Size: 0.80"W x 1.38"L x 0.23"H

Primary Decoder

- Latched Output
- Call Light Output
- Momentary Output
- Tone Alert Output
- Decode Delay
- Transponder Functions
- Timed Latched Reset
- Call Reset
- Group Call
- All Call
- Group Call Reset
- All Call Reset
- PTT Input
- Transmit Time-out Timer
- Busy Lock-Out
- Monitor/Reset Input
- PTT/TX Keying Select



NC404 D.T.M.F. Sub-Miniature Encoder

The Model NC404 is a sub-miniature digital synthesized Touch-Tone Encoder using a precision crystal controlled CMOS tone generator. This digital synthesized tone generator provides low current drain, all 16 standard D.T.M.F. tones and excellent frequency stability over a wide temperature range. Extensive circuitry by-passing and a copper plane designed P.C. Board provide excellent immunity to RF problems commonly associated with hand held transceiver applications. The NC404 is designed to mount directly to the back of a 12 or 16 button keypad or can be wired separately for applications where there is limited space.



FEATURES:

Size: 0.85"W x 1.0"L x .15"H

- Easy interfacing
- Adjustable audio output
- Single tone capability for test and level adjustments
- Fits most hand held radios
- 12" colored flying leads
- Crystal controlled
- Operating voltage 5.5VDC to 24VDC
- Encodes all 16 Touch-Tone characters



NC409 D.T.M.F. Sub-Miniature A.N.I. Encoder with Multiple Alarm Functions

The Model NC409 is a unique micro-miniature Touch-Tone Encoder with field programmable A.N.I., memory dial and last number redial capabilities, plus transmit time-out timer, channel busy lock-out and microphone mute function. The NC409 is completely self-contained and is designed to automatically or manually generate all 16 standard D.T.M.F. characters. E2Prom memory provides non-volatile storage of user programmable memories and input/output configuration and it is easily programmed by means of any standard D.T.M.F. keypad or the Model NC500 Universal P.C. Programmer.



FEATURES:

Size: 0.85"W x 1.36"L x 0.235"H

- Choice of operating modes: Manual or Automatic priority. (Alternate mode is easily accessed)
- A pause, stop, or change in data rate may be inserted anywhere within an A.N.I. or number memory.
- ANI activation by "*" or "#" or PTT circuitry.
- Transmit time-out timer (0-120 seconds, Q disabled) with audible alert to limit transmission time.
- Busy channel lock-out with audible alert to prevent transmitting on busy frequency.
- Microphone mute output to mute mic when encoding.
- User configurable PTT input, busy lock-out input and PTT keying output.
- Four (4) line binary input for activation of eight (8) of the memories without use of a keypad.
- Special alarm status mode..a memory designated by the user as an alarm code will provide the following features:
 - User programmable rate and duration of alarm code repetition.
 - PTT keying "hang" (enable/disable) to provide continuous monitoring of conversations or sounds via units microphone during alarm status.
 - Alarm reset input terminates repeat cycle.
 - Alarm delay provides a grace period before activation of alarm code.



NC421 Comm Call™ Mobile Dash Mount D.T.M.F. Decoder

The Model NC421 is a multi-function Touch-Tone Decoder enclosed in a smartly styled high impact plastic case with front panel call light and illuminated membrane switching of horn and reset/monitor functions. The Model NC421 combines three distinct, separately addressable D.T.M.F. Decoders in one highly versatile unit offering multiple user-configurable functions through micro-processor technology and NorComm's custom software.



FEATURES:

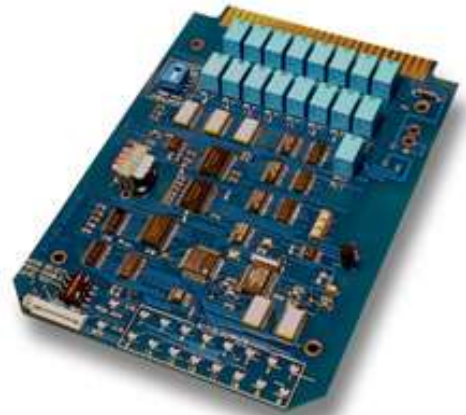
Size: 2.4"W x 3.8"L x .925"H

- Field programmable by use of a standard D.T.M.F. Encoder or the optional NC500 Universal P.C. Programmer
- Decodes any combination of 16 D.T.M.F. characters
- Address length of 1 to 14 Digits - Primary Decoder
- E2Prom memory for non-volatile storage
- Deadbeat disable
- Horn output
- Latched output
- Auxiliary output
- Group call
- All call
- Transponder
- Busy lock-out
- Remote programming
- Address length of 1 to 14 Digits - Secondary Decoder
- Remote programming decoder (3 digits)
- Comes complete with color coded 3 ft. interfacing cable and connector



NC4000 D.T.M.F. Multi-Function Encoder/Decoder with Relayed Outputs

The Model NC4000 is a uniquely engineered multi-function D.T.M.F. Encoder/Decoder designed for control of remote applications or as a compatible replacement for Speedcall's Model C527 Series decoders. The NC4000 provides 11 modes of operation, 16 relayed outputs and 14 sense inputs with status verification reporting of all active functions. The NC4000 uses the standard Dual-tone Multi-Frequency (D.T.M.F.) signaling format and may be operated over wireline, microwave, voice grade radio or telephone systems using most methods of modulation. Circuit design employs a 0 to 8 digit address with E2Prom memory for storage of programmed modes, address, input/output configurations and is easily programmed in the field by means of a standard D.T.M.F. encoder, optional Local Control circuitry, the Model NC500 Universal/P.C. Programmer or Option #4 Dedicated P.C. Programmer.



