

S-950 CONTROL UNIT (FOR DELTA-S RADIOS) PROGRAMMING INSTRUCTIONS USING TQ2310 PROGRAMMER

LBI31380



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NOTE

IT IS THE RESPONSIBILITY OF THE INDIVIDUAL WHO INSTALLS ANY RADIO EQUIPMENT TO CONFIRM THAT THE OPERATOR OF THE EQUIPMENT IS LEGALLY LICENSED FOR THE USE OF THE FREQUENCIES WHICH ARE PROGRAMMED INTO THE RADIO.

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.. O Introduction

This document describes operating instructions and procedures for programming the S-950 Control Head with the Universal Radio Programmer. The Universal Radio Programmer is a suitcase containing a standard Panasonic Hand Held Computer, Panasonic I/O Adapter, Panasonic mini Printer, a General Electric Program Storage Module, a General Electric Data I/O Module, and special cable adapters for connection to the S-950 Control Head. The Program Storage Module has eight sockets for up to eight programs (4K, 8K, or 16K EPROMS) each of which may be a different type radio. The Data I/O module has a cable connector for direct connection to the Control Head and a zero insertion force DIP socket for programming EPROMs outside the Control Head.

Refer to the Panasonic Manuals and to the General Electric "Maintenance Manual Universal Radio Programmer", TQ2310 (19B234413G1) for general system instructions.

The Universal Radio Programmer uses a series of multiple choice menu prompts to guide the user through a programming session. Selection of a menu item causes a new menu to be displayed until the operation to be performed has been fully specified.

Menu-type prompts consist of a sequence of one line displays. Each line consists of a digit or a letter, followed by an equal sign, followed by a brief description of an available option, such as:

| l=CALCULATOR

Successive lines of the display are numbered, then lettered, in order. The individual lines are displayed sequentially, over and over, until a selection is made by pressing a key corresponding to the number or letter of one of the options.

Immediately after a selection is typed in, the display acknowledges by showing the name of the selected option, without the number and equal sign.

When the operation has been specified, the Programmer switches from multiple choice menu prompts to fill-in-the-blanks type prompts guiding the user through the programming session.

Prompting displays of the fill-in-the-blanks contain text and a flashing cursor. (Menu prompts do not show any cursor.)

The cursor may sit on a blank, or it may be superimposed over a default value displayed initially.

The response to a prompt of the fill-in-the-blanks variety may either be a new data value typed in followed by ENTER, or it may be ENTER alone. Typing just ENTER tells the program that the default value is accepted.

The user may "freeze" (i.e. temperarily suspend) the current operation at any time by depressing the "STP/SPD" (stop/speed) key. Action may be resumed by depressing the "STP/SPD" key a second time.

The user may change the speed of display operations by depressing the "STP/SPD" key and typing a number from 1 thru 9 (1 is slowest). typing this number also resumes the operation in progress.

The user may abort the current operation at any time by depressing the CLLAR key.

2.0 Programmer I/O Options.

The Universal Radio Programmer provides the capability to store and access S-950 Control Head data in three media: The Control Head's internal EEPROM, an _FPROM external to the Control Head, and a data file in the Hand Held Computer's battery sustained ram memory. S-950 Control Head data may be retrieved from (i.e. RFAD), modified or created, and stored (i.e. WRITTEN) back to any of the three media. COPY utility operations enable data transfer among these media.

Access to these media are via:

- 1. Internal EEPROM via connecting cable between the Data I/O module and the Control Head.
- 2. External LEPROM Socket on the Data I/O module.
- 3. File named "S-950 CONTROL HEAD" in the Hand Held Computer memory.

The Programmer asks the operator for the input source and output destination at appropriate stages in the various programming functions:

2.1 Programming an Internal EEPROM

The easiest way to field program the S-950 Control Head is via the connecting cable, with the LEPROM left in place inside the Control Head. For a Control Head which has been previously programmed, the normal sequence is to select PROGRAM/REVIEW specifying OLD DATA and READ FROM: CONTROL HEAD, and then after editing data, specifying WRITH TO: CONTROL HEAD to put the updated data back

into the S-350. If the Control Head has not been previously programmed, the normal sequence is to program all new data, then write it to the Control Head.

2.2 EEPROM Socket

The user may elect to program LEPROMS using the EEPROM SOCKET on the Data I/O module. Programmed LEPROMS then could be installed in Control Heads, or copied via the COPY operation into the Control Head, or saved for future use. LEPROMS may be read and previewed, printed, reprogrammed, etc in the EEPROM SOCKET the same as described above for EEPROMS in the Control Head, by specifying LEPROM SOCKET instead of CONTROL HEAD.

2.3 S-950 File

The Programmer file system can store a single copy of a Control Head's data in a file in the Hand Held Computer's battery backed RAM. It will remain intact as long as the batteries are not completely discharged, the unit is not powered off with the ALL-OFF switch in the bottom of the unit, or until the file data is modified by the user.

Data may be read and previewed, printed, reprogrammed, etc using the file the same as an EEPROM in the Control Head. Data may be transferred between the file and Control Heads or MEPROMs in the external EEPROM SOCKET.

The use of the file allows convient programming outside the Control Head without additional hardware.

See Appendix B for additional discussions of the file system and file manipulation operations.

3.0 Getting Started

Refer to the Panasonic literature describing the Hand Held Computer system and system operations. These manuals provide excellent descriptions of the standard units, including the keyboard keys and display, and the "Primary Menu".

As indicated above, the system is "menu driven" where the user selects operations and options from menu items displayed on the LCD display. When the unit is initially turned on, the Primary menu usually will be displayed one line at a time, such as:

1	1	272	CA	LC	IJ	L.	A	T	01	R	

600,004	2=CLOCK/CONTROLLER	e copus
40000	3 = FILE~SYSTEM	· dom
Glassepo	4=RUN SNAP PROGRAMS	diges
***************************************	5=PHOENIX-MOBILS:	ditues
Gancia	6=S-950 CONTROL HEAD	ettere.
400000	7=SLLF TEST	energy
coups	8=(and so on)	

If a menu other than the Primary menu is being displayed, depressing the CLIAR key two times should result in the Primary menu.

NOTI

A word of CAUTION is in order concerning the CLEAR key. The system is designed to be powered on/off without losing the "state" prior to power off. The unit further powers itself off after about a 10 minute period of no operator action. Therefore, DO NOT indiscrimately depress CLEAR a few times every time you power on the system as you may wipe out some of your work from an incomplete session.

S-950 CONTROL HEAD is the selection for programming the S-950 Control Head. The program is selected by pushing the key corresponding to the number or letter displayed in front of the S-950 CONTROL HEAD menuitem, such as the number 6 key in the above example menu.

3.1 Data Entry

The Programmer in-so-far-as-possible uses multiple choice menu entries to minimize operator input errors. When a menu is displayed (one line at a time) the user must select only the number or letter shown at the start of the line before the "=". Any other key will cause the unit to "beep" and continue cycling thru the menu. (An exception is the CLEAR key that will terminate

that selection).

Normally, data entry other than menu selection consists of:

- 1. typing a number (such as 163.300) followed by the "ENTER" key,
- 2. typing a "Y" (for yes) or "N" (for no or none) to respond to "?(Y/N)" prompts,
- 3. typing codes such as "NONE" or 2:30, etc.
- 4. pressing the ENTER key, which means either accept the initially displayed default value (if there is one) or, in the case of channel selection, select the same channel again.

The Left and Right Arrow keys on the system keyboard can be used to move the flashing cursor on the display to assist with data entry. The system will restrict cursor movements to the specified or implied field positions. While entering purely numeric entries, such as frequency data, the system allows only the numerals 0...9 and the decimal point. (If a decimal point already exists, the system further prohibits another. In the unlikely event that the decimal point is in the wrong place, type a number, such as "0" over the existing decimal point, then move the cursor to the desired position and retype the decimal point).

Many of the special keys and functions described in the Panasonic literature are not applicable while programming a radio.

DO NOT attempt to use the HELP key as described in the Panasonic literature during execution of the program. If it is desired to use the HELP key to define the function keys fl, f2, or f3, it should be done prior to selecting the S-950 CONTROL HEAD program.

The control keys Cl. C2 .C3. C4 are not defined for this application.

The ROTATE key has no definition during execution of the S-950 CONTROL HEAD program.

4.0 S-950 CONTROL HEAD Functions Descriptions.

When the user selects the S-950 CONTROL HEAD program via the Primary system menu the following message is briefly displayed:

[|] SELECT DESIRED OPERATION |

followed by cycling a new menu:

Actions	1=PRIMARY MLNU	
ephone	2=PROGRAM/REVIEW	n 400000
Witness	3=PRINTOUT	
CODED	4=COPY -SINGLE	s dimes
entititith	on one one one one one one one one one o	A MODULA

These are all of the operational functions of the Universal Radio Programmer associated with programming the S-950 Control Head.

4.1 PRIMARY MENU

Typing key #1 returns the system to the PRIMARY menu discussed above. (This should be the last functional operation after completing a PROGRAM/REVIEW session).

4.2 PROGRAM/REVIEW

PROGRAM/REVIEW is the operation for programming, modifing, and/or reviewing the various data required in the S-950 Control Head. Section 5 of this document describes the PROGRAM/REVIEW operations.

4.3 PRINTOUT

The PRINTOUT function enables the user to make a hard copy listing of the data stored in the Radio, the LEPROM Socket, or the S-950 CONTROL HEAD file.

4.3.1 Whenever PRINTOUT is selected a READ FROM prompt asks the operator for the INPUT device by displaying the following menu:

	READ	FROM	:1	=_LI:PROM	SOC	KLT	done
skirete.	-	-	emeter spread	MINIST STATE PRINCE PRINCE PRINCE PRINCE PRINCE	manus winns woman manus	entros como como sonos .	

	engeles-	40004	360B #1	tidis econda	100000	espega	essess e	00000	40710	4000	HORES	-rejete	eponery	10000	essus con	th etroid	n remain	ADVENTAGES	o esses	insen	ALIEN ARRE	- KOSON	4000	
espica		R	ΕŻ	\D	ł	F	R	0	M	0	2	2000	C	0	NΊ	R	0	L	H	E	AD	ŧ		40000
	10129	4000	-	ujo essa	acaptes	<0100h	40000h 4	HOREN	4000	40000	emeters	40000	enes	essue	*5700 ecre	-	e electo		- enno	enga	electric earth	-	400010	
	emote	nzaise e		SEN HELDER	-	water	aminin e	porch .	-	100mm	eneco.	-	edela	ome.	elata son	- 01/05	4000	ANDIS ACRO	e enter	100000	entrip espira	4000	40000	
STEEL STEEL		R.	ĽΖ	ID		F	R	0.	M	0	3	the co	S	0204r	95	0		FI	L	E				-
	-	-		Dip comps	40000	ciutes	emilio e		ento.	-0000	-	_	annes.											

