BridgeCom Systems BCM-220 / Signalink Interface

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Purpose

My purpose in building this interface was to have the capability to receive NBEMS messages for use in a disaster and disaster exercises. Since this was a new radio on the market, I did not find any information regarding the building of this interface.

Scope

This article is intended to provide information on the building of this interface and the associated jumpers for the Tigertronics Signalink. This article does not provide information on how to utilize the associated software. However, just for information, I did use a PC, with Windows 10 with FLDIGI, FLWRAP and FLMSG.

Introduction

While this is a relatively simple interface, I have written this article in the spirit of helping and assisting others in interfacing the BridgeCom Systems BCM-220 radio accessory port with a Tigertronics Signalink. To that end, it may be overly detailed for many, but will hopefully fulfill a broader audience.

Disclaimer

It was suggested that I add a disclaimer to this article, so here it is. You use the information in this article entirely at your own risk. I, (the author of this article) will not be held responsible for anything that happens as a result of using this information.

Description

There are 2 components to this interface. One is a custom cable to interface the radio accessory port to the Signalink unit and the other component is the associated jumpers internal to the Signalink.

Cable Build

The cable between the BridgeCom Systems BCM-220 radio and the Signalink consists of one RJ-45 connector wired as EIA-568B for the Signalink end, and one HD-15 connector for the radio end. The Signalink unit comes with a 3 foot cable with an RJ-45 connector for use at the Signalink end. This connector is pictured below for reference.

T-568B Standard Wiring

1 2 3 4 5 6 7 8

Pin #1

RJ-45
Male Plug
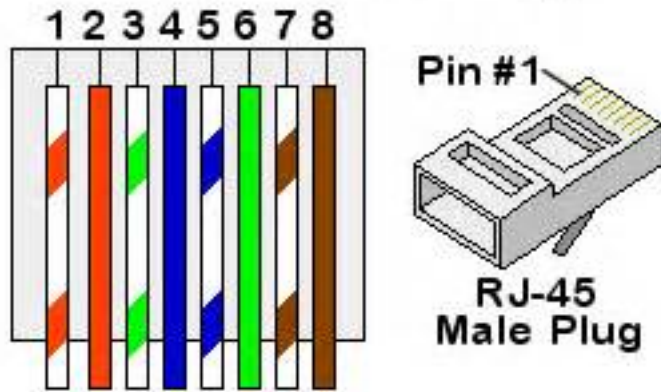
The other end of the Signalink cable is available in various configurations for different radios. Because there is no off-the shelf configuration available for the BCM-220, the end can be cut off and customized with the HD-15 connector. (It is also possible to purchase a version with a non-terminated end. However, this version was not stocked at the local Ham Radio Outlet and appeared only to be available by special order from the vendor directly. I wanted immediate gratification, hence locally purchased). The HD-15 connector needed is the one that comes with 3 rows of 5 offset male pins and is sourced in the Parts Used Section. Note that this connector is a solder cup version requiring the wires to be soldered into place. Other connector versions may be available. Pictures of this connector with the front and rear facing pin numbers are depicted below:

