www.reelschematic.com

GARMIN®

# GSD 21 Sounder Module

*installation instructions*



www.reelschematic.com

© Copyright 2006 Garmin Ltd. or its subsidiaries

Garmin International, Inc.
1200 East 151st Street,
Olathe, Kansas 66062, U.S.A.
Tel. 913/397.8200 or 800/800.1020
Fax 913/397.8282

Garmin (Europe) Ltd.
Unit 5, The Quadrangle,
Abbey Park Industrial Estate,
Romsey, SO51 9DL, U.K.
Tel. 44/0870.8501241
Fax 44/0870.8501251

Garmin Corporation
No. 68, Jangshu 2nd Road,
Shijr, Taipei County, Taiwan
Tel. 886/2.2642.9199
Fax 886/2.2642.9099

All rights reserved. Except as expressly provided herein, no part of this manual may be reproduced, copied, transmitted, disseminated, downloaded, or stored in any storage medium, for any purpose without the express prior written consent of Garmin. Garmin hereby grants permission to download a single copy of this manual onto a hard drive or other electronic storage medium to be viewed and to print one copy of this manual or of any revision hereto, provided that such electronic or printed copy of this manual must contain the complete text of this copyright notice and provided further that any unauthorized commercial distribution of this manual or any revision hereto is strictly prohibited.

Information in this document is subject to change without notice. Garmin reserves the right to change or improve its products and to make changes in the content without obligation to notify any person or organization of such changes or improvements. Visit the Garmin Web site (www.garmin.com) for current updates and supplemental information concerning the use and operation of this and other Garmin products.

Garmin®, DCG®, CANet ™, Ultrascroll™, and Dynacolor™ are trademarks and registered trademarks of Garmin Ltd. or its subsidiaries and may not be used without the express permission of Garmin.

## *Safety Information*

**WARNING:** This product, its packaging, and its components contain chemicals known to the State of California to cause cancer, birth defects, or reproductive harm. This Notice is being provided in accordance with California's Proposition 65. If you have any questions or would like additional information, please refer to our Web site at http://www.garmin.com/prop65.

## *Limited Warranty*

This Garmin product is warranted to be free from defects in materials or workmanship for one year from the date of purchase. Within this period, Garmin will at its sole option repair or replace any components that fail in normal use. Such repairs or replacement will be made at no charge to the customer for parts or labor, provided that the customer shall be responsible for any transportation cost. This warranty does not cover failures due to installation errors, abuse, misuse, accident, or unauthorized alteration or repairs.

THE WARRANTIES AND REMEDIES CONTAINED HEREIN ARE EXCLUSIVE AND IN LIEU OF ALL OTHER WARRANTIES EXPRESS OR IMPLIED OR STATUTORY, INCLUDING ANY LIABILITY ARISING UNDER ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, STATUTORY OR OTHERWISE. THIS WARRANTY GIVES YOU SPECIFIC LEGAL RIGHTS, WHICH MAY VARY FROM STATE TO STATE.

IN NO EVENT SHALL GARMIN BE LIABLE FOR ANY INCIDENTAL, SPECIAL, INDIRECT OR CONSEQUENTIAL DAMAGES, WHETHER RESULTING FROM THE USE, MISUSE, OR INABILITY TO USE THIS PRODUCT OR FROM DEFECTS IN THE PRODUCT. Some states do not allow the exclusion of incidental or consequential damages, so the above limitations may not apply to you.

Garmin retains the exclusive right to repair or replace the product or offer a full refund of the purchase price at its sole discretion. SUCH REMEDY SHALL BE YOUR SOLE AND EXCLUSIVE REMEDY FOR ANY BREACH OF WARRANTY.

Products sold through online auctions are not eligible for rebates or other special offers from Garmin. Online auction confirmations are not accepted for warranty verification. To obtain warranty service, an original or copy of the sales receipt from the original retailer is required. Garmin will not replace missing components from any package purchased through an online auction.

