

How to Construct a Cable for the Garmin Rino

Thank you for obtaining a GPS connector for the Garmin Rino receiver from us. This document will provide you with the information you need to construct virtually any type of cable you may require, whether you want to connect your GPS to a computer, or to provide power to your GPS.

Please remember that this information is provided without warranty of any kind. Though every effort is being made to ensure that the information is accurate, we cannot be held responsible for any errors or omissions. If you construct a cable that doesn't work (or even worse, damages your GPS, computer, or yourself) as a result of a mistake in these instructions, we would appreciate learning about the error so that it can be fixed, but we cannot be held liable for any damages.

A note about supplying power to your GPS

The Rino receiver operates from three 1.5 volt batteries, and expects a similar voltage when external power is applied. You can use the connectors to supply power to your GPS (in addition to data, if required), but please ensure that no more than 4.5 volts DC is applied. A voltage higher than this will almost certainly damage your GPS.

This means that you cannot power your GPS directly from a 12 VDC lighter adapter plug unless you provide a regulation circuit to reduce the voltage to somewhere in the neighbourhood of 4.5 volts.

Assembling the Connector

Slip the ring over a four conductor cable so that it is in position to hold the connector together when it is assembled. Then, solder or crimp wires from the cable to each of the four pins. Insert each of the pins into the appropriate holes of the cylindrical pin holder (see the pinout diagram to the right and wiring charts on the reverse side of this document for details).

Insert the cylindrical assembly into one side of the outer shell. At this point, it may be useful to add a bit of glue or epoxy to the inside of the connector to prevent the pins from pushing into the connector when it is plugged into the GPS.

Then, hook the tops of the two sides together, and slide the ring over the cable outlet of the assembly. This will help to hold everything together. The finished GPS end of the cable should appear as follows:

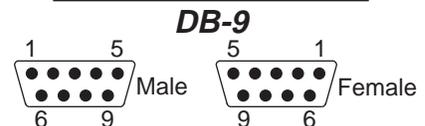


Now, you can solder or crimp the wires from the cable to the appropriate pins on your serial connector (DB-9, DB-25, or Mini DIN-8). Refer to the "Connector Pinouts and Signals" diagrams, as well as the following electrical construction guidelines to wire your connector appropriately.

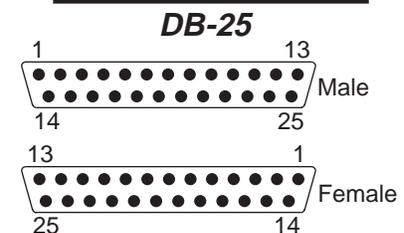
If you do wish to provide power to your GPS, note that the power ground is shared with the signal ground. Ensure that the power you provide the unit with is limited to 3.25 volts DC, as mentioned, and provide an inline fuse so that if something shorts out, your cable, computer, or GPS is not damaged.

Connector Pinouts and Signals

Diagrams represent the view of the connector as seen from the side that plugs into the computer or GPS. In other words, this is the side of the connector that you do NOT attach wires to. Keep this in mind when constructing your cable.

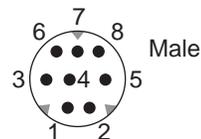


Pin 1	DCD	Carrier Detect
Pin 2	RxD	Receive Data
Pin 3	TxD	Transmit Data
Pin 4	DTR	Data Terminal Ready
Pin 5	GND	Signal Ground
Pin 7	RTS	Ready to Send
Pin 8	CTS	Clear to Send



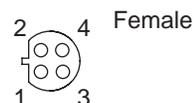
Pin 1	Shield	EMI Shield
Pin 2	TxD	Transmit Data
Pin 3	RxD	Receive Data
Pin 4	RTS	Ready to Send
Pin 5	CTS	Clear to Send
Pin 7	GND	Signal Ground
Pin 8	DCD	Carrier Detect
Pin 20	DTR	Data Terminal Ready

Mini Din-8



Pin 1	HSKo	Handshake Output
Pin 2	HSKi	Handshake Input
Pin 3	TxD-	Transmit Data -
Pin 4	SG	Signal Ground
Pin 5	RxD-	Receive Data -
Pin 6	TxD+	Transmit Data +
Pin 7	GPi	General purpose Input
Pin 8	RxD+	Receive Data +

Rino Connector



1	V+	Power
2	RxD	Receive Data
3	TxD	Transmit Data
4	Gnd	Signal/Power Ground

Constructing a Data Cable for the IBM with a DB-9 Serial Connector

First, determine whether or not you need a male or female DB-9 to plug into the serial port of your computer (most will require female). Use the pinout diagrams on the preceding page for the DB-9 and GPS connectors, and connect the following pins:

GPS	DB-9
Pin 2 (RxD)	Pin 3 (TxD)
Pin 3 (TxD)	Pin 2 (RxD)
Pin 4 (Gnd)	Pin 5 (Gnd)

Constructing a Data Cable for the IBM with a DB-25 Serial Connector

First, determine whether or not you need a male or female DB-25 to plug into the serial port of your computer. Use the pinout diagrams on the preceding page for the DB-25 and GPS connectors, and connect the following pins:

GPS	DB-25
Pin 2 (RxD)	Pin 2 (TxD)
Pin 3 (TxD)	Pin 3 (RxD)
Pin 4 (Gnd)	Pin 7 (Gnd)

Constructing a Data Cable to connect two Garmin GPS receivers

Obtain 2 GPS connectors and wire them as follows:

GPS 1	GPS 2
Pin 2 (RxD)	Pin 2 (TxD)
Pin 3 (TxD)	Pin 3 (RxD)
Pin 4 (Gnd)	Pin 1 (Gnd)

Constructing a Data Cable for the Macintosh

The Macintosh serial port can deal with either RS-232 or RS-422 signals, and uses the Mini DIN-8 connector. Wire the cable as follows:

GPS	Mini DIN-8
Pin 2 (RxD)	Pin 3 (TxD-)
Pin 3 (TxD)	Pin 5 (RxD-)
Pin 4 (Gnd)	Pin 4 (Gnd)

If your GPS emits a true RS-232 signal (most don't), tie Pin 8 on the Mini DIN-8 to Pin 4 to ground it.

Sending in Your Pledge

If you ordered GPS connectors from Syzygy Research & Technology for a pledge, you can honour that pledge by using the self-addressed envelope provided. Please make sure that your name is clearly marked on the return address of the envelope, as well as the cheque, so that we are sure who the pledge payment has come from. If you are sending in a cheque, please make it payable to "Syzygy Research & Technology".

If you would rather honour your pledge by credit card, you can visit our web site (<http://www.syz.com/gps/>) to use our secure server, telephone us, or send in the information by mail. If sending credit card information by mail, please include the following details. Of course, we are always anxious to hear any comments and experiences you may have! Thank you once again for your interest in GPS connectors and the pledge concept.

Name: _____
Card number: _____
Expiry Date: _____
Pledge Amount: _____
Signature: _____



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