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MODEL CIM-IRP Hand-Held ANI Programmer

For the CIM- FAMILY of ANI ENCODER-DECODERS

Instruction Manual

Rev 051115

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MODEL CIM-IRP Hand-Held ANI Programmer

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Manual revision CIM-IRP 051115

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Specifications

Interfaces	Connects to device being programmed via wireless IRDA or by wired cable with test grabbers.
Wireless range	IrDA capable of range up to 18" from device being programmed
On-Board Parameter Memory	Sixteen user programmable memory positions to store configurations.
Computer Interface	Interface using RS-232 is provided to upload and download programming parameters that have been stored in on-board memory and for testing purposes
Power Source	Two AA batteries
Battery Life	Approximately one year
Temperature	Operating: -30°C to +60°C.
Humidity	0% to 95% RH (non-condensing).
Weight	9.4 Oz with alkaline batteries installed
Dimensions	7.125" x 3.63" x 1.26"

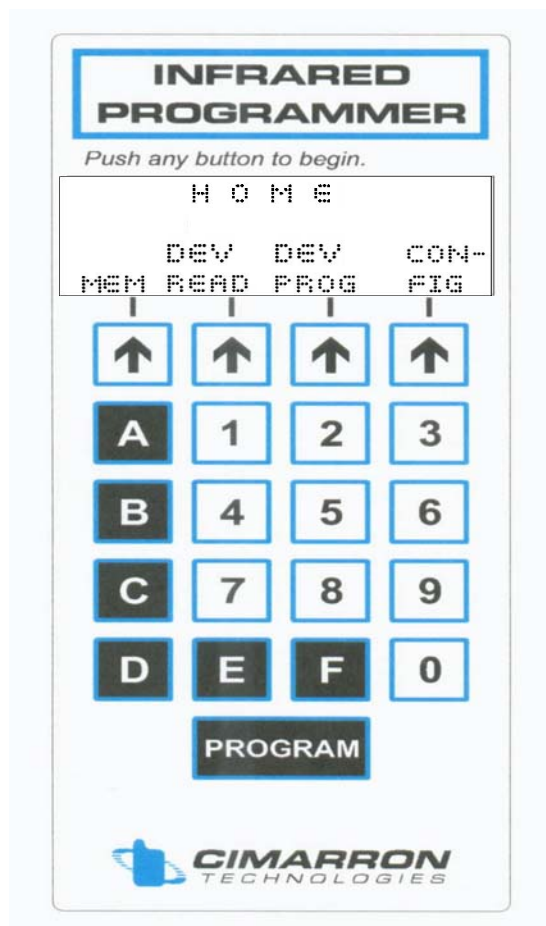
About the CIM-IRP

The CIM-IRP is a stand-alone, hand-held infrared programmer used to program the CIM family of devices. Many functions and features of the CIM-1000/2000 are user programmable. In addition to signaling type, ID and radio interface parameters, the device can be optimized for the application's particular needs. The Cimarron Technologies hand-held portable programmer (CIM-IRP) accomplishes the required programming without actually connecting to the CIM device. Power, however, must be applied to the CIM-1000/2000 during programming. If the device is already installed in the host radio, simply power up the radio and point the CIM-IRP at the CIM-1000/CIM-2000. Read the device, change the required parameters and then write the changes back to the device.

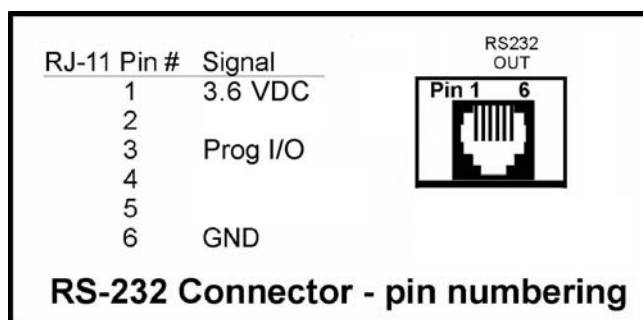
The CIM-IRP can program CIM devices at a range of up to 18" via the two-way infrared communications link. It also has an RJ-11 port on the right side of the housing. This connection is used to program CIM devices by wire instead of by the infrared communications link.

The CIM-IRP runs on two AA batteries with a life of approximately one year. Press any button to activate the programmer. The programmer automatically shuts down after a period of inactivity.

Battery voltage can be measured from the "Memory" screen. Pressing the undefined "soft" key returns the current voltage of the batteries.



The CIM-IRP can be connected to the CIM-1000/2000 with a three-wire programming cable. This cable also provides power to the CIM-1000/2000 and is very useful for pre-programming multiple boards prior to radio installation. Connections are made from the RJ-11 connector on the programmer to the three programming feed-throughs on the CIM-1000/2000.



Some radio installations require the removal of the IR portion of the CIM-1000/2000 circuit board. Boards that have had the IR removed can be reprogrammed via the three wire programming cable.