Reading the Control Head or an LEPROM in the external socket takes several minutes. While the Read operation is taking place, the display will say:

READING

If an I/O error of any type occurs in the "Read From" procedure, the entire sequence is repeated. Of course, the error (or normal) sequence may be stopped by depressing the CLEAR key (one time).

4.3.2 After reading either the <u>EPPROM</u> in the socket, or the Control Head, and sometimes after reading the file, the system will request frequency range information necessary to compute the correct frequencies from the radio formatted data.

The system will briefly display the message:

SELECT FREQ. RANGE

and present a selection menu of the possible options:

 $1 = Low \ Band}$ $2 = High \ Band}$ $2 = High \ Band}$ 3 = UHF

After the band is selected by typing 1, 2 or 3, the user further is prompted for split via the message:

SELECT BAND SPLIT

followed by the appropriate cycling menu.

4	. 3	0	2	0	1	LOW	BAND	spl	į	ts	9 6
---	-----	---	---	---	---	-----	------	-----	---	----	-----

	40000	vittiga egitira	estito	otomov	some	emin	conten	em200-	mens	401002	dinte	10010	com-reso	40010	Highinia	dom emp	CONSTRUCTION AND ADDRESS	4925 4100	eman escan	40100 KD1099	
* Contract		1=	2	9		7		tonte		3	6	Ð	0	M	H	7,					distante
	ennite	respon weren	auso	essio-	-1000	commiss	enceste.	40000	nupro	-	Ageni	99334A	questo circus	100/00	enco	ension-monto	alamp egrap	40000 40000	course estero	reside satter	
	-	CON 1000	accine	4000	edniste	4933	4500	101010	0100	***************************************	omes	GM:D	distilir opran	estica	essouth	episah ipan	-	UIII 1000	wante winter	60000 4000b	
8		2==	3	6	0	0		emes		4	2	۰	0	M	Ħ	Z .					- Simple
	*80000	1000 6100	45000	40000	ema	destrie	41500	40000	400V	1000	vectors	45000	ezni eize	eurpar	40000	eitus ento	colora entra	enno iono	400 400s	-	
	wisp		000	4100	4000	-	63002	nenda	****	es estas	numbi	timo	Anches Apriles	MONETO	1288	econo viceno	engia estas	esses enter	encos epun	4000 4600s	
40000		3==	4	2	ø	0		000		5	0	8	0	M	H	7,					40000

4.3.2.2 HIGH BAND splits:

							-,	-							- Co Lingue						V-Smile.			
- COMMON		1=	1	3	6	6	0		dignio		1	5	3	6	0	M	H	Z					· ·	and a second
	4000	-	G08209	GDNC+	110100	49500	-	мірция	4000p	Native	enter	dans	spane.	design	Charles worke	autor o	100	amer enter	engo esser	emano e	NOON .	CUIDO NITUO		
	energy	moto essis	COUNT	State-	40000	-totalitys	48000	400000	408409	- +048	-	4000	vongs	elsestiv	ADDITION ATTEMPORE	green t	tensor	-00000-400000	10000 00000	emp e	render	open ones	,	
400000		2=	1	5	0	0	8		-		1	7	4		0	M	Н	Z					- Automate	and the last
	engs	esson esero	4000	41000	40000	40000	20000	esticine	enne.	i iomo	natosalv	encorti.	restica	4pmin	enter estate	entots ti	one	com vers	quia enno	contra s	esien-	emesi espec		

4.3.2.3 UHF splits:

	MESSAGE	enada esenti	ronon	6000	40/100	1010377	weets	4000	9000	*******	ohese	400000	40,000	ndimox	ettosi	10000	40000	MP 400	ov estern	400/00 400	non rental	n estes	COSEP COME	•
480000		1==	4	0	3	60	0		elpude -		4	3	0	0	0		MI	12	P E					on the
	-61401	error tuste	with the	MERCH	44500	smilete	ethers	esiton	comin	-	estion	dim	*00770	Accesso	-0000	denne	4000 00	100 HOLD	in 40000	**************************************	DF 1590	ng mathematik	41120 61100	
	rotrop	HONOR HANK	ACTOR .	emp	<idtens< th=""><th>entiro</th><th>withou</th><th>dinor</th><th>ettendo</th><th>actions</th><th>diam</th><th>-salterior</th><th>-</th><th>MINISTRA</th><th>enco</th><th>esson</th><th>60000 AN</th><th>400</th><th>es essen</th><th>4000 40</th><th>100 1000</th><th>10 100000</th><th>400000 40000</th><th>•</th></idtens<>	entiro	withou	dinor	ettendo	actions	diam	-salterior	-	MINISTRA	enco	esson	60000 AN	400	es essen	4000 40	100 1000	10 100000	400000 40000	•
Address		2=	: 4	3	0	0	0		4000		4	7	0	٠	0		MF	12	ř					- CHILDREN
	emps.	*000 *000	- mante	ARREST	essins	nite-	ehop	NAME OF TAXABLE	emas	isones	estado	-tolerois.	-	simoo	100102	-	40MD GI	10 400	ts entrage	essagei add	400 40000	n estanto	essa essa	ď
	20110	curds epuns	0000	eletten.	******	equits-	12010	rpoca+	4000	utterns	common	valente	uspenie	euditi-	quen	dmer	-	10× 400	e ema	essoria ess	ta 1001	i dittip	idaso danu	
4000000		3=	4	7	0	ф	0		MARKET .		4	9	4	0	0		ME	12	,					-
	essota	entities rystros	ejma	APPERS	4000	40000	estence	-	sidilaro	icones	40000	epono-	essession	course	cossu	eliter	4000 101	ni- 1000	n energ	NOTIFY NEED	en 4000	*******	essio tens	
	<0.00	majo visino	*00,000	denote.	smoo.	equipa (quan	400	-	and the	Cour	60mm	thorn	484401	ANGANGE	COM	nburp ada	as store	P 10750	SURPLY CO.	to. sate	n v86669-	starbi teatra	
400000		4=	4	9	4	0	0		delinies		5	1	2	46	0		ME	12	P \$					-
	monops.	energy elemen	40000	+4000h	4000	econtri	19000	AUDO-	4009	ciano	140004	N/XXXIII	-olda	-1000	Hitti	denist	4000 KG	ny onn		50000 FIR	105 YATIS	o escue	enge bess	,

4.3.2.4 After asking for splits, the program asks whether the stored data relates to a Control Head for a radio with the standard oscillator frequency of 13.2 MHZ, rather then the optional alternative frequency of 13.8 MHZ. The cursor will be positioned over the letter Y, meaning that the default response is "yes", indicated by pressing the ENTER key, or typing Y. Otherwise, type N meaning that the standard frequency does not apply.

	street enter dates entre	etoto reioni vitura	mate their supp each succe	etical editor delitor escale direct escale alpha	or strate white spirit strate strate strate	HISTORY
400000	STD	13.	2MHZ	OSC?(Y/	Y(N'	1
	most mode vinde mode assure	NAME AND ADDRESS.	makin mashi abasa untak sakish	Station Station, records already scientific service setting	di estato, appine altern danne estata, estati	-

When the file is the data source, the Range and Oscillator information may have already been stored with the file, hence the system would not prompt for it. (The FILE input

S-950 CONTROL HEAD Programming Instructions S-950 CONTROL HEAD Functions Descriptions.

may require Range and Oscillator selection if not previously edited. The system knows when to prompt for these data).

4.3.3 Next the user is prompted for a label via the prompt:

	quiptile	state etate	date man e		coming econics	4860	contra	caes	694039	Attellisa	viidato	4100	Arcoto	40000	estorato	agente apolito	espain	deptir	essatio, elevan	4000 4000	
estation		EN	TEI	3	LA	B	T	T,	9												

The user may type up to 40 characters of label information followed by the ENTER key, or simply press the ENTER key (for no label). The text may be edited during input via the right and left arrow keys.

4.3.4 The user is prompted to specify which modes are to be printed out:

	enters	Action value	entrate elemb entrate	, min	distriction of Property	annie.	enors minns	does mino, or	mar woods soon		. House distinct		witter territory	dian ann	
elibitis		PR	INT	1	MO	D	ES	6	A	LI					
	******			-	eritivo estitu	water	more error	1000 OND 10	100 min 100m	-	manua elmajo	minute relation	stitute elephon	species appear	

The default selection, ALL, will result from just pressing the ENTER key. Otherwise, the user may enter the number of each mode for which a printout is desired, as for example:

	49000	STEED SHIPS	econd-econ -econ -econ	elitrili estera entra	enter terro con cons derro		NAMES AND ADDRESS ASSESSMENT	Autor Gross Karter Wilson	
4		PR	INT	MOD	ES:	123			delight
	-vesta	etitor estric	40000 BUNDA 40000 NOONS		esses valvo esses aprox sinos	ealth organ motor error		things against visuals assessed	

This selection would print modes 1, 2 and 3. Spacing or punctuation between numbers will be ignored.

- 4.3.5 Each printout has a header consisting of:
 - 1. 40 Character label, or blank line.
 - 2. "VOL S-950 CONTROL HEAD rrrrr (NB)", where rrrrr is "LOW BAND", "HIGH BAND", or "UHF".
 - 3. "ALT 13.8MHZ OSC SELECTED" if appropriate).
 - 4. "PRINTOUT FROM: dddddddd". Where "ddddddd" specifies a device: "EEPROM SOCKET", "CONTROL HEAD", or "S-950 FILE".
 - 5. Time and date of the printout.