To obtain warranty service, contact your local Garmin authorized dealer or call Garmin Product Support for shipping instructions and an RMA tracking number. The product should be securely packed with the tracking number clearly written on the outside of the package. The product should then be sent, freight charges prepaid, to any Garmin warranty service station. A copy of the original sales receipt is required as the proof of purchase for warranty repairs.

February 2006 Part Number 190-00630-00 Rev. A Printed in Taiwan

www.reelschematic.com



# INTRODUCTION

Thank you for choosing the Garmin GSD 21. The GSD 21 is a CANet™ compatible, remote sounder module designed to include powerful features found in other Garmin sounders, including Color Depth Control Gain (DCG®), Dynacolor™, and auto gain features technology. When used with compatible Garmin chartplotters, it provides full-featured depth sounder functions. It can interface to multiple head units, providing complete sounder control from multiple stations, including transmit frequency, range, and gain adjustments. To get successful results from your GSD 21, take time to read through this installation guide. If any items are missing, please contact your Garmin dealer immediately.

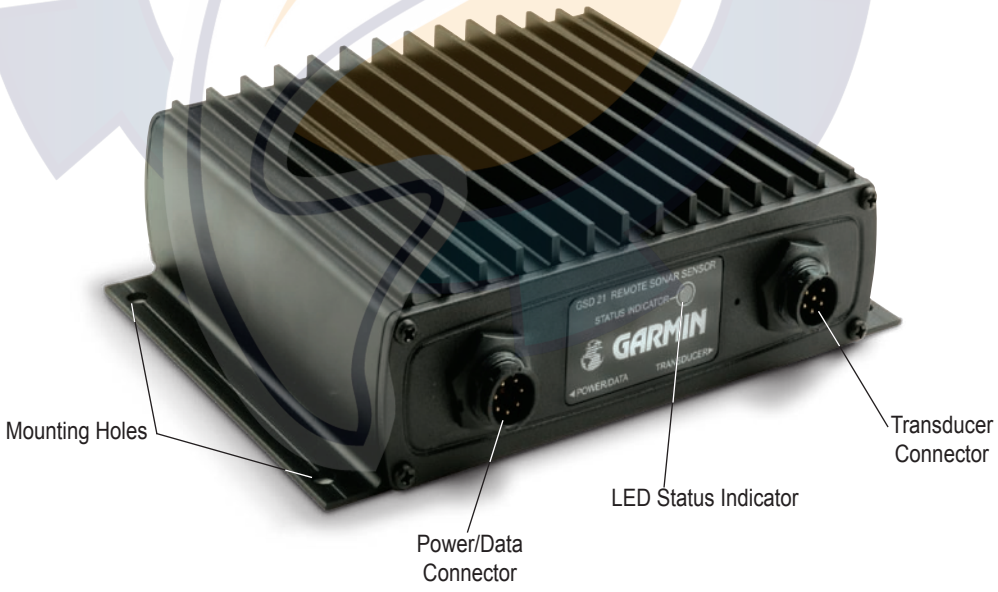
## Included Equipment:

- GSD 21 Sounder Module
- 6 ft (0.30 m) Power/Data Cable
- 40 ft (12.19 m) CANet/Serial Extension Cable
- 2 CANet Terminators
- 7 3-Wire Connectors
- *The GSD 21 Sounder Module Installation Instructions*

## Optional Transducers

The transducer acts as the eyes and ears of your new sonar. The transducer transmits sound waves toward the bottom in a cone shape. The larger the cone angle, the larger the coverage area at a given depth.

Proper transducer selection and installation are critical to the operation of your unit. Since mounting locations vary, see your local dealer or contact Garmin Product Support for further information. A full list of transducers can be found at www.garmin.com.



www.reelschematic.com


# Installation Instructions

The GSD 21 must be properly installed according to the following CANet or Serial installation instructions to get the best possible performance. To complete the installation, you need appropriate fasteners. **If you experience difficulty with the installation, contact Garmin Product Support.**

CANet is a high-speed sonar network. If you are connecting a CANet compatible unit, follow the CANet installation instructions. Using the CANet installation optimizes the performance of the CANet-compatible units. CANet compatible unit devices features, such as Ultrascroll™, are affected if a serial installation is used.

