

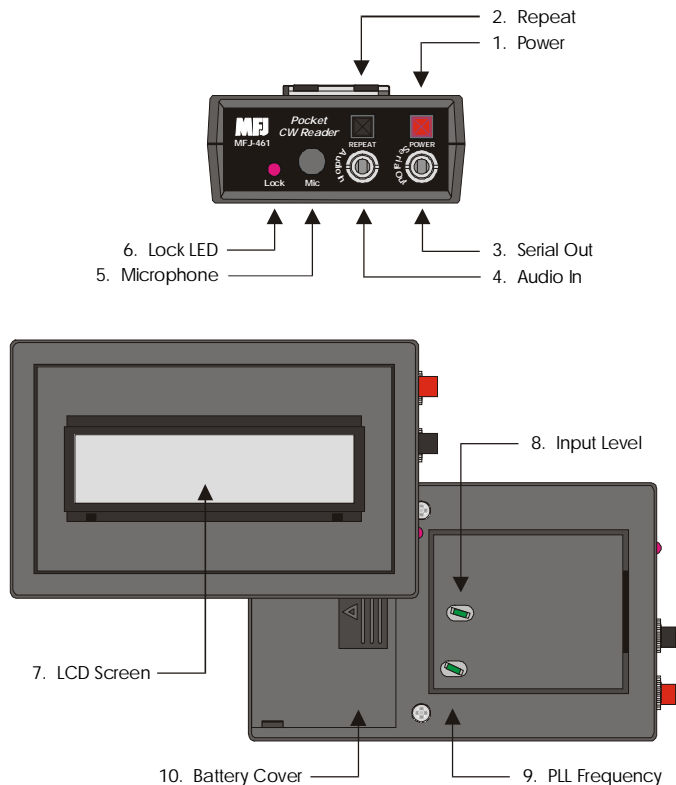
Introduction to the MFJ Pocket CW Reader

Thank you for purchasing the MFJ-461 Pocket CW Reader. The CW Reader is a pocket size Morse code decoder that features:

- Two-line 32-character LCD (liquid crystal display)
- Auto track CW up to 99 WPM (words per minute)
- 140 characters volatile repeat buffer memory
- Four scrolling display modes

Please read the following instructions before using the CW Reader. If you still have questions after reading all the instructions, please refer to the "Technical Assistance" section.

List of Components



1. **Power Button** – Push button in to turn power ON. Always turn power OFF when changing the battery.
2. **Repeat Button** – Push button momentarily to display the last 140 characters enclosed within “[” and “]”; push button again to exit repeat mode. Push and hold the button for two seconds to rotate through the four different display modes.
 - **Mode 1** – Text will display from left to right along the bottom line. When filled, that entire line will display on the top line until the bottom line refilled with the speed displayed on the right side (power-on initial mode).
 - **Mode 2** – Text will display from left to right along the bottom line. When filled, that entire line displays on the top line until the bottom line refills.
 - **Mode 3** – Text will scroll from right to left along the top line with the speed displayed on bottom line.
 - **Mode 4** – Text will scroll from right to left along the bottom line, then up and across the top line.
3. **Serial Out Jack** – A 3.5 mm jack for connecting the Reader to the computer’s serial port to display CW text on a monitor using a terminal software. Use an MFJ-5161 serial cable. Set the terminal software to 19200 baud, 8 data bits, no parity, 1 stop bit, and no flow control.
4. **Audio In Jack** – A 3.5 mm jack for inputting any audio source. A plug in this jack disconnects the built-in microphone.
5. **Microphone (Mic)** – Picks up audio signal from your receiver. This microphone is disabled when a plug is inserted into the Audio In jack.
6. **Lock Indicator LED** – Indicates signal lock when it blinks in sync with the Morse code.
7. **LCD Screen** – Displays the CW text on the two-line 32-character LCD screen.
8. **Input Level Control** – Adjusts the audio input level. Rotate right to increase input level.

9. **PLL Frequency Control** – Adjusts the PLL (phase locked loop) frequency from about 500 to 1000 Hz. Rotate right to decrease frequency. Factory set to approximately 700 Hz.
10. **Battery Cover** – Remove cover to add or replace the 9-volt battery (not included).

