



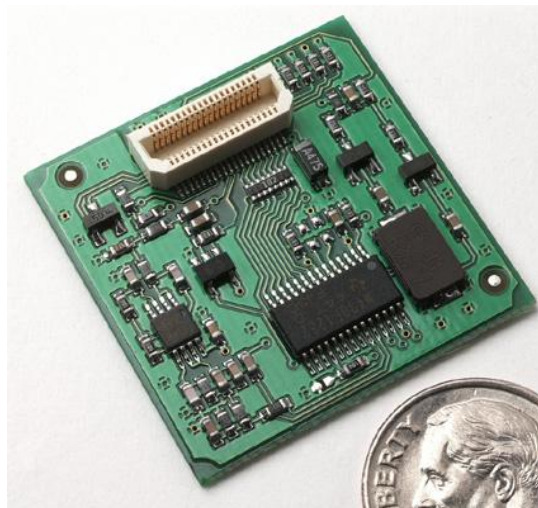
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MODEL VME-100 ANI ENCODER

**GE Star®, MDC-1200®, DTMF IDENTIFICATION ENCODER
for
VERTEX/STANDARD RADIOS**

Instruction Manual
Manual Number 05 30 0018
Rev 101105



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MODEL VME-100 ANI ENCODER
for Vertex/Standard Radios

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Manual revision VME-100 101105

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CHAPTER 1

Features

What Is the VME-100

The Cimarron Technologies Model VME-100 is a plug-in ANI encoder module capable of PTT ANI and Emergency ANI in GE Star, MDC-1200 or DTMF signaling format in Vertex communications radios. The unit provides Automatic Numeric Identification of a specific radio transmitter each time the microphone press-to-talk (PTT) switch is activated. Emergency messages are sent by depressing the designated emergency button for greater than a programmed period. Manual DTMF generation is available as well as automatic ANI.

Capabilities

- Identify every transmission source with the assigned ANI ID in Signaling formats of MDC-1200, GE Star or DTMF
- Manual button press DTMF generation
- Programmable automatic radio key-up with DTMF keypad presses
- Programmable ANI debounce time limits data bursts during continued conversations
- “Go-ahead” beep sounds when ready for voice transmission
- Courtesy beep transmitted when radio is unkeyed
- Emergency message sent with emergency button press
- Programmable open microphone monitor during emergency
- Stuck microphone identification
- Time-Out-Timer with alert tone
- ANI sent at beginning, end or both

Specifications

Data Format	GE Star®	MDC-1200®	DTMF
Modulation Type	PSK (Phase Shift Key)	FSK	DTMF
Rate	400 bps on 1600hz carrier	1200/1800 Hz	Character duration and pause 25mS/step, 1000mS max
Hard ID Range	0001 to 16,383	0001-DEEE	0001-FFFFFFFF
ID Locations	ANI at Beginning, End or Both		
Messages	PTT ANI, Emergency, TOT. Messages can be changed to any allowable GE Star® message.	PTT ANI, Emergency	PTT ANI, Emergency
Sidetone	1 KHz during attack delay and transmission of data.		
Burst Length	3 ½ messages each.	Fixed length 180mS	Character duration and pause in 25mS/step, 1000mS max
Preamble Length	24 bits.	Fixed length	N/A
Attack Delay	0 mS to 1000 mS programmable in 50 mS steps.		
ANI Repeat Timer	(Time since last PTT press. If less, don't send ANI) Programmable 0 S (Send every PTT); 10 S; 20 S; 40 S; 60 S; 90 S; 120 S.		
Programming	Programmed via Vertex/Standard CE-73 programming software.		
Radio Interface	Connects to mating accessory port on host radio		
Supply Voltage	3.6 VDC.		
Supply Current	5 mA constant.		
Temperature	Operating: -30°C to +60°C.		
Humidity	0% to 95% RH (non-condensing).		

CHAPTER 2 Programming

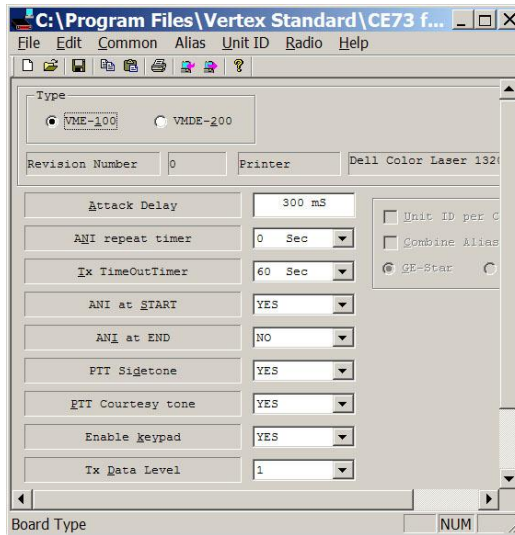
CE-73 Programming Software

The VME-100 is programmed while installed in the host radio. This is accomplished by placing the host radio into sub-clone mode and then attaching the appropriate programming cable and opening the Vertex CE-73 software. The radio must be in sub-clone mode before attempting upload or download. Refer to the following table for radio specifics:

