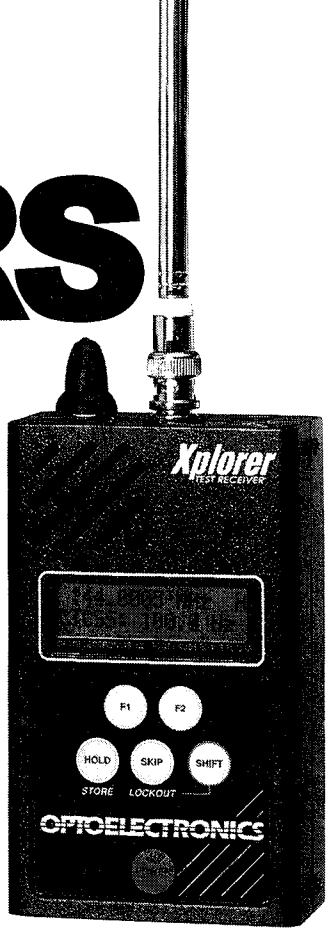
XPLORER

OWNERS MANUAL



INNOVATIVE PRODUCTS FOR A MODERN PLANET

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UNPACKING THE XPLORER

The Xplorer Test Receiver is supplied with the following items:

1. **TA100S Telescoping Whip Antenna**
2. **PC download cable**
3. **(1), 3.5" diskette with download utility and Radio Manager for Windows Software**
4. **AC adapter**

LEGAL NOTICE

Xplorer

Users Guide

All features, specifications, and the information included in this manual are subject to change without notice or obligation. Optoelectronics, Inc. reserves the right to change or modify the Xplorer without notice or obligation to notify any person or organization of such changes.

5821 NE 14th Avenue
Ft. Lauderdale, FL 33334

The Xplorer is covered under U.S. Patent No. 5,471,402

FCC NOTICE

The Xplorer contains Nickel Cadmium rechargeable batteries that must be recycled or disposed of properly. Use of the improper power adapter may cause damage to the Xplorer battery pack or charging circuitry.

*In compliance with US FCC Regulations, Xplorer's shipped in the U.S. are disabled in the following frequency bands: 824.010 - 848.970MHz and 869.010 - 893.970MHz.
*Except for FCC approved users.

FCC NOTICE

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 to radio communications. However, there is no guarantee that the interference will not occur in a particular installation. If this equipment does cause harmful interference to the radio of 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 or more of the following measures:

1. Reorient or relocate the receiving antenna.

2. Increase the separation between the equipment and receiver.

3. Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

4. Consult Optoelectronics or an experienced radio/TV technician for help.

Note: Optoelectronics is not responsible for any radio or TV interference caused by unauthorized modifications to this equipment. Such modifications could void the users authority to operate the equipment.

PREFACE

Welcome to the world of the Xplorer, the most advanced Near Field Radio Receiver available anywhere. The Xplorer has many features and functions useful for testing two way radio FM transmitters. Because the Xplorer is so versatile, we recommend reading the entire manual to understand the operating features.

This Owner's Manual is designed to help you get started quickly as well as provide detailed reference information.

Thanks for choosing the Optoelectronics Xplorer. If you have any questions or comments regarding the Xplorer please contact us at:
TEL: 954-771-2050
FAX: 954-771-2052
EMAIL: sales@optoelectronics.com
WEB SITE: www.optoelectronics.com

