Guide to the

FAIRMATE HP100E

Operations

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POWER SOURCE INFORMATION HP-100E

The HP-100E is supplied with 4 pcs. 600 mAh NICAD batteries, which are suggested to be fully charged on the purchase of the unit. When the HP-100E is connected to an external Power source ie; 12 volt DC supply in a car, truck etc. or an AC mains to a 12 volt DC power supply, then the external power source will automatically charge the NICAD batteries, even with the HP-100E switched OFF or ON. This is a great advantage over most other scanners. The HP-100E obviously does NOT require a special charger !

The requirement from an external power source is 12 volt DC at 150 mA. If you wish to use 4 pcs. dry cell AA size at any time then you may do so !

It is not recommended that you connect the HP-100E to an external power source when using DRY cells.... !

But if you do forget then there will be NO serious damage and NO danger. The HP-100E requires no memory back-up battery due to the use of EEP-ROM technology !

The use of NICAD batteries is highly recommended. Firstly the cost ratio NICAD batteries may be charged over 1000 times (that's nearly 3 years at a charge a day). How many dry batteries would you use in 3 years? Secondly all those hundreds of dry batteries you would use, have to be disposed of.... !

NICAD batteries may develop a "memory" condition. This condition may influence their charging and also limit the amount of battery power available. Every few months the NICAD pack should be discharged then fully charged at the recommended rate.

UNDERSTANDING THE FAIRMATE HP-100E CONTROLS

① Power on-off voluem control. Switches HP-100E on or off and also controls the audio output level.

② Squelch control. Used to cut out background noise. Slowly rotate clockwise to the point where the background noise just stops. Do not set the squelch control too far clockwise, or weak signals will not open squelch circuit. The squelch mode must be ON for the HP-100E to operate in scan or search modes.

③ Attenuator reduces receive signals by −10 dB.

④ Rotary UP-DOWN switch used for changing channels-frequency up or down.

⑤ BNC Antenna socket

⑥ External speaker or earphone socket 3.5 mmø

⑦ External 12 volt DC supply socket 1.3 mmø (PLEASE NOTE PAGE 1)

⑧ LCD (liquid crystal display) window

⑨ Key board

⑩ Internal loudspeaker

⑪ Lamp switch

⑫ Key lock switch

③ ATTENUATOR SW

① POWER ON-OFF/VOLUME

⑥ ANTENNA

④ UP-DOWN SW

⑥ EARPHONE

⑥ EARPHONE

② SQUELCH

③ ATT SW ④ UP-DOWN SW

⑧ LCD WINDOW

⑪ LAMP SW

⑨ KEY BOARD

① POWER ON-OFF/VOLUME

⑫ KEY LOCK SW

⑤ ANTENNA ② SQUELCH

⑦ DC SUPPLY SOCKET/CHARGE

⑩ INTERNAL LOUDSPEAKER

INTRODUCTION TO THE FAIRMATE HP-100E 1000 CHANNEL SCANNING COMMUNICATIONS RECEIVER

The Fairmate HP-100E is the worlds first 1000 channel programmable scanner monitor receiver. The HP-100E offers very wideband frequency coverage from 15-600 MHz with NO gaps and also from 805-1300 MHz NO gaps ! The HP-100E offers also, as a first in a pocket scanner, a choice of 3 modes ie; Amplitude modulation (AM), Narrow band FM (NFM) and also Wideband FM (WFM) on all frequency ranges ! The HP-100E comes complete with 2 different antennas, this allows for the best reception over the very wideband frequency coverage. The short antenna is most suited for the 805-1300 MHz band.

A wide range of accessories is included with the HP-100E as standard ! (not as optional extra cost items as many other brands). They include carrying case, belt clip, 2 antennas, DC 12 volt cable with cigar plug for car use, shoulder strap, earphone and 4 AA size NICADs.

Features
The Fairmate HP-100E uses the latest state-of-the-art microcomputer technology with 1000 programmable channels.

Search Bands
The HP-100E offers the choice of 10 separate search bands. Each search band can have its own upper and lower frequency limits. Free selection of modes ie; AM•NFM•WFM and also free selection of channel steps may be used on all bands.