Navigating the CIM-IRP Display Screens

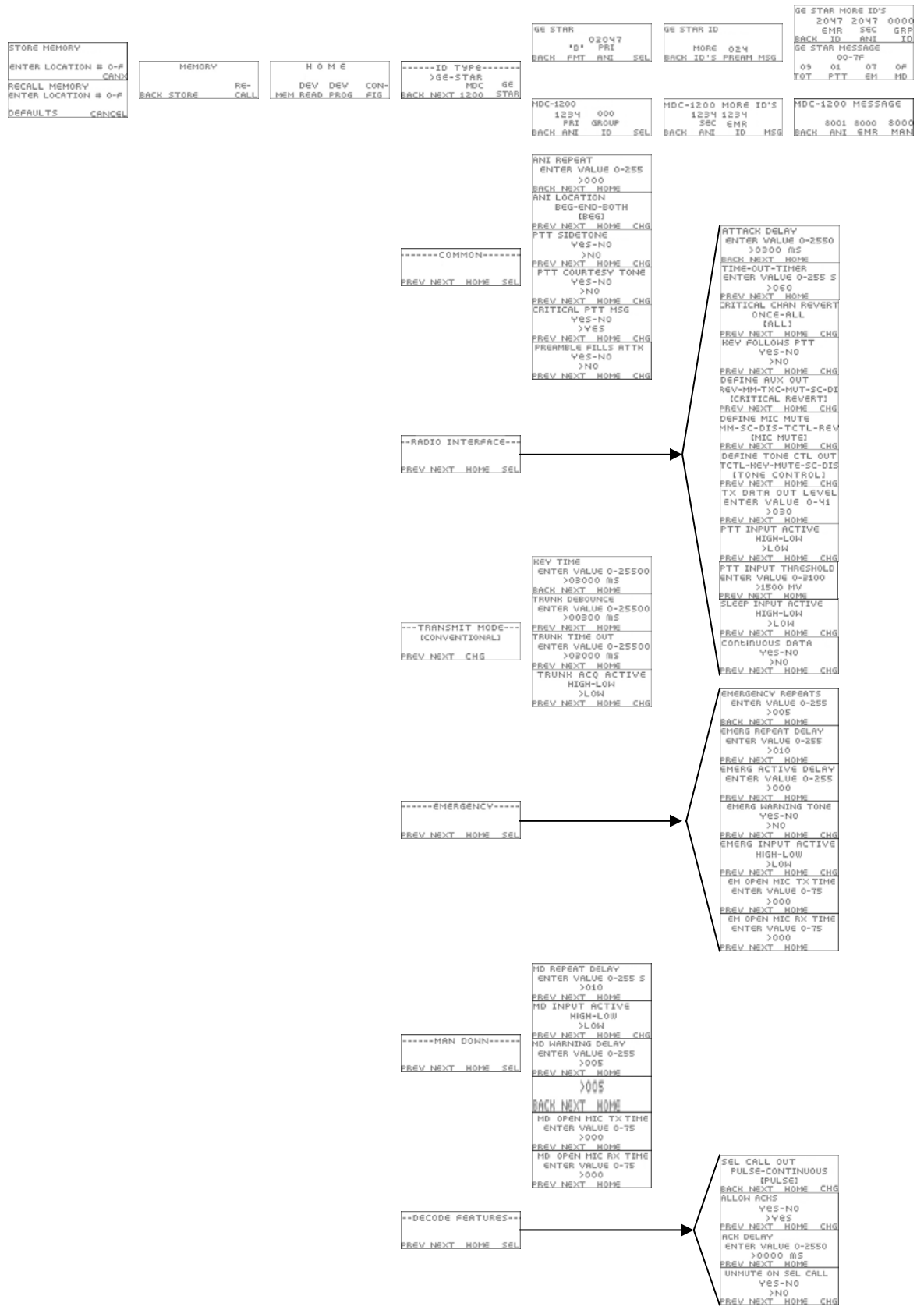
The portable programmer leads the user through parameter selections by using menu screens which are described in this section. The keys on the top row of the programmer are soft keys and are defined by the bottom row of the display. Some entries are made using the soft keys for selection while other entries will be made directly using the keypad that is labeled 0 through F.

Menu screens allow movement through the programming tree by assigning navigation actions to the soft keys located on the top row of the keypad. The table below explains the actions.

Navigation Actions in the Programming Tree	
BACK	Moves you to the left
PREV	Moves you up
NEXT	Moves you down
HOME	Moves you to the Home menu
CHG	Changes the value of the parameter
SEL	Moves you to the right

Once the user preferences are entered, they may be stored in one of sixteen memory locations for later reference. In this manner, a radio shop could store different user personalities for rapid retrieval. Then, only the ID would need to be entered to program additional boards for the same radio system.

Programming Tree



Home and the Primary Functions

The programmer powers up displaying the Home screen which allows the user to select memory functions (load from memory or store to memory); read or program a board; or move on to selecting desired parameters with CONFIG. Primary functions are ID Type, Common, Radio Interface, Transmit Mode, Emergency and Man Down. When "READ" is selected, line two of the display flashes "READING" while the device is being read. When reading is completed, you are moved to the ID TYPE screen. When "PROG" is selected, line two of the display flashes "PROGRAMMING" while the device is being programmed. When programming is completed, you are moved to the ID TYPE screen. If reading or programming fails, line two will flash "FAILED" and wait for the user to try again.

```

-----ID TYPE-----
      >GE-STAR
           MDC   GE
BACK NEXT 1200 STAR

```

```

-----COMMON-----
PREV NEXT HOME SEL

```

```

--RADIO INTERFACE--
PREV NEXT HOME SEL

```

```

---TRANSMIT MODE---
      [CONVENTIONAL]
PREV NEXT CHG

```

```

-----EMERGENCY-----
PREV NEXT HOME SEL

```

```

-----MAN DOWN-----
PREV NEXT HOME SEL

```

```

--DECODE FEATURES--
PREV NEXT HOME SEL

```

The "ID TYPE" screen above shows that GE-STAR is the currently selected format type. From this screen, pressing BACK moves you to the left, back to the HOME screen. Pressing NEXT moves you down to the COMMON screen. Pressing PREV on any of the screens moves you up to the previous screen in the group. Note that the TRANSMIT MODE screen shows that the current selection is "Conventional". Pressing the CHG button opens selections pertinent to Trunking mode. The "DECODE FEATURES" screen is only applicable to the CIM-2000 and is ignored by the CIM-1000.

ID Type and Memory Functions

From the default Home screen, the user may select MEM or CONFIG or be moved to ID TYPE after successfully reading or programming a target device. When the ID Type is selected, the user will be moved to the selected primary ID entry screen. The current ID is displayed. From there, the ID can be changed by pressing the PRI ANI button and entering the new ID. Once the PRI ANI button is pressed, the existing ID flashes and is replaced by the new button presses. Flashing stops when the entire ID is entered. By default, the primary ID, secondary ID and emergency ID are linked and will all change with the changing of the primary ID. To make the secondary ID and emergency ID different, you must navigate to the related screen and change it directly. To facilitate rapidly programming multiple boards, pressing the "PROGRAM" key on the keypad from the PRI ANI screen will program a board, then the ID can be changed and again another board programmed by pressing the "PROGRAM" key.

GE Star® format is changed by pressing the FMT button. Each press increments the format type by one. The current format display changes with the button presses. Existing ID's that do not conform to the format type selected are changed to default. ID entries are limited to the range that is allowable for the format selected.

GE Star® message values are selected at the GE STAR MESSAGE screen. Selecting the message type to change causes the current entry to flash. While the value is flashing, enter the new value using the keypad. Completing the entry moves you back to the previous screen.

MDC-1200® message values can be changed at the MDC MESSAGE screen. These values should not be changed without a thorough knowledge of the MDC signaling system and the impact a new message will have on the targeted radio and radio system.

WARNING:

Retrieving data from memory overwrites the existing configuration.

Selecting MEM from the home screen allows the user to store the current programming information into memory locations 0 through F or to retrieve previously stored information. Pressing CANX returns the user to the HOME screen. Entering the location retrieves or stores the data and then moves the user to the HOME screen.