Installing Battery

Remove the battery cover on the back of the CW Reader and insert a 9-volt battery. Use **only** fresh, high quality batteries. Alkaline batteries are recommended.

Caution: Always make sure the power is off before replacing the battery.

Battery life will vary depending on usage, so always keep a spare on hand. When the LCD begins to fade, the battery life is almost gone and you should replace the battery as soon as possible.

Operation

Power on your receiver and tune it to find a clear, well-sent Morse code signal. When you have found one, power on the Reader and place its microphone near your receiver’s speaker. If necessary, adjust the Input Level control so that the Lock LED is blinking. Now tune in the signal again to adjust its frequency (to match the PLL frequency) until you get the maximum response from the LED. Next, turn the Input Level control until the LED is blinking in sync with the Morse code. Wait for the LCD screen to start displaying something that makes sense. Once it has tracked the signal, read the messages as they scroll across the LCD screen. Repeat these steps a few times to get the best response.

The Reader automatically locks on and tracks low and high speed Morse code, decoding it up to 99 WPM. Its initial power-on tracking speed is 20 WPM. It will take some time to track an incoming signal or to re-track an extremely slow signal after copying a fast one and vice versa. If there is a lot of static, it will take time to track slow signals. This is because the static appears to the Reader as high speed Morse code.

There is a lot of sloppy code on the air and most computers cannot read them. Do not expect this Reader to do the incredible when it comes to copying Morse code. Nothing can clean up and copy a sloppy fist, especially with a weak signal and lots of QRM/QRN (interferences). However, you will be quite pleased when copying strong well-sent code, especially those sent with electronic keyers. Farnsworth code* and extremely negative weighted code will display with spaces between each character. Finally, invalid characters are displayed as block characters on the LCD screen and as spaces on the computer monitor. Prosigns (procedural signs) are enclosed within “<” and “>” such as <AR> and <SN>.

When it is too noisy for microphone pickup or when you do not want to *hear* CW, you can connect the Reader to your receiver using the Audio In jack.

* *Farnsworth code is where the dits and dahs are sent at a fast rate and the character and word spaces are much longer.*

Accessories

The following accessories are sold separately:

- MFJ-26B: Soft leather protective pouch with clear plastic overlay for LCD display, equipped with push buttons and jacks openings, and pocket/belt clip.
- MFJ-5161: A 3.5 mm to DB-9 RS-232 serial cable.
- MFJ-5162: Receiver cable that connects the Reader to your radio’s external speaker 3.5 mm jack.

Copyright Message and Firmware Number

Press and hold the Repeat button while turning the power on. A copyright message and the firmware version number will display across the LCD screen. The Reader then returns to normal operation.

Troubleshooting

Problem	Solution
The screen stays blank even though the power is ON.	<ul style="list-style-type: none"> Turn the power OFF. Wait a few moments and then turn the power ON. Replace the battery.
The screen appears faint.	<ul style="list-style-type: none"> Replace the battery.
The LED stays on.	<ul style="list-style-type: none"> Decrease the input level.
The LED does not light at all.	<ul style="list-style-type: none"> Increase the input level. Place the Mic closer to your audio source.
The screen displays unreadable code.	<ul style="list-style-type: none"> Adjust the PLL Frequency and Input Level controls.
The microphone is not picking up the audio.	<ul style="list-style-type: none"> Make sure nothing is plugged into the Audio In jack. Place the unit closer to your audio source.
The terminal displays unreadable code or nothing at all.	<ul style="list-style-type: none"> Make sure the serial cable is securely connected. Set the terminal software settings to 19200 baud, 8 data bits, no parity, 1 stop bit, and no flow control.