1000 Memory Channels
The HP-100E offers 1000 channels, which may be programmed into 10 banks of 100 channels each bank. Any mode AM•NFM•WFM may be used on any channel. Clear indication of which band and which channel is in use is shown on the LCD (liquid crystal display) window.

AM•NFM•WFM Modes
The HP-100E alllows you to listen on either AM•NFM•WFM on any channel from 15-600 MHz and also on 805-1300 MHz. The WFM mode is most suitable for FM-TV broadcast stations for music etc.

Attenuator
In case of very strong signals interference etc. you may bring into circuit an attenuator with about −10 dB of attenuation via LOC-DX switch.

Up-Down Rotary Switch
The HP-100E is the worlds first pocket scanner that offers the state-of-the-art UP or DOWN frequency step or channel step rotary switch. In manual or search modes you may step UP or Down within the range of 5 to 995 KHz !, in multiples of 5 or 12.5 KHz ie; 5, 10, 15, 20, 25, 30, 35, 40, 45, 50 KHz up to 995 KHz. In the scan mode you may use this rotary switch to go UP or DOWN the channels. NO more key pressing.... !

Power Source
The HP-100E has 3 power sources. 1. Using 4 pcs. AA size NICAD batteries. 2. Using 4 pcs. AA size DRY batteries. 3. Using direct 12 volt DC supply via the DC socket on the HP-100E. The 12 volt DC supply may be from a car supply or from a 220 V to 12 V DC supply. In the case of the NICADs running low BATT will appear on the LCD indicating recharging required. Please NOTE info Power sources inside front cover page 1 !

High Scan Speed
The HP-100E scans over 20 channels a second !, thereby offering very fast coverage of the frequency spectrum. The fastest pocket scanner around !

UNDERSTANDING THE FAIRMATE HP-100E
LCD (liquid crystal display) WINDOW

The LCD uses indicators that show the HP-100E current operating modes. The illustration shows the HP-100E LCD with ALL the mode indicators switched on!

Manual: Indicator on when the HP-100E is in the manual mode.

Scan: Shows the scan mode is selected.

Prog: This is a multi-function indicator. For scan, search, channel numbers etc.

MANUAL	SCAN	SEARCH	PROG		
WFM AM	L.OUT	HOLD	DELAY		BATT
		LIMIT	AUX	KEY	LOCK
▼ BANK					
▲		CH			5
		KHz			MHz

WFM·FM·AM: Shows which mode is selected ie; Wideband FM, Narrow FM and Amplitude modulation.

Lockout: Multi-function indicator for Channel, Bank and band lockout.

⬍ : UP-DOWN arrows indicate channel or frequency changes up or down.

Bank: First digit under bank shows bank-band number 0 to 9.

CH: 2 digits show channel numbers from 00 to 99.

KHz: 3 digits show frequency steps from 5 to 995 KHz in 5 KHz or 12.5 KHz multiples.

MHz: Up to 8 digits show the frequency the HP-100E is tuned to.

Batt: Flashes when the NICAD batteries need recharging or dry cells need replacing.

UNDERSTANDING THE HP-100E KEYBOARD

Number Keys: The number keys are single digit marked from 1 to 0. They are used for entering frequency information. Channel numbers. Frequency steps. For selecting search bands and scan banks.

Clear: Use this key to delete an incorrect entry.

Lockout: You may lockout a channel from the scanning mode ie; Continuous weather channels etc.

Manual: This key is used to stop search and scan modes and to advance channels.

Limit: This key is used to decide the frequency range when on search or for selecting search band coverage.

Bank: The bank key is used to program or select any of the 10 different 100 channel scan banks or the search bands.

Prog: The program key has secondary functions and is used for search range programming, bank programming and calling up channel numbers etc.

Key Lock: When the key lock is pressed all other keys are locked out of function. This feature is most useful when carrying the HP-100E as it prevents any accidental entries.

				LIGHT
PROG	LIMIT	1	2	3
STEP	AUX BANK	AIR VHF 1 4	AIR VHF 2 5	AIR uHF 6
AM	W-FM	POLICE V 7	MARINE 8	POLICE u1 9
FM LOCKOUT	DELAY	POLICE u2 0	MCA BASE •	LOW BAND
SEARCH	HOLD SCAN	HI-BAND	CLEAR ▼	ENTER KEY LOCK
		MANUAL		

Step: The step key allows you to choose a frequency step in the range from 5 KHz to 995 KHz or any multiple of 12.5 KHz. This function may be used in Manual, Scan or Search modes.