The module should be mounted in an out-of-the-way location that is dry and well ventilated. Avoid mounting the module where it can be submerged in liquids or exposed to extreme temperatures. Be sure to mount the module so that the LED is visible.

**NOTE:** When using the chartplotter and GSD 21 on battery power only (engines off) for extended periods of time, be sure there is enough available amperage to run the units for the time period. Running other onboard devices at the same time can lower the available amperage, causing the chartplotter and/or GSD 21 to shut off. Check with your local marine dealer/installer if problems persist.

### To install the GSD 21 sounder module:

1. After the location is chosen, place the unit. Be sure to allow enough clearance for attaching the cables. Using the module as a template, mark the location of the four mounting holes. If needed, additional mounting holes can be drilled in the side mounting flanges of the module.
2. Attach the GSD 21 to the mounting location using appropriate fasteners.
3. Mount the transducer according to the instructions provided with the transducer.
4. Route the cables according to the CANet or Serial instructions to the mounting locations of the display unit. Use the appropriate tie-wraps, fasteners, and sealant to secure the cable along the route and through any bulkhead or deck.
5. After installing the GSD 21 module, connect the power/data and transducer cables to the appropriate receptacle.
6. Refer to the following CANet and serial wiring diagrams for connecting the GSD 21 to compatible Garmin units.

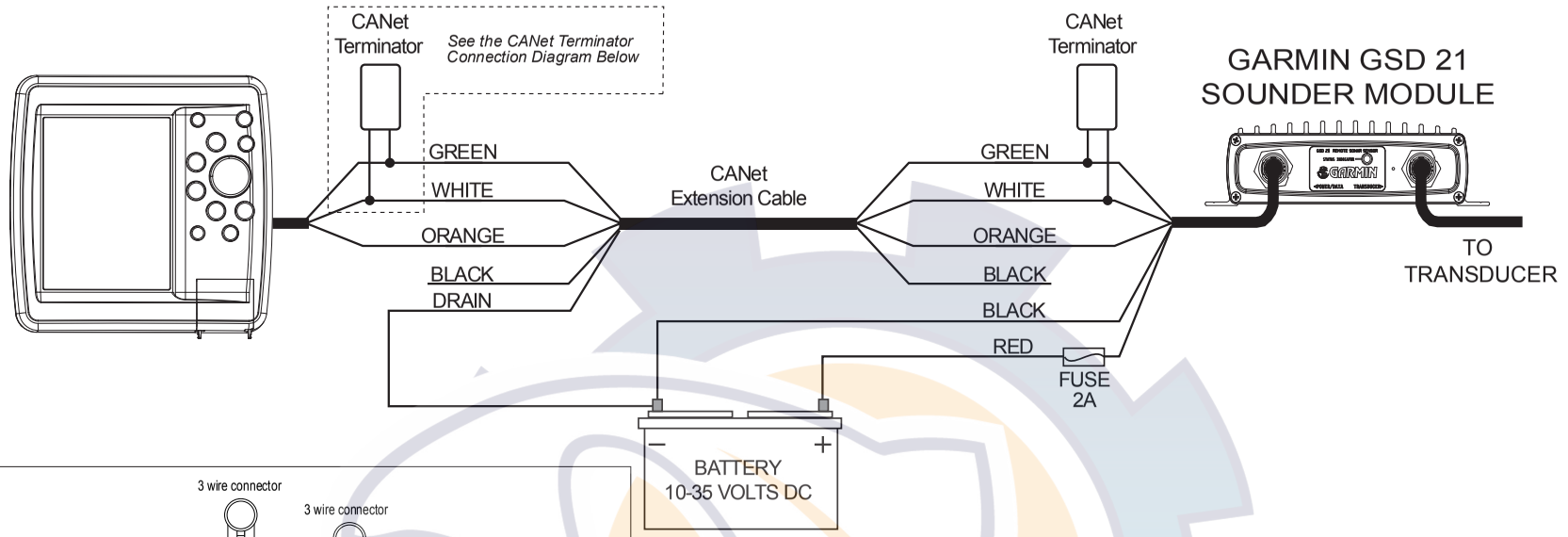
**NOTE:** You can extend the CANet wiring of the GSD 21 power/data cable up to 80 ft (24.38 m) total length using the CANet Connections Kit.