Radio Model	Programming Software	Firmware Version	Sub Clone Procedure	Sub Flash Procedure	Optimum TX level setting
VX-410/420	CE-64 Ver 1.10	1.2	[PTT] + [Side 2] + Pwr on	N/A	1
VX-537	CE-65 Ver 1.05	1.14	[PTT] + [Top Orange] + Pwr on	N/A	2
VX-600/900	CE-39 Ver 1.25	1.53	[PTT] + [Top Orange] + Pwr on	[Top Orange] + Pwr on	1
VX-800	CE-31 Ver 1.18	1.54	[PTT] + [Top Orange] + Pwr on	N/A	1
VX-820/920	CE-59 Ver 2.25	1.59	[PTT] + [Top Orange] + Pwr on	N/A	3
VX-4100/4200	CE-59 Ver 2.25	1.85	[▲] + Pwr on	N/A	3

Listed firmware version and programming software version is the minimum required to support the VME-100.

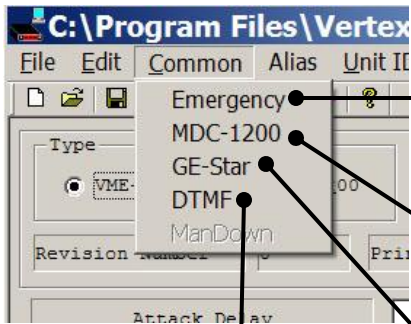
The CE-73 Main screen is presented upon startup



Select VME-100



Then navigate through the various screens making selections as required for your application.



GE-Star

ID format type	B	Emergency Message Value	07
PTT ID	9999	ManDown ID	9999
PTT Message Value	01	ManDown Message Value	0F
TOT ID	9999	Group ID	0
TOT Message Value	09	Selective Call to Unmute	NO
Emergency ID	9999		

OK Cancel

ID Format Type A .. P

DTMF

PTT ID	11234	Character Duration	50 mS
Emergency ID	71234	Inter Character Duration	50 mS
ManDown ID	71234	Manual Keypad	NO
		Auto Transmit	NO

OK Cancel

PTT ID 1 .. FFFFFFFF

Emergency

Repeat Max	5
Repeat Period	10 Sec
Warning Tone	NO
Open Mic TX Time	0 Sec
Open Mic RX Time	0 Sec

OK Cancel

Repeat Max 1 .. forever

MDC-1200

PTT ID	1234
PTT Message Value	8001
Emergency ID	1234
Emergency Message Value	8000
Call Alert encode	Short
Voice Select Call	NO
Group ID	000

OK Cancel

PTT ID 1 .. DEEE(HEX)

Uploading and Downloading

Uploading transfers information from the VME-100 to the CE-73 programming software. Downloading transfers information from the CE-73 programming software into the VME-100.

Radio Programming Software

The VME-100 board must be installed into the radio before attempting to use the associated radio programming software. This is so that the software detects the presence of the VME-100 and makes available additional options that are specific to the VME-100. Once uploading from the radio, go to the "Signaling" menu and under "ANI" select "Option ANI". Now signaling formats GE Star®, MDC-1200® and DTMF will be available on a per-channel basis. The desired format is selected in the "SIG" column (not the ANI column) of the main programming window. Options are (-) = Off; (1) = GE Star®; (2) = MDC-1200®; (3) = DTMF.

Programmable Parameters

The following parameters are programmable using the Vertex/Standard supplied CE-73 programming software. Default values are italicized in brackets to the right of the parameter.

Main Menu

Attack Delay (N/A for end send) 0ms to 1000ms in steps of 50ms. [*Default 300mS*]

PTT ANI repeat timer (time since last PTT press. If less, don't send PTT ANI) (0=send every PTT; 10s, 20s, 40s, 60s, 90s, 120s) [*Default 0*]

TX Time out timer (30s, 60s, 90s, 120s) [*Default: 60s*]

ANI at START: Send ID at beginning (Y/N) [*Default Yes*]

ANI at End: Send ID at end (Y/N) [*Default No*]

PTT Sidetone (beginning send only) (Y/N) [*Default Yes*]

PTT courtesy tone (Y/N) [*Default No*]

Enable keypad (Y/N) [*Default Yes*]

TX Data Level (0,1,2,3) [*Default 1*]

Common – Emergency

Repeat Max: Number of repeat emergency transmissions. (1, 5, 10, 15, 20, forever) [*Default =5*]

