

Ranger Instruments

Assembly Manual

0080 RS232-RS485 converter.

0080-800 Rev1.2

RANGER INSTRUMENTS ASSEMBY MANUAL

0080 RS232-RS485 Assembly

0080-800 Rev1.2

Sections:

1. AMENDMENT LOG	3
2. ASSEMBLY INSTRUCTIONS	4
3. BILL OF MATERIALS	7

1. **Amendment Log**

Action	Date	Signed
Original release	2/11/2000	DS
Added pics, updated jack screw instruction	26/2/2003	MR
Added BOM	04/02/2005	SL

2. Assembly Instructions

2.1. Board Assembly

All componentry is installed in house. This includes all surface mount and leaded components. One half of the DB9 backshell must also be drilled to accept the power socket. Refer to special instructions below for drilling guidelines.

2.2. Special Instructions

Follow the steps below for each unit.

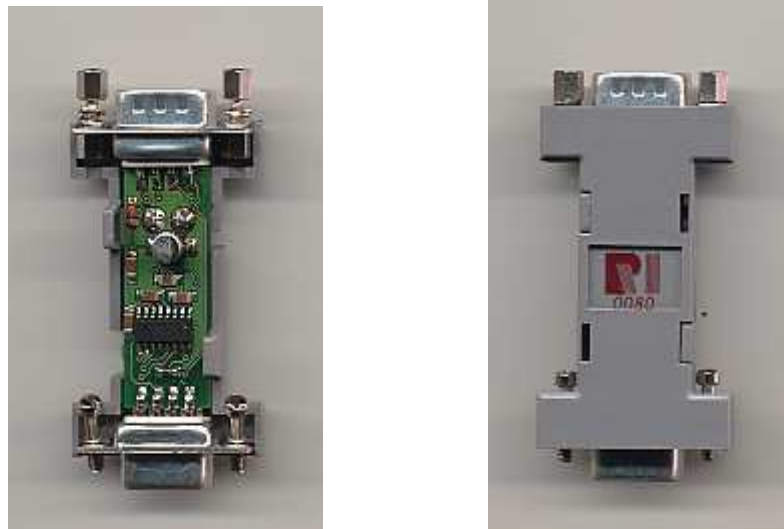
1. Check the circuit board for version. Revision 2.2 boards require modification. In a revision 2.2 board cut the track leading to pin 8 of J1 and join the track to pin 7 of J1.
2. Install all parts on the board except the three connectors J1, J2 and J6. Follow standard soldering procedures and inspect board for dry joints and incorrectly positioned components before proceeding.
3. Install J6 into a drilled backshell being sure to include an o-ring spacer between the socket and case. Tighten the socket nut leaving the socket pins perpendicular to the long edge of the case with the long pin on the right with the socket back facing you to the top
4. Push J1 and J2 onto the circuit board but do not solder. Seat the entire assembly into the case with the J6 installed and ensure that the two DB9 connectors and the pins from J6 are firmly seated. Solder two pins of each DB9 connector. DO NOT solder the power connector yet.
5. Remove the board from the case and solder all remaining DB9 pins. Check both sides of the board again for assembly or manufacturing errors.
6. Replace the assembly in the case and ensure the pins for J6 are both seated in their mounting holes. Solder the two pins for J6. Install the non-drilled half of the cover.
7. On the power socket case place the sticker indicating 6-12v in the centre directly below the outlet. Place sticker RS-422 at the end of the case where the male connector is situated. Place sticker RS-232 at the end of the case where the female connector is situated. On the non drilled case place the sticker RI 0080 in the centre. (See diagram 1.1)

Diagram 1.1.



8. Jackscrews are to be screwed into the RS-422 connector. (Male connector). A spring washer and flat washer is to be used with each screw and tightened with loctite. Standard screws are to be used with the RS-232 connector. (See diagram 1.2.).

Diagram 1.2.



Cover Drilling Instructions.

IMPORTANT SAFETY INFORMATION

This procedure requires the use of the milling machine located in the workshop. This machine can be dangerous if used incorrectly, if you are unsure how to operate the machine ask for instruction. Perform all adjustments and setup with the machine switched off.