Pin 2

Pin 2

Pin 9

Pin 8

Pin 8

Pin 9

Pin 15

Pin 15
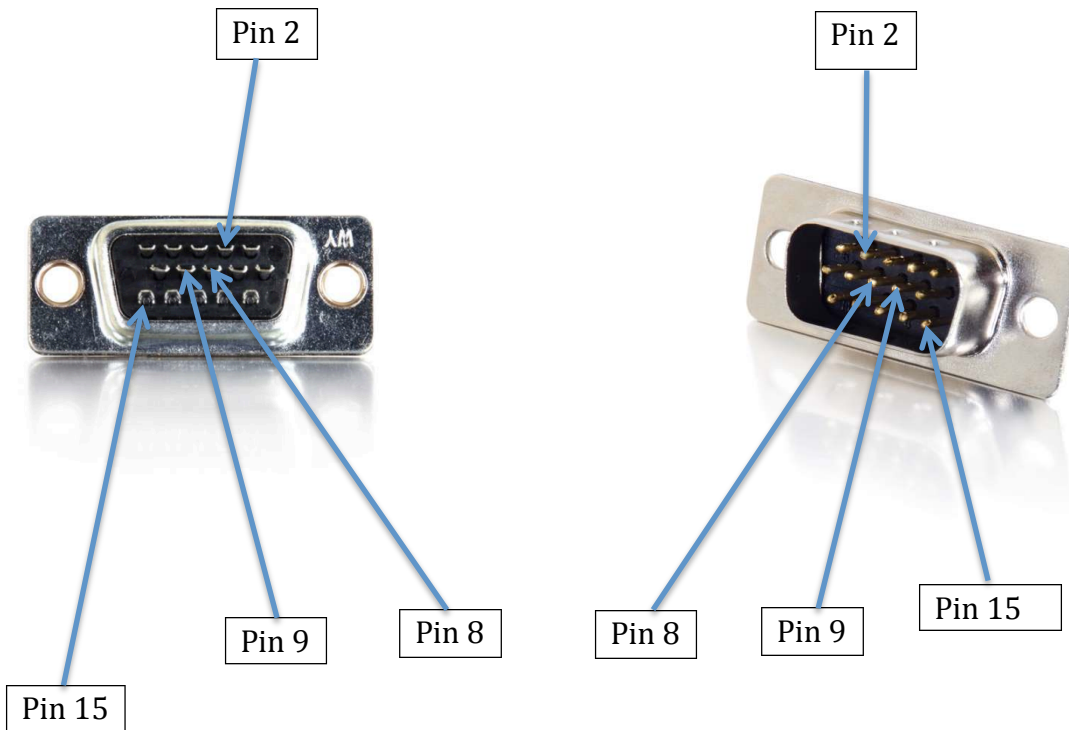
The table below is partial accessory connector pin-out information on the back of the BridgeCom BCM-220 radio. This information is from the BridgeCom Systems BCM-220 radio manual and is copied here for easy reference:

PIN	Signal
2	TX Data Input – (0-3V)
8	External PTT 3.3V: Active LOW
9	RX Audio Flat 100mV Output
10	COS Out – Carrier Off: 3.3V – On: 0V
15	GND

Now we have all of our reference material, we will wire the HD-15 connector. This interface uses only 4 wires. Pin 10 COS is not used for this interface. The wiring of the HD-15 connector is detailed below:

Note that pin numbers are inscribed on the HD-15 connector on both sides, but are printed small. The connections below are all, for my purposes, solder connections. There are four connections for the HD-15 as follows (refer to the pin numbers shown above):

Connect pin 2 of the HD-15 connector to pin 2 of the RJ-45 connector. This is the orange wire from the RJ-45 connector.

Connect pin 8 of the HD-15 connector to pin 3 of the RJ-45 connector. This is the Green/White wire.

Connect pin 9 of the HD-15 connector to pin 1 of the RJ-45 connector. This is the Orange/White wire.

Lastly, connect pin 15 of the HD-15 connector to pin 8 of the RJ-45 connector. This is the Brown wire.