Sample PRINTOUT

Ace Plumbing
V01 S-950 CONTROL HEAD LOW BAND (NB)
PRINTOUT FROM: EDITING (AFTER)
TUE 12:10:14 % OCT 02 1984
CAPACITY: 8 MODE/16 CHAN
DOWNLOADING: ON

EMERGENCY TONE SIGNALLING: T99

TONE #1 = 832.5 HZ

TONE #2 = 712.5 HZ

TONE #1 DURATION: 50 MS

TONE #2 DURATION: 50 MS

QUIET INTERVAL: 0 MS

GESTAR DELAY: 300 MS SQUELCH: VARIABLE CHANNEL ALERT: ON

MODE# 1
HOME CHANNEL: 1
SCAN: FRONT PROGRAMMABLE
OFF-HOOK SCAN: ON
SCAN RESUME DELAY: 2 SECONDS

TX-FREQ TX-CG CCT RX-FREQ RX-CG 1 31.1250 100.0 0:30 31.2500 67.00 2 31.1750 NONE 0:30 31.5000 HONE 3 OPEN NONE HONE OPEN NONE NONE 4 OPEN NONE OPEN NONE 5 OPEN NONE NONE OPEN NONE 6 32.0000 100.0 NONE 32.1500 67.00 CHANNEL 16 6 31.5600 TUNE NONE 31.6950 TUNE GESTAR CODES: PTT ID: 351 PTT STATUS: 6 PTT MSG TYPE: 1 PTT TAG: 0 EMERGENCY ID: 351 EMERGENCY STATUS: 6 EMERGENCY MSG TYPE: 7 EMERGENCY TAG: 0

GESTAR SELECTED FOR THESE CHANNELS:
1 2 6
REPEAT EMERGENCY GESTAR: 10 TIMES
REPETITION INTERVAL: 10 SECONDS
SIGNALLING INITIATED BY:
PUSH BUTTON
PTT FIRST TIME ONLY

MODE# 2
HOME CHANNEL: 1
SCAN: FRONT PROGRAMMABLE
OFF-HOOK SCAN: ON .
SCAN RESUME DELAY: 2 SECONDS

TX-FREQ TX-CG CCT RX-FREQ RX-CG 1 31.2500 023 0:30 32.2750 074 2 31.7500 136.5 0:30 31.0500 91.50 3 OPEN NONE NONE OPEN NONE 4 OPEN HONE HONE OPEN NONE 5 OPEN NONE HONE OPEN NONE 6 OPEN NONE NONE OPEN NONE 7 OPEN HONE HONE OPEN NONE 8 32.3000 85.40 0:30 31.3750 152 CHANNEL 16 6 31.7700 TUNE NONE 31.6600 TUNE

SIGNALLING TONES BY CHANNEL:
CH: 1 832.5 HZ, 712.5 HZ (T99)
CH: 2 607.5 HZ, 772.5 HZ (T99)
CH: 8 652.5 HZ, 772.5 HZ (T99)
SIGNALLING INITIATED BY:
PUSH BUTTON
PTT FIRST TIME ONLY

The least significant digit of the Channel Number is along the left side. After every eight channels, the next eight channels are introduced by a legend such as "CHANNELS 9 - 16". If the last several channels are not programmed, (i.e. they are open) then they will be omitted from the printout, except for Channel 16, which is always shown, since it may contain center tuning information.

TX-FREQ =transmit frequency (in MHZ)

TX-CG = the transmit channel quard digital code or tone frequency. If the channel is 16, and if the user elected to "center tune" during an edit session, the code "TUNE" will appear in CG position in the printout.

LUT = the Carrier Control Timer for that channel (min:secs)

RX-FREO = Receive frequency (in MH7)

RX-CG = receive channel guard digital code or tone frequency.

(A discussion of the format of channel guard is presented later in the PROGRAM/REVIEW section of this document).

If any entry is absent (i.e. not programmed) the printout shows "NONE".

If STE has been disabled for a channel that is programmed with tone channel guard the printout appends "*" to the TX-CG and/or RX-CG data. If any such "*"'s appear in the tabular data, a line is added at the bottom

: "* INDICATES STE DISABLED".

Note- If the DATE/TIME data are incorrect, see the Panasonic instructions and follow the routine in "CLOCK/CONTROLLER" (menu item 2 in the PRIMARY menu) to reset the date and time.

4.3.6 At the completion of the above described printout the user may obtain a Hex dump of the data by respnding "Y" to the prompt:

> HEX DUMP?(Y/N)

The HEX dump is of little value for most users.

The dump is formatted as a sequence of eight matrices, one for each 256 byte page of the EEPROM. Within the matrix for each page the bytes are listed in 32 rows of eight bytes each, perhaps better thought of as 16 sets of 16 bytes each, where each set of sixteen consecutive bytes is printed as a folded row of eight followed by eight. Across the top of each matrix

the least significant hex digit of the byte address is given as a folded row. On the left edge the 2 leading digits are given for each folded row. Often the data contains sequences of folded rows which repeat the contents of previous folded rows; in this case the repetitious data is merely indicated by showing the beginning and end of the range, with the legend "SAME AS TWO ROWS ABOVE".

4.4 COPY -SINGL

This is a utility function providing the capability to copy Radio formatted data among the above mentioned media (including from and to the same device).

Selecting the COPY -SINGLE key (key#4) prompts the operator to select an input or COPY-FROM device via the following cycling menu:

RLAD FROM: L=LEPROM SOCKET |
READ FROM: 2=CONTROL HEAD |
RLAD FROM: 3=S-950 FILE |

Selecting for example the LLPROM socket (key #1) results in a display of

| READ FROM: LEPROM SOCKET |

While the read is taking place (several minutes for the Control Head, a few seconds for the EEPROM Socket), the display shows:

| READING

If an I/O error of any type occurs in the "Read From" procedure, the entire sequence is repeated. Of course, the error (or normal) sequence may be stopped by depressing the CLEAR key (one time).

Following a successful "read-from" operation the system prompts the operator for a copy-TO device with:

| WRITE TO: 1=AEPROM SOCKET |

	COURT	etino etino	epus a	0000 40	inistr occup	900	entrons.	econo essos	econtrals	cratter	\$10760b	ditto	eton	enen-	0000 0 0014	4000b	0000	400004	distrib	(COO) 40	200 GE	000 esses	
commo		WR	I	. enn	E	T	0	ë 0	2	1000	C	0	N	T	RO	L		H	E	A١)		- minus
	-0.000+	10079 (0009	101001 -	1680 es	ever rests	etmo	etperts	opeia espon	4000a	enno	oven	emei e	dilitra	emp	editria estatis	60000	eteto	-01010a	stan -	1000a 40	ND 401	50s 40ses	
	Militan	eren znes	enem e	mo «	10400 HE1010	-1100	40mm	chelle ellen	econia	40000	esonep	steems o	come	100400	distriction	******	omis	singnay	erent-	entro en	no es	100 mino	
ATRICOSO		MK	T	r	E	177 J.	0	o	3	400000 400000	S	10km	9	5	0	F	I	L	E				į
	enom		400-000 In	-			,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		econtr.	-													

Selecting for example the CONTROL HEAD (option #2) results in a display of

```
WRITE TO: CONTROL HEAD
```

If either of the actual hardware devices is selected the write operation is verified as indicated by the display of the following sequence:

	estate	40000 visus	0 4290	e water	AND INC.	44550	600004	40000	KIRSI	* weeken	40000	comm	ecimin-	1000	enzado-	OCONY	4990	ento	etany	40000	409409	15/1000	40000	entro	ettes evas	
dep	,	V.	_R	I	F	Y																				-
	00000	100x com	- 4000	4000	4000	esser	******	enters	unqui	ente.	eathor	4000	*******	Merus	ABBBIA	40000	window	eteren.	41000	-01000	esera	All Discount In Control	essue	elititip	etator etario	
		•																								
	erena	400th 400s	n ment	-	-01000	altrapps	enen-	46500	Nonte	TOMA	electr	aweb.	elevelo	40000	Aminis	-	10000	4110	enno	neupr		enne	dinto.	-	entre entre	
4790000		RE	:A	D	I	N	Ģ																			entition
	escobe	-10707 1940	n 410n	-	40000	outre	entre	weiter	*****	-	name (in	engeries.	40000	48709	conno	contra	enth-	norest	ettoma :		-mm-	cucio	-	woman .	-	

If an I/O error of any type occurs in the "WRITE TO" proceedure, the entire sequence is repeated. Of course, the error (or normal) sequence may be stopped by depressing the CLEAR key (one time).

4.5 COPY-MULTIPLE

Copy Multiple is much like copy-single except the WRITE operation is repeated as many times as the operator responds "Y" to the prompt:

	40000	William Homes	entro	HOND	401000 E	ustro.	philos	ROOM	eann	enunte	visub	40000-4	nom	contin expre	фили	10005 11000	small reses	401039 4010an	estato estato	fitte ress	
00000		AG	A	I	N	?	(Y	1	N)										whomas.
	100000	4000 engs	1000	- Amo	eresp e	enur:	essen	editto	word	nunia	matica	viloso is	thines.	Olinia vassp	NBOOK	**************************************	-militar visiting	SOUR INDIA	comb visite	some enu.	

5.0 PROGRAM/REVIEW

Program/review is the "editor" that allows the user to program or review the various options in an S-950 Control Head. The user may review/modify data already existing in either of the three "devices" discussed previously, or originate totally new data.

The PROGRAM/REVIEW function consists of a preliminary sequence of operations, followed by a sequence which be repeated several times for different options, followed by a final sequence:

1. PRELIMINARY SEQUENCE

- 1. Selecting OLD data (existing in the File, LEPROM, or Radio) or NEW data (that does not exist in any of the "devices").
 - 1. Selecting the READ FROM device if OLD data is specified.
 - 2. Optional printout, for OLD data.
- Specifying whether frequency and Channel Guard data will be downloaded from the Control Head to the radio.
- 3. Entering the mode/channel configuration (8 modes/16 channels or 4 modes/32 channels).
- 4. Entering the total number of modes which will be used.

2. MODE DATA ENTRY/REVIEW LOOP

- 1. Selection of data types to be programmed for a mode or group of modes:
 - 1. Selecting whether frequency and LCT will be programmed.
 - 1. Selecting the frequency range, split, and standard vs alternate oscilator for the target radio, if frequency will be programmed. These selections are only made the first time that frequency information is printed or programmed.
 - 2. Selecting whether Channel Guard will be programmed.
 - 3. Selecting whether Home Channel will be programmed.
 - 4. Selecting the number of channels.
 - 5. Selecting whether scan will be programmed.
 - 6. Selecting whether signalling will be programmed.
- 2. Mode selection: Selecting one or several modes which will be programmed with data of the selected types, in the following data entry operation: several modes may thus be given the same information all at once.
- 3. Entry of selected-type data for selected modes:

Reviewing and/or entering desired data for the selected modes, according to the selections that were made in preceding steps.

4. Choosing whether to repeat programming of the same or different data for more modes. If so, repeat this sequence.

3. FINAL SEQUENCE

- 1. Entering Emergency Signalling options, Variable Squelch Option, and Channel Alert option.
- 2. Printing the editted data (if desired).
- 3. Selecting a WRITE TO device.

Several keys have Special meanings for the PROGRAM/REVIEW operations.