Typical control applications for the Model NC4000 are: Traffic signals, repeater systems, alert sirens, security of remote sites, oil field pumping stations, irrigation and pipeline valves, fuel storage pressure regulators, unattended television monitoring equipment, airport control lighting, alarm sensing devices and upgrading or replacement of older systems using Speedcall's Model C527 series decoder units.

FEATURES:

Size: 4.52"W x 6.5"L x 0.48"H w/o header
Size: 4.52"W x 6.9"L x 0.48"H with header

FEATURES:

- Standard 2 of 8 D.T.M.F. signaling format
- Field programmable by use of a standard 12 or 16 button D.T.M.F. encoder, optional Local Control, Model NC500 Universal/P.C. Programmer or Option #4 Dedicated P.C. Programmer.
- Programmed data is stored in non-volatile E2Prom memory and will remain regardless of power interruption
- Digit rate programmable from 0.5 to 20 digits per second (DPS)
- Two operating modes: Manual Status and Autostat
- Automatic or manual status interrogation
- 10 modes of output operation in Manual Status mode
- 16 form "1A" relayed outputs with LED indicators (1 AMP @ 30VDC)
- 14 input sense circuits provide status monitoring of external conditions
- 3 programmable configurations for Power-on reset
- Optional Local Control keypad and circuitry for programming or control of local functions
- COR input for interrupt of active functions



NC105 Dip-Switch Programmable Digital Coded Squelch Encoder/Decoder

The Model NC105 is a micro-miniature field programmable D.C.S. Encoder/Decoder compatible with most **F.M.** 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 . All programming can be performed with power on and is retained in a nonvolatile E2Prom memory.



FEATURES:

Size: 0.80"W x 1.63"L x 0.30"H
(.20"H with sip switch removed)

ENCODER:

- CODE SELECTION: 176 pre-set 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
- TX KEY OUTPUT: sinks to ground
- PTT INPUT: above or to ground
- PTT/TX KEY: common or following

DECODER:

- CODE SELECTION: 176 pre-set 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 turn-off 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: -30°C to + 70°C
- BUSY LOCK-OUT INPUT: Above or to ground (\pm 1.5VDC threshold)
- TX TIME-OUT TIMER: 0 to 150 sec.
- B.L.O./T.O.T. ALERT TONE: 900/1800Hz, pulsating at 125mS



NC802 Voice Plus Inversion Scrambler

The Model NC802 is a micro-miniature voice-plus inversion scrambler designed to provide a perfect, cost effective solution to entry-level voice scrambling for commercial users, police departments, public safety organizations and other systems, as a defense against unauthorized interception of private voice transmissions by casual listeners or business competition such as with taxi dispatching.



The NC802 provides single line or double tap of radio's Monitor switch for selection of scramble or clear modes. Speaker beep-tone mode recognition, 3 line binary selection of up to 8 carrier frequencies, high-pass filter for reduction of "C.T.C.S.S." tone frequencies, sourced output for "LED" indicator when in scrambled mode and analog input/output audio processing filters for low distortion and high quality audio with near voice transparency in most installations.

FEATURES:

Size: 0.77"W x 1.23"L x 0.23"H

- 3 line binary selection of 1 to 8 commonly used carrier frequencies
- 3107Hz, 3333Hz, 3500Hz, 3729Hz, 2632Hz, 3388Hz, 2868Hz and 2728Hz
- Single line selection of scramble/clear modes
- Monitor (double-tap) selection of scramble/clear modes
- Speaker beep-tone mode select recognition
- Scrambled mode "LED" sourced output
- Three pole high-pass/Notch C.T.C.S.S. filters
- 5.5 to 16VDC operating voltage
- <5mA operating current
- Micro-miniature header with 12" color coded assembly
- Ideal for limited space applications such as in today's portable radios



NC804 Voice Plus Encryption Scrambler

The Model NC804 is a micro-miniature voice-plus pseudo-random rolling code scrambler designed to provide high level security for two-way radio voice communication systems. Its unique digital encryption processing algorithm, plus its many features makes the Model NC804 a perfect cost effective solution for high-end voice encryption scrambling for commercial users, police departments, public safety organizations and other systems as a defense against unauthorized interception of private and sensitive voice transmissions by casual or even the most determined listeners.