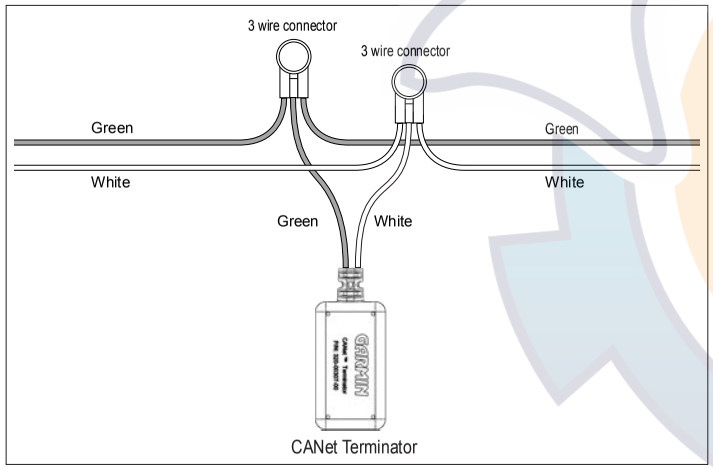
**NOTE:** You can extend the serial/power wiring of the GSD 21 power/data cable up to 100 ft (30 m) total length. Use the CANet Extension Cable or 22 AWG, 4-conductor shielded cable for data connections and 18 AWG for power. Transducer cable extensions are available through your Garmin dealer.

**WARNING:** Do not connect or disconnect the transducer while the MFD and GSD 21 are connected and turned on . Doing so might damage the GSD 21.