Technical Assistance

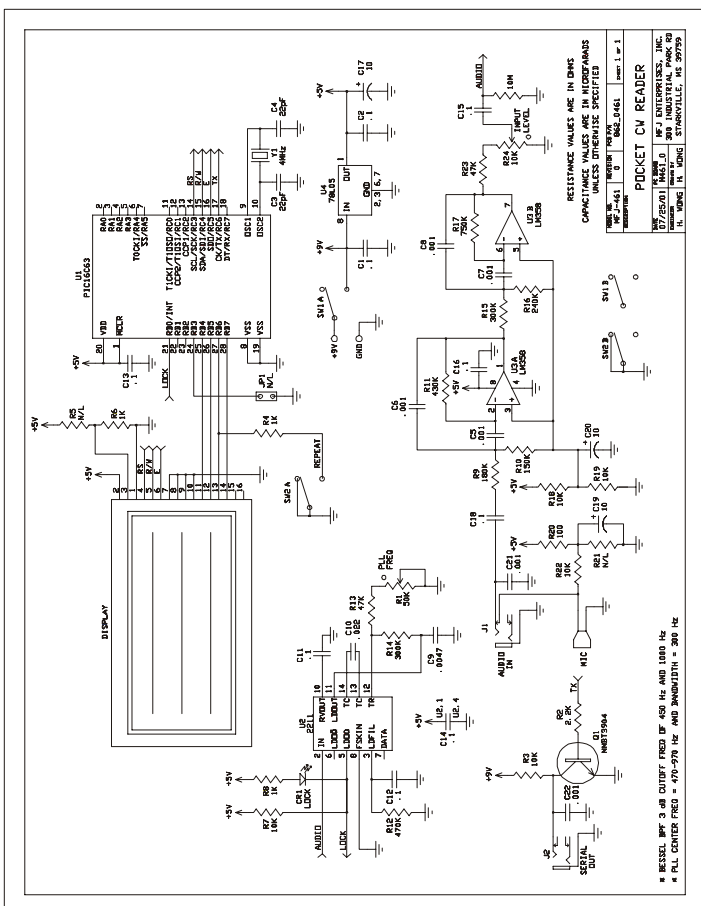
If you have any problem with this unit, check the appropriate section of this instruction manual. If this manual does not reference your problem, you may call *MFJ Technical Service* at **662-323-0549** or the *MFJ Factory* at **662-323-5869**. Please have your unit, this manual, and an accessible workstation.

Other ways to contact MFJ are by facsimile at **662-323-6551**, by email at techinfo@mfjenterprises.com, or by mail at:

MFJ Enterprises, Inc.
300 Industrial Park Road
Starkville, MS 39759

When writing MFJ, please send a complete description of your problem, an explanation of exactly how you are using your unit, and a complete description of your station.

Schematic



Morse Code Characters

A	di-dah	• -	N	dah-dit	- •
B	dah-di-di-dit	- • •	O	dah-dah-dah	- - -
C	dah-di-dah-dit	- • - •	P	di-dah-dah-dit	• - - •
D	dah-di-dit	- • •	Q	dah-dah-di-dah	• - - -
E	dit	•	R	di-dah-dit	• - •
F	di-di-dah-dit	• • - •	S	di-di-dit	• • •
G	dah-dah-dit	- - •	T	dah	-
H	di-di-di-dit	• • • •	U	di-di-dah	• • -
I	di-dit	• •	V	di-di-di-dah	• • • -
J	di-dah-dah-dah	• - - -	W	di-dah-dah	• - -
K	dah-di-dah	- • -	X	dah-di-di-dah	- • • -
L	di-dah-di-dit	- • • •	Y	dah-di-dah-dah	- • - -
M	dah-dah	- -	Z	dah-dah-di-dit	- - • •
1	di-dah-dah-dah-dah	• - - - -	6	dah-di-di-di-dit	- • • • •
2	di-di-dah-dah-dah	• • - - -	7	dah-dah-di-di-dit	- - • • •
3	di-di-di-dah-dah	• • • - -	8	dah-dah-dah-di-dit	- - - • •
4	di-di-di-di-dah	• • • • -	9	dah-dah-dah-dah-dit	- - - - •
5	di-di-di-di-dit	• • • • •	0	dah-dah-dah-dah-dah	- - - - -
Period	[.]	di-dah-di-dah-di-dah	• - • - • -	AAA	
Comma	[,]	dah-dah-di-di-dah-dah	- - • • - -	MIM	
Question Mark or Request for Repetition	[?]	di-di-dah-dah-di-dit	• • - - • •	IMI	
Fraction Bar or Slash Bar	[/]	dah-di-di-dah-dit	- • • - •	DN	
End of Message, Plus Sign, or Cross	<AR>	di-dah-di-dah-dit	• - • - •	AR	
End of Work	<SK>	di-di-di-dah-di-dah	• • • - • -	SK	
Double Dash, Equal Sign, Pause, or Break	[=]	dah-di-di-di-dah	- • • • -	BT	
Semicolon	[;]	dah-di-dah-di-dah-dit	- • - • - •	KR	
Colon	[:]	dah-dah-dah-di-di-dit	- - - • • •	OS	
Apostrophe	[']	di-dah-dah-dah-dah-dit	• - - - • •	WG	
Quotation Mark	["]	di-dah-di-di-dah-dit	• • - • • •	AF	
Hyphen or Dash	[-]	dah-di-di-di-di-dah	- • • • • -	DU	
Underline	[_]	di-di-dah-dah-di-dah	• • - - • -	IQ	
Dollar Sign	[\$]	di-di-di-dah-di-di-dah	• • • - • • -	SX	
Left Parenthesis or Go Only	[(]	dah-di-dah-dah-dit	- • - • •	KN	
Right Parenthesis	[)]	dah-di-dah-dah-di-dah	- • - • - •	KK	
Wait or Stand By	<AS>	di-dah-di-di-dit	• - • • •	AS	
Understood	<SN>	di-di-di-dah-dit	• • • • •	SN	
Starting Signal	<KA>	dah-di-dah-di-dah	- • - • -	KA	
Error	<HH>	di-di-di-di-di-di-dit	• • • • • • •	HH	
Paragraph	<AL>	di-dah-di-dah-di-dit	• - • - • •	AL	
Invitation to Transmit or Go Ahead	[K]	dah-di-dah	- • -	K	