When the programmer is first turned on, configuration information that was last used is loaded. To overwrite the information with default selections, go to the main HOME menu and select MEM. Then select RECALL and DEFAULTS.

```

H O M E
DEV DEV CON-
MEN READ PROG FIG
    
```

```

-----ID TYPE-----
>GE-STAR
MDC GE
BACK NEXT 1200 STAR
    
```



```


GE STAR
02047
'B' PRI
BACK FMT ANI SEL
    
```

```

GE STAR ID
MORE 024
BACK ID'S PREAM MSG
    
```

```

GE STAR MORE ID'S
2047 2047 0000
EMR SEC GRP
BACK ID ANI ID
GE STAR MESSAGE
00-7F
09 01 07 0F
TOT PTT EM MD
    
```



```

MDC-1200
1234 000
PRI GROUP
BACK ANI ID SEL
    
```

```

MDC-1200 MORE ID'S
1234 1234
SEC EMR
BACK ANI ID MSG
    
```

```

MDC-1200 MESSAGE
8001 8000 8000
BACK ANI EMR MAN
    
```

```

STORE MEMORY
ENTER LOCATION # 0-F
CANX
RECALL MEMORY
ENTER LOCATION # 0-F
DEFAULTS CANCEL
    
```

```

MEMORY
RE-
BACK STORE CALL
    
```



The HOME screen is automatically assigned depending on the last signaling type used. Pressing the "HOME" button in any screen returns the user to the Home menu associated with the signaling type in use.

Common Functions

```
-----COMMON-----
PREV NEXT HOME SEL
```

```
ANI REPEAT
  ENTER VALUE 0-255
  >000
BACK NEXT HOME
ANI LOCATION
  BEG-END-BOTH
  [BEG]
PREV NEXT HOME CHG
PTT SIDETONE
  YES-NO
  >NO
PREV NEXT HOME CHG
PTT COURTESY TONE
  YES-NO
  >NO
PREV NEXT HOME CHG
CRITICAL PTT MSG
  YES-NO
  >YES
PREV NEXT HOME CHG
PREAMBLE FILLS ATTH
  YES-NO
  >NO
PREV NEXT HOME CHG
```

Radio Interface Functions

```
--RADIO INTERFACE--
PREV NEXT HOME SEL
```

Note 1: For the CIM-1000, only selections REV (Critical Channel Revert) and TXC (Transmit Control) are valid.

Note 2: For the CIM-1000, only MM (Mic Mute) is valid.

Note 3: For the CIM-1000, only TCTL (Tone Control) is valid.

```
ATTACK DELAY
ENTER VALUE 0-2550
>0300 MS
BACK NEXT HOME
TIME-OUT-TIMER
ENTER VALUE 0-255 S
>060
PREV NEXT HOME
CRITICAL CHAN REVERT
ONCE-ALL
[ALL]
PREV NEXT HOME CHG
KEY FOLLOWS PTT
YES-NO
>NO
PREV NEXT HOME CHG
DEFINE AUX OUT
REV-MM-TXC-MUT-SC-DI
[CRITICAL REVERT]
PREV NEXT HOME CHG
DEFINE MIC MUTE
MM-SC-DIS-TCTL-REV
[MIC MUTE]
PREV NEXT HOME CHG
DEFINE TONE CTL OUT
TCTL-KEY-MUTE-SC-DIS
[STONE CONTROL]
PREV NEXT HOME CHG
TX DATA OUT LEVEL
ENTER VALUE 0-41
>030
PREV NEXT HOME
PTT INPUT ACTIVE
HIGH-LOW
>LOW
PREV NEXT HOME CHG
PTT INPUT THRESHOLD
ENTER VALUE 0-3100
>1500 MV
PREV NEXT HOME
SLEEP INPUT ACTIVE
HIGH-LOW
>LOW
PREV NEXT HOME CHG
CONTINUOUS DATA
YES-NO
>NO
PREV NEXT HOME CHG
```

Note 1

Note 2

Note 3

Transmit Mode

There are two transmit modes to select from; conventional and trunking. If conventional mode is selected, there are no additional selections to be made. Trunking mode, however, requires the definition of various timers.

```

---TRANSMIT MODE---
  [CONVENTIONAL]
PREV NEXT  CHG

```

```

---TRANSMIT MODE---
  [TRUNKING]
PREV NEXT  CHG   SEL

```

```

KEY TIME
  ENTER VALUE 0-25500
  >03000 MS
BACK NEXT HOME
TRUNK DEBOUNCE
  ENTER VALUE 0-25500
  >00500 MS
PREV NEXT HOME
TRUNK TIME OUT
  ENTER VALUE 0-25500
  >03000 MS
PREV NEXT HOME
TRUNK ACQ ACTIVE
  HIGH-LOW
  >LOW
PREV NEXT HOME CHG

```


Emergency Functions

```
-----EMERGENCY-----  
PREV NEXT HOME SEL
```

```
EMERGENCY REPEATS  
ENTER VALUE 0-255  
>005  
BACK NEXT HOME  
EMERG REPEAT DELAY  
ENTER VALUE 0-255  
>010  
PREV NEXT HOME  
EMERG ACTIVE DELAY  
ENTER VALUE 0-255  
>000  
PREV NEXT HOME  
EMERG WARNING TONE  
YES-NO  
>NO  
PREV NEXT HOME CHG  
EMERG INPUT ACTIVE  
HIGH-LOW  
>LOW  
PREV NEXT HOME CHG  
EM OPEN MIC TX TIME  
ENTER VALUE 0-75  
>000  
PREV NEXT HOME  
EM OPEN MIC RX TIME  
ENTER VALUE 0-75  
>000  
PREV NEXT HOME
```

Man-Down Functions

```

-----MAN DOWN-----
PREV NEXT HOME SEL

```

```

MAN DOWN REPEATS
  ENTER VALUE 0-255
    >005
BACK NEXT HOME
MD REPEAT DELAY
  ENTER VALUE 0-255 S
    >010
PREV NEXT HOME
MD INPUT ACTIVE
  HIGH-LOW
    >LOW
PREV NEXT HOME CHG
MD WARNING DELAY
  ENTER VALUE 0-255
    >005
PREV NEXT HOME
MD ACTIVATION DELAY
  ENTER VALUE 0-255
    >005
PREV NEXT HOME
MD OPEN MIC TX TIME
  ENTER VALUE 0-75
    >000
PREV NEXT HOME
MD OPEN MIC RX TIME
  ENTER VALUE 0-75
    >000
PREV NEXT HOME

```

Decode Features

```
--DECODE FEATURES--  
PREV NEXT HOME SEL
```

```
SEL CALL OUT  
PULSE-CONTINUOUS  
[PULSE]  
BACK NEXT HOME CHG  
ALLOW ACKS  
YES-NO  
>YES  
PREV NEXT HOME CHG  
ACK DELAY  
ENTER VALUE 0-2550  
>0000 MS  
PREV NEXT HOME  
UNMUTE ON SEL CALL  
YES-NO  
>NO  
PREV NEXT HOME CHG
```

Note: Decode Features are not available for the CIM-1000. Selections are ignored.

