

MPU32D Basic Program Instructions

Programming mode – Locating the programming switch

1. Remove the three black screws on the back of the radio.
2. Remove the battery.
3. Remove only one chrome-plated screw from the bottom of the radio, which is closest to the battery release button.
4. Very carefully separate the front and rear halves just enough to locate the program switch. (Position the radio so that the keypad is up and the PTT switch is on the left, the radio will open on the left side. The right side will have a flex circuit attaching the front and rear portions.) The switch is located between the On/Off and channel selector switches on a small printed circuit board. Relocate it to the "Up" position to set it to the programming mode.
5. Reassemble the radio installing only one back screw into the back of the radio. This will hold the radio together while you are programming the radio, and lessen the chance of tearing the two flex circuits.
6. Attach the charged battery to the radio.

To Program Frequencies:

* Note: The following information is a modified version of the MP-series Programming manual.

1. Turn the radio on. A "P" should appear on the display.
2. Press the M/S button. A "P4" should be in the display. The 4 is the first digit of the receive frequency.
3. Enter all six digits of the desired receive frequency. {Ex: 462675 (for 462.675Mhz)}
4. Enter the three-digit tone code, for receive tone, see Table 1 for CTCSS tones or Table 2 for DCS tones. {Ex: 012 (for 100hz)}
5. Press zero four times. {Ex: 0000 (for no four-digit DTMF decode)}
6. A "P4" should be in the display. (If you are programming a Receive only channel, such as a weather frequency, stop at the "P1" and press the ENT or Enter key, then a two digit channel number {Ex: 01 (for channel 1).} Start over at step 2 to program the next channel. **If a transmit frequency is desired enter all six digits of the transmit frequency.** {Ex: 462675 (for 462.675Mhz)}
7. Enter the three-digit tone code, for receive tone, see Table 1 for CTCSS tones or Table 2 for DCS tones. {Ex: 012 (for 100hz)}
8. Press zero four times. {Ex: 0000 (for no four-digit DTMF encode)}
9. Press the ENT or Enter key, then a two-digit channel number. {Ex: 01 (for channel 1)}
10. To program the next channel, start over at step 2.

Table 1

Tone Code	Tone(Hz)	Tone Code	Tone(Hz)	Tone Code	Tone(Hz)	Tone Code	Tone(Hz)
000	No tone	013	103.5	026	162.2	039	69.4
001	67	014	107.2	027	167.9	040	159.8
002	71.9	015	110.9	028	173.8	041	165.5
003	74.4	016	114.8	029	179.9	042	171.3
004	77	017	118.8	030	186.2	043	177.3
005	79.7	018	123	031	192.8	044	183.5
006	82.5	019	127.3	032	203.5	045	189.9
007	85.4	020	131.8	033	210.7	046	196.6
008	88.5	021	136.5	034	218.1	047	199.5
009	91.5	022	141.3	035	225.7	048	206.5
010	94.8	023	146.2	036	233.6	049	229.1
011	97.4	024	151.4	037	241.8	050	254.1
012	100	025	156.7	038	250.3		

