



Sea-Bird Electronics, Inc.  
1808 136th Place NE  
Bellevue, WA 98005  
USA

Phone: (425) 643-9866  
Fax: (425) 643-9954  
E-mail: seabird@seabird.com  
Web: www.seabird.com

**APPLICATION NOTE NO. 46**

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**DC OPTO-ISOLATED RS-485 to RS-232 JUNCTION BOX P/N 90238**

**INSTRUCTIONS FOR APPLICATION AND USE**

The Sea-Bird Electronics DC Opto-Isolated RS-485 to RS-232 Junction Box is a multi-purpose accessory that provides a convenient power and/or data interface between Sea-Bird instruments with an RS-485 interface and the user's computer serial RS-232 port. The junction box is DC powered (10 to 35 VDC) and features optical data coupling and an isolated power supply to permit working without interference from shipboard power circuits and grounds. It can supply up to 2 amperes at +15 volts DC to power an SBE 16 and auxiliary sensors.

The DC Opto Box RS-485 is intended for the following uses:

1. It provides an interface between the instrument's RS-485 port and the user's computer serial RS-232 port.
2. It optically isolates a user's AC-powered computer from a real-time instrument.
3. It provides power to the instrument and associated auxiliary sensors, without relying on internal batteries. The maximum cable length will be limited by the voltage drop due to the cable's resistance and the operating current requirement.

Sea-Bird's instruments, when not equipped with the internal opto-isolated line driver option, can receive external power through a data I/O connector with an external power pin which is diode-OR'd with the internal battery supply. Since the 15 volts from the junction box is greater than the normal battery voltage, the instrument will automatically draw power from the junction box, not its internal batteries.

Two cables are supplied with the junction box:

- 1) 2.5 m (8.2 ft) cable with 4-pin MS type connector to 4-pin RMG type underwater connector (P/N 80437) used to connect the instrument directly to the junction box.
- 2) 1.5 m (4.9 ft) cable with DB-25P to DB-25S (P/N 80072) for connecting the junction box to a computer's serial interface (a 25-pin to 9-pin adapter [P/N 17030] is supplied for use with 'AT' and laptop computers).

DC power (10 to 35 VDC) is connected to the junction box via the two-pin MS style connector on the junction box. A mating connector (P/N 17315) with clamp and boot has been supplied with the unit. Connect positive power to pin B and negative power to pin A.

To operate your RS-485 instrument with the DC Opto-Isolated Junction Box, connect it to the junction box, connect the junction box to the computer, and connect DC power. Turn the junction box power ON with the toggle switch (the red L.E.D. should light up). Run the terminal program and communicate with the instrument via the computer keyboard.