- 1. The UP-ARROW is the same as the "ENTER" key except when selecting a channel number, where the current number is decremented by 1 and entered.
- 2. The DOWN-ARROW is:
 - 1. same as the "ENTER" key, except in channel selection where the current channel is incremented by 1 and entered.
 - 2. the same as typing "Y" for yes .

Thus the DOWN-ARROW may be used for all entries after setup for reviewing existing data.

- As previously described "Y" is for yes to a "(Y/N)" prompt.
- 4. Also as already discussed "N" is for no for a "(Y/N)" prompt.
 "N" also may be used as an abreviation for "NONE" for entering (no) channel guard or selecting "no Radio LCT".

5.1 Select Old/New

The first choice is to elect to read OLD data from one of the three "devices", or to start from scratch and create all NEW data. The following menu is displayed as soon as PROGRAM/REVIEW is selected.

	9000 A000 A0	to entro esses	s ausora estatur	10/59	enn	4100 mm	n etuta	41507 F	ente ente	n styselle	quant	40000	entrib	4000	40044	4000	atomo	nasan	SVDII.	esen	49925	
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	4000 HOUR 440	es 4000à ento	******	-	-1070/8	etossi eses	- entre	4000 4	11010 mieni	-	40000	nstole	-	0000	esser-	-	elizipe	commo	******	atten	48500	
	entra entra ent			Morain	esso-	CROSS SERVICE		einto, e	0000 4 000	- cuner	quon.	emes	queste	1000p	-00000-	epitos :	nistan-	esses	10000	etituies	-	
Access	2=	=N_	V	D	A	TA	k.															-
	-0000 AMOUNT WAR	n chun 1000		6000h	vectors	mane emi	- 45000	40000 4	produce errore	-	-	elemen .	-	-	eticone.	ADODS -		-	conor	4000	-000	

If N.W data are selected the system data buffer is zeroed and initialized.

If OLD DATA is selected, the system prompts for the user to select a READ FROM device via the following menu sequence:

	Game	span en	1000 45	10000	entro	comp	etypitas	essein	delters	etionsp	elution	espina	marin	entroja	NOTION:	especials	eleckylosey -	quar	done	450,54	ASPANIA.	within a	einster -	Apliape	dois	HOUSE ROUSE	
woman a		R.)] 	A	D		F	R	0	14	9 0	1	200	. بأد	F	P	R	Ó	M		S	Ó	C	K	Į.	T	-
	4000	4000 Hz	1500 1	0044	reme	ezem	40800	magas	опри	Militar	wagan	MEDIO	were	wage	100kin	Hilliply	4900	MISSE	01100	spinion	esse	******	NOTICE .	etototo	estra	elizer ricon	
	eneros.	-0100 W	uo e	pagar .	ARTHON IN	entin	NAMES	40000	4600	0000	esmilitra	Auritoria	40000	- - - - -	essee	ésso	tomp	4000	ALESSON,	water	ettenaan	4980	dian	nistro	erategy	Aparter Aparter	
Olean		R1	3	A	D		F	R	0	M	0	2	neodp tunitis	C	0	N	Ţ	R	0	۲.,		H	E	A	D		
	umin	ANDRO HI	MID 1	ofuntsi o	etters.	-101103	ensis	малин	minne	190040	**SNP	evolts	escole	STATE OF THE PARTY.	dissin	10074	100000	4000	eorgas	etenes	60100	water	este	eass		eninia vanias	
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		10000 NO	mb 4	-	-	*****	ester	-	******	*2000	control	week	4000s	*****		-00000		-	one	-	ession	-	-10100	nion	resiste -	-	

Selecting, for example, the CONTROL HEAD (option #2) results in a display of

	emo	******	ASSESSE	nantip	NEEDER OF	NO 4000	10000	noner	erespin	ome-	40000	entro to	ine e	essera esistem	10000-000	ne wome mister	-0000 -0000	enns 10	NP MOUNTAIN	
48000		RE	Α	D	II	ΥG														-
			_			_							·							

If an I/O error of any type occurs in the "Read From" proceedure, repeat the Read-From sequence until data are read without errors from the selected device.

5.2 After a successful Read operation, the user has the option of selecting a printout via the prompt:

	cotoe	100003 10000-	NOR'S	40100	40140010000A	AMOUNT	ensories	delinitie	discolub.	SERVICE.	40300	A ADDRESS A	comm	essety.	quapp	enous vers	DI AMINE	- anne	40000 VINUE	199203	estigo	dosto-desp	
0		PR	I	N	TO	U	T	2	1	Y	1	N)										-
	10000	TOTAL PRODUCTION	ettesa	entop	ntma-cons	12319	45500h	40E3E94	emmo	NISSEN-	assa	46700	409005	95100	40110	ANDRO FORE	i ana	tolenste	4000 4000	40000	10002	1000 4000	

If selected, the radio data will be printed as per the format described in Section 4.3 above for the PRINTOUT menu item.

The 3rd line of the printout header will read as follows if the user elects a printout here:

PRINTOUT FROM: EDITING (BEFORE)

If the operator is not really sure of the Range information he should request a PRINTOUT to verify reasonable looking RX-Freq. (The TX-Freq will most likely be ok. However, the RX-Freq data will be out of range and incorrect if the incorrect Range

information are input by the operator).

5.3 Next the user is asked if the Control Head will be downloading data to the radio (if not, the Control Head will probably not be programmed with frequency, CCT or Channel Guard data). The prompt is:

| DOWNLOAD TO RADIO?(Y/N)Y |

If the Control Head is being programmed with all new data, then the default response will be N. If the data is old, than the default will be whatever it was in the old data.

5.4 Next the user is asked to specify the mode/channel configuration. This should agree with the attached Delta/S radio, so that if the radio has 32 channels (ie. a 9-mode as well as an A-mode) then the Control head will have a capacity of 4 modes/32 channels; otherwise it will have 3 modes/16 channels. The prompt is a menu-type, with two possible choices:

1 = 8 MODI/16 CHAN
2=4 MODE/32 CHAN

Respond either 1 or 2 to register a selection.

5.5 Next, the user specifies the actual number of modes which will be used. The prompt is a fill-in type, which initially will display a default value equal to the maximum number of modes selected in the previous action, as for example with 4 Modes/32 Channels:

| ENTER NUMBER OF MODES: 4

6.0 Mode Data Entry/Review Loop

The Mode Data Entry/Review Loop may be repeated as many times as necessary to specify all data for all modes. On each pass through, the user specififies the types of data and the modes to be programmed on that pass. Several modes may be selected at the same time, causing the same data to be stored for each of them. By combining the data type selection and the mode selection appropriately, it is easy to avoid repetitive data entry operations for modes that contain some identical data and some unique data.

6.1 The first data-type selection prompt, for frequency and CCT, is:

PROGRAM FREO CCT?(Y/N)Y |

If downloading is on, the default will be Y(es), otherwise N(o).

- 6.2 If frequency programming was selected, then frequency range, splits and oscillator will be selected, unless they were seelcted previously. See Section 4.3.2 for a detailed description.
- 6.3 Next, the user will be asked to select whether Channel Guard will be programmed:

PROGRAM CG?(Y/N)Y

The default is Y(es) if downloading was selected, and N(o) otherwise.

6.4 Next, the user will be asked to select whether Home Channel will be programmed:

PROGRAM HOME CH'S?(Y/N)Y

The default response is always Y(es).

6.5 If downloading is off, then the user will be asked to select whether the number of channels will be programmed explicitly. The prompt is:

PROGRAM MAX CH'S?(Y/N)Y |

6.6 Next, the user is asked whether scan is to be programmed:

PROGRAM SCAN?(Y/N)Y

6.7 Finally, the user is asked to select whether signalling is to be programmed:

400000	***********	esses vom	N1020 43100	dette distr	erouse exerci	duse	-000	4000	4000M 4000	-	40000 HONOR	40,000	weeds	400.00	MITTER	ebsety	contrib	40000 mon	
	Ыß	OG	RA	M	SI	G	M	Α	T.I	·I	NG	?	(y	1	N)	Y	e e e e e e e e e e e e e e e e e e e

6.8 After the data types to be programmed have been selected, the user is asked to specify the mode or modes which will receive the data to be entered. Each selected mode will receive all data entered during the following steps of the loop. The mode prompt is:

	4850	4010 010	to sour	6 4030×	erren enten	40000	mous	ANNES	-6500	congra	4001000	41000	anium -	quinte	4610	*****	20100 4000 0	4000 4000	rando Helio	e entre	400 risr	
9		in	ľŢ	E	R	M	O	D	E	(S)	9 0		1							Gustava
	-	son en	9 400	9 101110	abon work		wee		asm	-	65600	elizatio.	consin	einnih	come.	enma enero	etem rima	enema disente	water late	b artists	-	

The default response is 1, but allowable responses are the word "ALL" or the numbers of one or modes which it is desired to program together: spaces or punctuation between mode numbers are ignored. Mode numbers outside the range which was specified as the "NUMBER OF MODES" will be ignored or cause an error message.

6.9 Main Loop Data Entry and Review

After the data types and modes have been selected, the actual data values are elicited, according to the type selection which was made. In the following paragraphs describing data entry, it should be understood that the prompts will only appear for those data types which were selected for programming. Those data which apply to the entire mode are elicited first, after which the user is asked to specify particular channels, and then asked for data for those channels.