Repeat Period: Time between emergency repeats. (5s, 10, 20, 30s) [*Default=10s*]

Warning Tone: Emergency TX warning tone (Y/N) [*Default No*]

Open Microphone Monitor on Emergency TX time (0s to 55s, 5s steps) [*Default 0s*]

Open Microphone Monitor on Emergency RX time (0s to 55s, 5s steps) [*Default 0s*]

Common – MDC-1200®

PTT ID (1 – DEEE) [*Default 1234*]

PTT Message value (0x0000-0xFFFF) [*Default 0x8001*]

Emergency ID (1 – DEEE) [*Default 1234*]

Emergency Message value (0x0000-0xFFFF) [*Default 0x8000*]

Common – GE Star®

Format type (A through P) [*Default B*]

PTT ID (1 – 16383) [*Default 9999*]

PTT Message value (0x00-0x7F) [Default 0x01]

TOT ID (1 – 16383) [Default 9999]

TOT Message value (0x00-0x7F) [Default 0x09]

Emergency ID (1 – 16383) [Default 9999]

Emergency Message value (0x00-0x7F) [Default 0x07]

Common – DTMF

PTT ID (1 – FFFFFFFF) [Default = 11234]

Emergency ID (1 – FFFFFFFF) [Default = 71234]

Character duration (25mS through 1000 mS in 25 mS steps) [Default 50 mS]

Inter-character duration (25 mS through 1000 mS in 25 mS steps) [Default 50 mS]

Enable Manual Keypad DTMF (Y/N) [Default Yes]

Keypad auto transmit (Y/N) [Default No]

Definitions

Attack Delay:

The period of time from when the user keys the radio and the data begins to be transmitted. This delay allows the communications system to stabilize and be ready for transmission.

PTT ANI repeat timer:

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

Number of repeat emergency transmissions:

Number of times that an emergency message is transmitted.

Time between emergency repeats:

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

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 unkeyed.

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 unkey and remain unkeyed 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.

Send ID at beginning:

If programmed “Yes”, the ID will be transmitted when the user keys the radio.

Send ID at end:

If programmed “Yes”, the ID will be transmitted when the user unkeys the radio.

TX Data Level:

Changes the data output level in four steps. Enter a value between 0 and 3 that provides a data deviation that is just below radio voice deviation.

Sidetone with PTT ANI:

If programmed “Yes”, a tone will sound through the local speaker to advise the user to hold off talking. Prevents “Voice syllable clipping” which could occur during data transmission.

Unkey courtesy tone:

If programmed “Yes”, a tone will be transmitted when the user unkeys to inform the listener that they may now transmit.

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.

Enable Keypad:

If programmed “No”, keypad presses are ignored.

Enable Manual Keypad DTMF

(Y/N) If enabled, DTMF tones will be generated when keypad buttons are pressed with the radio keyed. The associated tone continues to be transmitted until the button is released. The radio microphone is muted for the duration of the button press. Enabling this feature and not designating ANI type for the channel will permit manual DTMF generation without PTT ANI. The default is YES.

DTMF Keypad auto transmit

(Y/N) If enabled, the radio will automatically go into transmit mode if keypad buttons are pressed and DTMF is generated. If this feature is enabled, ANI will be disabled. Additionally, after a button is released, the radio will remain keyed for one second to await further button presses. The length of the transmitted DTMF tone is the value programmed as “DTMF character duration”. The radio microphone is muted for the duration of the function. If PTT ANI transmission is required, this feature must be disabled and the user must manually key the radio while pressing buttons for DTMF transmission. The default is NO.

GE Star® format type

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

GE Star® PTT ID, Emergency ID

(1 – 16383) The actual maximum value depends on the GE Star® format type selected. Generally, the PTT ID and the Emergency ID in GE Star® are the same, however, they could be programmed different if desired. A radio cannot be programmed for an ID of 0 (zero). The default for both is 9999.

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. The default for both is 1234.

MDC-1200® PTT and Emergency Message Type

To increase flexibility of the VME-100 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 and the default message type for an Emergency ANI is 0x8000. These parameters should not be changed without a thorough understanding of the signaling system and existing signaling codes.

DTMF character duration

(25 mS through 1000 mS in 25 mS steps) This timer is active for PTT and Emergency ANI and DTMF Keypad Auto transmit mode. Each ANI character is generated for this amount of time. The default is 50 mS.

DTMF inter-character duration

(25 mS through 1000 mS in 25 mS steps) This timer is active only for PTT and Emergency ANI. The time selected is the silent gap between individual DTMF digit transmissions. The default is 50 mS.