Light: The light key is used for illumination of the LCD display. After pressing the key once the light will stay on for about 6 seconds and then automatically switch off.

Scan: By pressing the scan key the HP-100E will start scanning through the channels in the banks that are programmed and not locked out.
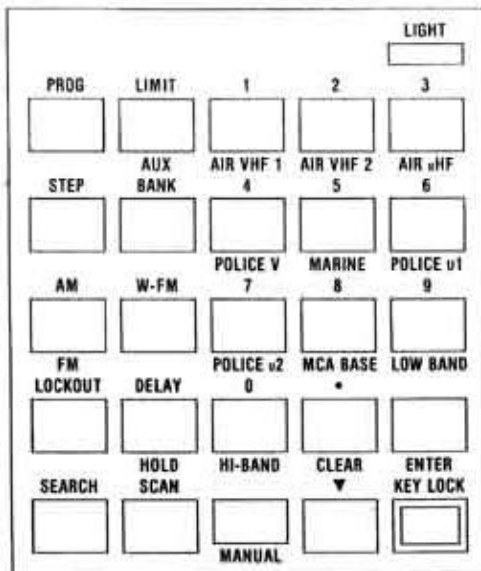
Search: The search key allows you access to 10 independent search bands, with your own choice of mode and frequency steps.

Aux: The aux position is for calling up a priority channel of your own choice either in scan or search mode. The aux-priority channel will be samples every 2 seconds.

AM-FM-WFM: These keys select the MODE for reception on any channel. AM (amplitude modulation) is used mainly for the Aircraft band but is used by some other services. FM (narrow band FM-NFM) is used by most public services, Amateur radio etc. WFM (wide band FM) is used mainly by FM-TV broadcast stations for music etc.

Delay-Hold: When a Signal-carrier appears on a frequency programmed into the HP-100E with sufficient signal strength then the SCAN or SEARCH mode will STOP. In the delay mode after the signal carrier stops there will be a 2 second delay before scan or search resumes. If hold mode is selected then after the signal-carrier stops then the HP-100E will stay continuously on that channel-frequency.

Down Key (▼): By pressing the (▼) key you may lower a memory channel or lower a search frequency. If the key is depressed for more than 1 second it will automatically count down in scan or search.

THE HP-100E IN OPERATION SCAN-MANUAL MODES

The HP-100E may be used in 3 basic ways as follows:-
1. Single frequency operation with free selection of MODE ie; AM.FM or WFM.
2. 1000 channel selection in 10 memory banks of each 100 channels. Free selection of MODE ie; AM•FM or WFM.
3. 10 search bands with selection of 1. Frequency coverage 2. MODE 3. Frequency steps

SINGLE FREQUENCY ENTRY

EXAMPLE 1. You wish to listen to 97.500 MHz in WFM
A. Press MANUAL. B. Enter 97.500 C. Press WFM key D. Press ENTER
You may now change this frequency UP or DOWN by turning the UP-DOWN rotary switch. The frequency step is automatically set at 12.5 KHz. You may however select a frequency step of your own choice between 5-995 KHz as follows:-
EXAMPLE: You wish to use 100 KHz steps.
A. Press STEP (KHz sign flashes). B. Enter 100 C. Press ENTER (KHz sign will stop flashing).
If you now turn UP-DOWN rotary switch the frequency will change in 100 KHz steps. As you change the frequency UP-WARDS there is a small arrow on LCD that shows (▲). As you go DOWN in frequency a small arrow prints (▼).

