

## F5021/F5121/5011 Series Radios

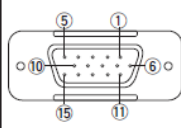
### 25 or 15-Pin Connector Signals (OPC-2078 or OPC-1939)

OPC-2078 Pin #	OPC-1939 Pin #	Radio PCB Side	Pin Name	Function Description	Active Logic	
					I/O	High/Low
7	1	4	GND	Common Ground	-	-
9	2	7	DISC	Discriminator output; 240mVrms +/-3dB at 1kHz 60% Dev, Impedance: 1kΩ	-	-
14	3	10	GND	Ground for IN	-	-
2	4	12	Ext I/O 4	Ext I/O Programmable, H:+5V, L: 0V	I/O	H/L
---	5	-	N/C			
15	6	2	Ext I/O 6	External I/O Programmable High: =5V ~ +30V, Low: 0V	I	H
			IGSW	Program in Ext I/O Option screen Active: Power ON, Inactive: Power OFF	-	-
22	7	5	Ext. I/O 7	External I/O programmable; H: 5V, L: 0V	I	H
			AFO	Solder bead I, cut K Audio volume controlled N/W: 100mVrms +/- 3dB at 1kHz 60% Dev	-	-
14	8	8	GND	GND for DISC	-	-
---	9	-	N/C	-	-	-
3	10	13	Ext I/O	Ext I/O Programmable High: 5V, Low: 0V	I/O	H/L
10	11	3	Ext I/O 11	Programmable Ext I/O Drive Current Max: 100mA Open Collector)	O	L
14	12	6	GND	GND for AFO	-	-
8	13	9	IN	External modulation input Note: this is a 10k impedance and is not Mic level. Solder beads <b>D</b> for Analog Voice and <b>F</b> for Analog Data. Note: there is currently no connection for Digital Mod Input. 240mVrms +/-3dB at 1kHz 60% Dev	-	-
19	14	11	Ext I/O 14	Programmable; High: 5V, Low: 0V	I/O	H/L
			EPTT	Set function in Ext I/O Option Screen High: PTT OFF; Low: PTT ON	-	-
11	15	1	VCC	Maximum Current: 0.3A	-	-

## OPC-1939/2078 Pinouts

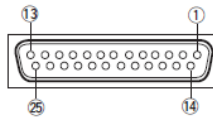
These cables gives you access to signals from the Main Board.

**OPTIONAL CABLE OPC-1939 PIN ASSIGNMENT**



- ① GND (COMMON)
- ② Det. AF OUT (1 kΩ)  
(240 mVrms ±3 dB at 1 kHz 60 % Dev.)
- ③ GND (INPUT)
- ④ Ext. I/O 4 (H:3 V, L: 0V) or TXD (RS-232C)
- ⑤ N/C
- ⑥ Ext. I/O 6 (H: 5–13.6 V, L: 0V) or Ignition SW (Active: Power ON, Inactive: Power OFF)
- ⑦ Ext. I/O 7 (H: 5 V, L: 0V) or AF OUT (100 mVrms ±3 dB at 1 kHz 60 % Dev.)
- ⑧ GND (Det. AF)
- ⑨ N/C
- ⑩ Ext. I/O 10 (H: 3 V, L: 0V) or RXD (RS-232C)
- ⑪ Ext. I/O 11 HORN OUT (100 mA max.; Open corrector)
- ⑫ GND (AF OUT)
- ⑬ Mod. IN (240 mVrms ±3 dB at 1 kHz 60 % Dev.)
- ⑭ Ext. I/O 14 (H: 3 V, L: 0V) or Ext. PTT (H: PTT OFF, L: PTT ON)
- ⑮ VCC OUTPUT (0.3 A max.)