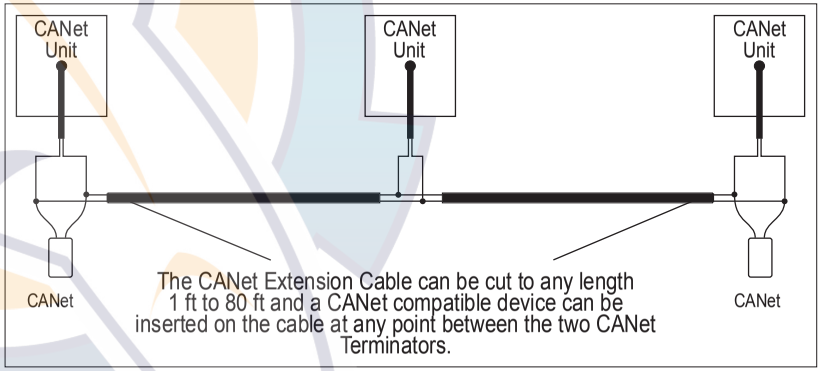
www.reelschematic.com

# CANet Wiring for the Garmin GSD 21




**CANet Terminator Connection**



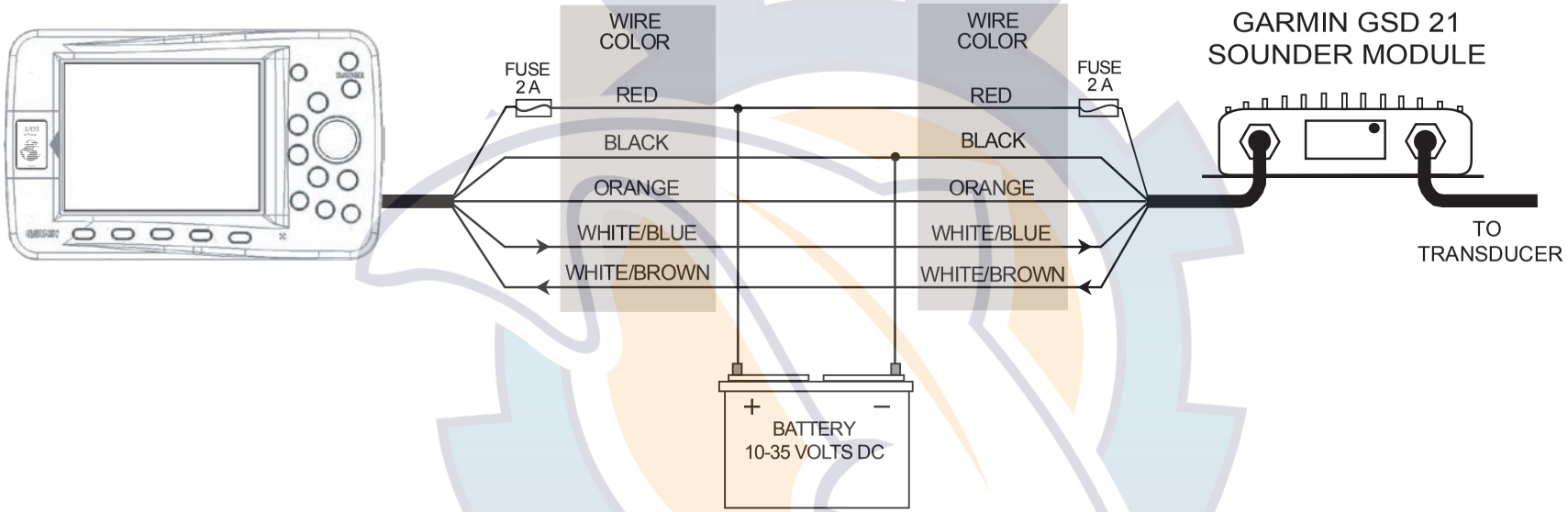

**Multiple CANet Unit Connection**

**Notes:**

1. Power and ground wires require 18 AWG. You can extend the CANet wiring of the GSD 21 power/data cable up to 80 ft (24.38 m) total length using the CANet Connections Kit.
2. The CANet Extension Cable can support a maximum of two display units and one sonar unit.
3. The maximum length of cable from the CANet Extension Cable to the sonar or display units is 6 ft.
4. Refer to the chartplotter's installation instructions for wiring the GPS 17 sensor and other devices.
5. Ground the drain wire at the first display unit. Do not ground the drain wire on the subsequent display units or sonar unit.
6. The CANet Extension Cable Black wire is reserved for future use. When inserting a CANet unit on the CANet Extension Cable, reconnect all wires according to their color.
7. When crimping the 3-wire connector, use a standard pair of pliers and make sure the button is fully depressed into the connector.