DTMF PTT ID, Emergency ID

(1 – FFFFFFFF) In DTMF signaling, the PTT ID and the Emergency ID are different so the base can determine what is an emergency message. Systems using dispatch consoles generally define a DTMF PTT ID as a

number beginning with a 1 and DTMF Emergency ID's begin with a 7.
The default PTT ID is 11234 and the default emergency ID is 71234.

Memory Characteristics

Programming parameters are stored in non-volatile memory and will be retained when the radio is turned off or when the battery is removed.

CHAPTER 3

Operation

Viewing the Programmed ID

To review the programmed ID on the channel selected, press the # (pound) key. Press the # key again or wait five seconds to return to the channel information presentation.

PTT Operation

On specified radio channels, with the press of the PTT button, The VME-100 disables the radio microphone and then transmits the ANI ID. While the radio is transmitting the data, a tone sounds in the local speaker to advise the user to hold off talking. After the data is transmitted, the PTT sidetone stops and the microphone is activated. The digital burst can be programmed to occur when the switch is first pressed, or when the switch is released, or at both times. If the burst is programmed for transmission when the PTT is released or the radio is on a non signaling channel, a short "go ahead" beep will be heard. When the PTT is released and transmission is over, a courtesy beep is transmitted to inform the listener that they can now transmit.

The PTT Sidetone and courtesy beep can be individually deactivated in personality programming.

To reduce the amount of data transmissions, data can be programmed to not occur during continuing conversations. A value can be selected for the time since the last PTT press. If the selected time is not exceeded in subsequent Key-ups, data is not sent. Programmable times are 0, 10s, 20s, 40s, 60s, 120s. [Default = 0]. If the time selected is 0 (zero), ANI will be sent with every PTT press.

Emergency Message

An Emergency message transmission is activated whenever the designated emergency button is held down for greater than the programmed time.

The emergency 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. Available times are as follows:

Number of repeat emergency transmissions. (1, 5, 10, 15, 20, forever)

[Default = 5]. Time between emergency repeats. (5s, 10, 20, 30s)

[Default=10s].

If desired, a warning tone can be sounded in the local speaker to advise the user that an emergency message has been sent.

In conjunction with a properly configured radio personality, the radio will change channels prior to sending the emergency message.

Emergency Message Open Microphone Monitor

If this feature is enabled, when an emergency is activated, the radio will key up and transmit ambient noise for a programmed period of time. It will then unkey and remain unkeyed 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.

Time-Out-Timer and Stuck-Microphone

The Time-Out-Timer feature terminates a transmission that is longer than the programmed time. Available times are 30s, 60s, 90s, 120s. [Default = 60s]. The radio will automatically unkey and a low frequency (500 Hz) tone will be heard in the local speaker for four seconds or until the radio is unkeyed. The value of the time-out-timer is programmable in the radio personality programming.

To permit identification of the offending radio, prior to un-keying the transmitter, the VME-100 will send the radio ID.

DTMF Operations

The VME-100 is capable of generating DTMF tones in three modes.

Manual Keypad DTMF

DTMF tones are generated when keypad buttons are pressed with the radio keyed. The DTMF tone continues to be transmitted until the button is released. The radio microphone is muted for the duration of the button press. This feature can be used on channels that use GE Star or MDC-1200 ANI signaling. Enabling this feature and not designating ANI type (or designating the channel as a non-signaling channel) for the channel will permit manual DTMF generation without PTT ANI.

DTMF Keypad auto transmit

If enabled, the radio automatically goes into transmit mode when keypad buttons are pressed and DTMF is generated. If ANI is enabled, the auto transmit feature will be disabled. To activate the feature, the channel must be designated a signaling channel even though PTT ANI is disabled. Additionally, after a button is released, the radio will remain keyed for one second to await further button presses. The length of the transmitted DTMF tone is the value programmed as “DTMF character duration”. The radio microphone is muted for the duration of the function. If PTT ANI transmission is required, this feature must be disabled and the user must manually key the radio while pressing buttons for DTMF transmission.

DTMF ANI

Typically, in DTMF ANI, the PTT ID and the Emergency ID are different so the base decoder can determine what is an emergency message. Systems using dispatch consoles generally define a DTMF PTT ID as a number beginning with a 1 and DTMF Emergency ID's begin with a 7. The length of a DTMF character is programmable 25 mS through 1000 mS in 25 mS steps. The pause between DTMF characters is programmable 25 mS through 1000 mS in 25 mS steps. DTMF ANI can be programmed for up to eight digits.

CHAPTER 4 Technical Information

GE Star® Message Types

The GE Star bits designated S2, S3, S4 and M1 through M4 are used to code various messages. The VME-100 can be programmed so that different message types are transmitted for PTT ANI, Emergency ANI and TOT ANI. The desired star code is selected via the CE73 Vertex programming software. The table below describes the Star codes, the value to enter in the CE73 software and the corresponding decoder displayed message:

STAR CODE	CE73 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 Sel Call 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	EMRGNCY	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

MDC-1200® Message Type

To increase flexibility of the VME-100 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 and the default message type for an Emergency ANI is 0x8000. These parameters should not be changed without a thorough understanding of the signaling system and existing signaling codes.