LIMITED 12 MONTH WARRANTY

MFJ Enterprises, Inc. warrants to the original owner of this product, if manufactured by MFJ Enterprises, Inc. and purchased from an authorized dealer or directly from MFJ Enterprises, Inc. to be free from defects in material and workmanship for a period of 12 months from date of purchase provided the following terms of this warranty are satisfied:

- The purchaser must retain the dated proof-of-purchase (bill of sale, canceled check, credit card or money order receipt, etc.) describing the product to establish the validity of the warranty claim and submit the original or machine reproduction of such proof of purchase to MFJ Enterprises, Inc. at the time of warranty service. MFJ Enterprises, Inc. shall have the discretion to deny warranty without dated proof-of-purchase. Any evidence of alteration, erasure, or forgery shall be cause to void any and all warranty terms immediately.
- MFJ Enterprises, Inc. agrees to repair or replace at MFJ's option without charge to the original owner any defective product under warranty provided the product is returned postage prepaid to MFJ Enterprises, Inc. with a personal check, cashiers check, or money order for \$7.00 covering postage and handling.
- This warranty is NOT void for owners who attempt to repair defective units. Technical consultation is available by calling Service Department at 662-323-0549 or the MFJ Factory at 662-323-5869.
- This warranty does not apply to kits sold by or manufactured by MFJ Enterprises, Inc.
- Wired and tested PC board products are covered by this warranty provided only the wired and tested PC board product is returned. Wired and tested PC boards installed in the owner's cabinet or connected to switches, jacks, or cables, etc. sent to MFJ Enterprises, Inc. will be returned at the owner's expense unrepaid.
- Under no circumstances is MFJ Enterprises, Inc. liable for consequential damages to person or property by the use of any MFJ products.
- Out-of-Warranty Service: MFJ Enterprises, Inc. will repair any out-of-warranty product provided the unit is shipped prepaid. All repaired units will be shipped COD to the owner. Repair charges will be added to the COD fee unless other arrangements are made.
- This warranty is given in lieu of any other warranty expressed or implied.
- MFJ Enterprises, Inc. reserves the right to make changes or improvements in design or manufacture without incurring any obligation to install such changes upon any of the products previously manufactured.
- All MFJ products to be serviced in-warranty or out-of-warranty should be addressed to:
**MFJ Enterprises, Inc.
300 Industrial Park Road
Starkville, Mississippi 39759 USA**
and must be accompanied by a letter describing the problem in detail along with a copy of your dated proof-of-purchase.
- This warranty gives you specific rights, and you may also have other rights which vary from state to state.