6.9.1 Home Channel

The prompt is:

| ENTER HOME CHANNEL: 1 |

6.9.2 Scanning Options

The first prompt regarding scan is a menu-type, as follows:

4	urode	word	emp-	wene	eledo	vittorio	4000	entrop viernin	mosts	econo	40010	etime	estons	dotton	PRINTS CONTROL	enaps	10000	essep	vitation	winess rising	estate estenti	4000 4000	
		1	*******	Į4°	R	0	N	T	P	R	Ó	G	R	A	MM	A	B	L	E				- Marie
•	enios.	40006	etterap	*010	NONE	elitpois		-rinda rumos	ниць	sphices	with	Attoba	40ide	400	V0000 01/00	10000	0 101150	10000	- OFFICE	entition senten	eans esse		
	bittor	ettodo	******	ondra	-	40000		entale entale	eme	coatr	****	491000	900	00000	-0000	****	- salama	-0.0000	-	53880+ 10(H)	middle militare	-continu aliquitar	
		2	Annually Annually	F	I	X	L	D	P	R	I	0	R	I	TY								40000
		etitos	ethiga ethiol	etinia etimia etimo	etina etinak etinak etinak etinak etinak enista enista	editos etitolo escosa englas spatos	ettina ettina ettina ettina ettina ettina ettina	ections account of the color of	with class with the the class species with								1=FRONT PROGRAMMA 2=FIXED PRIORITY				1=FRONT PROGRAMMABLE 2=FIXED PRIORITY		

		3=SELECTE		PROP 40000 CREEN GREEN 40000 ACCESS ACCESSOR		
	••••••••••••••••••••••••••••••••••••••	MITTED APPERS ATTERS NEEDS NEEDS NEEDS NEEDS NEEDS NEEDS A	allife distall distall contain contain avenue avenue destale contain c	नर्वात नावस्क बायक्र व्यवस्था व्यवस्था ब्राह्मा व्यवस्था -		
	de		ntin edinin tioleh elotza sisten erosin einek estelh elaten elbisp estelh e	mater construction editors chapte spinish		
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6.9.2.1 Th	e following osen:	question	is asked,	unless	NO SCAN	was
			and without species within remain relative blance station region regions design re-			
			SCAN? (Y/N			
6.9.2.2 The	e following lacted:	is asked	if FIXED	PRIORITY	scanning	was
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			SUME DELAY?	Y/N)Y		
				The state of the s		
6.9.3 Signal	ling Options					
The ty	pe of signal	ling is as	ked through	a menu-t	ype prompt	*
		1=GESTAR E	NCODE	n words whole simps extent chaps		
	6400		- MIND - AND - MIND - M	a destine entaglia Albasia entanta entanta		
		2=T90/T99	INCODA	econic ecopie cocco ecopies		

400000	3=T90 ENCODE	OCCUP distrit antito combi vamb visibi essas visibi essas visibi essas visibi hauto sapay.
		MINI MINI MINI MINI MINI MINI MINI MINI
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	neth rethe class	MON WIRE WINDS CROP ACCUS (MICE STORE WINDS CROPS CROP
	6=NONE	THE COURS SEED STORE STORE STORE SEED,

6.9.3.1 Unless no signalling is specified, the user will be asked to specify what initiates the signalling, by a series of questions, as follows:

Statione	PUSH	BUTTON?(Y/	N)N		
	-ellera ellahir-ellera ellera ellera -elle	in-Allin- office diving diving motion colors colors along alone; comes	Amin's elitina Aminis Ami	OD CONTANT MINISTER SOLICES AN	atia atian dana anta
Manual Control	HOOK	SWITCH?(Y/	N)N	to county assess essess es	
		in dann medir. Elitak danan viruk melap kilasa sepala sajata, respen-	names names names when	in talka tilaki meser op	inte colore struse aparox
datases	PTT:	FIRST ONLY	?(Y/	N)	
	ANCO CITES SOME AND ADDRESS AND	The state while while while state st	Mode volutio viviga diseas		The entire states exists
Sample .	PTT:	EVERY TIME	?(Y/	N)N	

The question PTT: EVERY TIME? will only be asked if the answer to PTT: FIRST TIME? is No.

6.9.3.2 If GESTAR was selected, then the contents of the GESTAR message will be elicited, for both the PTT message, and the emergency message, as follows:

	PTT MSG TYPE:1
	ware data after af
	EMERGENCY MSG TYPE: 7
	PIT ID:0
from 2048 to values is enter the entry is	mum value for ID is 2047. However, values 4095 may be entered. If one of the higher ed, the user will be asked to verify that correct, by a question which will appear in ay frame, after the ID value, as for
	PTT ID: 4011 CORRECT?(Y/N)
The default value supplied by the	ue of EMERGENCY ID is copied from the value user for PTT ID.
	EMERGENCY ID:
	white within within white white the control with the control with white and the control within the control w
	PTT TAG: 0
	MINE MANN MANN MANN MANN MANN MANN MANN MA
	IMERGENCY TAG: O

After the message contents has been entered, the user is

PTT STATUS: 15

I EMERGENCY STATUS:15

asked to indicate whether the Emergency Message will be automatically repeated, and if so, how many repetitions, and how often:

| EMERGENCY REPEAT?(Y/N) |
| NUMBER OF REPEATS: 1 |
| INTERVAL: 10 SECONDS |

The number of repeats may be any number from 0 to 255, and the interval may be 1 to 256 seconds.

6.9.4 Channel Guard Enable/Disable

If Channel Guard programming is selected, then the following prompt is used to optionally disable the channel guard option for all channels in all selected modes:

| CHANNEL GUARD DESIRED (Y/N)|

Responding with "N" (for NO) will:

- cause the system to automatically scan thru all channels and delete all existing channel guard codes (tone and digital).
- 2. block the option (during this pass through the Main Programming Loop) to insert Channel Guard codes, by causing Channel Guard prompts to be omitted.

A "Y" (for YES) response enables (tone) channel guard and promotes further prompts for Digital channel guard and STE options:

1. Digital CG prompt is:

| DIGITAL CG?(Y/N) |

A "N" (for NO) will:

- 1. cause the system to automatically scan thru all channels and delete all existing DIGITAL channel guard codes.
- 2. prevent the user from entering any type digital channel quard during the edit/programming session.
- 3. block the option of selecting Inverted Digital Channel Guard and Restricted Digital Channel Guard.

A "Y" (for YES) is more or less the opposite of a "N" as described above in that it allows the user to:

- 1. enter digital channel guard during the edit/programming session.
- 2. select Inverted Digital Channel Guard and Restricted Digital Channel Guard.
- 2. STE Option prompt: The system briefly displays the message:

	40000	returnity o	VEED	estrin-	40000	10000	10000	4000	epinija	4000	Namé es	on eses	40000 40040	69000	емрця	ecodes opcom	KONEN E	1000	enco enco	esser visus	4000to Intellig	
1		C	10	T	1	10	m		C	m	9.5	0	Pm	T.	0	NI						600
9		5.00	d.	فبق	Min.	1	ale.		be p	d,	ndisir.	3,7	di di	-l.,	4.7	4.4						.8
	Alteria	40mph	distrib	diliter	405409	45000	4000	400496	distri	401901	approx six	des expen	60000 WISHING	1000029	40005	ANNUA ANNUA	160000 4	06000 4	COSTON PRINCIPAL	mates sizon.	spots state	

followed by the cycling menu:

	*000	o contan o	com c	QC2004	-dolls	COURS	district	40000	dentes	490100	enano	NEEDIG	morps	enup	49000	40000	40000	10(10)0	comp	486009	edution	duppe	enign.	enuns	652530	espions dynam-	
dissor		1:	TOTAL STREET	D	I	S	A	B	L	L		S	T	Œ	1	A	L	L		C	H	A	N	8	S		entring.
	******	s 40005 e	*****	estan-	Maner	waterste	esma	40000	embassa	-00000	one	écus	epolito	enuo	NO.COLO	enter	earny	4002B	10000	tougo	10000	49000	egetus	100000	espoor	KOREN KRISEN	
	*0500	- electric m	mun e	IN NO.	remo	MRUSSA.	vintois	10000	40000	dissits	90046	101100	48000	wings	sanon	Attition	dinaso	49000	40000	100000	49/2009	40000	60700	4040b	emen	1000 4000	
4000		2:	2002	E	N	A	B	L	E		S	T	E	ewio	A	L	T,		Ċ	H	A	N	0	S			Î
	elpton	400a e	omen d	iovois	HELES	skopa	<0000e	estoney	-01100	rassar	emotos	cupus	HOUR	ento.	week	4000	40000	William	mento	election	energy	4000	eentin	eppins	-01059	mines esses	
	*****	1 10000-1	ush e	inte	-	*0.000	40000	Minne	-	60000	min	-	epidon.	agette	-tinto	deres	NOOM.	uptim	401103-	ronon	етто	impo	gour	40504	engener	egran earth	
400		3:	and (5	1	L	À	C	ŋ		S	T	And		F	0	R		E	A	C	H		C	H	AN	disser
	1010	40000	nes v	meo ·	etino	etegen	#1076#	ennor-	dasp	open.	enace	4866	Name	sobner	40000	etimer	90000	énno	en en		emañ.	- 	especially.	money	dista	-	

Option 1 searches thru entire data base and sets the STE DISABLE bit for all channels already programmed with Tone CG, and all channels programmed with tone CG during this session.

Option 2 searches thru the entire data base and enables STE for all channels already programmed with Tone CG, and all channels programmed with tone CG during this session.

Option 3 allows/requires the user to ENABLE/DSABLE STE on a per channel basis as such are processed. Only the channels actually PROGRAM/REVIEWed are effected by option 3.

The user is not prompted further about STE if option 1 or 2 is selected.

6.9.5 Select Carrier Control Timer (CCT).

The Delta/S has the option for selecting a LCT on any channel on a Channel by channel basis. All CCT's may be disallowed if desired.

The following prompt allows the user to allow/disallow CT:

| ANY LCT DESIRED?(Y/N) |

A "N" (for no) will disable CCT and not allow the user to enable/select a CCT for any channel during this session, and will delete any CCT values set in the entire radio.

A "Y" will enable the user to select a CCT on any channel.

6.10 Channel Data Entry/Review Loop

Following entry of data which applies overall to the selected mode or modes, channel data is prompted for. The sequence is as follows:

- 1. Enter Channel Number.
- 2. Transmit Frequency (if selected).
- 3. Transmit Channel Guard (if selected and enabled).
- 4. Tx Carrier Control Timer (CCT) (if selected and enabled).
- 5. Receive Frequency (if selected).
- 6. Receive Channel Guard (if selected and enabled).
- 7. STE (if enabled, and tone Channel Guard is selected for Tx or Rx).
- 8. GESTAR enable/disable (if selected).
- 9. T90, T99 or special tone (if selected).
- 10. The option to program more channels.

6.10.1 Selecting Channel Number.

The user is prompted to input the channel number via :

| ENTER CHANNEL NUMBER: |

The user has a number of options to enter channel numbers:

- 1. Simply type the "INTER" key to leave the channel number unchanged (e.g. to rework the current channel data). If this is the first time thru the loop typing the "INTER" key defaults to channel 1.
- 2. The user may enter any valid channel number by typing in one or two digits in any combination or order followed by the "ENTER" key. Recall that some Delta/S Radios have an "A" mode and a "B" mode, each with channels I thru 16. A S-950 Control Head used with such a radio would be set-up for 32 channels per mode, and valid channel entries would include, for example,

Al. 1A, A, B, 7, B4, 3B, 16, 28, 32, etc.

When the channel number is entered with an "A" or "B", the data display will show the correct channel number, but without the "A" or "B".

If the channel number data are not acceptable, the system will repeat the prompt for channel number.