The Model NC804 features 8 user code keys with over 20 trillion codes to choose from. Single line or double tap mode for selection of scramble or clear function, audible (speaker beeps) or LED (visual) outputs of mode selection and start to speak sequence, kill disable for stolen or lost radios, over the air programming for changing of units key codes without removal from radio, and 4 layer SMT assembly.

The Model NC804 scrambles speech by transposing the inband voice spectrum into alternative frequencies. This is accomplished by a proprietary digital encryption algorithm that pseudo randomly changes the rolling code sequence frequency generator an average of 1000 times per second with an average dwell time of plus or minus 1.1 milliseconds. The NC804 is continuously churning its data comprised of the selected code key, while waiting for either the reception of transmitted packet data or activation of the PTT function. It is important to know that cipher keys are never transmitted, but rather the unit's address and sync cue. When scramble mode is enabled and the unit transmits its packet data, all units within the system compare the data to their own coded address. If the address is the same deciphered reception is automatic. Clear reception is also automatic.

Security of system depends on the secrecy of user's code keys. To maintain secure operation it is recommended that code keys be changed from time to time. Reprogramming of code keys and other features requires the use of the inexpensive Model NC800 P.C. Programming Adapter and Windows based software package.

Once the Model NC804 scrambler module has been programmed it can then be used while still connected to host P.C. as a "RF" modem to reprogram via "Over the Air Programming" (OTAP) other modules.

FEATURES:

Size: 0.92"W x 1.30"L x 0.22"H

- **FORMAT:** Rolling code encryption.
- **SECURITY LEVEL:** High level.
- **CODE KEY MEMORIES:** 3 line binary selection of 8 keys.
- **SCRAMBLE/CLEAR ENABLE:** [1] Single line (active high or low). [2] Double tap of momentary switch.
- **CIPHERED RECEPTION:** Automatically detects scrambled mode.
- **KEY CODES:** 8 Digit address (over 20 Trillion code combinations).
- **KILL FUNCTION:** To disable radio if stolen or lost.



NC806 Rolling Code/Inversion Encryption Scrambler

NorComm Corporation is proud to introduce, the Model NC806, a micro-miniature scrambler designed to provide both inversion and rolling code encryption plus many of the same features found in the NC802 Inversion and NC804 Rolling Code Scrambler in a single unit. Its unique digital processing, plus it's many features makes the Model NC806 a perfect cost effective solution for voice encryption scrambling for commercial users, police departments, public safety organizations and other systems as a defense against unauthorized interception of private and sensitive voice communications.



The Model NC806 is the result of customer requests for a single module that provides both simple inversion and rolling code encryption on a per channel basis. Using the Model NC800 programmer, the NC806 can be programmed with eight individual codes of either encryption formats, and functional features. All this, and more on a P.C. Board the size of our very popular Model NC804 Rolling Code Scrambler. The Model NC806 is the industry solution to interoperability for those requiring two levels of voice encryption from a single module.

The Model NC806 features 8 user code keys with over 20 trillion codes to choose from as well as 8 inversion carrier frequencies. Single line or double tap mode for selection of scramble or clear function, audible (speaker beeps) or LED (visual) outputs of mode selection, start to speak sequence, kill disable for stolen or lost radios, and over the air programming for changing of units key codes.

To further appreciate this new and unique product, please view the manual and application notes that provide you with a solution to your encryption application requiring both formats. Download the Model NC800 program software to view, and become more familiar with the Model NC806's many features. If you have any further questions regarding this new product or its application, please call our sales staff at 1-800-874-8663.

FEATURES

Size: 0.92" W x 1.30"L x 0.22"H

- **SCRAMBLE/CLEAR MODES:** Single-line or Double-tap of radio's monitor switch for mode selection. Now no need for external mode switch.
- **AUDIBLE ANNOUNCER:** Audible (Beeps) speaker driver output to denote mode selected and start to speak.
- **VISUAL INDICATOR:** LED sink/source output denotes active scramble mode.
- **CODE KEY MEMORIES:** 3 line binary selection of eight keys.
- **KEY CODES:** Eight 6 digit addresses (over 20 trillion code combinations).
- **INVERSION CODES:** User selection of 8 commonly used inversion carrier frequencies.
- **OVER THE AIR KILL FUNCTION:** To disable radio if stolen or lost.
- **OVER THE AIR PROGRAMMING:** Remote programming of all key codes.
- **VOICE QUALITY:** Voice communication is clear sounding with excellent speech recognition. Analog processing filters provide natural, low distortion (<5%) audio and in most applications with near-transparent operation to user.
- **SYNCHRONIZATION:** Allows late entry reception.
- **SYSTEM PROGRAMMING:** Use of the inexpensive Model NC800 Windows® based programming software.
- **INTERFACING:** Micro-miniature header and 12 inch color coded flying lead assembly.