GE Star® Format Types

Radio systems using GE Star® can define the T1, T2 and S1 bits to have different values or various meanings. Industry-wide, there are sixteen accepted variants with Format "B" being the industry defacto standard. The VME-100 is programmable for any of the sixteen variants.

Format Definitions

The following table defines the sixteen GE Star® formats.

Format	Description	T1	T2	S1	Comments
A	IDs to 2047 (1st 11 bits).	X	X	X	T1, T2, and S1 ignored
B	IDs to 16383 (14 bit ID)	8192	4096	2048	Expanded-ID STAR #1.
C	IDs to 16383 (14 bit ID)	4096	8192	2048	GE-STAR #3.
D	IDs to 16383 (14 bit ID)	4096	2048	8192	Compatible with GE-STAR #4
E	IDs to 4095 (12 bit ID, T2 = "0")	2048	M0	X	GE-STAR #1. T2 = "0" for Mobile.
F	IDs to 4095 (12 bit ID, T2 = "1")	2048	P1	X	GE-STAR #1. T2 = "1" for Portable.
G	IDs to 8191 (13 bit ID, T2 = "0")	4096	M0	2048	GE-STAR #2. T2 = "0" for Mobile.
H	IDs to 8191 (13 bit ID, T2 = "1")	4096	P1	2048	GE-STAR #2. T2 = "1" for Portable.
I	IDs to 4095 (12 bit ID), Tags="00"	0	0	2048	System "0"
J	IDs to 4095 (12 bit ID), Tags="01"	0	1	2048	System "1".
K	IDs to 4095 (12 bit ID), Tags="10"	1	0	2048	System "2".
L	IDs to 4095 (12 bit ID), Tags="11"	1	1	2048	System "3".
M - P	IDs to 2047 (11 bit ID)			X	Identical to I - L with capability only to program IDs to max of 2047.

Value Assignment	Description
8192	If bit is set, add 8192 to ID
4096	If bit is set, add 4096 to ID
2048	If bit is set, add 2048 to ID
M0	If the bit is not set, originator is a Mobile
P1	If the bit is set, originator is a Portable
X	This bit is ignored

For System types I through P, the C Plus decoder looks for a match in the T1 and T2 bits. If the bits match then the C Plus decoder will react to the received message. If not, the message is ignored. This is for communications systems that have multiple unrelated users so that different users do not see ID's from other users.

Radio Connections

Conn Pin	Signal	Description
1	Ground	Ground
3	TRX	TX/RX Status Input: TX="H" RX="L"
9	Ground	Ground
14	AFOut	Audio out from VME-100
16	AFIn	Audio in to VME-100
17	SD	Sub CPU Clock Shift
18	MicOut	TX audio out from VME-100
20	MicIn	Mic TX audio in to VME-100
22	OpTypeStb	Option board sense
24	KEY4M	Key Matrix Col 4
25	OpTyp	Option board sense
26	KEY3M	Key Matrix Col 3
28	KEY2M	Key Matrix Col 2
30	KEY1M	Key Matrix Col 1
31	SIG	Sig Mon noise squelch
32	KS4M	Key Matrix Row 4
33	SUBCPU Reset	Sub CPU Reset
34	KS3M	Key Matrix Row 3
35	RXD	Receive data from VME-100
36	KS2M	Key Matrix Row 2
37	TXD	Transmit data to VME-100
38	KS1M	Key Matrix Row 1
39	Ground	Ground
40	VDD1	3.5VDC \pm 10%

Micro to Micro Communications

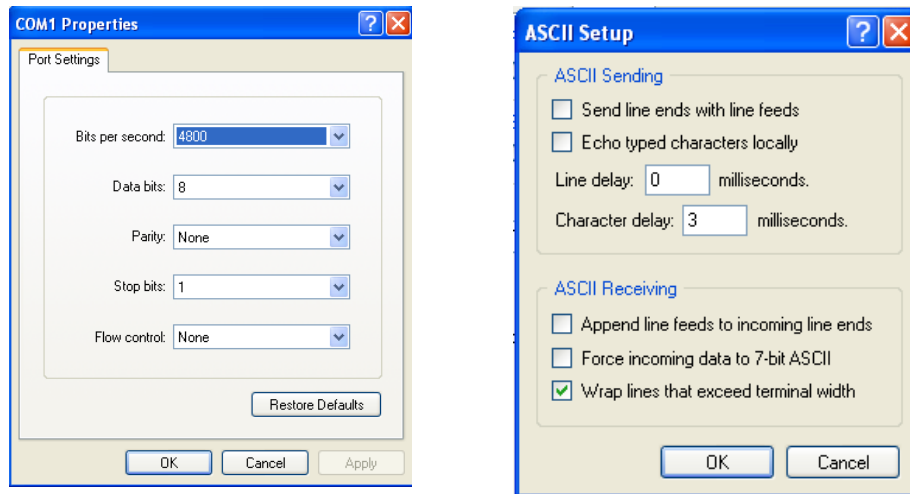
The microprocessor of the host radio and the microprocessor of the VME-100 communicate with each other using one-byte hex commands. This interaction allows the VME-100 to control many functions of the host radio.