Programmable Parameter Definitions

Signaling Type and ID Selection

Signaling Type Selection

The CIM-1000/CIM-2000 is programmable to encode one of two signaling types. These types are GE Star® and MDC-1200®.

Secondary ANI ID's

Secondary ANI ID's are used if the CIM-1000/CIM-2000 is turned on while the radio PTT is pressed. If dual ID's are not desired, program the primary ID and secondary ID with the same number.

GE Star®

GE Star® format type

(A through P) This selection defines which of the sixteen GE Star® formats are in use.

GE Star® PTT ID, Emergency ID

(1 – 16383) The actual maximum value depends on the GE Star® format type selected. Generally, the PTT ID, Emergency ID and Man-Down ID in GE Star® are the same; however, they could be programmed different if desired.

Group ID

This selection defines the common ID of a group of users. The ID used as a group ID cannot be used as a unit ID (PTT/Emergency) by any member of the group. However, units receiving a command like call or radio disable will react to the message as if it were addressed to their unit ID but will not send an acknowledgment. Acknowledgments are not supported in Group ID's because, by definition, the command is addressed to multiple units and if all units attempted to transmit an acknowledgment at the same time, communications system degradation would result.

ANI Message

This selection defines the four message bits and three status bits in the GE Star® payload. An ANI PTT ID message is hex 01. This could be changed to accommodate unique applications. Other message definitions are listed on page 27.

Emergency Message

This selection defines the four message bits and three status bits in the GE Star® payload. An emergency message is hex 07. This could be changed to accommodate unique applications. Other message definitions are listed on page 27.

TOT Message

This selection defines the four message bits and three status bits in the GE Star® payload. A TOT (Time-out-timer) message is hex 09. This could be

changed to accommodate unique applications. Other message definitions are listed on page 27.

Man-Down Message

This selection defines the four message bits and three status bits in the GE Star® payload. A Man-down message is hex 0F. This could be changed to accommodate unique applications. Other message definitions are listed on page 27.

Preamble Length

The original GE Star® format specified 16 preamble bits. However, it was determined that a 24 bit preamble significantly improved data muting reliability and 24 bits eventually became the standard. Some installations have opted to increase the preamble length while decreasing the attack delay. So the length can be programmed from 0 bits to 256 bits. Additionally, the CIM-1000/CIM-2000 is capable of being programmed for “preamble fills attack delay.” With this feature enabled, the entire attack delay is filled with preamble. At the end of the programmed attack delay time, a full preamble is again transmitted and data follows.

MDC-1200®

MDC-1200® PTT ID, Emergency ID

(1 – DEEE) Generally, the PTT ID and the Emergency ID are the same; however, they could be programmed different if desired. A radio ID cannot contain the character F nor can it begin with the character E as these are defined as wildcards.

Group ID

ANI Message

To increase flexibility of the CIM-1000/CIM-2000 and enhance compatibility with existing communications systems, the format of encoded MDC-1200® messages can be modified. The default message type for a PTT ANI is represented by 0x8001

Emergency Message

To increase flexibility of the CIM-1000/CIM-2000 and enhance compatibility with existing communications systems, the format of encoded MDC-1200® messages can be modified. The default message type for an Emergency ANI is 0x8000.

Common

The common section handles parameters that will be used in all available signaling formats.

Location:

If programmed “Beginning”, the ID will be transmitted when the user keys the radio. If programmed “End”, the ID will be transmitted when the user un-keys the radio. If programmed “Both”, the ID will be transmitted both at the beginning and end of transmission

PTT ANI repeat timer:

Used to reduce the amount of data transmissions during a conversation. If the selected time since the last PTT press is not exceeded, data is not transmitted with that PTT press.

Sidetone with PTT ANI:

If programmed "Yes", a tone will sound through the local speaker to advise the user to hold off talking. The tone helps to prevent "voice syllable clipping" which could occur if the user speaks during data transmission.

Un-key courtesy tone:

If programmed "Yes", a tone will be transmitted when the user un-keys to inform listeners that they may now transmit.

PTT Message Becomes Critical

If enabled, whenever the device is in critical mode (emergency cycle or Man-Down cycle), and the PTT button is pressed, the ANI message to be transmitted will be the associated critical message instead of a PTT ANI message.

Preamble Fills Attack Delay

Typically, the attack delay is filled with silent carrier. If this selection is enabled, the attack delay period will be filled with the signaling format preamble and there will be no silent attack delay. After the programmed attack delay, one more duration of preamble will be transmitted to ensure reliable decoding.

Radio Interface

The Radio Interface section handles parameters that relate to the correct interfacing of the board to the radio electronics.

Attack Delay:

The period of time from when the user keys the radio and when the data begins to be transmitted is called the attack delay. This delay allows the communications system to stabilize and be ready for transmission. Usually, the attack delay is dead air time, with the carrier being transmitted only, but the CIM-1000/CIM-2000 can be programmed so that the attack delay time is filled with data preamble.

Time out timer:

If the radio is held keyed up for greater than the selected time, the ID is transmitted and the radio is automatically un-keyed.

Key Follows PTT

Enabling Key Follows PTT makes the CIM-1000/CIM-2000 key line echo the condition of the PTT line. So if the PTT line goes low, the key line will follow and stay in the condition until the PTT line again changes state. This is especially useful if you desire the CIM-1000/CIM-2000 to un-key the radio at the expiration of the Time-Out-Timer time.

Auxiliary Output

For the CIM-1000, this line can be programmed as either Critical Channel Revert or Transmit Control. The default function is "Critical Channel Revert". In the CIM-2000, this multi-function line can be programmed to perform any one of the following functions:

Function	Comment	CIM-IRP Abbrev
Critical Channel Revert	Default condition, Active only during Emergency and Man-Down data transmissions. Typically used to change the radio channel to a "Home" channel before sending the Emergency or Man-Down message. Becomes active 50 mS before the Key line is activated. If set for "Once", the line becomes active only at the start of the emergency or man-down cycle. If set for "All", the line will become active with each activation of the key line during the cycle.	REV
Microphone Mute	Used to disable the microphone during data transmission time.	MM
Transmit Control	Idle state is 3.3VDC. Active state occurs during all data burst transmissions. When active, it sinks to within 1 volt of system ground (100 mA max). Typically used to control a transmitter CTCSS, turning it off during ANI transmissions.	TxC
Speaker Mute	Active after receiving a valid data preamble. This line should be interfaced to a point in the radio which will quiet the speaker during data reception times and if radio disable is received. Note that the insertion point must be after the Data-In insertion point. It can be used to activate a gate or to directly shunt the audio.	MUT
Selective Call	Active upon receipt of a selective call, group call or all call. Can be programmed for continuous or pulse action. Becomes de-active upon receipt of a call cancel or by pressing the radio PTT button.	SC
Radio Disable	Active upon receipt of a radio disable command. Not affected by cycling of power.	DI