**OPTIONAL CABLE OPC-2078 PIN ASSIGNMENT**

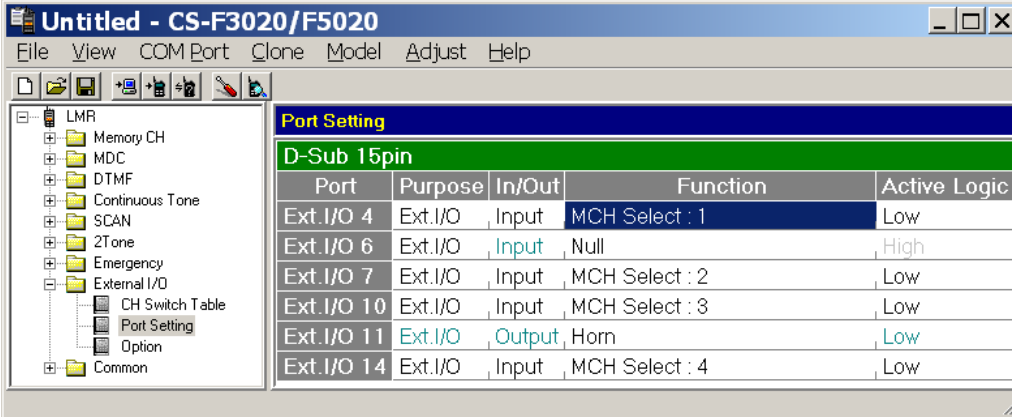


- ② Ext. Input 4 (H:5 V, L: 0V) or TXD (RS-232C)
- ③ Ext. I/O 10 (H: 5 V, L: 0V) or RXD (RS-232C)
- ⑦ GND (COMMON)
- ⑧ Mod. IN (240 mVrms ±3 dB at 1 kHz 60 % Dev.)
- ⑨ Det. AF OUT (1 kΩ)  
(240 mVrms ±3 dB at 1 kHz 60 % Dev.)
- ⑩ Ext. I/O 11 HORN OUT (100 mA max.; Open corrector)
- ⑪ VCC OUTPUT (0.3 A max.)
- ⑭ GND (INPUT)
- ⑭ GND (Det. AF)
- ⑭ GND (AF OUT)
- ⑮ Ext. I/O 6 (H: 5–13.6 V, L: 0V) or Ignition SW (Active: Power ON, Inactive: Power OFF)
- ⑰ Ext. I/O 14 (H: 3 V, L: 0V) or Ext. PTT (H: PTT OFF, L: PTT ON)
- ⑳ Ext. I/O 7 (H: 5 V, L: 0V) or AF OUT (100 mVrms ±3 dB at 1 kHz 60 % Dev.)

## F5021 Channel Steering Port Assignments

The F5021 uses BCD (Binary-Coded Decimal) for changing channels on the 15pin connector.

In the **Port Setting** window, assign **MCH Select 1-4** on any four pins (ports) available and set them high (or low, depending on the output of the tone remote adapter). **MCH Select** *does not* mean channel number on the repeater, it refers to BCD numbers (please look at the table that follows).



Port	Purpose	In/Out	Function	Active Logic
Ext. I/O 4	Ext. I/O	Input	MCH Select : 1	Low
Ext. I/O 6	Ext. I/O	Input	Null	High
Ext. I/O 7	Ext. I/O	Input	MCH Select : 2	Low
Ext. I/O 10	Ext. I/O	Input	MCH Select : 3	Low
Ext. I/O 11	Ext. I/O	Output	Horn	Low
Ext. I/O 14	Ext. I/O	Input	MCH Select : 4	Low

Port Setting Function                      BCD Equivalents

<b>MCH Select: 1</b>	+ 1 CH
<b>MCH Select: 2</b>	+ 2 CH
<b>MCH Select: 3</b>	+ 4 CH
<b>MCH Select: 4</b>	+ 8 CH

By using a combination of the BCD values, you can assign the desired memory channel to each **Ext CH No.** in the **CH Switch Table**. The **Ext CH No** column is *the sum* of the **MCH Select** inputs from the tone remote adapter. The **Move CH** is the channel you want to switch to in response to the **Ext CH No**.

BCD Sum of MCH Select Settings                      The Channel assigned to be moved

CH Switch Table	
Ext CH No	Move CH
0	1-1CH
1	1-2CH
2	1-3CH
3	1-4CH
4	1-5CH
5	1-6CH
6	1-7CH
7	1-8CH
8	1-9CH
9	1-10CH
10	1-11CH
11	1-12CH
12	1-13CH
13	1-14CH
14	1-15CH
15	1-16CH

Example 1:

The examples assume the port channels (**MCH Select**) are set to be active high, the tone remote BCD is set to “normally low”.

With **MCH Select 1, 2, 3, 4** set to high (**Port Setting** Window), the tone remote adapter sends a high signal to MCH Select 1 and 3, this is equivalent to a BCD of 1 + 4, which equals 5. In the **CH Switch Table** shown above, **Ext CH No 5** diverts the radio to Zone 1, Channel 6.

Example 2:

If a tone remote adapter sends a High signal to **MCH Select 1, 2, and 4**, this is equivalent to a BCD of  $1 + 2 + 8$ , which equals 11. In the table above, **Ext CH No 11** diverts the radio to Zone 1, Channel 12.

Note: the "move" Channels can be changed in programming as needed.