FEATURES & SPECIFICATIONS

Frequency Range:	30MHz - 2GHz (Cellular Frequencies Blocked except for FCC Approved Users)
Modulation:	FM, Deviation < 100KHz
Frequency Response:	50-3000Hz
Auto Sweep Time:	<1 Second (with Lockouts turned off)
Input Impedance:	50 Ohm
Connector:	Female BNC
Sensitivity:	100uV @ 500MHz (typical)
Display:	Two line, 16 character LCD with EL Backlight
Indicators:	LED: Lock, Charge
Inputs/Outputs:	3.5mm Stereo Phone Jack: Headphone Audio Mini Din 8: Serial Data
Power:	Battery: Internal Rechargeable 7.2V 900mAH NiCad, 6 cell 1.2V per battery
Battery Charging Time:	1 - 1.5 Hours, Reverse Slope/Time Out charge end point determination.
Adapter/Charger:	12VDC 2Amps Regulated output, 100-240 VAC 50-60Hz input
Signal Decoding:	52 CTCSS tones, 106 DCS codes, 16 DTMF digits
LTR Decoding:	Area: 1 digit, Go To: 2 digits, Home: 2 digits, ID: 3 digits, Free: 2 digits
CTCSS Acquisition Time:	600 milliseconds (0.6 seconds)
DCS Acquisition Time:	350 milliseconds (0.35 seconds)
DTMF Digit Rate:	10 digits per second
Deviation Measurement:	0 - 100KHz, 100Hz resolution, +/- 1kHz Accuracy 1 - 100kHz
Frequency Measurement:	100Hz resolution, +/- 500Hz accuracy. Internal Calibration Adjustment.
Signal Strength:	50 segment bargraph, relative reading, uncalibrated.
Real Time Clock:	Internal Calibration Adjustment

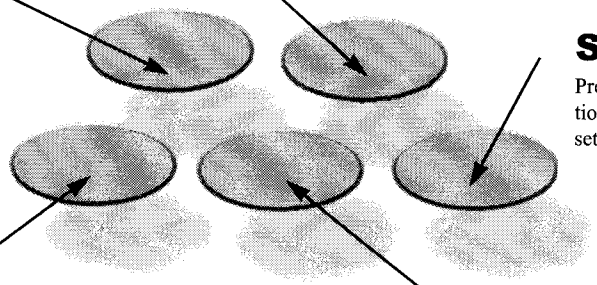
CONTROLS

F2 •

Parameter select when used with VOL knob.
Fine Frequency select with knob.

F1 •

Mode Selection



SHIFT •

Press to activate Store and Lockout functions. Hold down when using VOL knob to set coarse frequency in VFO mode.

HOLD/STORE•

Press in Sweep Mode to Hold next frequency found. H replaces Indicator. Press Shift then hold to store current or next frequency in memory.

SKIP/ LOCKOUT •

Releases current frequency. Press Shift then Skip key to Lockout current frequency. Press Skip to move on to next frequency.

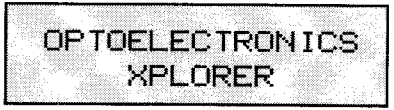
POWER •

Press to activate Xplorer. Press to turn off.

GETTING STARTED

POWER UP

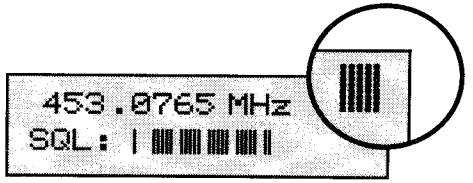
1. Press the red POWER key once firmly to turn the Xplorer on. The Initialization Screen will be displayed for two seconds.



2. Next, one of the seven Operating Modes will be displayed for two seconds. The Mode that will be displayed will be the one previously selected.

3. Press the F1 key to cycle through the modes.

4. Press the F1 key repeatedly until the *SWEEP* mode is selected.*SWEEP* will be displayed for two seconds and then the XPLORER will begin sweeping.



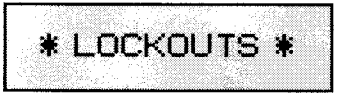
Magnified View of Sweep Indicator

Sweep indicator bars move when Xplorer is actively sweeping.

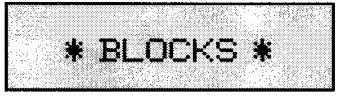
Xplorer sweeps 30MHz - 2GHz automatically in this mode.

Tune into a specific frequency.

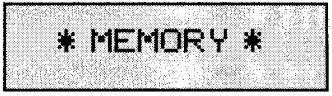
Configuration mode sets up the different functions of the Xplorer.



View locked out frequencies, and unlock single frequencies.



