

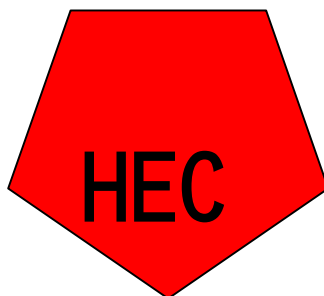
52-7880LC2

UHF

DATA TRANSCEIVERS

PLL SYNTHESIZED (EEPROM)

Service Manual



HERMES ELECTRONICS CO., LTD.

TABLE OF CONTENTS

1. SPECIFICATION	2
2. CONNECTIONS AND OPERATION DESCRIPTION.....	3
3. CIRCUIT DESCRIPTION	4-6
4. PERFORMANCE TEST AND ALIGNMENT.....	7
5. TEST EQUIPMENT CONFIGURATION	8
6. TRANSMITTER PERFORMANCE TEST	9-11
7. PARTS LIST	12-15
8. PROGRAMMER INSTRUCTION.....	16-20
9. PRINT CIRCUIT BOARD LAYOUT.....	21-22
10. PARTS ASSEMBLY	23
11. BLOCK DIAGRAM	24
12. SCHEMATICS DIAGRAM.....	25

1. SPECIFICATION

GENERAL SPECIFICATIONS

POWER SOURCE	6.0VD.C.
TEMPERATURE RANGE	
STORAGE	80°C maximum -40°C min. 25°C nominal
OPERATING	70°C maximum -20°C min.
ANTENNA IMPEDANCE	50Ω
FREQUENCY CONTROL	PLL SYNTHESISER
FREQUENCIES OF OPERATION	406-430MHZ,450-470MHZ
FREQUENCY TOLERANCE AND STABILITY	±1.5PPM
HIGH HUMIDITY	90%
CHANNEL CAPABILITY	1 (16CH OPTION)
NOMINAL DIMENSIONS	60 mm(L)X 30 mm(W)X 25 mm(H)
WEIGHT	18.5g

RADIO DATA TRANSCEIVER NOMINAL PERFORMANCE

RF OUTPUT POWER	<3W
MODULATION TYPE	FM
CHANNEL SPACING	25KHZ/12.5KHZ
TRANSMIT ATTACK TIME	< 25 mS
CURRENT CONSUMPTION	
TRANSMIT	1500mA@2.5W
RECEIVE	60mA

4. PERFORMANCE TEST AND ALIGNMENT

The alignment and performance test procedures assume the use of the following equipment.

Discrete test equipment

Volt Meter

RF Power Meter.

DC Power Supply, 0-15V 2A min

Oscilloscope, 20 MHz dual beam

RF Frequency Counter,

100 kHz - 600 MHz

AF Signal Generator 0 – 20 kHz

RF Signal Generator

SINAD Meter

Modulation Meter

Audio Power Meter

Spectrum Analyser and notch filter(option)

Coupler (20dB isolation)

Distortion Meter

8. PROGRAMMER INSTRUCTION

Welcome to PC Programmer.

Please Read this file, before you first use the software.

TABLE OF CONTENTS

1. Brief introduction
2. Before Installing
3. Install PC Programmer
4. INSTRUCTIONS
5. UnInstall PC Programmer

1. Brief introduction

Welcome to PC Programmer. This program is designed to be used with the Interface Adapter.

The following equipment will be needed to program the Device:

- A. A computer to install this program with at least 2 MB available space in hard disk and a 9-pin male RS-232 serial port.
- B. Win 95, Win 98, Win ME or Win 2000 Operation System.
- C. Part of the Programming Kit
 - 1) An interface Adapter.
 - 2) A CD disk with the program, PC Programmer files

2. Before Installing

Before You Run Setup, make sure that your computer meets the minimum requirements mentioned above, and read the Readme file(this file).

NOTE: If you firstly install PC Programmer in you system, the setup may update some system files on your computer , so you may run the setup again after your system be updated. Please follow the installation instruction on the screen.