Microphone Mute

This is an open collector output and is at high impedance when idle and sinks to within 1 volt of system ground (100 mA max) during attack delay and data transmission. Usually interfaced to Mic High. In the CIM-2000 its default function is used to disable the microphone during data transmission but it can be programmed to perform any one of the following functions

Function	Comment	CIM-IRP Abbrev
Microphone Mute	Default condition. Used to disable the microphone during data transmission time.	MM
Tone Control	Used to activate a radio amplifier or audio pass gate when Sidetone is being generated by the CIM-2000. Sidetone is not powerful enough to drive a radio speaker directly so the radio's amplifier must be used. If sidetone is desired, the radio audio amp may need to be turned on for the duration of the tone.	TCTL
Selective Call	Active upon receipt of a selective call, group call or all call. Can be programmed for	SC

	continuous or pulse action. Becomes de-active upon receipt of a call cancel or by pressing the radio PTT button.	
Critical Channel Revert	Active only during Emergency and Man-Down data transmissions. Typically used to change the radio channel to a "Home" channel before sending the Emergency or Man-Down message. Becomes active 50 mS before the Key line is activated.	REV
Disable	Active upon receipt of a radio disable command. Not affected by cycling of power.	DI

Tone Control Output

This line is used to activate a radio amplifier or audio pass gate when Sidetone is being generated by the CIM-1000/CIM-2000. Sidetone is not powerful enough to drive a radio speaker directly so the radio's amplifier must be used. This multi-level output is very handy for controlling audio amplifier circuits in a radio. If sidetone is desired, the radio audio amp will need to be turned on for the duration of the tone.

In the CIM-2000, the tone control output line is user programmable so that it can be re-programmed for any of the following functions:

Function	Comment	CIM-IRP Abbrev
Tone Control	Default condition, described above	TCTL
Key	Allows Key Output to be directed to this multi-level output	KEY
Mute	Active after receiving a valid data preamble. This line should be interfaced to a point in the radio which will quiet the speaker during data reception times and if radio disable is received. Note that the insertion point must be after the Data-In insertion point. It can be used to activate a gate or to directly shunt the audio.	MUTE
Selective Call	Active upon receipt of a selective call, group call or all call. Can be programmed for continuous or pulse action. Becomes de-active upon receipt of a call cancel or by pressing the radio PTT button.	SC
Disable	Active upon receipt of a radio disable command. Not affected by cycling of power.	DIS

Transmit Level

The data output level of the CIM-1000/CIM-2000 is software adjustable. This level can be set by entering a number between 0 and 41. The default setting is 30. A setting of 21 provides approximately 0.33 VPP unloaded. A setting of 41 provides the maximum of 3.3 VPP.

PTT Input Active Level

PTT input is used to detect when the attached radio is busy transmitting. This line is programmable for an input sense of active high or active low.

PTT Input Threshold

Entering a value between 0 and 31 will change the input sense threshold to between 0 mV and 3100 mV. The default value is 1500 mV. This means that any voltage level below 1500 mV will be considered a logic zero and a voltage above 1500 mV will be considered a logic one.

Sleep Input

This is useful if ANI is desired on selected channels only or when not desired on talk-around channels. This is an input to the CIM-1000/CIM-2000 microprocessor. If the line becomes active, it will put the CIM-1000/CIM-2000 to "sleep" preventing ANI activity. The active state is programmable for logic 1 or 0. It is normally pulled up to VCC.

Critical Channel Type

If critical channel revert is being used to change the channel of the radio during Emergency or Man-Down functions then the critical channel type should be designated. There are two methods of critical channel revert; "All" or "Once". If "All" is selected, the critical channel output will become active 50 mS before each critical transmission and remain active during the transmission. If "Once" is selected, the critical channel output will become active only once at the beginning of the critical cycle. This feature is to accommodate radios that:

- a) Require a line to change state and remain changed in order to go to a specified channel. Typically, this type of radio will revert to its previous channel when the line becomes inactive.
- b) Require a line to toggle only once to change the channel and remain on that channel until the user manually changes it back.

Transmit Mode

Conventional

If Conventional is selected, data is transmitted after the programmed attack delay.

Trunked

If trunked mode is selected, the Channel Acquired input line of the CIM-1000/CIM-2000 is used to detect when the trunking channel has been acquired and transmission is possible. In LTR systems, Trunk Key Time and Trunk Timeout should be the same. In MPT-1327, this timer allows the transmitter to be keyed and then un-keyed in order to request channel access. The time selected is the period the unit stays keyed for the request. The CIM-1000/CIM-2000 will wait for the period designated in Trunk Timeout for a channel acquisition indication. When received, the unit will again key up and send out data.

Trunk Debounce

Some trunking radios have channel acquired logic which pulses while attempting to be granted access and then remain in a state showing access is granted. For this reason, the line is programmable to set the debounce time so that pulsing is ignored. The unit will not transmit data until the specified time period has been exceeded.

Trunk Key Time

Trunk Key sets the time the unit is keyed while awaiting channel acquisition.

Trunk Time Out

Trunk Timeout sets the maximum amount of time that the unit will attempt to acquire a trunk. Once exceeded, the unit will quit attempts.

Trunk Channel Acquired Active Level

This line is interfaced to a point in a trunking radio that changes state when granted access. The input is used to detect when the trunking channel has been acquired and transmission is possible.

Emergency

Number of repeat emergency transmissions:

The number of times that an emergency message is to be repeated.

Repeat Delay:

When in the emergency mode, if the number of repeat emergency transmissions is not "Zero", this is the time that will be waited between emergency transmissions.

Activation Delay

This timer designates the amount of time the emergency input must be held active before it is recognized by the board.

Emergency TX warning tone:

If programmed "Yes", a warning tone will sound through the local speaker to advise the user that an emergency message is being transmitted.

Active State

The active state is programmable for logic 1 or 0. It is normally pulled up to VCC.

Open Microphone Monitor on Emergency TX time

If not set to zero, once an emergency is activated, the radio will key up and transmit ambient noise for this period of time. It will then un-key and remain un-keyed for a programmed amount of time and then repeat the process. It will alternate between TX and RX throughout the emergency cycle. The length of the cycle is determined by the settings of "Number of repeat emergency transmissions" and "Time between emergency repeats". If the value is set to zero, there will be no open microphone monitor.