View and setup different ranges for lockout.



View memory history.

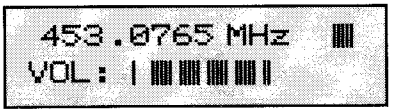
Configure clock functions.

Sample mode displays for Xplorer

SETTING VOLUME AND SQUELCH

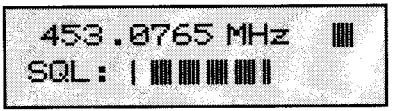
The black encoder knob located on the top panel of the Xplorer is used to scroll through the Xplorer's different settings, and also to control Volume and Squelch.

Press down on the VOL knob ONCE to display volume setting.



Rotate the VOL Knob to increase or decrease the volume setting. The number of bars showing gives a graphical representation of volume setting. After two seconds of inactivity of the knob the screen will return to the previous mode.

Press down on the VOL knob TWICE to display the Squelch Screen

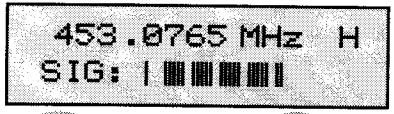


Rotate the VOL Knob to increase or decrease the Squelch setting. Initially, set the Squelch for the number of bars shown above. Setting the squelch too low (one bar or less), or to high (eight bars or more), can cause the Xplorer to stop sweeping . Setting the squelch lower than the initial setting shown above, will result in an increase in the number of farfield signals captured. Setting the squelch higher than the initial setting shown above is an ideal setting for testing radios when just a few feet away, so as to not be interfered by any farfield signals.

HOLD & SKIP

With the TA100S antenna (supplied), the Xplorer should be sweeping at this point. If there are any FM signals in range you will see the Xplorer lock lamp illuminate and hear any audio.

You can press the HOLD key and stop the Xplorer on the frequency it is currently receiving or if it is sweeping, it will hold on the next frequency that locks. When in Hold, an "H" will replace the Sweep Indicator.



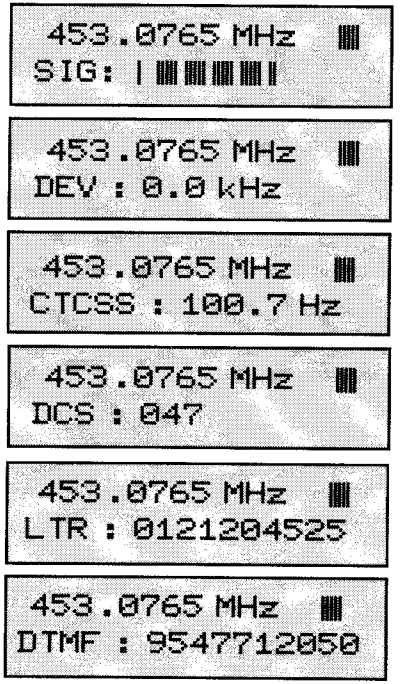
To resume sweeping from Hold, press the SKIP key. Press the SKIP key whenever the Xplorer is locked on a frequency to resume sweeping.

VFO TUNING

VFO mode is used to tune the Xplorer to a specific frequency. Use the F1 key to select VFO Mode. *VFO* display will time out after two seconds. Rotate the Encoder Knob to FINE tune the frequency. Hold down the SHIFT key and rotate the VOL Knob to COARSE tune the frequency.

SELECT MEASUREMENT DISPLAY

To change the measurement display, press and hold down the **F2** key and rotate the VOL knob.



CONFIGURATION SETUP

Enter the Configuration Mode to set the operational parameters. Press the F1 key until *CONFIG* is displayed. The *CONFIG* display will time out after two seconds. Use the VOL knob to select between parameters.

Each parameter has attributes that can be selected by holding down the F2 key while rotating the VOL Knob. After selecting the attribute, release the F2 key and rotate the VOL knob to the next parameter. Exit the *CONFIG* mode by pressing the F1 key.