Software Version Verification

To verify the version of the microprocessor software, press the # (pound) key followed by the * (asterisk) key. The embedded software check sum will be displayed in the radio display.

Reloading Flash

If upgraded flash software becomes available, the new software can be loaded into the VME-100 by performing the following procedure. Start the terminal emulation program "Hyperterm". This program must be set up for direct connect to Com 1 at 4800, N,8,1 with no handshaking. After the program is set up, Go to "File", select "Properties" then select the tab labeled "Settings". Change emulation type to "TTY". Click the "ASCII Setup" button and change the character delay to 3 mS.



Connect the programming cable between the radio and the PC COM port.

WARNING:

Do not turn the radio off until you have successfully loaded a new VME-100 program. If power is turned off, the board will need to be returned to

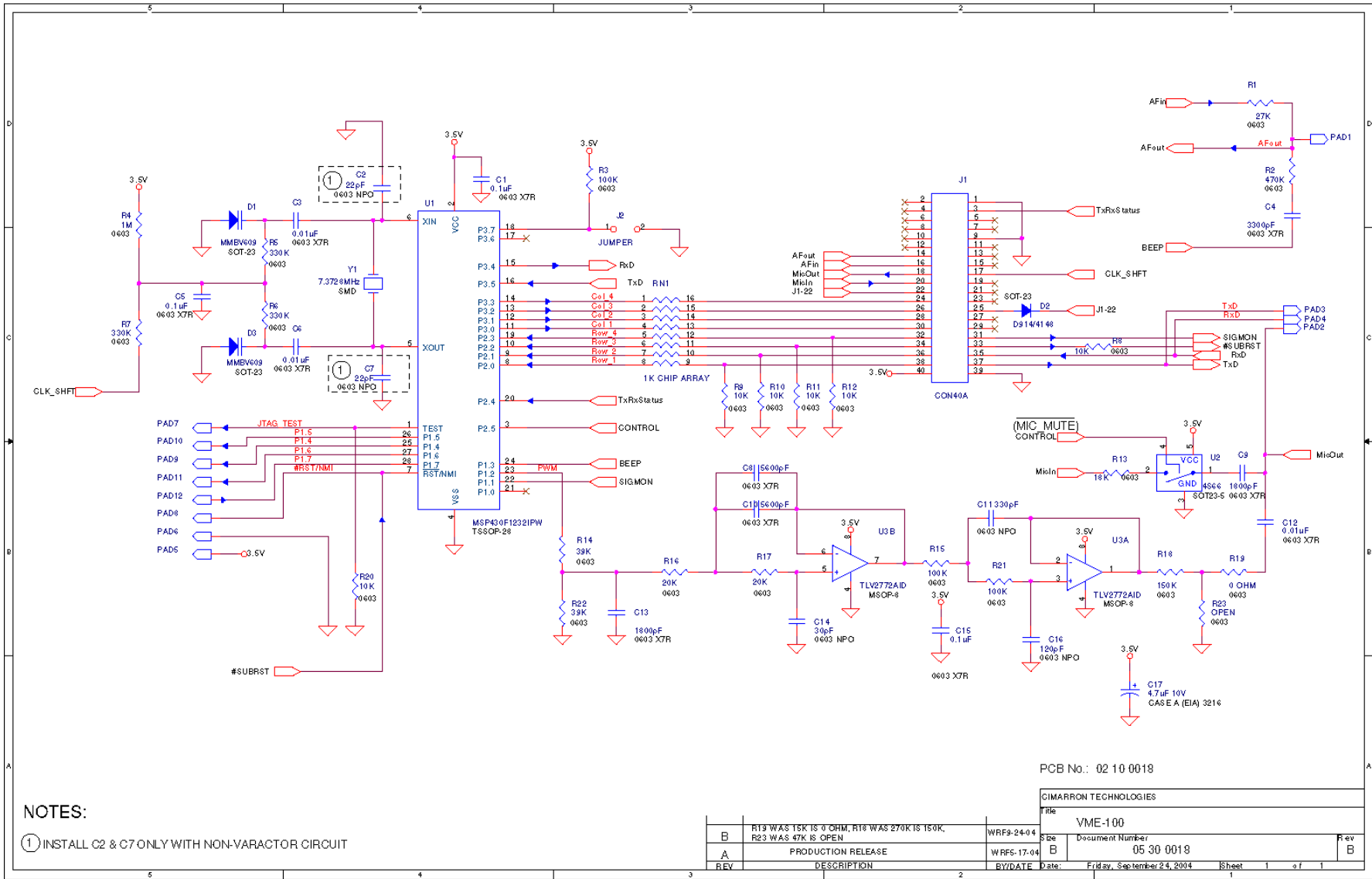
Place the radio in Sub Clone mode by pressing the PTT button and the orange button simultaneously and then turning power on. The radio display will show: "SUB CLON".