NC500 Universal D.T.M.F. P.C./Field Programmer

The Model NC500 Universal/P.C. programmer is a compact, battery powered unit which incorporates surface mount technology in a smartly styled high impact plastic enclosure with 16 button tactile keyboard, power switch, battery recharge plug with power and programming verification LED indicators. The NC500 is designed for programming of NorComm's D.T.M.F. products and provides two methods of programming: menu driven software inter-face and stand-alone field programming via keyboard entry. The NC500 menu driven software allows: Direct retrieval modifications, archiving and writing of product configurations. When used with the P.C. software, the hand-held unit acts as an interface between NorComm's D.T.M.F. products and the computer's serial port. The model NC500 programmer comes complete with a DB-9 pin plug and 3 ft. cable assembly for connection to computer serial ports 1 or 2, A.C. wall battery charger and CD system software. The software operates under MS-DOS (version 3.01 or later) on any IBM-PC or compatible computer.



FEATURES:

Size: 2.4"W x 3.8"L x .925"H

- Smartly styled plastic enclosure
- Rechargeable NiCad supply
- Tactile 16 button keyboard

NC800 USB Powered Encryption P.C. Programmer

The NC800 P.C. Programming Adapter and Windows® based software is designed to program NorComm's NC804 Encryption Scrambler as well as the NC806 Rolling Code/Inversion Scrambler. All Programming with the exception of input and output level settings are performed using the Model NC800 programmer. Unless otherwise specified the Model NC804 and Model NC806 scrambler functional parameters and key codes come factory defaulted for conventional operation as noted in the instruction manual. Reprogramming the NC804 and NC806 is accomplished using the Model NC800 Programmer via direct connection to a standard USB port and loading the Windows® 95/98/NT/XP compatible software, then simply following the on-screen menu to select user desired operating parameters and key codes. The NC800 software is a very intuitive and easy to use program with context sensitive help pertaining to every aspect of programming just a mouse click away!



FEATURES:

Size: 2.75"W x 3.76"L x 0.23"H



NC4000 Option #4 D.T.M.F. P.C. Programmer

The Option 4 Dedicated PC Programmer is a compact smartly styled unit developed for programming of NorComm's NC4000 Multi Function D.T.M.F. Encoder/Decoder. The Option 4 provides programming by means of a menu driven PC program. The menu driven software provides all programming data to be input or read from the NC4000 and edited on the screen along with a print out of all data. The option 4 dedicated PC Programmer is ideal for shop programming of multiple units.



Programming Software

NorComm Corporation programmers come complete with current software. However NorComm also offers downloadable Programming Software for the following products:

- NC500
- NC800
- NC4000 Option 4

Visit www.norcommcorp.com to download software.

Note: All software is PC compatible only.



12 Button Keypad

The KL0054 Digitran 12 button keypad is a low profile keyboard. Key tops are contoured to enhance tactile awareness and ensure operator comfort and ease in locating each key by feel. Keys are two-color molded with black characters on white backgrounds. Frames are black, textured, and no-glare finished to accentuate the appearance of the keys. This keypad is provided with four plastic mounting posts for front mounting. This keypad is the perfect complement to the NC404 D.T.M.F. Encoder and NC409 D.T.M.F. A.N.I. Encoder



FEATURES:

Size: 2.7"W x 2.0"L x .225"H

- KEYTOPS: 2 color molded ABS, satin finish white with black legends.
- FRAME: Molded ABS, textured finish.
- 2 of 7 dual-tone multi-frequency switching for communications applications.

16 Button Keypad

This Keypad is comparable with the KL0049 Digitran 16 button Keypad. With sleek styling, steel keys and weather proof design it is a superior keypad.. Frames are black, textured, and non-glare-finished to accentuate the appearance of the keys. This keypad is provided with four plastic mounting posts for front mounting. This keypad is the perfect complement to the NC404 D.T.M.F. Encoder and NC409 D.T.M.F. A.N.I. Encoder.



FEATURES:

Size: 2.65"L x 2.50"W x .20"H

- 16 Key Format
- Steel Keys
- Sealed Gold Dome Contacts
- Contacts Weather Proof / Dust Proof
- Keyboard Available in Black
- FRAME: Molded ABS, textured finish
- 2 of 8 dual-tone multi-frequency switching for communications applications with common ground.



CAMOL-00 12" Universal Flying Lead Cable Assembly

The CAMOL-00 is a 12" flying lead cable utilizing the standard 14 pin Molex receptacle used on NorComm products. This cable is designed as a universal replacement cable. This cable can be customized at no additional charge for applications requiring a header at both ends, such as the CAMOL-123, CAMOL-137 and CAMOL-89

FEATURES:

- 14 pin Molex header
- 12" flying leads
- Customizable



CAMOL-14 Cable Assembly

The CAMOL-14 is a 3 foot cable assembly used with the NC221 Dash Mount Two-Tone Decoder, NC421 Dash Mount D.T.M.F. Decoder and NC800 P.C Programmer. This cable comes with a 14 pin Molex header that easily plugs into the NorComm NC221, NC421 or NC800.