SCAN FUNCTION-MEMORY BANKS

The HP-100E offers you 1000 channels of fixed frequencies with free choice of MODE ie; AM, FM or WFM. The 10 memory banks read from 0 to 9. The channel number read from 00 to 99. (Please refer to LCD window display information).
EXAMPLE 2. Programming scan memory ie; Frequency 121.000 MHz. Scan bank 1. Channel 00 mode AM.
A. Press MANUAL B. Key in 121.000 C. Press ENTER D. Press AM-FM key so that AM shows on LCD
E. Press PROG F. Key in 1 (bank) G. Key in 00 (channel)
EXAMPLE 3. You wish to programme 79.0125 MHz into scan bank 1. Channel 01 with mode NFM.
A. Press MANUAL B. Key in 79.0125 MHz C. Press ENTER D. Press AM-FM key so that FM shows
E. Press PROG F. Key in 1 (bank) G. Key in 01 (channel)

CHANNEL CHANGE IN SCAN MODE

If you turn the UP-DOWN rotary switch during scan mode you may change CHANNEL UP or DOWN. If you press MANUAL during scan mode you may change FREQUENCY. You will notice that 12.5 KHz appears on LCD. You may however choose any step between 5 and 995 KHz in multiples of 5 KHz or 12.5 KHz.
EXAMPLE 4. You wish to change to 100 KHz steps.
A. During scan press MANUAL (KHz sign will flash) B. Press STEP C. Key in 100
D. Press ENTER (KHz sign will stop flashing).
You may now go UP or DOWN in frequency by 100 KHz steps.

CALLING UP A CHANNEL NUMBER

To call up a fixed channel in the scan mode you must make sure you are on the correct Memory bank.
EXAMPLE 5. You are using bank 5 and you wish to listen to bank 4 channel 01.
Firstly you must move from bank 5 to bank 4 as follows:-
A. Press SCAN B. Press BANK C. Press PROG D. Key in 4 (bank) E. Press LIMIT F. Key in 4 G. Press ENTER
You are now on BANK 4 and will now have to get to channel 01 as follows:-
A. Press MANUAL B. Press BANK C. Key in 4 (bank) D. Key in 01 (channel).

BANK SCANNING

The HP-100E allows you to scan over a single bank or you may make a selection of any of the 10 banks to scan over.
EXAMPLE 6. You wish to scan over bank 4 only.
A. Press SCAN B. Press BANK C. Press PROG D. Key in 4 E. Press LIMIT F. Key in 4 G. Press ENTER
The HP-100E will now only scan over the frequencies you have programmed into bank 4. Those channels which are LOCKED OUT or have not been programmed will be automatically by-passed.
EXAMPLE 7. You wish to listen to bank 00 to bank 03 only.
A. Press SCAN B. Press BANK C. Press PROG D. Key in 00 E. Press LIMIT F. Key in 03 G. Press ENTER
The HP-100E will now scan over Bank 00, 1, 2 and 3 and then start off bank from bank 00 again.

TO ERASE A FREQUENCY IN A MEMORY BANK

EXAMPLE 8. You wish to delete channel 12 in memory bank 2.

First you must make sure that you are on bank 2 (note info calling up a channel number page 6).
When you are on bank 2 proceed as follows:-

A. Press MANUAL B. Press CLEAR C. Press ENTER D. Press PROG E. Key in 2 (bank) F. Key in 12 (channel).
Channel 12 in bank 2 is now deleted and neither channel number of frequency will be show.

LOCKOUT OF CHANNELS-BANKS

If you wish to lockout channels in the scan mode you may do so. You may also cancel lockout at any time.
EXAMPLE 9. You wish to lockout channel 89 on memory 2.

A. Press MANUAL B. Press BANK C. Key in 2 (bank) D. Key in 89 (channel) E. Press LOCKOUT
Manual lockout manual. To cancel lockout of the above channel:-

A. Press MANUAL B. Press BANK C. Key in 2 (bank) D. Key in 89 (channel) E. Press LOCKOUT
If lockout flashes, press lockout key until lockout on LCD stops flashing.

LOCKING OUT A WHOLE MEMORY BANK

EXAMPLE 10. You wish to lockout memory bank 2.

A. Press MANUAL B. Press BANK C. Key in 2 (bank) D. Key in 2 digits (channel) E. Press BANK F. Press LOCKOUT
To cancel Bank lockout: A. Press MANUAL B. Press LOCKOUT

AUX-PRIORITY

You may allocate a specific channel either during search or scan as your priority channel. This means in practice that
the priority channel will be checked (sampled) about every 2 seconds as the scanner goes through SCAN or SEARCH modes.
EXAMPLE 11. You wish to choose channel 07 in bank 4 as your priority channel.