- 3. The user may type UP ARROW key to select the channel previous to the current channel (e.g. moving from 3 to 2, or from 17 to 16, etc).
- 4. The user may type the DOWN ARROW key to move to the next successive channel number (e.g. moving from 4 to 5, or from 16 to 17, etc).

6.10.2 Transmit Frequency entries.

The following is a sample prompt for TX-Freq input:

| CH: 1 TX-FREO:xxx.xxxxMH|

where:

- "1" shows channel number 1.
- "TX-FRIO" indicates transmit frequency.

- "XXX.XXXXMH" designates current TX frequency for the channel.

The flashing cursor is positioned over the 1st "x" as marked on the above diagram with the "f" on the bottom box line.
The user has a number of input options. He may:

- simply type the "ENTER" or DOWN ARROW key to leave the entry unchanged.
- 2. use RT and LEFT ARROWS to position the cursor to modify any digit shown and then type "INTER" or DOWN ARROW key.
- 3. he may retype the entire xxx.xxxx frequency followed by the "ENTER" or DOWN ARROW key.
- 4. type "000.0000" to blank (i.e. not program or "unprogram") this Tx frequency on this channel.

Note that a blank channel frequency always shows up on the LCD as "000.0000MHZ".

The system checks all entries, even those already apparently programmed, for range violations and invalid frequencies.

6.10.2.1 If the entry is out of range for the specified radio Range the system will "B_EP" and the specified Range is briefly displayed, such as:

| RANGE: 450.000- 470.000 |

Then, the input entry (containing the out-of-range value) will be repeated. (See also section #6 on "Special Frequency Input Features").

6.10.2.2 If the entry is an invalid frequency (i.e. does not convert to an integer when divided by a reference code, etc.) the system "BEEPS" and briefly displays the following message:

INVALID

and the input entry display (with the "invalid" data) is repeated.

NOTE

WARNING- The programmer system's rules for invalid frequencies may not agree at all with the FCC or other regulatory agency rules for invalid or illegal frequencies. FREQUENCY SELECTION IS THE USERS RESPONSIBILITY.

6.10.3 Transmit Channel Guard Entry.

Following entry of the TX Freq (if nonblank) and if the channel guard option was selected, a prompt similiar to the following is displayed showing the current channel guard for this TX channel:

CH: 1 TX-CG:xxxx

where "xxxxx" is symbolic of the current CG and may be:

- 1. "NONF" = currently no TX CG
- 2. tone CG such as 67.0, 210.7, etc.
- 3. Digital CG code such as 023, 703, etc.
- 4. If INVERTED Digital Channel Guard was enabled during setup (option selections), the display for digital CG also always shows the corresponding INVERTED digital CG equivalent code to the right of the "/" in the display. Note that for every normal digital channel quard input code there exist a corresponding INVERTED digital CG input code. The Hex codes are idential in the programmer and in the Delta Radio. The following is a sample display with INVERTED digital CG enabled:

| CH: 1 TX-CG:023. / 047 |

where "023" is the normal DCG and "047" is the corresponding INVERTED DCG equivalent.

The flashing cursor is initially pointing to the first digit of the code. Note that the "current" value always disappears when the user types anything. The user has several data entry options:

1. to leave the entry unchanged, type the ENTER or

DOWN ARROW Key.

- 2. to select a tone CG simply type the thing followed by the ENTER or DN ARROW key. A sample input might be 67.0, 210.7, etc.
- 3. to enter a normal Digital CG, simply type the three digit code, such as 023, 654, etc. followed by the LNTER or DN ARROW key.
- 4. to enter an INVERTED DIDITAL CG CODE precede the code with an "I", such as "IO23", "IO47", I172, etc. followed by ENTER or DN ARROW key.
- 5. the restricted codes are entered the same as other digital CG codes. Note that the system "BLEPS" and briefly issues the following WARNING message on every entry of Restricted DCG. However, the data are accepted by the system after this warning sequence.

| RESTRICTED-BUT ACCEPTED |

If the user types a code unknown to the system (i.e. not on the attached list) or if the user attempts to enter a type code not selected during setup (option selections) the system "beeps" and briefly displays the message:

BAD CODE

then repeats the initial CG prompt with the INITIAL (old) data.

6.10.4 Carrier Control Timer (CCT) Entry

The current value of the CCT for the current channel is displayed in the following prompt.

1 CH: 1 TX-CCT=x:xx

where x:xx is "NONE" or any valid CCT from 0:30 to 4:00 in 15 sec increments.

MOTE

The "2ND SFT" (second shift) key must be typed prior to typing the ":" (colon) character that is required for all CCT entries except "NONE". (Of course the user may use the RT and LEFT ARROW Keys to move the cursor to change only selected digits as desired).

6.11 Receive Frequency Intry

Receive Frequency data entry follows the same rules/procedures as for Transmit Frequency. The prompts are almost the same except "RX" replaces "TX" as shown is a sample below:

| CH: 1 RX-FREQ: xxx.xxxxMH|

6.12 Receive Channel Guard Entry

Receive CG data entry follows same rules/procedures as for Transmit CG. The prompts are almost the same except "RX" replaces "TX" as shown is a sample below:

CIT : RX--CG: XXXXX

6.13 STE Option.

If the user selected to ENABLE/DSABLE STE on a per channel mode, and if TONL CG is programmed for either TX or RX channel, then the user is prompted to ENABLE or DISABLE STE.

6.13.1 If STE is already enabled (default) the user is presented with:

CH: 1 STE ENABLED OK?(Y/N)

A "Y" for YES will leave STE ENABLED for this channel. A "N" for NO will DISABLE STE for this channel.

6.13.2 If STE is already DISABLED the user is presented with:

I CH: 1 STE DSABLED OK? (Y/N)

A "Y" for YES will leave STE DISABLED for this channel.
A "N" for NO will ENABLE STE for this channel.

6.14 GESTAR Enable

If GESTAR has been selected for the mode or modes being programmed, then the system will prompt for each channel to allow the GESTAR message to be enabled or disabled for the channel. The prompt is:

CH: 1 GESTAR MSG?(Y/N)N

The default value, Y or N, is taken from the value initially in storage.

6.15 Tone Signal

If tone signalling -- T90, T99, or Special Tone -- has been selected, then the user will be asked for tone frequencies for each channel. If T90 was selected, then only a single tone will be expected, and the prompt will be:

CH:1 T90 TONE=0.0 HZ

Acceptable responses are N, or 0.0 -- meaning no T90 signalling for this channel -- or any of the values listed in Table 6.15.1. If an illegal value is entered, then the following error message will be displayed with a beep, followed by the original prompt:

UNEXPECTED SPECIAL TONE |

If the T99 was selected, then the following prompt will be displayed:

CH: 1 1ST TONE=0.0 HZ

If the response is N or 0.0, then signalling will be disabled for the channel; otherwise, the system will check that the entered value was one of those listed in Table 6.15.2. If an erroneous value is entered, the system will diplay "UNEXPECTED SPECIAL TONE" as above, and repeat the prompt. When a legal first tone is

entered, the user will be asked for a second tone, which will also be checked against Table 6.15.2:

	4510	enter wants	-	where chairs were	come with some comp	enem whele ente		ste enom	eren anno	4000 4000 4000		
- Marie		СН	0	1	2ND	TON	[]=C) .	0		HZ	Oliver of the same

1050	1500	1950	2400 2850
1125	1575	2025	2475 2925
1200	1650	2100	2550 3000
1275	1725	2175	2625
1350	1800	2250	2700
1425	1975	2325	2775

Table 6.15.1 -- Legal T90 Frequencies (Hertz)

		and the second of the second o		and the second of the second o
517.5	607.5	697.5	787.5	877.5
532.5	622.5	712.5	802.5	892.5
547.5	637.5	727.5	817.5	907.5
562.5	652.5	742.5	832.5	922.5
577.5	667.5	757.5	847.5	937.5
592.5	682.5	772.5	862.5	952.5
				967.5

Table 6.15.2 -- Legal T99 Frequencies (Hertz)

6.16 Stop/Repeat Channel Loop.

After processing data entry for a channel, the system asks whether the user wishes to enter a similiar sequence of data for another channel: | MORE CHANNELS?(Y/N)

A "Y" or DN ARROW response causes the system to repeat the loop beginning with the ENTER CHANNEL NUMBER prompt described above.

A "N" (for NO) directs the system to:

1. Check programmed bandwidth; first TX then RX channels. The following message is displayed while computing TX bandwidth:

CHECKING TX BANDWIDTH

If the frequency spread (minimum to maximum) is greater than specified for that particular range and split, an error message such as the following is displayed. This brief message is the only indication that the TX bandwidth exceeds specified radio capabilities.

| EXCLEDS 5.5 MHZ BANDWIDTH |

The following message is displayed while computing RX bandwidth:

CHECKING RX BANDWIDTH

If the frequency spread (minimum to maximum) is greater than such as the following is displayed. This brief message is the only indication that the TX bandwidth exceeds specified radio capabilities.

| EXCLEDS 2.0 MHZ BANDWIDTH |

2. Determine if user desires center tuning automatically (i.e. if channel 16 has not been programmed) via the prompt:

CENTER TUNE?(Y/N)

The user may elect not to center tune, or may accept the computed frequency, or may enter a different frequency. The system automatically computes the center tune TX and RX frequencies and presents same much as normal TX/Rx frequency data entry.

While sorting and computing the average of the maximum and minimum programmed frequencies FOR TX SIDE, the system displays the following message:

COMPUTING CENTER TUNE FREOI

When computing is completed, the center tune frequency is shown as:

CH:16 TX-FRIO:XXX.XXXXMH

While sorting and computing the average of the maximum and minimum programmed frequencies FOR RX SIDE, the system displays the following message:

COMPUTING CENTER TUNE FREQ!

When computing is completed, the center tune frequency is shown as:

CH:16 RX-FREO:xxx.xxxxMH|

The user may simply type the enter or down arrow key to leave the entries as computed, or may modify as desired just like a normal frequency.

6.17 Stop/Repeat Mode Loop

After processing data entry for a mode or modes, the system asks whether the user wishes to enter a similiar sequence of data for another mode or modes:

| MORE MODES?(Y/N)

A "Y" or DN ARROW response causes the system to repeat the loop beginning with the ENTER MODE(S) prompt described above.

A "N" (for NO) ends the loop for the current mode or modes.