Parameters	Attribute Selections
BACKLIGHT	ON, OFF, AUTO
NRZ DECODE	LTR, DCS
AUDIO	ON, OFF
DTMF	ON, OFF
AUTO HOLD	ON, OFF
LOCKOUTS	ON, OFF
BLOCKS	ON, OFF
VFO FINE	5, 10, 12.5, 25, 30, 50, 100kHz
VFO COARSE	1, 5, 10 MHz
CLEAR LOCKOUTS	F2 + KNOB TO CLEAR
CLEAR MEMORY	F2 + KNOB TO CLEAR
AUTO STORE	ON, OFF
CAPTURE	EVERY, UNIQUE
SECONDS	0-59
MINUTES	0-59
HOURS	0-23
DAY	0-31
MONTH	1-12
YEAR	1960-2215
RAPID CHARGE	KNOB + F2, FAULT, V IN, IN PROGRESS

LTR DECODING

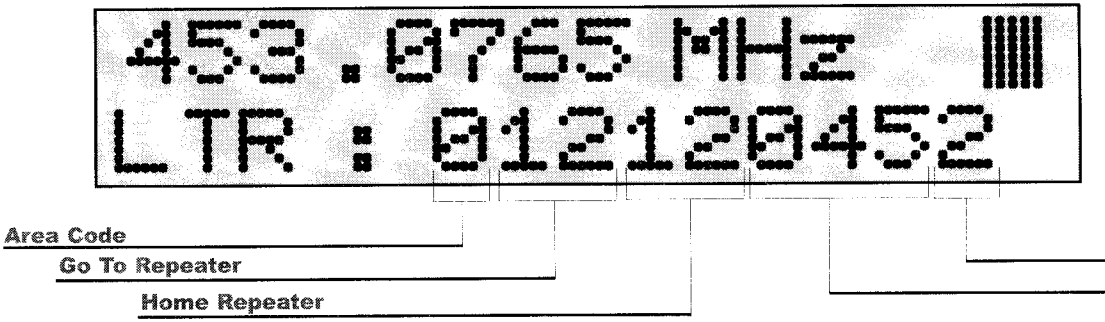
To activate the Xplorer for LTR decode mode press the F1 key until *CONF IG* menu is displayed. Turn encoder knob until NRZ DECODE is displayed. Press the F2 key and turn knob at same time until LTR is displayed. Exit back to *SWEEP* mode by pressing the F1 key

There are 10 digits and 5 different fields of information displayed in LTR decode mode.

1.	AREA	1 digit	0-1	
2.	GO TO	2 digits	00-31	If 31 then turn off code
3.	HOME	2 digits	00-31	
4.	ID	3 digits	000-255	255 is all call
5.	FREE	2 digits	00-31	Mobile is always 31

When an active LTR code is present on the display an * will appear to the right of the display. If the frequency is not active the * will not be present.

Logging an LTR code into memory is required to be done manually. The LTR does not have to be active in order to be logged into memory.



FREQUENCY LOCKOUT

The Xplorer has a 1000 memory lockout feature that inhibits audio from undesirable signals. Pager data, as well as broadcast FM and TV signals are generally undesirable to listen to when searching for two-way radio signals. When searching for new signals, the lockout feature permits disabling known frequencies. The Xplorer will continue to stop on every signal it finds and will perform its frequency determination routine and then check the lockout memory. If the frequency is locked out then the Xplorer will not enable audio and will resume sweeping.

The Configuration and Lockout Menu will allow the operator to globally, as well as individually, enable and disable lockouts.

TO LOCKOUT A FREQUENCY

Press SHIFT + SKIP at the same time to place the current frequency into Lockout Memory.

ENABLE / DISABLE FREQUENCY LOCKOUTS

Press the F1 key a number of times until *CONFIG* is displayed, wait two seconds then rotate VOL knob until *LOCKOUTS* is displayed. Hold down the F2 key and rotate VOL knob to select ON or OFF.

TO REVIEW LOCKED OUT FREQUENCIES

Press the F1 key and enter the *LOCKOUTS* mode. Wait two seconds and rotate VOL knob to review locked out frequencies.