First make sure you are on bank 4.

A. Press AUX B. Press PROG (this must be done quite quickly) the frequency shown on the LCD will disappear and the
BANK sign will flash. C. Key in 4 (bank) D. Key in 07 (channel) E. Press ENTER F. Press SCAN
To cancel priority: Press AUX key.

UNDERSTANDING AUX (PRIORITY) SCAN-SEARCH

If you had changed from memory bank scan mode into search band mode and at the same time had an active priority
channel programmed then the following would occur:-

*EXAMPLE 12. You are listening to a station on search bank 1 and a signal appears on the frequency that have programmed
into channel 07 memory 4 at the same time, then the HP-100E will automatically switch from search band 1 to memory
bank 4 channel 07. As soon as the transmission ends on channel 07 then the HP-100E will automatically revert to the
search bank.*

DELAY-HOLD IN SCAN OR SEARCH MODES

You may select either DELAY or HOLD modes by pressing DELAY-HOLD key. Delay or Hold will appear on the LCD.
DELAY: When a Signal-carrier appears on a frequency programmed into the HP-100E with sufficient signal strength then
the SCAN or SEARCH mode will STOP. In the delay mode after the signal carrier stops there will be a 2 second delay before
scan or search resumes.
HOLD: If hold mode is selected then after the signal-carrier stops then the HP-100E will stay continuously on that channel-
frequency.

LOCKOUT OF A FREQUENCY IN SEARCH MODE

Whilst in search mode you may wish to lockout a frequency because it contains a continuous carrier.
EXAMPLE: Whilst searching bank 2 a continuous carrier is heard on 228.45 and the search automatically stops.
Press LOCKOUT and the set will continue scanning missing this frequency on the next pass.

BAND BANK FREQUENCY TABLE

SEARCH BANK FREQUENCY TABLE

Bank	Band	Frequency (MHz)	Step (KHz)	Mode
1	AIR VHF 1	108.0 to 142.0	10	AM
2	AIR VHF 2	225.0 to 261.5	50	AM
3	AIR UHF	275.0 to 364.0	50	AM
4	POLICE V	142.0 to 159.5	10	FM
5	MARINE	156.0 to 162.0	5	FM
6	POLICE U1	347.7125 to 354.525	12.5	FM
7	POLICE U2	361.95 to 363.0	12.5	FM
8	MCA	850.0 to 859.975	12.5	FM
9	LOW BAND	25.0 to 550.0	10	FM
0	HIGH BAND	850 to 1300.0	12.5	FM

The HP-100E has 10 separate search banks. The search bands are pre-preogrammed from the factory as per the search bank frequency table above. Please NOTE you may re-programme these search bands to your own choice. You may decide upper and lower frequency limits also MODE ie; AM.NFM or WFM and also the search frequency steps in KHz from 5 to 995 KHz in multiples of KHz or 12.5 KHz.

EXAMPLE 1. You wish to select Band 8 (MCA BASE). You wish to programme the HP-100E with the following information: Frequency 936.0125 MHz. MODE NFM. Frequency steps 12.5 KHz.

A. Press SEARCH
B. Press PROG
C. Key in 936.0125
D. Press LIMIT
E. Key in 940.0125
F. Press ENTER
G. Key in 12.5 KHz
H. Press AM-FM key so that FM appears on the LCD
J. Press ENTER
K. Key in 8
L. Press ENTER
M. Press SEARCH

The above example 1 has shown you how to programme a specific band of your own choice. The HP-100E has however 10 separate search bands which are pre-programmed from factory the access to these bands is such that the HP-100E will start at band 1 through to band 2 all the way to band 0 and back again. This obviously will take some time and also may be of no interest to you. If you programme the HP-100E to search over a *single band* then you will *not be able to access* the other bands. If you wish to search over other bands at the same time you *must programme "in between band searching"*. This will give you access to search bands of *your own choice.*

SELECTION OF "PRE-PROGRAMMED" SEARCH BAND

EXAMPLE 2. You wish to search over band 8 only:-

A. Press SEARCH   B. Press BANK
C. Press PROG   D. Key in 8
E. Press LIMIT   F. Key in 8
G. Press ENTER

The HP-100E will now search through band 8 from the lowest to the highest frequency and then back again.