FEATURES:

- 14 pin Molex header
- 3 foot length



CAMOL-500 P.C. Cable Assembly for NC500

The CAMOL-500 is a replacement cable for the NC500. This cable has a DB9 pin plug and connects to the NC500 via a 3 pin Molex receptacle.

FEATURES:

- DB9 plug
- 3 foot length



CAMOL-501 Module Cable Assembly

The CAMOL-501 is a replacement cable for the NC500 and NC800 programmers. This cable provides the connection between the programmer and the unit to be programmed.

FEATURES:

- 6" length
- 14 pin Molex connectors at each end



NC4000 Option #1 AC Power Supply

This option provides a means of powering the NC4000 in the event a ready source of D.C. power is not available. This option consists of some additional circuitry and a wall-pack transformer.



NC4000 Option #2 Local Control Circuitry

This option provides a means of locally commanding the NC4000 for on-site test purposes or for standard operation. The local control circuitry may also be used for programming the NC 4000. This option consists of a D.T.M.F. keypad with a 3 foot cable assembly that plugs into interface connector P2.



NC4000 Option #3 Plastic Enclosure

This option provides the user with a sturdy, protective mount for the NC4000. This is a generic enclosure with all surfaces unmodified, giving the user the ability to customize the enclosure to his requirements.

FEATURES:

Size: 5.5" W x 8.25" L x 1 5/8" H



USB Cable

This is a standard six foot, Mini B to Type A, USB cable. This cable is used with the NC800 programmer.



NC802 Voice Plus Inversion Scrambler

MANUFACTURER	RADIO MODEL	PRODUCT	REV	APP
E.F. Johnson	Challenger 7155 Mobile	NC802-130	C/D/E	1184
E.F. Johnson	8600 Mobile	NC802-107	C/D/E	1158
Ericsson	Orion Desk Top Station	NC802-168	C/D/E	1267
Fujitsu	FTM40-3029H Mobile	NC802-16	C/D/E	1157
G.E.	DELTA-S Mobile	NC802-140	C/D/E	1215
G.E.	MASTR II Series Mobile	NC802-139	C/D/E	1214
G.E.	MLS	NC802-166	C/D/E	1265
G.E.	Monogram Series	NC802-132	C/D/E	1186
G.E.	MVS	NC802-169	C/D/E	1268
G.E.	PCS Portable	NC802-91	C/D/E	1117
G.E.	Phoenix Mobile Series	NC802-133	C/D/E	1188
Icom	IC207H Mobile	NC802-143	C/D/E	1225
Icom	IC2100	NC802-170	C/D/E	1269
Icom	IC-F32OS Mobile	NC802-145	C/D/E	1227
Icom	IC-F3/F4 Portable	NC802-148	C/D/E	1234
Kenwood	TK190/290/390 Portables	NC802-119	C/D/E	1172
Kenwood	TK240/340 Series Portables	NC802-51	C/D/E	1216
Kenwood	TK250/350/259/359 Portables	NC802-89	C/D/E	1146
Kenwood	TK260/360/270/370 Portables	NC802-100	C/D/E	1141
Kenwood	TK260G/360G/270G/370G/272G/372G/373G Portables	NC802-136	C/D/E	1208
Kenwood	TK280/380 Portables	NC802-122	C/D/E	1176
Kenwood	TK353 Portable	NC802-103	C/D/E	1150
Kenwood	TK430 Portable	NC802-102	C/D/E	1144
Kenwood	TK480/481 Portables	NC802-120	C/D/E	1173
Kenwood	TK630/730/830 Mobiles	NC802-87	C/D/E	1145
Kenwood	TK690/790/890 Series Mobiles	NC802-123	C/D/E	1177
Kenwood	TK705D/805D Mobiles	NC802-90	C/D/E	1149
Kenwood	TK760/860/762/862 Mobiles	NC802-101	C/D/E	1142
Kenwood	TK760G/762G/860G/862G/863G Mobiles	NC802-137	C/D/E	1211
Kenwood	TK780/880/980 Series Mobiles	NC802-124	C/D/E	1178
Kenwood	TK840/940 Mobiles	NC802-95	C/D/E	1147
Kenwood	TK930 Mobile	NC802-146	C/D/E	1230
Kenwood	TK2160/3160 Series Portables	NC802-165	D/E	1263
Kenwood	TK2170/3170/3173 Portables	NC802-177	E	1280
Kenwood	TK2180/3180 Series Portables	NC802-172	D/E	1272
Kenwood	TK5210 Portables	NC802-182	E	1287
Kenwood	TK7150/8150 Series Mobile	NC802-157	D/E	1249
Kenwood	TK7100/8100 Mobiles & TK7102/8102 Series 2 Mobiles	NC801-161	D/E	1276
Kenwood	TK7160/8160 Series Mobile	NC802-174	E	1275