At the Hyperterm computer, press "A" (upper case). The radio will respond with "Reprogram?". To erase Sub CPU program memory and proceed, press "Y", "C", "I", "M". The radio will respond with "0" indicating that the flash has been erased and the unit is ready to receive a new program. Pressing any other sequence of keys exits without erasing the Sub CPU program memory.

From Hyperterm menu, select <Transfer><Send Text File>. Select the specified binary file and begin sending. Ignore characters streaming across screen (these are binary characters echoed by some Yaesu cables).

When the load is successfully completed, the final character on the hyperterm display will show "1". If the load was not successful, the display will show "0" and the flash will be again erased and await the download. DO NOT POWER-OFF THE RADIO UNTIL A NEW SUB-CPU PROGRAM HAS BEEN SUCESSFULLY LOADED.

Schematic



PCB No.: 02 10 0018

CIMARRON TECHNOLOGIES			
File: VME-100			
Size: B	Document Number: 05 30 0018	Rev: B	
REV: A	DESCRIPTION: PRODUCTION RELEASE	BY/DATE: WRF5-17-04	Date: Friday, September 24, 2004
Sheet: 1 of 1		1	

NOTES:

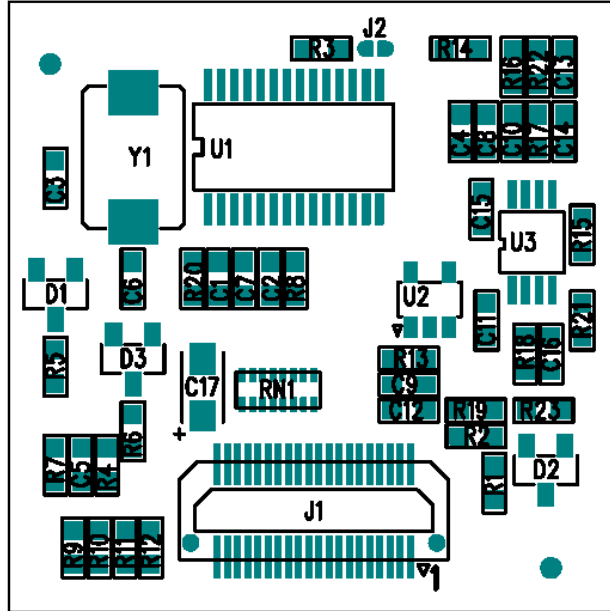
① INSTALL C2 & C7 ONLY WITH NON-VARACTOR CIRCUIT

B	R13 WAS 15K IS 0 OHM, R18 WAS 270K IS 150K, R23 WAS 47K IS OPEN	WRF5-24-04
A	PRODUCTION RELEASE	WRF5-17-04
REV	DESCRIPTION	BY/DATE