www.reelschematic.com

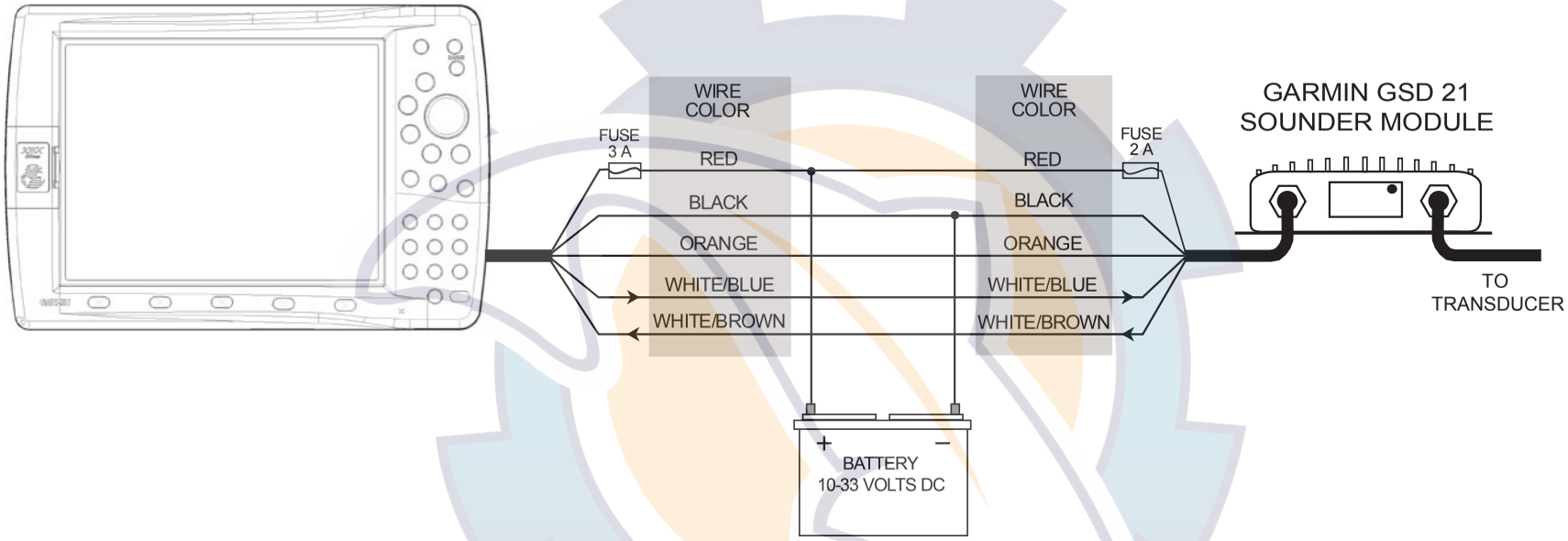
# Serial Wiring for the Garmin GSD 21 to a Single GPSMAP 3005C/3205




**Notes:**

1. You can extend the serial/power wiring of the GSD 21 power/data cable up to 100 ft (30 m) total length. Use the CANet Extension Cable or 22 AWG, 4-conductor shielded cable for data connections and 18 AWG for power.
2. Ground the drain wire at the display unit. Do not ground the drain wire on the sonar unit.
3. Refer to the chartplotter's specific Installation Instructions for wiring the GPS 17 sensor and other devices.
4. When crimping the 3-wire connector, use a standard pair of pliers and make sure the button is fully depressed into the connector.