Table 2

Standard RELM Code	DCS Code Standard	DCS Code Inverted	Inverted RELM Code	Standard RELM Code	DCS Code Standard	DCS Code Inverted	Inverted RELM Code	Standard RELM Code	DCS Code Standard	DCS Code Inverted	Inverted RELM Code
051	023	074	058	086	223	134	074	121	445	043	057
052	025	244	090	087	225	122	070	122	446	255	095
053	026	464	127	088	226	411	115	123	452	053	060
054	031	627	141	089	243	351	110	124	454	266	099
055	032	051	059	090	244	025	052	125	455	332	107
056	036	172	082	091	245	072	064	126	462	252	094
057	043	445	121	092	246	523	133	127	464	026	053
058	047	023	051	093	251	165	081	128	465	331	106
059	051	032	055	094	252	462	126	129	466	662	145
060	053	452	123	095	255	446	122	130	503	162	080
061	054	413	117	096	261	732	151	131	506	073	065
062	065	271	100	097	263	205	084	132	516	432	120
063	071	306	102	098	265	156	079	133	523	246	092
064	072	245	091	099	266	454	124	134	526	325	105
065	073	506	131	100	271	065	062	135	532	343	108
066	074	174	083	101	274	145	076	136	546	132	073
067	114	712	148	102	306	071	063	137	565	703	147
068	115	152	077	103	311	664	146	138	606	631	142
069	116	754	154	104	315	423	118	139	612	346	109
070	122	225	087	105	325	526	134	140	624	632	143
071	125	365	113	106	331	465	128	141	627	031	054
072	131	364	112	107	332	455	125	142	631	606	138
073	132	546	136	108	343	532	135	143	632	624	140
074	134	223	086	109	346	612	139	144	654	743	153
075	143	412	116	110	351	243	089	145	662	466	139
076	145	274	101	111	356	212	085	146	664	311	103
077	152	115	068	112	364	131	072	147	703	565	137
078	155	731	050	113	365	125	071	148	712	114	067
079	156	265	098	114	371	734	152	149	723	431	119
080	162	503	130	115	411	226	088	150	731	155	078
081	165	251	093	116	412	143	075	151	732	261	096
082	172	036	056	117	413	054	061	152	734	371	114
083	174	074	066	118	423	315	104	153	743	654	144
084	205	263	097	119	431	723	149	154	754	116	069
085	212	356	111	120	432	516	132				

To Review programming while in the program mode:

1. When the P is in the display press the PRI key.
2. Press the two-digit channel number. Each section of the program of that channel will be displayed for a brief period of time. The radio will display receive frequency, receive tone, receive DTMF decode, transmit frequency, transmit tone, then transmit DTMF encode.

To Delete a channel from memory:

1. Press the A/D key.
2. Press the two-digit channel number.
3. Press the ENT or Enter Key

Radio Configuration Data Options:

	Options	Number to select:									
		0	1	2	3	4	5	6	7	8	9
A.	RCC Mode	Disable	Enable								
B.	Scan/RCC Delay	1/2	1	2	3	4	5	6	7	8	9
C.	Transmit Time-out-timer	Disable	15 secs	30	60						
D.	Busy Channel Lock-out	Disable	Enable								
E.	DTMF Encode is sent	First PTT	Every PTT								
F.	Channel Select Lock	Disable	Enable								

The stock radio configuration is 030110.

To change the configuration the radio must be in the program mode and the P in the display.

Enter the five digits, one number for each option must be selected, then press the **ENT** key, and then press **00**.

Note: A four-digit ANI decode and encode function can be programmed in each channel. Only a four-digit number can be sent upon PTT or received. When programmed for transmit, and the PTT button is depressed, the four-digit number is sent in approximately 350 milliseconds. The four-digit number can be used, in place of zeros, at steps 5(for receive) and 8(for transmit) in the aforementioned programming procedure. The Radio Configuration should be programmed to transmit on Every PTT. While in the Pag or Page mode the receiving radio will open up only when the correct DTMF signal is sent. The receiver automatically returns to the DTMF decode mode once the encoded signal goes away and the receiving radio squelches for more than 3 seconds. The keypad on the front of the radio is active to send DTMF any time the radio is in the transmit mode and any number on the front is depressed. The four-digit ANI does not effect the keypad. It will send one digit at a time and does not require any programming. If used in the decode mode, radio to radio, the Radio Configuration should be changed to Every PTT.

Rarely used functions:

1. Most systems or communications operations do not require the use of DTMF ANI.
2. BCL or Busy-Channel-Lock-out is usually not used unless the radio is utilizing a repeater or base station that is equipped with a telephone interconnect, and has a few to several users on the same channel.
3. RCC mode = Radio Common Carrier - It is not available in most areas. It was owned and operated by AT&T, and possibly other companies, as the first type of mobile phone system. It was popular in the early to mid 1980s.

Master Clear:

The MP-series radio is shipped with several channels programmed. The programmed transmit and receive frequencies are for test purposes only, and are intentionally offset to keep the user from utilizing these programmed channels for communicating. If the end-user is not utilizing all 32 channels it might be easier to erase the test programming from memory by performing a Master Clear.