TO ENABLE / DISABLE INDIVIDUAL LOCKED OUT FREQUENCIES

Press the F1 key and enter the *LOCKOUTS* mode.

Wait two seconds and rotate VOL knob to select locked out frequency.

Hold down the F2 key and rotate VOL knob to turn locked out frequency ON(*) or OFF.

TO CLEAR LOCKOUT MEMORY

Press the F1 key and enter the *CONFIG* mode.

Wait two seconds and rotate the VOL knob until *CLEAR LOCKOUTS* is displayed.

Press the F2 key and rotate the VOL KNOB to erase lockout memory.

B L O C K S

The Xplorer has 10 frequency blocks numbered 0-9, located in the BLOCKS menu. This function is very convenient for locking out, "EXCLUDE", a block of frequencies like FM stations, TV stations, etc... It is also convenient for locking in, "INCLUDE", a block of frequencies that the user wishes to test exclusively.

Press the F1 key until the *BLOCKS* menu is displayed. Tuning the encoder knob will toggle through all ten blocks.

PARAMETERS

Each block has 3 parameters: Press F2 and turn encoder knob to toggle through the three different parameters for each block.

1. "A:" frequency
2. "B:" frequency
3. "TYPE:" INCLUDE, EXCLUDE, or OFF.

SETTING PARAMETERS

Frequency ranges are entered similarly to VFO mode. To set the frequency step size press the F1 key until *CONFIG* mode is displayed. Turn encoder knob until VFO FINE appears. To change the step size press the F2 key and turn the knob at the same time until you reach the desired kHz tune setting. Next, turn the encoder knob clockwise one position so that VFO COARSE appears. Press the F2 key and turn the knob at the same time until you reach the desired MHz tune setting. Exit out of *CONFIG* mode by pressing the F1 until *BLOCKS* mode appears.

SETTING FREQUENCY BLOCKS

Enter the desired frequency block number (0-9). Press the F2 key and turn the knob until "A:" appears. Press the SHIFT key and turn the knob for frequency "A" COARSE tune, and press the HOLD key and turn the knob for frequency "A" FINE tune.

Once the frequency is set, press the F2 key and turn the knob until "B:" appears. Repeat the step above to set the desired frequency.

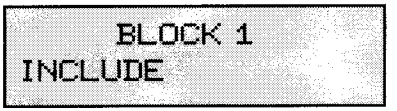
This now constitutes a frequency block. Go to next step to select the TYPE of frequency block desired.

SETTING INCLUDE, EXCLUDE AND OFF

Press the F2 key and turn the knob until the word INCLUDE, EXCLUDE, or OFF appears. Press the SHIFT button and turn the knob until the desired type is set. See below for a description of INCLUDE, EXCLUDE and OFF.

INCLUDE

To INCLUDE a block of frequencies means the Xplorer will receive and display all frequencies within that block. All frequencies that fall outside those blocks will be excluded from reception and display.



EXCLUDE

To EXCLUDE a block of frequencies means the Xplorer will reject all frequencies within that block. All frequencies that fall outside those blocks will be included for reception and display.

OFF

All blocks set to OFF are inactive and therefore ignored.

INCLUDE AND EXCLUDE

If a block of frequencies are in an EXCLUDE and INCLUDE block, then the block order (0-9) takes precedence in the Xplorer's reception of those frequencies. For example: If 145.000 MHz - 155.000 MHz is in BLOCK 0 that is set for EXCLUDE, and is also in BLOCK 1 set for INCLUDE, then BLOCK 0 takes precedence over BLOCK 1 and 145.000 MHz - 155.000 MHz is excluded from acceptance and display.

MEMORY OPERATIONS

Shown below are the 12 fields of data contained in the memory of the Xplorer.

Field	Data
1	Frequency in MHz
2	Hits
3	Time
4	Date
5	Audio on/off
6	DTMF on/off
7	Signal Strength
8	Deviation
9	CTCSS Tone
10	DCS Code
11	DTMF Data
12	LTR

Xplorer memory can be recalled to the LCD Display from Memory Mode:

Press the F1 key until *MEMORY* Mode is displayed. Rotate VOL knob to select Sequence Number and stored frequency.