SELECTION OF "INBETWEEN BAND SEARCHING"

EXAMPLE 3. You wish to search between band 1 and band 3.

A. Press SEARCH   B. Press BANK
C. Press PROG   D. Key in 1
E. Press LIMIT   F. Key in 3
G. Press ENTER

The HP-100E will now start searching on band 1 to band 2 then band 3 and back to band 1 again. During the above search you may manually select either band 1, 2 or 3 by pressing those respective keys. During the above search you may also STOP the search by either pressing the V key or by turning UP-DOWN rotary switch. You may now if you wish change the frequency step as follows:-

Stop search by 1. Pressing V key or 2. by turning UP-DOWN rotary switch. Now press STEP (KHz sign will flash on LCD). You must now decide what channel step you wish to use? Example 100 KHz. Key in 100 (KHz sign on LCD will stop flashing). You may now either go UP or DOWN in frequency manually by rotating UP-DOWN switch or by using the V key. By pressing the V key you may go DOWN in frequency by the 100 KHz you have selected manually or if you keep the V key depressed for 2 seconds it will automatically count down the frequency by 100 KHz.

NOTE. MODE selection may be changed at any time by simple pressing AM-FM or WFM keys!

EXAMPLE 4. You wish to search or select any band from band 1 to band 9.

A. Press SEARCH   B. Press BANK
C. Press PROG   D. Key in 1
E. Press LIMIT   F. Key in 9
G. Press ENTER

MEMORY BANK TRANSFER

If during the search mode you receive an interesting frequency which you wish to immediately transfer to one of the 10 memory banks wihtout the need of entering the frequency or mode then this may be done as follows:-
EXAMPLE 5.

A. Press HOLD (hold to appear on LCD)   B. Press ENTER
C. Key in a bank number (your choice)   D. Key in channel number (your choice)
E. Press ENTER

To continue search mode: A. Press SEARCH B. Press HOLD (delay will return to LCD).

HP-100E TECHNICAL SPECIFICATIONS

Frequency Range:	15-600 MHz (Low Band) and 805-1300 MHz (High Band)
Receiving Modes:	AM•NFM•WFM (all bands)
Receiving Sensitivity:	15-600 MHz less than 0.5 uV for 12 dB SINAD (NFM)
	805-1300 MHz less than 0.5 uV for 12 dB SINAD (NFM)
	15-600 MHz less than 2 uV for 20 dB QAM 60% modulation
	15-600 MHz less than 3 uV for 30 dB S/N (WFM)
Scan Speed:	Over 20 channels per second
Antenna:	BNC 50 ohms
Channels:	1000
Scan Banks:	10 Banks of 100 channels each
Search Bands:	10 freely programmable Bands
Power Sources:	4 pcs. AA size NICAD or 4 pcs. DRY CELL AA size.
	External 12 V DC supply also used for charging.
Power Consumption:	Standby with Squelch on: apx. 83 mA
	Receive mode 1/2 power: apx. 87 mA
	Receive mode Maximum audio: apx. 105 mA
Temperature Range:	−20 oc to +50 oc
Size and Weight:	170H × 35D × 65W mm. Weight without batteries: 280 g
Audio Output:	Over 100 mW for 10% or less THD
Search Increments:	Any channel step between 5 KHz and 995 KHz in multiples of 5 KHz or 12.5 KHz
Display Type:	LCD Liquid Crystal Display
Priority Sampling:	2 seconds
Delay Time:	2 seconds
IF Frequencies:	

Band	1st	2nd	3rd
15-49.995 MHz	+ 561.225 MHz	58.075 MHz	
50-107.995 MHz	+ 561.225 MHz	58.075 MHz	
108-169.995 MHz	+ 561.225 MHz	58.075 MHz	
170-296.995 MHz	+ 561.225 MHz	58.075 MHz	455 KHz WFM 10.7 MHz
297-600.000 MHz	+ 251.575 MHz	58.075 MHz	
805-1109.495 MHz	− 251.575 MHz	58.075 MHz	
1100-1300 MHz	− 561.225 MHz	58.075 MHz	

We reserve the right to make technical changes to the specifications without prior notice.

Fairmate HP100E