A picture of the wired connector is shown below. (Note that the Green/White wire may appear to be blue/white or take on other color casts on some monitors and/or printers.)
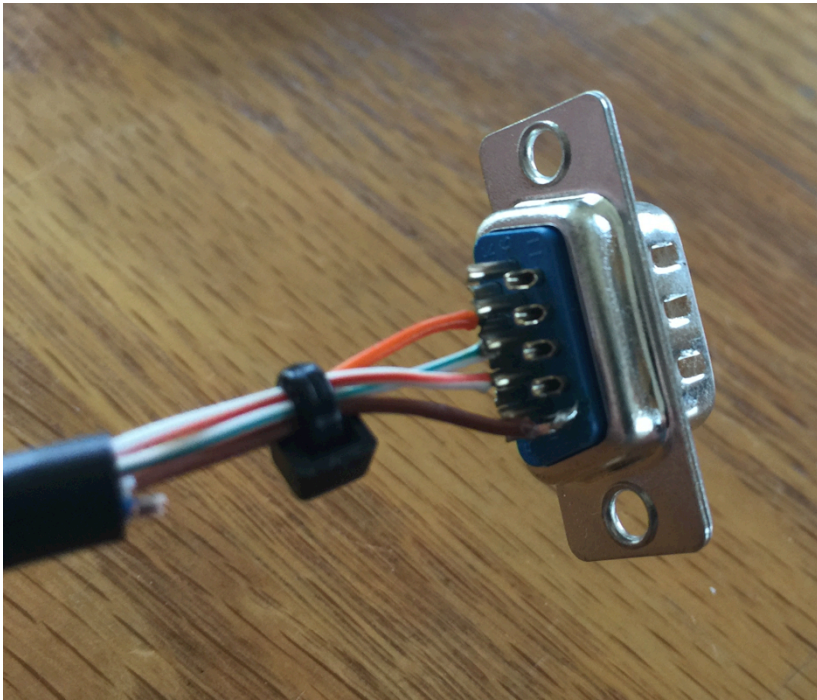
I used cable ties and added some electrical tape around the wire (at the cable entry to the connector) to secure the connector shell to the HD-15 connector. The completed cable is shown in the picture below:

Now we are ready to move on to installing the jumper wires into the Signalink unit described in the next section.

Internal Signalink Jumpers

The internal Signalink jumper socket is depicted below with the necessary jumpers shown:
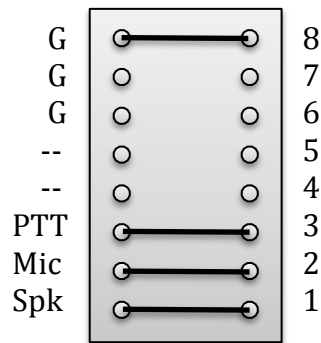
The jumper wires are included with the Signalink along with instructions. The above diagram is intended to depict the jumper wires for the BridgeCom Systems BCM-220 radio to be used with our newly created custom HD-15 cable.

There are many other jumper configurations on the Tigertronics (parent of Signalink) web site for other radios. You could use a header for this socket and put the jumpers on a removable header. Tigertronics sells headers for this purpose. It is just a 16 pin socket, so other sources are also available. This allows a single Signalink product to be used with different cable and jumper configurations to support multiple radios.

After the jumpers are installed, you may want to run a continuity check between the jumper socket and the HD-15 pins just to insure proper wiring before connecting to the radio and Signalink. Just plug the Signalink RJ-45 cable into the port with the Signalink box open and proceed with the test.

Parts Used

The parts I used are detailed listed below (links may have to be pasted into browser):

Radio – BridgeCom Systems BCM-220 mobile. http://www.bridgecomsystems.com
Accessory port on back of radio is used.

Signalink – Tigertronics, Model SL-USB-RJ45 (source- Ham Radio Outlet)
http://www.hamradio.com (RJ-45 both ends, just one end off)

HD-15 connector - StarTech.com C15HPSMMETAL Assembled HD15 Male Solder D-SUB Connector with Metal Backshell. Source – Amazon.com, https://www.amazon.com/StarTech-com-C15HPSMMETAL-Assembled-Connector
Backshell/dp/B00066HQKK/ref=pd_rhf_gw_p_img_5?_encoding=UTF8&psc=1&refRID=JFK6R1WMT72YRM STHGGY

Conclusion

I have been using this cable and setup for a few months now and successfully receiving NBEMS messages on 220 using the BridgeCom Systems BCM-220 radio, which satisfies my original purpose.

Please reference the radio and Signalink operations manuals for installation and configuration information.

I hope this article provides some assistance for you.

If you have some improvements or suggestions, please let me know. Thanks.