MANUFACTURER	RADIO MODEL	PRODUCT	REV	APP
Kenwood	TK7180/8180 Series Mobiles	NC802-173	E	1273
Kenwood	TKR720/820 Repeater/Base	NC802-121	C/D/E	1174
M/A Com	KMC-100/KMC-300 Series Mobile	Product Interface Not Available		
Maxon	SP120/130/140 Portables	NC802-114	C/D/E	1167
Maxon	SP300 Series Portables	NC802-149	E	1236
Maxon	SP2000 Portables, non scan models	NC802-83	C/D/E	1155
Maxon	SM4150 Series Mobiles	NC802-115	C/D/E	1168
Maxon	SM6000 Enduro Series Mobiles	NC802-162	D/E	1259
Midland	70-336 Series Mobiles	NC802-113	C/D/E	1166
Midland	70-0511B Titan Series Mobiles	NC802-152	E	1240
Midland	70-1541/1544/1641/1644 Mobiles	NC802-128	C/D/E	1182
Midland	70-3400/3800 Syntech II Mobiles	NC802-135	C/D/E	1207
Motorola	CM160, CM300, CM360	Product Interface Not Available		
Motorola	CP140, CP160, CP180	Product Interface Not Available		
Motorola	CP340, CP360, CP380	Product Interface Not Available		
Motorola	EM400	Product Interface Not Available		
Motorola	EP450	Product Interface Not Available		
Motorola	GM300 Radius Mobiles	NC802-108	C/D/E	1159
Motorola	GM900, GM1100, GM1200, GM2000 Mobile Series	Product Interface Not Available		
Motorola	GM3688	Product Interface Not Available		
Motorola	GP68 Portable	NC802-142	C/D/E	1223
Motorola	GP88, GP300 & P110 Portables	NC802-99	C/D/E	1148
Motorola	GP140	Product Interface Not Available		
Motorola	GP300/350 PRO Series Portables	Product Interface Not Available		
Motorola	GP340	Product Interface Not Available		
Motorola	GP350 Portables	NC802-106	C/D/E	1156
Motorola	GP328 PLUS/GP338 PLUS Portables	Product Interface Not Available		
Motorola	GP3600	Product Interface Not Available		
Motorola	HT750/HT1250 Portables	Product Interface Not Available		
Motorola	M1225 Series Mobiles	NC802-125	C/D/E	1179
Motorola	MARATRAC M400	NC802-155	C/D/E	1251
Motorola	MAXTRAC LS Series Mobiles	NC802-111	C/D/E	1164
Motorola	MC2000-L3215 Deskset	NC802-160	D/E	1256
Motorola	MCS2000	Product Interface Not Available		
Motorola	MCX1200 & MCX2000 Mobile Series	Product Interface Not Available		
Motorola	Micor Mobile	NC802-58	C/D/E	1161
Motorola	MTS2000, HT1000, MT2000	Product Interface Not Available		
Motorola	P110 Portable	Product Interface Not Available		
Motorola	P1225 Series Portables w/o Keypad	NC802-134	C/D/E	1189
Motorola	PM400	Product Interface Not Available		

MANUFACTURER	RADIO MODEL	PRODUCT	REV	APP
Motorola	PR400	Product Interface Not Available		
Motorola	PRO5150/PRO7150 Series Portables	Product Interface Not Available		
Motorola	Radius Mobile Series	NC802-109	C/D/E	1160
Motorola	Saber Series Portables	NC802-131	C/D/E	1185
Motorola	SM Series Mobiles	NC802-126	C/D/E	1180
Motorola	SM50 Series Mobiles	NC802-118	C/D/E	1171
Motorola	SP50 Series Portables	NC802-105	C/D/E	1154
Motorola	Spectra Series Mobile	NC802-116	C/D/E	1169
Motorola	Syntor X	NC802-110	C/D/E	1162
Motorola	Syntor X 9000E	NC802-104	C/D/E	1153
Motorola	Syntor Series T43XXX	NC802-86	C/D/E	1152
Regency	4256B Mobile	NC802-167	C/D/E	1266
Rexon	RL-328S Portable	NC802-180	E	1285
Uniden	SMU4525KT Series Mobiles	NC802-112	C/D/E	1165
Uniden	SVS8025TSE Mobile Series	NC802-127	C/D/E	1181
Uniden	SPS801TS/SPS802TS Portables	NC802-129	C/D/E	1183
Vertex	VX2000U/3000V Mobile	NC802-141	C/D/E	1218
Yaesu	Vertec FTL2011/7011	NC802-117	C/D/E	1170
Yaesu	VX-510 Portable	NC802-138	C/D/E	1213

Notice: Please refer to individual equipment manufacturer's manuals to verify compatibility. NorComm Corporation assumes no responsibility for the accuracy of this information or for any damage to radio, NorComm's module, or other associated equipment resulting from the use of any application procedure.