6.18 Stop/Repeat Programming Loop

After processing data entry with a given set of data types enabled, the user chooses whether to enter more data for a mode or modes, with different types enabled:

	entonin	MINIST MINIST	KORDS-	KENDER	entra dona	400000	rana	Applicate Assets	e como	etrass	497000	more stan	w coors	entrup	estronio	estrone	enthis	deno resu	a essura e	man -	vocas excus	
							_															
ł		MO	R	F.	P	R	0	GE	A!	M	M	TN	IG	2	P	Y	1	NI				1
		-		-	-						-				٩	m	-	/				v
	9500(91)	essin esson	KONEA 4	delgra	mino resto	0.000	eyenno	ristre esse	40000	GUNDS	e 02007	STORE ARTE	e dinon	-contin-	4500m	double	STEEDER.	etonin desci	etimo o	num e	CERCES 45000	

A "Y" or DN ARROW response causes the system to repeat the loop beginning with the PROGRAM FREO _LCT prompt described above.

A "N" (for NO) ends the loop.

6.19 FINAL SEQUENCE

The Final Sequence consists of the programming steps that take place after the modes are programmed.

6.19.1 Emergency Tone Signalling

Emergency Tone Signalling may be enabled and selected from among T90, T99 or Special Encode types, by responding to the following menu-prompt:

	electric control electric enter electric electri	a contra contra contra	entra entra entra entra	ente vente ann	- 1780 - 1800	40000-4000-	Adjalo scipcio	ecoto econ	menta kener	
4000000	1=T90	ENC	ODE							-
	sinitis estima estera estata estata estata estata	e totos entre entre	white orders exists spare	econo encos essas	FROME WHITE	cirito eproja	COUNTY PROCESS	essan fittero	emp min	
	ession apaga candra amani educir asilam edicil	o estima grada assero.	epum estato oppina aprila	Città 1800 willia	entes dente	ettoro etrosa	eman sunnis	contro citato	estin citin	
discount	2=199									egents.
	while either within minim minim minim	e essile resile discre	apus epide epide otras	· 10/500 46360 40360	estrio estes	many many	emp emp	come comp	escrip epara.	
deposit	3=SPEC					opticion estiman	espita estido	etunan esstay	eombi oman	8
8	anne entre vous estes entre entre entre entre min produit in entre print					SERVE ARREST	DELIN PRINT	ODDR AROS	entra esieni	100
,	nitra dang sama sahan dina dina dina	state when each	edistri elidini spista opista	enter enter enter	riina 4000	equin altern	initia «nues ·	emento estatos	stings engage	
Antioppe	4=NON_									restan
	CPED ATTER VENEZ ATTER SERVICE ATTER ATTER	character section								

If signalling is enabled, by choosing options 1, 2 or 3 then the user will be asked to supply tone frequencies, as described in Section --- above.

6.19.2 Tone Signalling Durations

If any Tone Signalling has been specified, either for one or more modes, or for Emergency Tone Signalling, then at this point the user will be asked to specify tone duration and, if two tone signalling has been programmed, the user will also be asked for a silent interval duration. The series of prompts will be as follows:

	1 15	ST TONE: 0 MS	control econor econor alastra atante escata apana.	
	Allowable values are		ento ento esta esta cina com	
		ID TONE: O MS	resi escala esca	
	Allowable values are			
	I	TERVAL: 0 MS		
	Allowable values are	0 to 300 MS.		
6.19.3	Next the user will desired:	be asked whether	er Variable	Squelch is
		RIABLE SQUELCH?(Y/		
6.19.4	Next the user will b			s desired:
		ANNEL ALERT?(Y/N)		
	supp after admit	while from extra vector rector rector action action sector extra classes action design design action	Na dalla nazio ettilo delle rezon kizza	
6.19.5	PRINTOUT -			
	The user will be pro		OUT via:	
		INTOUT?(Y/N)		
	If "Y" or DN ARROW k data as discussed	ey is typed the sy	stem prints t	he channel e. The 3rd

line of the printout header will read as follows if the user elects a printout here:

PRINTOUT FROM: EDITING (AFTER)

6.19.6 Data Storage

The user will be asked to select the output destination with:

WRITE TO: 1=LEPROM SOCKET |

WRITE TO: 2=CONTROL HEAD |

WRITE TO: 3=S-950 FILE

Selecting for example the S-950 File (key #3) results in a display of

WRITE TO: S-950 FILE

Note that system will not exit this loop until the data has been WRITTEN without errors. If an error occurs the system will prompt for the "WRITE TO" device again and again.

HOTE

DO NOT depress the CLEAR key at this point in the PROGRAM/RIVIEW session to clear an error condition else you will loose all the input just completed. Of course, if you were only REVIEWing the data, the CLEAR key will do no harm.

The S-950 File should always be an option for an error free WRITE TO device, but you must realize that previous file data will be overwritten.

7.0 Special Frequency Input Features.

In the event the user wishes to stretch the Delta slightly outside of the normal allowable frequency range, the user can force the programmer to accept a VALID frequency of any value by using the "Insert" key in lieu of the ENTER or DN ARROW keys. The system will still violently "beep" and show you the proper range, but will accept any VALID value. Of course the Radio may not operate properly or even at all on any out-of-range frequency so programmed. (A "VALID" frequency is one that does not result in the "INVALID" message during frequency selections).

8.0 Frror Codes/Messages/Conditions.

The Programmer system will display a number of error messages when certain error conditions are encountered.

1. NO SPACE

This message may occur if somehow there is not enough unused RAM memory to execute this program. This could result from other uses of the Hand Held Computer such as with the FILE system, or perhaps with BASIC. The S-950 CONTROL HEAD Program will not execute until you provide enough RAM. The ultimate "fix" to a RAM problem (i.e. the last resort) is to turn the "ALL OFF" switch OFF and ON again.

OPEN FAILED
ATTACH FAILED
I/O FAILURE

These messages result if the GE I/O module is not connected properly into the system. The S-950 CONTROL HEAD Program will continue after "beeps" and error messages. However, you will not be able to write/read the Control Head or EEPROM socket until the error condition is fixed.

3. ID ERR

I ID ER (XX XX) CONT?(Y/N) I

This message occurs only when attempting to read from or write to the Control Head. This may be because:

- 1. The Cable is not attached properly to the I/O module or Control Head.
- 2. The Control Head is not powered ON.
- 3. The Control Head is not working properly.
- 4. Someone is messing with the PTT, channel select, etc. during a programming operation.
- 5. The Control Head is not compatible with this version of the S-950 Control Head Program (e.g. if you are actually connected to a product other than an S-950 Control Head, or perhaps because the Control Head is an incompatible "special").

typing N (for no) terminates the Control Head Read or Write sequence. The system will continue prompting for an output device.

typing Y (for yes) instructs the system to attempt again to READ

from or WRITE to the Control Head.

The user must assume responsibility for possible ill effects of over-riding the ID check, such as, perhaps, reading from or writing to an incompatible product.

- 4. VERIFY ERROR Indicates data written to or read from the Control Head or AMPROM socket did not check during the VERIFY READ operation.
- 5. I/O RROR -xxx Where "xxx" is an I/O error resulting from invalid I/O of some sort and will cause the system to repeat the I/O sequences until the error condition is cleared.
- 6. NO FILL or WRONG TYPE

NO FILE is not actually an error. This message results from an attempt to READ the file when no data has been written to the S-950 File.

9.0 Helpful Suggestions.

The following could prevent some frustrations with the Hand Held Computer and Universal Radio Programmer system.

- 1. Select a display speed not greater then 6 or 7 for most convenient data entry.
- 2. New Control Heads may contain factory test data for all the possible combinations of High Band, UHF, Low Band options. As such the RX frequencies will appear incorrect (i.e.out of range). Therefore always assume that fresh-from-the-factory Control Heads need all new data.
- 3. To set Date/Time in your system you may have to remove the Hand Held Computer from the suitcase.
- 4. If the S-950 CONTROL HEAD Program does not show up in the Primary menu, try removing the Hand held Computer from the suitcase; turning it "ON" (with "ON KEY"); type the CLEAR key a few times; turn the unit "OFF" with the normal "OFF KEY"; then re-insert into the suitcase; and try again. If this fails to reveal the menu legend for S-950 CONTROL HEAD repeat this procedure again before assuming that your unit is defective.
- 5. DO NOT Plug/Unplug peripherals when the system is executing an application program. To be sure of the state of the unit depress CLEAR a few times until you see the PRIMARY menu being displayed. Then turn the unit off via the normal "OFF KEY" prior to inserting or removing modules or capsule programs.

- 6. The Panasonic BASIC Capsule program options (purchase from Panasonic) has special exiting procedures that one should carefully observe else one may have to play the "ALL OFF" game with the ALL OFF switch in the back of the Hand Held Computer.
- 7. The user may purchase a variety of peripherals and software capsules for the Hand Held Computer from Panasonic. However, the 3-950 CONTROL HEAD Program was designed for use only with the computer, the Panasonic Mini-Printer Model RL P1004, the GE Program Storage Module and GE I/O Module. As such, inclusion of other devices or other Capsule programs may cause problems. If a problem arises, simply unplug the problem Peripheral/Capsule when executing the S-950 CONTROL HEAD Program.
- 8. If the user is programming repetitive data such as frequencies, channel guard, etc use of the function keys may facilitate data entry. The function keys fl, f2, f3 may be programmed (before selecting the S-950 CONTROL HEAD Program) by the following for each desired function key:
 - 1. Depress "HELP" key on keyboard.

The systems responds with the prompt:

PRESS KEY FOR DEFINITION

2. Depress function key (fl, f2, or f3).

The system briefly displays the message:

DEFINE FUNCTION

- 3. Following this system directive type the desired data, such as 467.8750 for a frequency, or 100.0 for channel guard, etc.
- 4. Depress "LNTER" key on keyboard
- 5. Depress "CLEAR" key.

Thereafter, the user may simply depress the appropriate function key in lieu of typing out the freq, channel guard, etc. defined for that function key.

10.0 EPROM INSTALLATION AND SYSTEM CONNECTIONS

10.1 EPROM INSTALLATION

The TO 2329 EPROM containing the S-950 CONTROL HEAD Program must be installed in the Program Storage Module before programming can be accomplished. This EPROM is provided separately, as ordered, and must be installed by the user. The following installation procedure is suggested (refer to the following Figure).