Open Microphone Monitor on Emergency RX time

If open microphone monitor on emergency TX time is not set to zero, the radio will remain unkeyed for this period of time between TX times.

Man-Down

Number of repeat Man-Down transmissions

(0 to 255 repeats) The Man-Down message transmission will be repeated a programmed number of times with a programmed period between transmissions. The repeats will be transmitted regardless of radio status. A warning tone is sounded at the local radio speaker each time a man-down message is transmitted, unless man-down activation delay is set to zero.

Repeat Delay

0 to 255s) Repeated Man-Down transmissions will be separated by a programmed delay period between transmissions.

Active State

The active state is programmable for logic 1 or 0. It is normally pulled up to VCC.

Man-Down Warning Delay

(0 – 255 S) Once the CIM-1000/CIM-2000 senses a Man-Down situation, this timer begins to run. If the radio is not up righted within this period of time, a warning tone lasting 1 second is sounded. If the radio is up righted, the warning timer resets. If the warning delay is set to zero, there will be no audible warning and the man-down message will be transmitted at the expiration of the man-down activation delay.

Man-Down Activation Delay

(0 – 255 S) If the warning delay timer succeeds to complete its countdown and the warning tone is sounded, the activation delay timer begins to run. The activation delay timer is programmable 0 to 255 seconds. If the radio is not up righted within this period of time, the radio will key up and send a message to the base.

Open Microphone Monitor on Man-Down TX time

(0s to 55s, 5s steps) If not set to zero, once a Man-Down is activated, the radio will key up and transmit ambient noise for this period of time. It will then un-key and remain un-keyed for a programmed amount of time and then repeat the process. It will alternate between TX and RX throughout the Man-Down cycle. The length of the cycle is determined by the settings of “Number of repeat Man-Down transmissions” and “Time between Man-Down repeats”. If the value is set to zero, there will be no open microphone monitor.

Open Microphone Monitor on Man-Down RX time

(0s to 55s, 5s steps) If open microphone monitor on Man-Down TX time is not set to zero, the radio will remain un-keyed for this period of time between TX times.

DECODE FEATURES

Decode features are only available on the CIM-2000 as the CIM-1000 is an encode only device.

Selective Call Output

The selective call output can be programmed for either “Pulse” operation or “Continuous” operation. If “Pulse” is selected, when active, the selective call output will alternate between on and off at a one second interval (on for one second, off for one second). If “Continuous” is selected, the output will be active for the duration of the cycle.

Allow Acknowledgments

When a CIM-2000 receives a command directed to it that requires an acknowledgment, the device will automatically key up the radio and send an acknowledgment message unless this parameter is set to “NO”.

Acknowledgment Delay

This selection determines how long the CIM-2000 will wait after receiving an acknowledgeable message before it sends the appropriate acknowledgment. The value of this parameter is system dependent and should be set to the shortest value acceptable by the system being used.

Unmute on Selective Call

If this parameter is set to "YES", the Mute output will be active unless a selective call is received. It then deactivates and remains in that state until power is cycled or receipt of a "Selective Call Cancel"

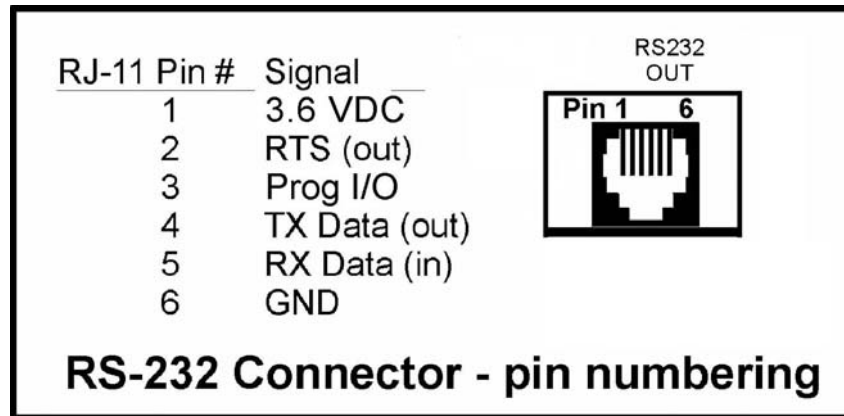
GE Star® Message Descriptions

The GE Star® bits designated S2, S3, S4 and M1 through M4 are used to code various messages. The CIM-1000/CIM-2000 can be programmed so that different message types are transmitted for PTT ANI, Emergency ANI, Man-Down and TOT ANI. The desired star code is selected in programming. The table below describes the Star codes, the value to enter while programming and the corresponding decoder displayed message:

STAR CODE	GE Star Message code	C Plus Decoder display	REMARKS
000-0000	00	STATUS 0	Status
001-0000	10	STATUS 1	Status
010-0000	20	STATUS 2	Status
011-0000	30	STATUS 3	Status
100-0000	40	STATUS 4	Status
101-0000	50	STATUS 5	Status
110-0000	60	STATUS 6	Status
111-0000	70	STATUS 7	Status
000-0001	01	(none)	ANI ID and SelCall Ack
000-0010	02	INTG ACK	Interrogate Ack
000-0011	03	REQ TALK	Request to talk
000-0100	04	MSSAGE C	Canned Message
000-0101	05	MSSAGE D	Canned Message
000-0110	06	TAXI BID	Taxi Bid
000-0111	07	EMRGENCY	Emergency
000-1000	08	CNCL ACK	Call Cancel Ack
000-1001	09	STUCKMIC	Stuck Microphone
000-1010	0A	MNTR ACK	Open Mic Monitor Ack
000-1011	0B	MSSAGE F	Canned Message
000-1100	0C	MSSAGE G	Canned Message
000-1101	0D	MSSAGE H	Canned Message
000-1110	0E	MSSAGE J	Canned Message
000-1111	0F	MAN-DOWN	Man-Down
100-1010	4A	DSBL ACK	Radio Disable Ack
101-1010	5A	ENBL ACK	Radio Enable Ack
(not listed)	(not listed)	UNDEFINE	Undefined

Connecting the CIM-IRP to a computer

The RJ-11 (6 pin modular) connector on the side of the programmer is primarily used to program CIM devices that have had their IR transceiver removed or mass programming for multiple installations. However, it also can be used to connect the IRP to a computer. It is RS-232 protocol compatible with pin assignments the same as the Cimarron Technologies Computer interface cable used with the C Plus equipment family. The connections are described in the figure below:



Pin 1 is used to provide power for programming attached CIM devices and is not attached to the host computer. The Computer Interface cable includes an adapter with the following internal connections:

RJ-11 Pin #	DB-9F Pin #
1 (Wht)	Not Connected
2 (Blk)	8
3 (Red)	7
4 (Grn)	2
5 (Yel)	3
6 (Blu)	5

The CIM-IRP supports connection to a computer serial port with any computer running terminal emulation software. One such program that is included in most Microsoft operating systems is called Hyperterm. Hyperterm is usually accessed under "Programs", "Accessories" and "Communications" in the windows start menu.