NC804 Voice Plus Encryption Scrambler and NC806 Rolling Code/Inversion Scrambler

MANUFACTURER	RADIO MODEL	MODEL	REV	APP
Cybercom	PK66-88 Portable	NC804-175	C/D/E	1278
G.E.	Phoenix Mobile Series	NC804-133	C/D/E	1221
G.E.	Ranger Mobile LBI-38180A	NC804-153	C/D/E	1242
G.E.	Ranger Mobile LBI-31619C Low Band/LBI-31620C VHF	NC804-156	C/D/E	1245
Icom	IC207H Mobile Series	NC804-143	C/D/E	1224
Furuno	FM2510 Marine Mobile	NC804-147	C/D/E	1231
Kenwood	TK190/290/390 Portable Series	NC804-119	C/D/E	1195
Kenwood	TK250/350/259/359 Series Portables	NC804-89	C/D/E	1233
Kenwood	TK260/360/270/370	NC804-100	C/D/E	1205
Kenwood	TK260G/360G/270G/370G/272G/372G/373G Portables	NC804-136	C/D/E	1209
Kenwood	TK280/380 Portable Series	NC804-122	C/D/E	1194
Kenwood	TK480/481 Portable Series	NC804-120	C/D/E	1229
Kenwood	TK630/730/830 Series Mobiles	NC804-87	C/D/E	1196
Kenwood	TK690/790/890 Series Mobiles	NC804-123	C/D/E	1190
Kenwood	TK705D/TK805D Series Mobiles	NC804-90	C/D/E	1192
Kenwood	TK720 Series Mobile/Base	NC804-159	C/D/E	1252
Kenwood	TK760/860/762/862 Series Mobiles	NC804-101	C/D/E	1191
Kenwood	TK760G/762G/860G/862G/863G Mobiles	NC804-137	C/D/E	1210
Kenwood	TK780/880/980 Series Mobiles	NC804-124	C/D/E	1197
Kenwood	TK840/940 Series Mobiles	NC804-95	C/D/E	1198
Kenwood	TK930 Mobile	NC804-146	D/E	1253
Kenwood	TK2160/3160 Series Portables	NC804-165	E	1283
Kenwood	TK2170/3170/3173 Portables	NC804-177	E	1281
Kenwood	TK2180/3180 Series Portables	NC804-172	D/E	1271
Kenwood	TK2212 Portable	NC804-179	E	1284
Kenwood	TK6110 – K 2/3 Mobile	NC804-176	E	1279
Kenwood	TK7100/8100 Series Mobiles	NC804-161	D/E	1257
Kenwood	TK7102/8102 Series Mobiles	NC804-158	D/E	1250
Kenwood	TK7150/8150 Series Mobiles	NC804-157	D/E	1248
Kenwood	TK7160/8160 Series Mobiles	NC804-174	D/E	1277
Kenwood	TK7180/8180 Series Mobiles	NC804-173	D/E	1274
Kenwood	TKR750	NC804-171	C/D	1270
Maxon	SM120/130/140 Series Portables	NC804-114	C/D/E	1235
Maxon	SP300 Series Portables	NC804-149	C/D/E	1237
Maxon	SM4150 Series Mobile	NC804-115	C/D/E	1228
Maxon	SM6000 Enduro Series Mobiles	NC804-162	C/D/E	1258
Micro	PK/PRC2505 Portable	NC804-183	E	1288
Midland	70-0511B Titan Series Mobile	NC804-152	C/D/E	1241
Midland	70-1541/1544/1641/1644 Titan Mobiles	NC804-128	C/D/E	1193
Midland	70-3400/3800 Syntech II Mobiles	NC804-135	C/D/E	1206
Motorola	CM160, CM300, CM360	Product Interface Not Available		
Motorola	CP140, CP160, CP180	Product Interface Not Available		

MANUFACTURER	RADIO MODEL	PRODUCT	REV	APP
Motorola	CP340, CP360, CP380	Product Interface Not Available		
Motorola	EM400	Product Interface Not Available		
Motorola	EP450	Product Interface Not Available		
Motorola	GM300 Series Mobiles	Product Interface Not Available		
Motorola	GM300 Radius Mobiles	NC804-108	C/D/E	1219
Motorola	GM900, GM1100, GM1200, GM2000 Mobile Series	Product Interface Not Available		
Motorola	GM3688	Product Interface Not Available		
Motorola	GP68 Portable	NC804-142	C/D/E	1247
Motorola	GP88, GP300, & P110 Portables	NC804-99	C/D/E	1201
Motorola	GP140	Product Interface Not Available		
Motorola	GP300/GP350 PRO Series Portables	Product Interface Not Available		
Motorola	GP340	Product Interface Not Available		
Motorola	GP350 Portables	Product Interface Not Available		
Motorola	GP328PLUS/GP338PLUS Portables	Product Interface Not Available		
Motorola	GP3600	Product Interface Not Available		
Motorola	HT750/HT1250 Portables	Product Interface Not Available		
Motorola	M1225 Series Mobiles	NC804-125	C/D/E	1220
Motorola	Maratrac M400	NC804-155	C/D/E	1244
Motorola	Max Trac Mobile Series	NC804-150	C/D/E	1238
Motorola	MC900, MC2100, MCS2000 Mobile Series	Product Interface Not Available		
Motorola	MCX1200 & MCX2000 Mobile Series	Product Interface Not Available		
Motorola	MTS2000, HT1000, MT2000	Product Interface Not Available		
Motorola	P110 Portable	Product Interface Not Available		
Motorola	P1225 Portable Series w/o Keypad	NC804-134	C/D/E	1200
Motorola	PM400	Product Interface Not Available		
Motorola	PR400	Product Interface Not Available		
Motorola	PRO5150/PRO7150 Series Portables	Product Interface Not Available		
Motorola	SM50 Series Mobile	NC804-118	C/D/E	1232
Motorola	SP50 Portable	NC804-105	C/D/E	1246
Rexon	RL-328S Portable	NC804-181	E	1286
Sea	SEA 156 MARINE Mobile	NC804-151	C/D/E	1239
Vertex	VX2000U/3000V Mobile	NC804-141	C/D/E	1217
Yaesu	FT-2800M Portables	NC804-178	E	1282
Yaesu	VX-510 Portable	NC804-138	C/D/E	1212