Hold the F2 key and turn VOL knob to scroll fields. Press the F1 key to exit Memory Mode.

Note: While scrolling memory frequencies, the Xplorer will VFO tune to the indicated frequency.

MANUAL DATA RECORDING

To manually record data into the memory of the Xplorer press the SHIFT + HOLD keys at the same time. Refer to page 19 for a list of data that can be recorded into memory. *Note: Signal Strength, Deviation, CTCSS, DCS, LTR & DTMF can only be recorded into memory manually. The current frequency, or if the Xplorer has resumed sweeping, the next frequency captured will be logged.

AUTOMATIC DATA RECORDING

Automatic data recording is ideal for unattended operation, site surveys and logging frequency use. Refer to page 19 for a list of data that can be recorded into memory *Important: Even when Auto Store is enabled, Signal Strength, Deviation, CTCSS, DCS, LTR & DTMF must be recorded into memory manually by pressing the SHIFT + HOLD keys at the same time. Doing this will not affect the Xplorers ability to automatically store all other data

TO ENABLE AUTOMATIC DATA RECORDING

Press the F1 key until the *CONFIG* menu is displayed. Rotate the VOL knob until AUTO STORE is displayed. Hold the F2 key and rotate knob to select ON to enable Automatic data recording.

RECORDING EVERY / UNIQUE FREQUENCIES

Press the F1 key until *CONFIG* menu is displayed. Rotate the VOL knob until CAPTURE is displayed. Hold the F2 key and rotate knob to select EVERY or UNIQUE. If CAPTURE/EVERY is chosen, every occurrence will be logged in memory with the time, date, etc.

If CAPTURE/UNIQUE is chosen, only frequencies that are not already recorded in memory will be logged. Repeat occurrences will increment the hit counter. Each frequency in memory can record up to 65,535 hits.

CLOCK

TIME/DATE MODE

To look at the current time / date setting press the 

key to cycle through the modes until the *TIME/DATE* mode is selected.

TIME/DATE SETTING

To set the Time and Date press the 

key until the *CONFIG* menu is displayed. After two seconds, rotate the VOL KNOB to display the following Parameters.

SECONDS, MINUTES, HOURS, DAY, MONTH, YEAR

To change one of the parameters, hold down the 

key and rotate the VOL KNOB until the desired value is displayed.

After the clock and calender are set, exit out of the *CONFIG* menu by pressing the 

key.

The clock is backed up by a lithium battery that takes over when the unit is switched off. The battery is capable of keeping the clock circuit running for many years.

CAPABILITIES

The Xplorer is a completely unique Near Field Test Receiver. It is not a single frequency radio receiver in the conventional sense, or a high speed scanner. It is actually a frequency sweeper using multiple swept harmonic LO frequencies that enable the Xplorer to lock on to virtually any two-way FM signal in less than one second. Its unique frequency conversion system allows it to search for and acquire new frequencies much more quickly than a conventional receiver.

Near Field refers to the relative strength of a transmitter as compared with the background RF floor. The Near Field refers to an approximate distance where the signal strength radiating from an antenna is relatively strong. As you approach an antenna, the observed signal strength increases to a point where its amplitude becomes greater than any other signal sources. At this point you are in the Near Field of the transmitter. The Xplorer will pick up signals in the Near Field of a transmitter.

Because of its high rate of sweeping, the Xplorer is essentially a self tuning receiver. The primary reason for a Near Field Receiver is to trade distance for speed. A conventional scanning receiver will receive signals from greater distances than the Xplorer but suffers from being able to scan only 25 to 100 frequencies per second. It could take several minutes to several hours to tune an unknown frequency using a scanner. (An FCC data base search shows over 5,000 licensed transmitters within 5 miles of the Optoelectronics facility.)