# Serial Wiring for the Garmin GSD 21 to a Single GPSMAP 2006/2006C/2010/2010C/2106/2110/2206/2210/3006C/3010C/3206/3210



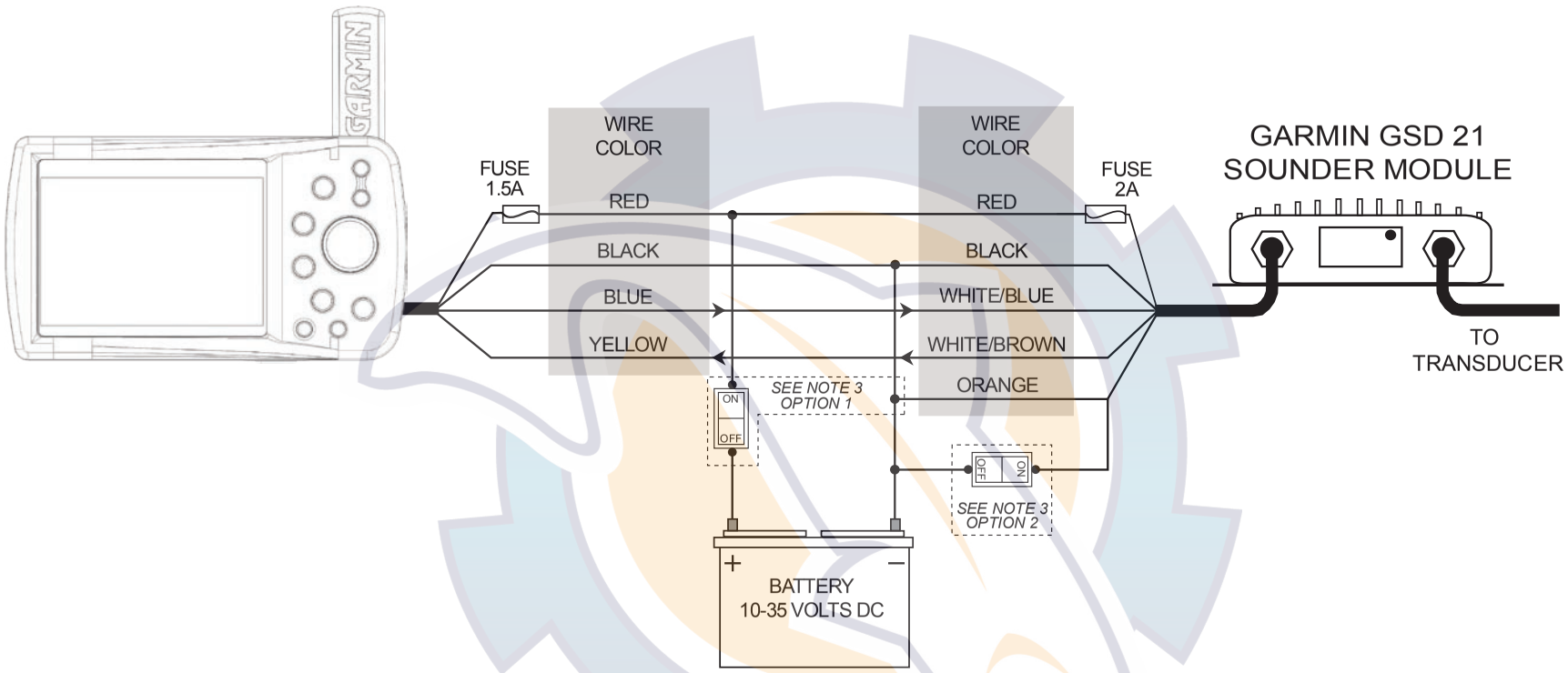

**Notes:**

1. You can extend the serial/power wiring of the GSD 21 power/data cable up to 100 ft (30 m) total length. Use the CANet Extension Cable or 22 AWG, 4-conductor shielded cable for data connections and 18 AWG for power.
2. Ground the drain wire at the display unit. Do not ground the drain wire on the sonar unit.
3. Refer to the chartplotter's specific Installation Instructions for wiring the GPS 17 sensor and other devices.
4. When crimping the 3-wire connector, use a standard pair of pliers and make sure the button is fully depressed into the connector.