Start the Hyperterm program on your computer by double clicking on *Hyperterm.exe* or selecting *Hyperterm* under the Communications menu selection. A *New Connection* window will open. Name the new connection "CIM1000", select one of the available icons and click the "OK" button. A *Connect To* window will open. Under *Connect Using*, select "*Direct to COM1*" and click the "OK" button. A *Port Settings* window will open. Adjust the settings to match the below table and then click the "OK" button:

Parameter	Value
Bits per Second	9600
Data Bits	8
Parity	None
Stop Bits	1
Flow Control	None

Once you have made the changes above, reset the connection by disconnecting and reconnecting using the icons in the toolbar. To disconnect, click the icon with the phone having the lifted handset. To connect, click the icon with the phone having the cradled handset. Be sure to save your selections under "File".

Once connected, pressing any computer keyboard key will cause the CIM-IRP to output the following menu:

Available commands:

UPLD = Upload full parameter table from CIM-IRP to PC
DNLD = Download full parameter table from PC to CIM-IRP
TEST = Self test
CONT = Adjust LCD contrast
DFLT = Set User Config #D, E, F to factory default

>

UPLD allows you to store to the computer, parameters that have been saved in the CIM-IRP. DNLD permits you to retrieve from the computer parameters that were previously saved to the computer.

TEST puts the CIM-IRP in a mode that asks you to press each keypad button in sequence. Pressing the buttons illuminates a section of the display. In this manner, all keypad buttons are tested as well as all display segments.

CONT is used to adjust the contrast of the LCD. A setting of 000 (presented by the CIM-IRP as "dacDat=0x000") provides the most contrast. A setting above 300 will make the display appear blank.

DFLT will restore CIM-IRP memory locations D, E and F back to factory default.

Defaults and Stored Memory Locations

The CIM-IRP has preprogrammed defaults and loaded memory locations to facilitate parameter selections. This table describes the preprogrammed information in “Defaults” and memory locations F, E, and D. Defaults are generic selections that are compatible with most radios and satisfy most customer requirements. Memory location F is configured to provide very rapid continuous data with the initial press of the radio PTT button. A quick “double-click” of the PTT button halts the continuous data. Memory location E permits rapid continuous data with an alternate button press and normal operation with PTT press. Memory location D is normal operation but with Preamble filling radio attack delay. Yellow highlight shows differences from defaults.

Memory location	“Defaults”	F	E	D	C	B	A
SIGNALING =	GESTAR	GESTAR	GESTAR	GESTAR			
ID Type :	B	B	B	B			
ANI ID :	2047	2047	2047	2047			
AuxANI ID :	2047	2047	2047	2047			
EMR ID :	2047	2047	2047	2047			
ANI Msg :	01	01	01	01			
EMR Msg :	07	07	01	07			
TOT Msg :	09	09	09	09			
MAN Msg :	0F	0F	0F	0F			
Preamble :	024 bit	000 bit	016 bit	000 bit			
COMMON							
Start ANI :	YES	YES	YES	YES			
End ANI :	NO	NO	NO	NO			
ANI RepDly :	000 Sec	000 Sec	000 Sec	000 Sec			
PTT Sidetone :	NO	NO	NO	NO			
PTT Courtesy :	NO	NO	NO	NO			
ANI becomes Crit :	YES	YES	YES	YES			
Preamb w/Atk :	NO	YES	YES	YES			
RADIO INTERFACE							
Attack :	300 mS	120 mS	80 mS	120 mS			
TOT :	060 Sec	060 Sec	060 Sec	060 Sec			
Cont.Data :	NO	YES	YES	NO			
KeyFollowsPTT :	NO	YES	YES	NO			
AuxOut :	CritChAll	CritChAll	CritChAll	CritChAll			
TxLevel :	030 dB	030 dB	030 dB	030 dB			
PttIn :	actLOW	actLOW	actLOW	actLOW			
SleepIn :	actLOW	actLOW	actLOW	actLOW			
TX MODE =	CONV	CONV	CONV	CONV			
EMER							
RepQty :	005	005	001	005			
RepDly :	010 Sec	010 Sec	010 Sec	010 Sec			
ActiveDly :	000 Sec	000 Sec	000 Sec	000 Sec			
WarnTone :	NO	NO	NO	NO			
In :	actLOW	actLOW	actLOW	actLOW			
OpnMicTx :	000 Sec	000 Sec	000 Sec	000 Sec			
OpnMicRx :	000 Sec	000 Sec	000 Sec	000 Sec			
MAN-DOWN							
RepQty :	005	005	005	005			
RepDly :	010 Sec	010 Sec	010 Sec	010 Sec			
ActiveDly :	005 Sec	005 Sec	005 Sec	005 Sec			
WarnDly :	005 Sec	005 Sec	005 Sec	005 Sec			
In :	actLOW	actLOW	actLOW	actLOW			
OpnMicTx :	000 Sec	000 Sec	000 Sec	000 Sec			
OpnMicRx :	000 Sec	000 Sec	000 Sec	000 Sec			
Comments	Equipment Defaults	Very Rapid Continuous Data	Rapid Cont Data with alternate button press. Normal with PTT. Yel wire to 2 nd button, Grn and Brn wire to PTT.	Normal except preamble only on attack delay			

How To ...(Step-by-Step)

This section provides step-by-step instructions for typical changes to the programming parameters:

Reading a Device and Changing the ID



Turn the radio on so power is applied to the Cimarron board and point the programmer at the board. Press the “DEV READ” button. The programmer will report that the read was successful.



The above will be displayed. Press the “PRI ANI” button, enter the new ID and press the “PRI ANI” button again. Press the “PROGRAM” button and programmer will report “write successful”.

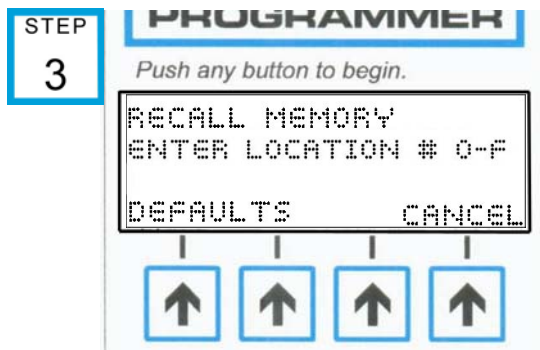
Loading a stored configuration



Press the “MEM” button.