1. This is done with the radio in the programming mode.
2. When the radio is Off, hold down the function key. The Function key is located on the left side of the radio, just above the PTT switch. Also hold down the * or star key.
3. Turn the radio on while holding down these keys.
4. Release the function key and wait for the P in the display.
5. Program the customer's required frequencies.
6. It might be necessary to reprogram the Radio Configuration Data as all of the options are set to 0 as a result of the Master Clear.

Programming is complete

1. When programming is complete remove the battery.
2. Remove any screws you have installed during the process of programming the radio.
3. Carefully open the radio and move the programming switch to the down position.
4. Carefully reassemble the radio and install all 4 of the removed screws.
5. The radio should be ready to use.

Troubleshooting common problems:

1. Blinking display – Using a voltmeter, measure the DC voltage on the two top contacts of the battery. The battery must have a minimum charge of 10.8 volts. If the battery voltage drops below 10.8vdc the radio will not function correctly in the user or programming modes. A fully charged battery should measure from a minimum of 12.4vdc to a maximum of 13.0vdc.
2. Blank Display – **The radio does not have a fuse in it.**
 - A. Put the radio in the programming mode and see if the display lights up. If the display appears normal when in the programming mode, perform the Master Clear and reprogram the radio.
 - B. If the radio display does not light up in the programming mode check the following:
 1. Check the contact for the positive lead of the battery terminal that is attached to the front case. When the front and rear cases are put together it should make good contact to the AF or the center board. Be sure that the board and the contact are clean. Ohm the contact from the bottom to the inside of the contact to check for an open. If the contact got hot, it may have melted the plastic around it to the point where the screw is no longer providing a short between the two contacts.
 2. Check the flex circuit to the On/Off switch to be burnt, cracked or broken.
 3. Check the flex circuit to the On/Off switch for bad solder connections at the switch or where it solders onto the AF or center board.
 4. Check the On/Off switch to be open.
3. No Receive –
 - A. Perform the Master Clear as described previously and reprogram the radio. If the radio was subjected to a voltage surge (such as dropping the radio into a rapid charger with the radio turned on), or low battery for a long period of time, or to a close lightning strike, or other high static discharge, it may lose part of the parity information. The Master Clear is the way of correcting this problem.
 - B. Check IF reference crystal to verify that it is oscillating.
4. The battery does not hold a proper charge when used in the rapid charger (BCMP) –

General Information: All Ni-Cad batteries of any type or brand will lose its ability to hold a charge if it is left in a charger, charged incorrectly, or the battery is not used to the point just before equipment failure.

- A. Make sure that the user is not turning the radio on while trying to charge the battery. The radio should be left off at least 4 hours before being used as a monitor. If it is used as a monitor over a period of hours, the radio should be turned off and removed from the charger for about two minutes, then dropped back in the charger for at least two hours before using it. **For best results:** Use two batteries instead one and cycle the batteries in regular usage out of the charger.
- B. The radio should be used until the display starts to flash. Then turn the radio off and charge it in the rapid bay for at least 4 hours. The slow rate bay will charge the 700milliamp battery (BPMP7) in approximately 14 to 16 hours, or the 1000milliamp battery (BPMP1) in 20 to 22 hours. This procedure should be done 4 to 5 times and unless the battery has been charged incorrectly for a long period of time or the battery or charger is defective, it should correct the charge capacity of the battery. **For best results:** Purchase a battery analyzer/tri-analyzer to evaluate customer's batteries.
- C. If the user removes the radio from the charger while it is in the rapid charge mode or the AC is interrupted (black-out or brown-out), the charger will flash Red or Orange. If the radio is removed for approximately 2 to 4 minutes, the charger will turn the LED off and reset. The radio or battery can be dropped back into the charger and it will switch back into the rapid charge mode. The charger will not switch back to the rapid charge mode if the radio is left in the charger during the AC interruption, or put back into the charger before it resets. **For best results for areas subjected to repeated AC brown-outs or black-outs:** Have the customer purchase a non-interruptible AC power supply with battery back-up and plug their charger into it.