BATTERY OPERATION

The Xplorer battery pack is rated at a nominal 7.2V with 900 mAH capacity. It contains an internal, automatically resetable fuse. The Xplorer can be operated and charged at the same time using the line operated power supply. The Xplorer can be damaged if any other adapter is used that is not rated for 12-14VDC with at least 1A current output capacity. The Xplorer should operate approximately 5-6 hours before it requires recharging. Times will vary depending upon backlight use and volume levels set.

TRICKLE CHARGE

To trickle charge the battery, plug the Xplorer into the Adapter with the power off. Make sure the Adapter is plugged into line power. Trickle charge will slowly charge battery.

*Note: Once the Xplorer has been charged and the unit is warm to touch, rapid charge is not possible, only trickle charge is possible. To rapid charge refer to page 23.

RAPID CHARGE

The Xplorer will rapid charge in 1.5 hours or less when connected to the power supply. Rapid Charge is taking place when the red "CHARGE" LED is illuminated.

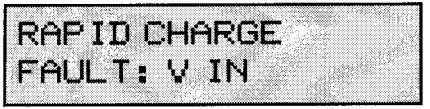
Although the Xplorer has internal safe guards for protection, it is recommended that the operator not initiate charge if the battery has recently been charged or if the Xplorer is noticeably warm to touch.

To initiate Rapid Charge, Press the 

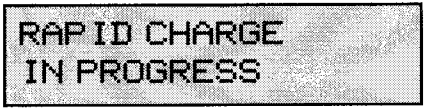
key until the *CONFIG* menu is displayed. Rotate Knob until Rapid Charge is displayed.

There are three possible messages displayed below Rapid Charge:

Press F2 and turn knob to start rapid charge.



Incorrect input voltage. Refer to page 22 for power requirements.



Rapid Charge is taking place.

If the input supply voltage is adequate you can initiate Rapid Charge. If the Xplorer senses any out of tolerance condition then you will not be able to initiate charge.

PC COMMUNICATIONS

To connect the Xplorer to your computer for data downloading use the supplied cable (8 pin din to 9 pin DB9).

The Xplorer can download data stored in memory to a text file created in a PC. The Xplorer/Scout Download Utility Disk is supplied with the Xplorer. A cable is supplied for data connection from the Xplorer to a PC serial (com) port.

To download Xplorer data, connect the PC cable from the Xplorer to an available COM port on the PC. Create a Dos directory and copy the XPLORER.EXE from the Xplorer/Scout Download Utility Disk. Type Xplorer and follow the instructions.

Xplorer data can also be downloaded from the Radio Manager for Windows scanning program. Click on RM.EXE to open program. Click on TOOLS menu bar and go to XPLORER download.

The following information can be downloaded to the computer:

Frequency
Number of Hits
Time
Date
Signal Strength
Numerical Deviation
CTCSS / DCS / LTR / DTMF

The electrical parameters given in Table 3 are specified relative to Signal Ground (SHIELD).

Table 3. Xplorer CI-V Interface Electrical Specifications.

Serial Data - Receive (To Xplorer)	Logic "0"	0 - 0.7 VDC (50 A max. load current)
	Logic "1"	2.0 - 5.0 VDC (50 A max. load current)
Serial Data - Transmit (From Xplorer)	Logic "0"	0 - 0.45 VDC (1.6 mA max. sink current)
	Logic "1"	2.4 - 5.0 VDC (60 A max. source current)

The communications parameters given in Table 4 are used for data transfers on the CI-V interface.

Table 4. Xplorer CI-V Interface Communications Parameters.

Data Rate	9600 bps
Start Bits	1
Data Bits	8
Parity	NONE
Stop Bits	1

ACCESSORIES

To enhance the operation of the Xplorer, a wide assortment of antennas and accessories are available from Optoelectronics. The following charts will help you choose the right antennas and filters for your application.

ANTENNAS

Antennas that work well with the Xplorer include the RD27, TA100S (supplied with Xplorer), RD440, RD800, and DB32.