1. To drill the hole for connector J6 requires the use of the milling machine in the workshop and the drilling jig TE106.
2. Clamp the jig to the bed of the milling machine using at least two clamps with the aluminium strip on top of the jig to the right. Ensure that the jig is firmly fixed to the bed.
3. Place a 5/16 drill bit in the drill chuck and tighten.
4. Place the first DB9 cover over the aluminium strip on top of the jig, the cover should seat firmly over the strip and not be free to move. Place the setup key, attached to the jig, over the blank cover with the hole on the short end of the jig. **ENSURE THE MACHINE IS TURNED OFF.**
5. Use the wheels on the front and sides of the machine to move the bed, with the machine still off, so that the drill bit is lined up precisely with the hole in the key. Once the drill is aligned lock the bed with the screws located under the front and right hand side of the bed.
6. Remove the key from the jig.
7. Put on safety glasses, start drill and slowly with even pressure drill the first cover.
8. Remove the cover from the jig and locate the next cover on the jig. As long as the bed is not moved this process can be repeated for as many covers as necessary. If for some reason the bed or jig is moved the drill must be stopped and the alignment procedure using the key must be repeated. To avoid injury and damaging the key **NEVER** drill through the key. Always remove it before starting the machine.
9. Once drilling is complete stop machine and remove the drill bit. Unlock the machine bed and unclamp jig. Be sure to replace the key onto the jig using the stud and nut on the bottom left hand side of the jig. Return jig to production area.

2.3. Post Assembly

- Check each unit for cosmetic defects or damage. Install labels and put aside for testing.

3.0 Bill of Materials

Stock code	Description	Drawing office no.	U/M Cat.	Rev Rel	Ebq	Pan	Lead Time						
0080	Converter, RS-232 to 485		EA M		50.000	1.000	82						
Lv Component	Seq Description	Quantity per	U/M	On-date	Off-date	Qty	Scrap %	Rev Rel	Op	Cat	Prt	Lt	
01 510033	PACK I/H MANUAL 0080 CONVERTER USER	1.0000	EA						5	B	N	Y	15
01 520131	PACK LABEL 0080 CONVERT 232-485 PKG	1.0000	EA						5	B	N	Y	15
01 830026	PACK F/S BAG PLSTC CLR SEAL 100x76	1.0000	EA						5	B	N	Y	7
01 620036	PTH PCB-ASSY 0080 MAIN BD	1.0000	EA						2	G	N	Y	79
02 210073	PTH CONN DB9 FEMALE SOLDER-LINE	1.0000	EA						2	B	N	Y	60
02 210082	PTH CONN DC-PWR SKT 2.1MM ROUND	1.0000	EA						2	B	N	Y	60
02 210099	PTH CONN DB9 MALE SOLDER-LINE R/R	1.0000	EA						2	B	N	Y	60
02 420097	PTH O-RING 7/32" x 1/16" 0.070 ND	1.0000	EA						2	B	N	Y	15
01 610026	SMT SMT-ASSY 0080 MAIN BD	1.0000	EA						1	G	N	Y	76
02 310025	PCB PCB 0080 RS232 to 485 Bd V2.5	1.0000	EA						1	B	N	Y	30
02 110009	SMT CAP 100N 10% 50V X7R SMT 1206	8.0000	EA						1	B	N	Y	75
02 110017	SMT CAP 10U 20% 35V ELEC SMT	1.0000	EA						1	B	N	Y	75
02 130016	SMT RES 1K0 1% 50PPM SMT MINMELF	2.0000	EA						1	B	N	Y	75
02 170006	SMT DIODE SIGNL BAS32 SMT SOD80C	2.0000	EA						1	B	N	Y	70
02 170019	SMT IC VOLT-REG 5V 78L05 SMT S08	1.0000	EA						1	B	N	Y	60
02 170065	SMT IC ANLG-SW MAX4544 SMT SOT23-6	1.0000	EA						1	B	N	Y	75
02 170071	SMT IC RS232 TCVR ESD15KV SMT XXXX	1.0000	EA						1	B	N	Y	75
02 170072	SMT IC RS485 TCVR ESD15KV SMT SO-8	2.0000	EA						1	B	N	Y	60
01 420081	UNIT SCREW HEX STANDOFF UNC 4#40	2.0000	EA						3	B	N	Y	30
01 430017	UNIT CASE DB9-TO-DB9 PLASTIC	1.0000	EA						2	B	N	Y	30
01 520041	UNIT LABEL 0080 FUNCTION STICKERS	1.0000	EA						5	B	N	Y	15

End of report