3. Install

TO install PC Programmer on your computer

- 1) Insert the CD.
- 2) Run Setup.exe
- 3) Follow the installation instruction on the screen.

Important: You cannot simply copy files from the CD to your hard disk and run PC Programmer . You must use the Setup program, which decompresses and installs the files in the appropriate directories.

4. INSTRUCTIONS

4.1 Connection

4.2 Start up PC Programmer

4.3 Edit Configuration

4.3.1 Open/Recall/Upload Configuration file

4.3.2 Edit Channel data

4.3.3 Set Option item

4.3.4 (Block)Cut/Copy/Delete/Paste

4.3.5 Auto-Frequency edit

4.3.6 Save a Configuration to disk

4.3.7 Download Configuration to device

4.3.8 Print a Configuration

4.4 Exit PC Programmer

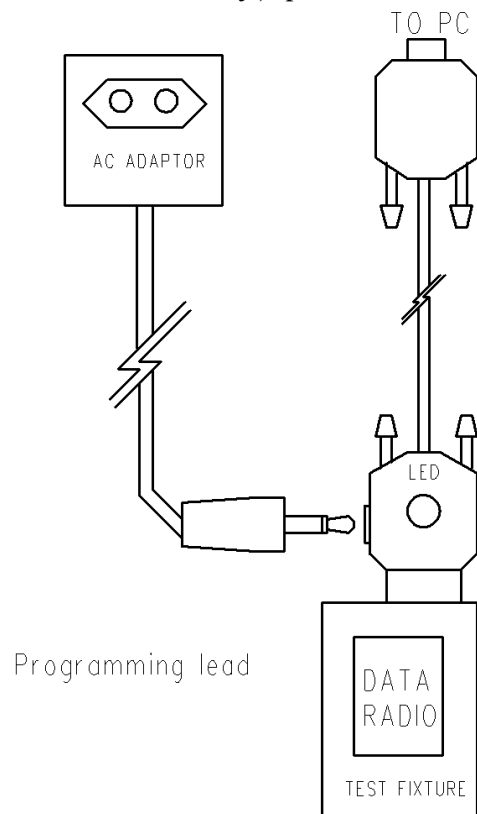
4.1 Connection

1. Connect one side of Interface Adapter to the computer's serial port.

Never care the port number, the PC Programmer will locate it automatically.

2. Connect the other side of Interface Adapter to the Device's 9-pin male RS-232 port.

3. Connect power supply to device and LED will be light. The device will into PC_programming mode automatically, please see the picture of below.



PC CONNECTION INSTRUCTION

4.2 Start up PC Programmer

1. Select 'Start', choose 'Programs', click on the '*** Serial PC Programmer' program.
2. When HD Serial PC Programmer is started, a main form will be shown after a greeting form.
3. There has a menu bar at the top of the main form, and a message box at the bottom.

NOTE: The program is menu driven for all pertinent commands. All the commands can be accessed by either key board or the left mouse button.

Access keys mainly used are:

'Tab' or 'Arrow' to move focus(or cursor)

'Enter' to active a focused command

4.3 Edit Configuration

4.3.1 Open/Upload Configuration file

To edit the configuration, please either

- 1) Recall an Existing Configuration by click on the 'Open' item in the File Menu, select the configuration file by click on or input its name then press 'Enter' key.

OR 2) Upload configuration data from a device by click on 'Upload' item in the Device menu. to a Configuration window .

Different Model's device Configuration can be opened and edited.

There are two fields in each Configuration window: system data and Channel data.

OR 3) Open an existing Configuration by click on the 'OPEN' item in the File Menu. A pop up window will be shown, select a file by arrow key or mouse then click 'OK'.

4.3.2 Edit Channel data

- 1) Set focus to the Channel data field by move the mouse pointer.
- 2) Select a particular channel number to be edited by either the arrow key or click on it.
- 3) Pop up input window by either press 'Enter' key or double click on the selected channel number.
- 4) Use computer's cursor keys, Tab key, Enter key, arrow key or mouse to renew the channel data.
- 5) Click 'OK' button on the input window to accept the change or 'Cancel' to not change, and return back to Configuration Window.