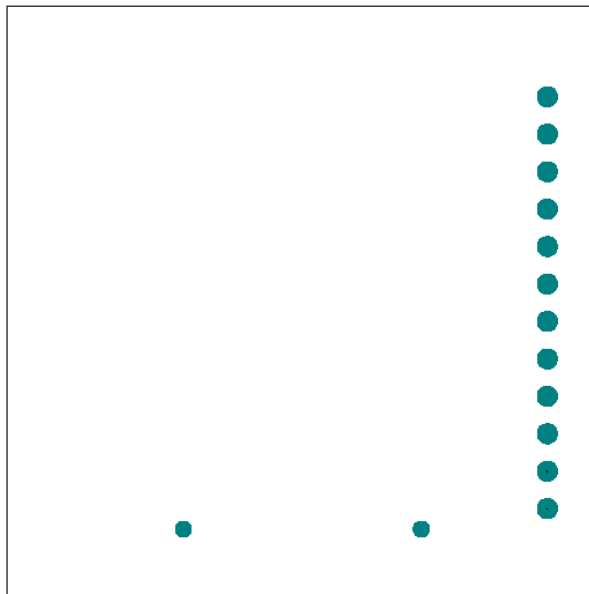
Parts List

Qty	Reference	Description	Mfgr	Mfgr P/N
1		PCB	CIMARRON	02 10 0018
2	B C2,7	CAP 5% NPO 22pF	0603 MURATA	GRM1885C2A220JA01D
1	C14	CAP 5% NPO 30pF	0603 MURATA	GRM1885C2A300JA01D
1	C16	CAP 5% NPO 120pF	0603 KEMET	C0603C121J5GACTU
1	C11	CAP 5% NPO 330pF	0603 KEMET	C0603C221J5GACTU
2	C9,13	CAP 10% X7R 1800pF	0603 MURATA	GRM188R72A182KA01D
1	C4	CAP 10% X7R 3300pF	0603 KEMET	C0603C332K5RACTU
2	C8,10	CAP 10% X7R 5600pF	0603 MURATA	GRM188R71H562KA01D
2	A C3,6	CAP 10% X7R 0.01uF	0603 KEMET	C0603C103K5RACTU
1	C12	CAP 10% X7R 0.01uF	0603 KEMET	C0603C103K5RACTU
1	A C5	CAP 10% X7R 0.1uF	0603 KEMET	C0603C104K4RACTU
2	A C1,15	CAP 10% X7R 0.1uF	0603 KEMET	C0603C104K4RACTU
1	C17	CAP TANT 10V 20%4.7uF CASE A(EIA)	3216 PANASONIC	ECS-T1AY475R
1	R23	Not Installed		
1	R19	RES 5% 1/16W 0 Ohm	0603 PANASONIC	ERJ-3GEYJ000V
1	RN1	RES CHIP ARRAY 1K	SMD CTS	741X163102J
6	R8-12,20	RES 5% 1/16W 10K	0603 PANASONIC	ERJ-3GEYJ103V
1	R13	RES 5% 1/16W 18K	0603 PANASONIC	ERJ-3GEYJ183V
2	R16,17	RES 5% 1/16W 20K	0603 PANASONIC	ERJ-3GEYJ203V
1	R1	RES 5% 1/16W 27K	0603 PANASONIC	ERJ-3GEYJ273V
2	R14,22	RES 5% 1/16W 39K	0603 PANASONIC	ERJ-3GEYJ393V
3	R3,15,21	RES 5% 1/16W 100K	0603 PANASONIC	ERJ-3GEYJ104V
1	R18	RES 5% 1/16W 150K	0603 PANASONIC	ERJ-3GEYJ154V
3	A R5-7	RES 5% 1/16W 330K	0603 PANASONIC	ERJ-3GEYJ334V
1	R2	RES 5% 1/16W 470K	0603 PANASONIC	ERJ-3GEYJ474V
1	A R4	RES 5% 1/16W 1M	0603 PANASONIC	ERJ-3GEYJ105V
1	U2	IC AN. SW. 4S66	SOT-23-5 TOSHIBA	TC4S66F(TE85L)
1	U3	IC OP AMP TLV2772	MSOP-8 T.I.	TLV2772IDGKR
1	U1	IC uCONT MSP430F1232	TSSOP-28 T.I.	MSP430F1232IPW
2	A D1,3	TUNING DIODE MMBV609	SOT-23 ON SEMI	MMBV609LT1
1	D2	DIODE SM. SIG. D914/4148	SOT-23 FAIRCHILD	MMBD4148
1	J1	CONNECTOR 40 POS	SMD AROMAT	AXK5S40035P
1	Y1	CRYSTAL 7.3728MHz	SMD FOX	219-7.3728-14
A =PULLED CRYSTAL CKT B=SIMPLE CRYSTAL CKT				

Parts Layout



Test Pinout



Pad Assignments	
Pad 12	JTAG
Pad 11	JTAG
Pad 10	JTAG
Pad 9	JTAG
Pad 8	RESET
Pad 7	JTAG Test
Pad 6	Ground
Pad 5	3.5 VDC
Pad 4	RXD
Pad 3	TXD
Pad 2	Data Out
Pad 1	Beep

CHAPTER 5

Product Support

If you have any questions or comments about Cimarron products, please make use of our technical support hotline at (760) 738-3283.

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Escondido, CA 92029
Technical Support Hot-Line (760) 738-3283
service@cimtechcorp.com
www.cimtechcorp.com

WARRANTY

Cimarron Technologies Corporation warrants this product to be free from defects in material and workmanship for a period of one year 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

This warranty does not apply to any failure or damage caused by accident, neglect, unreasonable use, improper installation, or to alterations or modifications to the unit. Nor does the warranty extend to damage incurred by force majeure (natural causes) such as lightning, fire, floods, or other such catastrophes, nor to damage caused by environmental extremes, power surges and/or transients

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