Antenna	Frequency Range
RD27	26MHz - 150MHz
RD440	440MHz - 480MHz
RD800	500MHz - 1000MHz
DB32	150MHz - 1000MHz
TA100S	100MHz - 600MHz

TA100S Supplied With Xplorer, All other antennas are optional

FILTERS

The BHP800, when used with a RD800 antenna, will eliminate all frequencies below, and increase the pick up distance for those above, 800MHz. Use the BLP70 with the RD27 or whenever your focus is below 70MHz.

Filters	Frequency Range
BLP70	Below 70MHz
BHP800	Above 800MHz

BLP70 & BHP800 are optional accessories

PICK-UP DISTANCE

The pick up distance data provided is intended to be an indication as to what the user can expect in a real world urban situation. As with any Near Field device, the performance over distance is heavily influenced by the RF environment.

The testing below was at the Optoelectronics factory in Fort Lauderdale. A radius search in the FCC database shows approximately 5000 licensed transmitters within a 5 mile radius. In particular there is a UHF paging system in a Hospital 1/4 mile away and an FM radio transmitter two miles away. The RF floor is at approximately -50 dB. This should be a typical urban RF environment for testing the Xplorer. Remember though, results can differ widely depending on the particular environment.

FM Transmitter	Output Pwr	Frequency	Distance	Antenna
VHF Radio	1W	150MHz	600'	TA100S
UHF Radio	5W	450MHz	1000'	DB32

Some Transmitters the Xplorer Will Not Pick Up:

The Xplorer does not demodulate AM so this will exclude CB and Aircraft transmissions. Digital modulation from digital cordless phones and digital cellular phones is also excluded. Discontinuous sources using on-off keying such as, garage door openers, radio control signals, and keyless entry transmitters will not work with the Xplorer.

APPLICATIONS

The self tuning feature along with its measurement and decoding capabilities makes the Xplorer valuable for testing two-way radios. The Xplorer is also able to locate strong RF signals located near by in order to evaluate interference. The Xplorer is useful for checking commercial FM wireless microphones and other low power transmitters. Whenever two way radios can be observed, the Xplorer will be able to lock on rapidly for test or monitoring purposes.

PRODUCT WARRANTY

Optoelectronics, Inc. warrants all products and accessories for one (1) year against defects in materials and workmanship to the original purchaser. Products returned for warranty service will be repaired or replaced at Optoelectronics' option.

Specifically excluded are any products returned under this warranty that, upon examination, have been modified, had unauthorized repairs attempted, have suffered damage to the input circuitry from the application of an excessive input signal, have suffered damage to the charging circuitry or internal batteries from the application of excessive voltage, or show other evidence of misuse or abuse. Optoelectronics reserves sole right to make this determination.

No other warranties are expressed or implied, including but not limited to the implied warranties of merchantability and fitness for a particular purpose. Optoelectronics, Inc. is not liable for consequential damages.

FACTORY SERVICE

WARRANTY

Products under warranty must be returned, transportation prepaid, to Optoelectronics' Fort Lauderdale Service Center. All parts replaced and labor performed under warranty are at no charge to the customer.

NON-WARRANTY

Products not under warranty must be returned, transportation prepaid, to Optoelectronics' Fort Lauderdale Service Center. Factory service will be performed on a time and materials basis at the service rate in effect at the time of repair. A repair estimate prior to commencement of service may be requested. Return shipping will be added to the service invoice and is to be paid by the customer.

RETURN POLICY FOR REPAIRS

The Optoelectronics Service Department will provide rapid turnaround of your repair. No return authorization is required. Enclose complete information as follows:

1. Copy of sales receipt if under warranty.
2. Detailed description of problem(s).
3. Complete return address and phone number (UPS street address for USA).
4. Proper packaging (insurance recommended). Note: Carriers will not pay for damage if items are improperly packaged.
5. Proper remittance including return shipping, if applicable (Visa/MasterCard number with expiration date, Money Order, Company PO., etc.).

Address all items to:

Optoelectronics, Inc.
Service Department
5821 NE 14th Avenue
Fort Lauderdale, FL 33334

Note: Optoelectronics is not responsible for packages lost or damaged during shipment

If in question, contact the factory for assistance.
Service Department: (954) 771-2050

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