Notice: Please refer to individual equipment manufacturer's manuals to verify compatibility. NorComm Corporation assumes no responsibility for the accuracy of this information or for any damage to radio, NorComm's module, or other associated equipment resulting from the use of any application procedure.

NORCOMM WARRANTY

This Warranty is exclusive of all other warranties whether written, oral or implied.

NorComm products are unconditionally guaranteed for two (2) years on materials and labor from date of purchase, with the exception of clearance items which have a 90 day limited warranty.

All warranty repairs must be performed at NorComm's Customer Service Department in Grass Valley, California. All product must be returned with a valid RMA number.. Out of warranty units returned, constitute Purchaser's authorization for NorComm Corporation to repair or replace equipment and to invoice Purchaser for any and all reasonable costs of repair labor, parts and freight.

NorComm shall not be obligated to repair or replace equipment rendered defective, in whole or part, by causes external to the equipment, such as, but not limited to catastrophe, power failure, or transients, environmental extremes, and improper use or maintenance of interfacing applications. NorComm further assumes no liability for any incidental or consequential damages which may result from the application of its products by the purchaser or any other party.

ORDERING INFORMATION

"Dealer Net" prices will be honored for all manufacturers, dealers, radio shops, RCC's, government agencies and public utilities who install and service their own equipment. For pricing on larger quantities, contact the factory for a quotation.

Aggregative pricing is not permitted, i.e., purchases of different line items cannot be combined in order to arrive at a higher quantity discount.

OPEN ACCOUNT TERMS

Standard terms are Net-15 days for pre-approved accounts. Credit approval normally requires 2 weeks after receipt of a completed credit application. Customers will be notified in writing when their credit application has been approved. If an account has not been established, orders can be shipped C.O.D., Visa or MasterCard.

Interest charges at the rate of 2% will be added to all past due accounts and accounts over 45 days will automatically revert to C.O.D. status. If it becomes necessary to refer the account for collection all interest and legal fees will be added to the amount due.

F.O.B. POINT

Normal F.O.B. point is Grass Valley, California, USA. **All** shipments are sent United Parcel Service (UPS) with prepaid **freight and handling added** to the invoice.

C.O.D. SHIPMENTS

C.O.D. Orders will be shipped by UPS, therefore, a physical street address (not a post office box) must be specified when ordering. All C.O.D. and prepaid orders in excess of \$150.00 will require guaranteed funds.

INTERNATIONAL SHIPMENTS

Orders from customers outside USA will be accepted on a telegraphic transfer, or Visa or MasterCard basis. All international orders will be shipped F.O.B. Grass Valley, California USA. All charges for freight, insurance, customs clearance and any necessary documents that may be required will be at the cost of the Purchaser.

RETURNS

NorComm does not accept returns on product that has been installed. Returns for any reason other than repair or replacement must be pre-authorized by NorComm personnel prior to returning the merchandise and are subject to a 25% restocking charge. NorComm does not credit freight charges unless shipper provides a refund for lost or delayed items

CLAIMS FOR SHORTAGES

Claims for shortages, erroneous charges or price corrections must be presented within 10 days from date of invoice. Freight damage claims should be filed directly with the delivery carrier within 7 days. NorComm does not credit freight charges unless shipper provides a refund for lost or delayed items.

SPECIAL PROGRAMMING, TUNING OR MODIFICATIONS

NorComm products may be modified or provide special frequency ranges, timing formats or input/output configurations. Though we are pleased to provide our customers with special configurations, there will be a per unit charge.

All standard products may be pre-tuned or programmed as specified when ordered for an additional charge.

CUSTOM PRODUCTS

NorComm Corporation provides data signaling products for specialized applications by either re-designing or modifying our standard units. Customers interested in this service should contact NorComm for a quotation on costs and feasibility.