4.3.3 Edit Option item

- 1) To Edit Channel Option, Select a particular channel number in the Option View Window by either the arrow key or click on it, then Pop up the input window for Channel Option, 'Enter' key or double click on the selected channel number.
- 2) To Edit System Option, Pop up input window for System Option, click "SYSTEM" in the 'OPTION' menu.
 - 3) To Edit Advanced Option, Pop up input window for Advanced Option, click "ADVANCED OPTION" in the 'OPTION' menu.
- 4) Use computer's cursor keys, Tab key, Enter key, arrow key or mouse to renew the Option Item.
- 5) Click 'OK' button on the input window to accept the change or 'CANCEL' to not change, and return back to Configuration Window.

4.3.4 (Block)Cut/Copy/Delete/Paste

To select a block of channel data as source by either

- 1) Select start channel by arrow key, then while press 'Shift' key select end channel number by arrow key.
- 2) Click on start channel, then while press 'Shift' key click on end channel number
 - 3) Press the left mouse button on start channel then move the mouse until reach the end channel number, release left mouse button.
- A) To Cut selected (block) Channel(s) either press 'Ctrl'+ 'X' or click 'CUT' item in Edit menu.
- B) To Copy selected (block) Channel(s) either press 'Ctrl'+ 'C' or click 'COPY' item in Edit menu.
- C) To Delete selected (block) Channel(s) either press 'Del(Delete)' key or click on 'DELETE' item in Edit menu.

After Cut or Copy, the data can be pasted to where you want.
- D) To Paste , select a channel as the start number of target , then either press 'Ctrl'+ 'V' or click on 'PASTE' item in Edit menu.

NOTE: Paste operation allows you to export data to any Configuration window opened.

4.3.5 Auto-Frequency edit

This feature provide you with a quick Frequency set function.

To use this command after either

- 1) Click 'EDIT' Menu
- 2) Click on 'AUTOFREQ' item in 'EDIT' menu to pop up a input window.
- 3) Use computer's cursor keys, Tab key, Enter key, arrow key or mouse to set data.

4)Click 'OK' button on the input window to accept the change or 'CANCEL' to not change, and return back to Configuration Window.

4.3.6 Save a Configuration to disk

1)Different configuration can be saved to disk.

2)Click on 'SAVE' item in 'FILE' Menu will overwrite an existing configuration file on your disk by current configuration.

3)Select 'SAVE AS' from 'FILE' Menu will save the current configuration by a name as you prefer.

4.3.7 Download to device

To Download current Configuration to device, select 'DOWNLOAD' from sub menu under 'DEVICE' menu.

4.3.8 Print a Configuration

Click on 'PRINT' item in 'FILE' Menu will send current Configuration to printer.

4.4 Exit PC Programmer

To Exit PC Programmer,click on 'EXIT' item in 'FILE' Menu.

5. UnInstall PC Programmer

To uninstall PC Programmer from your hard disk, select 'Start' , choose 'Settings', click on the 'Control Panel', then find 'Add/Remove Programs' icon from the pop up window then double click on it, then find '*** Serial PC Programmer' from application list and click on it, then click on 'Add/Remove' button under application list, then follow the instructions on your screen.

Federal Communication Commission Interference Statement

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.

This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of the following measures:

- . Reorient or relocate the receiving antenna.
- . Increase the separation between the equipment and receiver.
- . Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- . Consult the dealer or an experienced radio/TV technician for help.

FCC Caution: To assure continued compliance, any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment. (Example - use only shielded interface cables when connecting to computer or peripheral devices).

This device complies with Part 15 of the FCC Rules and IC RSS-119. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation

The antenna of the product, under normal use condition is at least 0.52 m away from the body of the user. Warning statement to the user for keeping at least 0.52 m separation distance and the prohibition of operating to a person has been printed on the user's manual. So, this product under normal use is located on electromagnetic far field between the human body.