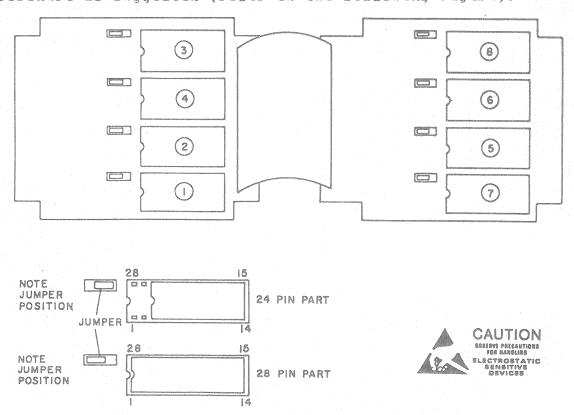


Figure 10.1 EPROM INSTALLATION

The EPROM device can be destroyed by static discharges. Before handling, the installer should be discharged by touching the test bench ground bus. The PW board and EPROM should also be at ground potential. EPROMS should be stored in conductive material.

- 1. Remove the Program Storage Module from the system I/O Adaptor by sliding it to the right approximately two inches.
- 2. Remove the four screws from bottom cover and open. Do not remove boards.
- 3. Install the EPROM in the lowest-numbered empty socket as shown on the attached figure. (Note socket designations and numerical sequence. Programs will be displayed in the Programmer primary menu according to the socket number.) Check location of the jumper adjacent to the socket.
- 4. Close the cover and replace the four screws in the bottom.
- 5. Reinstall the Program Storage module in the programmer.
- 10.2 PROGRAMMING THE S-950 CONTROL HEAD

The TQ2322 S-950 Cable, provided separately as ordered, is used for connecting the S-950 Control Head to the Universal Radio Programmer during programming. The following procedure is recommended:

- 10.2.1 Bench Programming Without Radio
 - 1. Turn off the Control Head; PWR switch out.
 - 2. Connect 13.8 VDC bench supply A+ to J1-11 and A- to J1-3 on back of the Control Head. Connect J2-2 (Control A-) to ground.
 - 3. Connect the 9-pin connector P2 of the programming cable to mating connector J2 of the Programmer's Data I/O Module. Press the locking lever on the cable connector to facilitate installation and removal.
 - 4. Connect the 6-pin connector P7 of the cable to mating connector J6 on back of the Control Head.
 - 5. Press in PWR switch to turn on Control Head and begin programming procedure.

10.2.2 Programming With Radio Installed

With the S-950 Control Head and associated radio installed in a vehicle, the following procedure is recommended:

- 1. Turn off the Control Head and radio; PWR switch out.
- 2. Connect programming cable TQ2322 to J2 on Programmer's Data I/O Module and to J6 on back of Control Head. (All power and ground connections are made through the normal Power/Control cable installation.)
- 3. Turn on Control Head and radio by pressing PWR switch in and begin programming procedures.

10.3 PROGRAMMING EEPROMS OUTSIDE THE S-950 CONTROL HEAD

EEPROMS can be programmed outside the Contro Head using the TO2313 Socket Adaptor. Install the socket adaptor on top of the Data I/O Module, making certain that the connector pins are properly aligned.

The socket adaptor is equipped with a zero insertion force (ZIF) socket. Raise the lever on the socket before installing the LEPROM. Press the lever forward to lock the LEPROM in the socket.

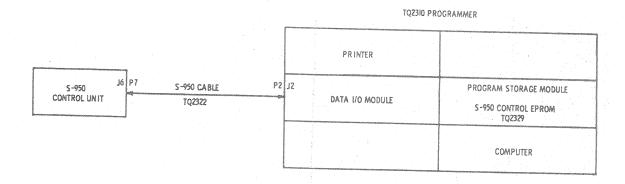
NOTE

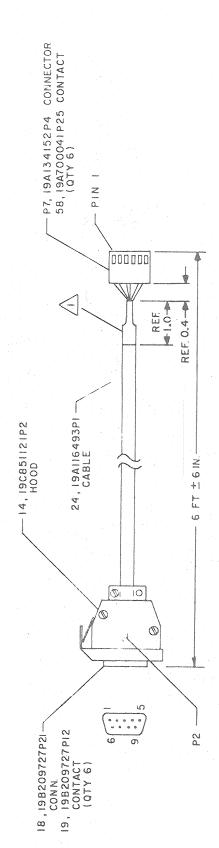
Check orientation of the EEPROM. The EEPROM can be damaged if reading or programming is attempted with the part installed backwards.

NOTE

The LPROM can be damaged by static discharges. Observe handling precautions for electrostatic sensitive devices.

PROGRAMMING S-950 CONTROL UNIT





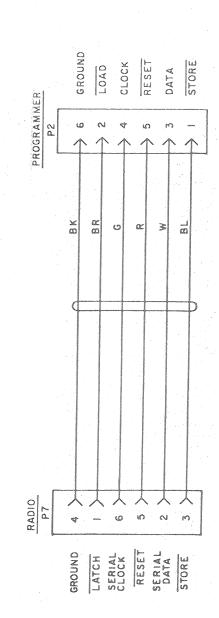


Figure 10-3 S-950 PROGRAMMING CABLE, TQ3222

11.0 FILE OPERATIONS.

The programmer offers several facilities for managing radio data saved in files, which are summarized in this section. For more detailed information, consult the sections of the Panasonic Hand Held Computer - Instructions for Use titled "File System" and "Beyond the Primary Unit with the I/O Key". Control Head data written to (and read from) the S-950 CONTROL HEAD FILE is written to (and read from) a file named S-950 CONTROL HEAD, which is automatically created when file data is written. The file can be deleted, renamed, or copied as required.

11.1 Expanding File Storage with Programmable Memory Peripherals

Optional Panasonic Programmable Memory (RAM) Peripherals can be added to increase file storage capacity. Peripherals are available in several capacities, and one peripheral can be installed in each unused I/O Adaptor slot.

Each Programmable Memory Peripheral, and internal RAM, are separate memory areas. Only one area can be active at a time, and only files stored in that area are available to the S-950 CONTROL HEAD Program, or other programs. To find the current area, or change the current area designation, press the I/O key to enter the I/O menu. Each peripheral, and each memory area is displayed, with the space remaining, and the current area is in reverse image. For example:

estate.	1=RADIO I/O IN, OFF, SLOT=2	
decoup	2=RADIO I/O OUT, OFF, SLOT=2	
Complete	3=PRINTER OUT, OFF, SLOT=3	ACTION .
dilion	4-INT RAM, 6520 FRLE	· Constitution
	design control	
ADDIOS.	5=EXT RAM, 7542 FREE, SLOT=4	

NOTE

Underline is used to indicate reverse image in this preliminary manual.

Change the current memory by pressing the number displayed with the desired memory area.

11.2 Deleting a File

It may be desireable to delete the S-950 CONTROL HEAD file if the memory space occupied by it is required for other files.

- 1. Return to the primary menu if not already there.
- 2. Select the file system by pressing "3" (3=FILE SYSTEM). The computer will display a menu listing all (visible) files. Items 1 and 2 are special functions used to copy and create files.

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- 3. Choose the S-950 CONTROL HEAD file by pressing the number displayed with it (4 in this example). "S-950 CONTROL HEAD" will appear in reverse image.
- 4. Delete the file by depressing the "DELETE" and "DN ARROW" keys. The programmer will begin displaying the menu of files (less the deleted file).
- 5. Return to the primary menu by pressing the "CLEAR" key twice.

11.3 Renaming a File

Any file in the current memory area can be renamed.

- 1. First make certain that the desired data has been written to the S-950 CONTROL HEAD File.
- 2. Return to the primary menu if not already there.
- 3. Select the file system by pressing *3* (3=FILE SYSTEM). The computer will display a menu listing all (visible) files, as described above.
- 4. Choose the S-950 CONTROL HEAD file, or any other desired file, by pressing the number displayed with it (4 in the example). The file name will appear in reverse image and the blinking cursor will be left after the last character of the filename.

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S-950	CONT		بكداهم	AD				
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5. Use the RIGHTARROW and LEFTARROW keys to reposition the cursor and type in the new name. The new name can be longer than the original name, up to 24 characters. Delete excess characters by pressing the DILITE key and then the RIGHTARROW or LEFTARROW keys, to delete the character at the cursor.

NOTE

It is better to add characters to the filename than to replace the filename. The added characters can simply be deleted if it is necessary to program another radio from the file, and the type of radio is not forgotten.

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-	ace plumbing	distant
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	or	
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	S-950 ace plumbing	9
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6. Press the ENTER key when the name is correct. The programmer will beep, flash "CAN'T EDIT", and begin displaying the file menu again. The modified filename should appear in the menu.

11.4 Restoring the Renamed File

The file must be renamed back to S-950 CONTROL HEAD (must be uppercase) for the S-950 CONTROL HEAD Program to use it. Use the renaming procedure described above. Be careful to rename or delete any S-950 CONTROL HEAD file that already exists, to avoid confusing the computer with two identically-named files.

NOTE

S-950 CONTROL HEAD is not a text file and cannot be edited by the editing commands described in the Panasonic literature. In addition, the S-950 CONTROL HEAD Program will reject text files, or files created by other programs, that have been renamed S-950 CONTROL HEAD.

11.5 Printing the file list

A list of all (visible) files in the current memory can be printed using the following procedure.

- 1. First make certain the computer is in the primary menu. Press CLEAR twice if it is not.
- 2. Press the I/O key to display the I/O menu. The computer will display a menu of I/O devices and RAM. A typical I/O menu is displayed below:

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- 3. If the printer is off (PRINTER OUT, OFF, SLOT=x), press the number displayed with the printer (3 in the example).
- 4. Press the I/O key to return to the primary menu.
- 5. Press the "3" key to enter the file system. The printer will print everything that appears on the display.
- 6. When a complete list of files has been printed, press the CLEAR key twice to return to the primary menu.
- 7. Press the I/O key to display the I/O menu. Then press the key corresponding to the printer to turn the printer off. Press the I/O key again to return to the primary menu.

11.6 Copying a File

You may wish to copy a file from one memory area to another or to create a duplicate copy of a file. First make sure that the file to be copied is in the current memory area. If not, change the current memory designation as required, using the I/O menu.

1. If not in the primary menu, press clear twice to return to the

primary menu.

- 2. Press the "3" key to enter the file system.
- 3. Press the "2" key for COPY FILE: this prompt appears:

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6000 6000 eees ee								

A menu of all the file names in the current memory will be displayed. Press the number of the file to be copied; and the following promt appears:

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CONTRACTOR AND										ŧ

followed by a menu of destination memory areas. The current memory is displayed in reverse image. For example:

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Press the number corresponding to the desired destination memory area. When the copying is complete, the original file system menu will return.

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S-950 CONTROL UNIT (FOR DELTA-S RADIOS) PROGRAMMING INSTRUCTIONS USING TQ2310 PROGRAMMER

LBI31380