Press the “RECALL” button.



Then, press the button of the location you desire to recall (Buttons zero through “F”). To reload defaults, press the “DEFAULTS” button.



The above will be displayed. Press the “PRI ANI” button, enter the new ID and press the “PRI ANI” button again. Press the “PROGRAM” button and programmer will report “write successful”.

Adjusting Transmit Level

STEP 1

PROGRAMMER

Push any button to begin.

```

GE STAR
          02047
    *B* PRI
BACK FMT ANI SEL
    
```

After reading the device, the above will be displayed. Press the “BACK” button.

STEP 2

PROGRAMMER

Push any button to begin.

```

-----ID TYPE-----
>GE-STAR
          MDC    GE
BACK NEXT 1200 STAR
    
```

Then, at this screen, press the “NEXT” button.

STEP 3

PROGRAMMER

Push any button to begin.

```

-----COMMON-----
PREV NEXT HOME SEL
    
```

Then, at this screen, press the “NEXT” button.

STEP 4

PROGRAMMER

Push any button to begin.

```

--RADIO INTERFACE--
PREV NEXT HOME SEL
    
```

At this screen, press the “SEL” button.

STEP 5

PROGRAMMER

Push any button to begin.

```

ATTACK DELAY
ENTER VALUE 0-2550
>0300 MS
BACK NEXT HOME
    
```

This screen will appear. Press the “NEXT” button 6 times, you will see the following screens go past

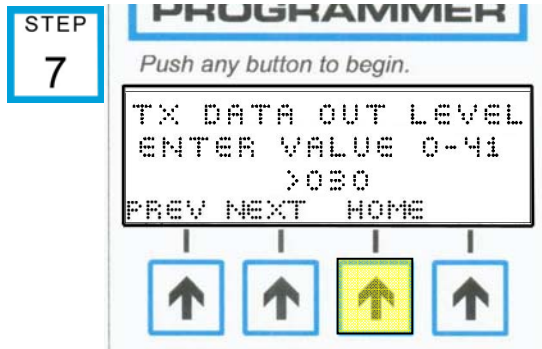
```

TIME-OUT-TIMER
ENTER VALUE 0-255 S
>060
PREV NEXT HOME
CRITICAL CHAN REVERT
ONCE-ALL
[ALL]
PREV NEXT HOME CHG
KEY FOLLOWS PTT
YES-NO
>NO
PREV NEXT HOME CHG
    
```

```

DEFINE AUX OUT
REV-MM-THC-MUT-SC-DI
[CRITICAL REVERT]
PREV NEXT HOME CHG
DEFINE MIC MUTE
MM-SC-DIS-TCTL-REV
[MIC MUTE]
PREV NEXT HOME CHG
DEFINE TONE CTL OUT
TCTL-KEY-MUTE-SC-DIS
[ITONE CONTROL]
PREV NEXT HOME CHG
    
```

STEP 6 Press the “NEXT” button the 7th time.



The 7th time you press “NEXT” you will be at this screen. Use the number buttons to enter the new value for the output level. The maximum is 41. After making the change, press the “HOME” button.

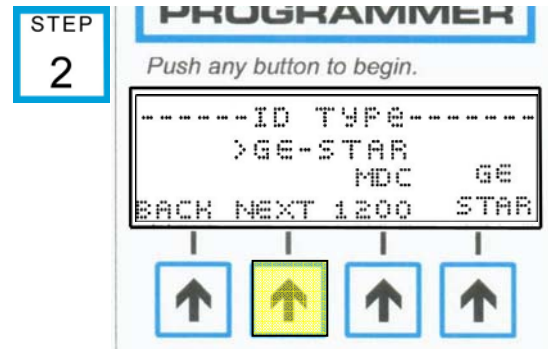


Then press “DEV PROG” or the “PROGRAM” button.

Changing the Attack Delay



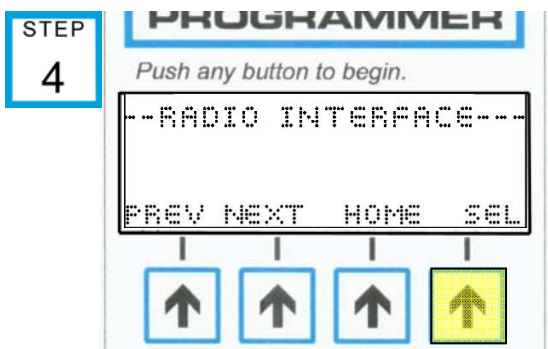
After reading the device, the above will be displayed. Press the “BACK” button.



Then, at this screen, press the “NEXT” button.



Then, at this screen, press the “NEXT” button.



At this screen, press the “SEL” button.

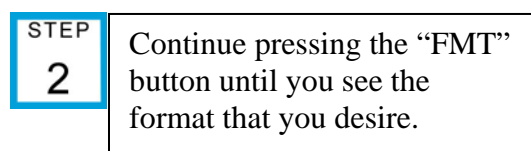


This screen will appear. Enter the new value using the number keys and then press “HOME”



Then press “DEV PROG” or the “PROGRAM” button.

Changing the GE Star® Format



After reading the device, the above will be displayed. Press the “FMT” button and the “B” changes to a “C”.



Some formats do not allow higher ID numbers. If you change the format to a format which will not support the current ID, the ID will revert to 2047 and will need to be changed to the new desired ID.

Now press the large “PROGRAM” button to program the new format into the CIM board.

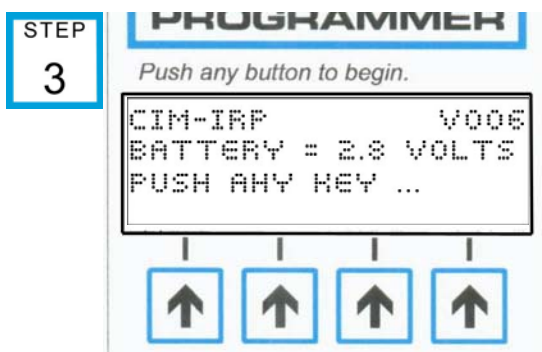
Checking the Programmer Battery



Press the “MEM” button.



Press the button that has no label.



The device will display the voltage of the batteries. New batteries will measure just above 3 Volts. Batteries should be replaced before the level gets below 1.5 Volts

Product Support

If you have any questions or comments about Cimarron products, please make use of our technical support hotline at (760) 738-3285.

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Cimarron Technologies Corporation warrants this product to be free from defects in material and workmanship for a period of three years from date of shipment. If a malfunction occurs due to defective material or workmanship, the product will be repaired or replaced (Cimarron's discretion) without charge if returned to the factory

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