www.reelschematic.com

www.reelschematic.com

# Serial Wiring for the Garmin GSD 21 to a Single GPSMAP 276C/296/376C/396



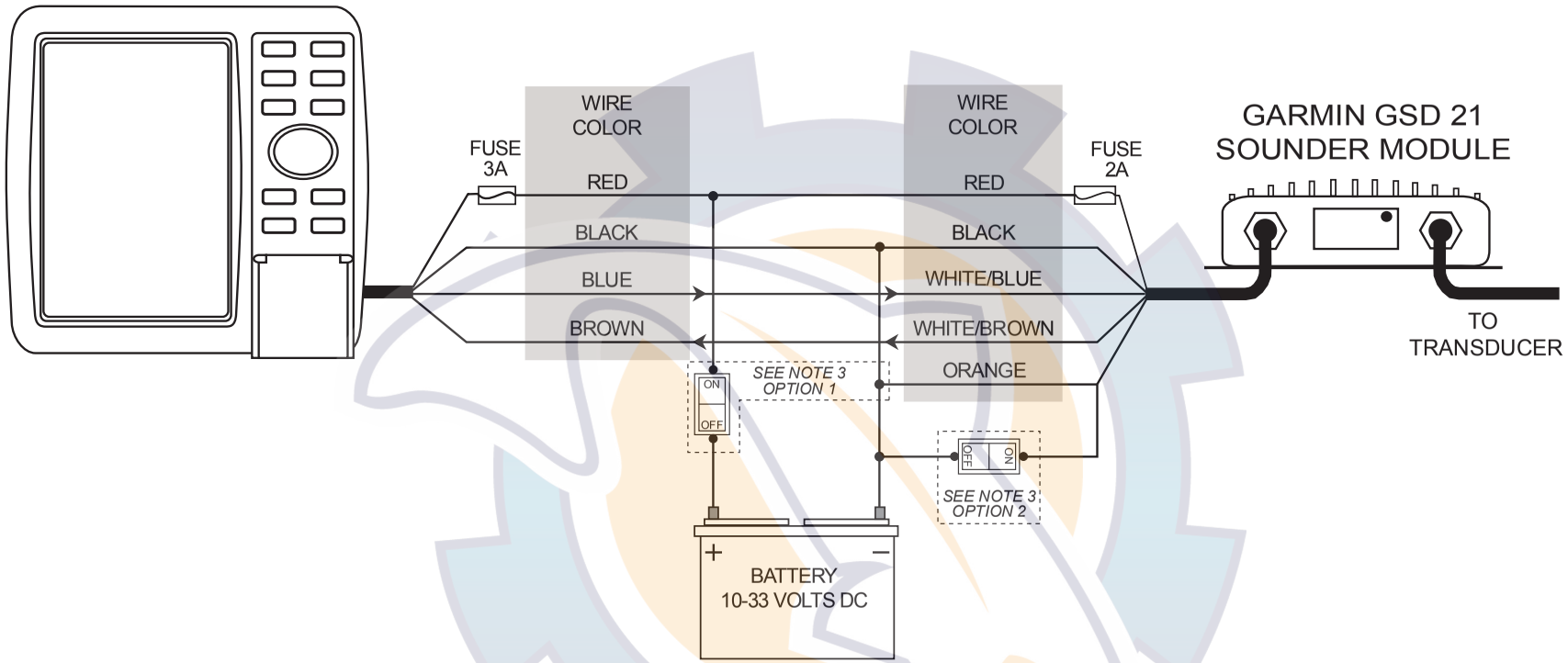

**Notes:**

1. You can extend the serial/power wiring of the GSD 21 power/data cable up to 100 ft (30 m) total length. Use the CANet Extension Cable or 22 AWG, 4-conductor shielded cable for data connections and 18 AWG for power.
2. Ground the drain wire at the display unit. Do not ground the drain wire on the sonar unit.
3. The Orange wire must be pulled low (-) in order for the GSD 21 to power on.

   Option 1: If the GSD 21 is wired to a circuit that is switched on the Red (+) wire, connect the Orange wire to ground. The GSD 21 and the GPSMAP 276C/296/376C/396 turn on or off when power is applied or removed form the Red wire.

   Option 2: If the Red (+) wire is applied directly to a power source, install a switch between the Orange wire and ground. The GSD 21 turns on or off when ground is applied or removed from the Orange wire.
4. When crimping the 3-wire connector, use a standard pair of pliers and make sure the button is fully depressed into the connector.

# Serial Wiring for the Garmin GSD 21 to a Single GPSMAP 182/182C/192C/232/292/392/492




**Notes:**

1. You can extend the serial/power wiring of the GSD 21 power/data cable up to 100 ft (30 m) total length. Use the CANet Extension Cable or 22 AWG, 4-conductor shielded cable for data connections and 18 AWG for power.
2. Ground the drain wire at the display unit. Do not ground the drain wire on the sonar unit.
3. The Orange wire must be pulled low (-) in order for the GSD 21 to power on.

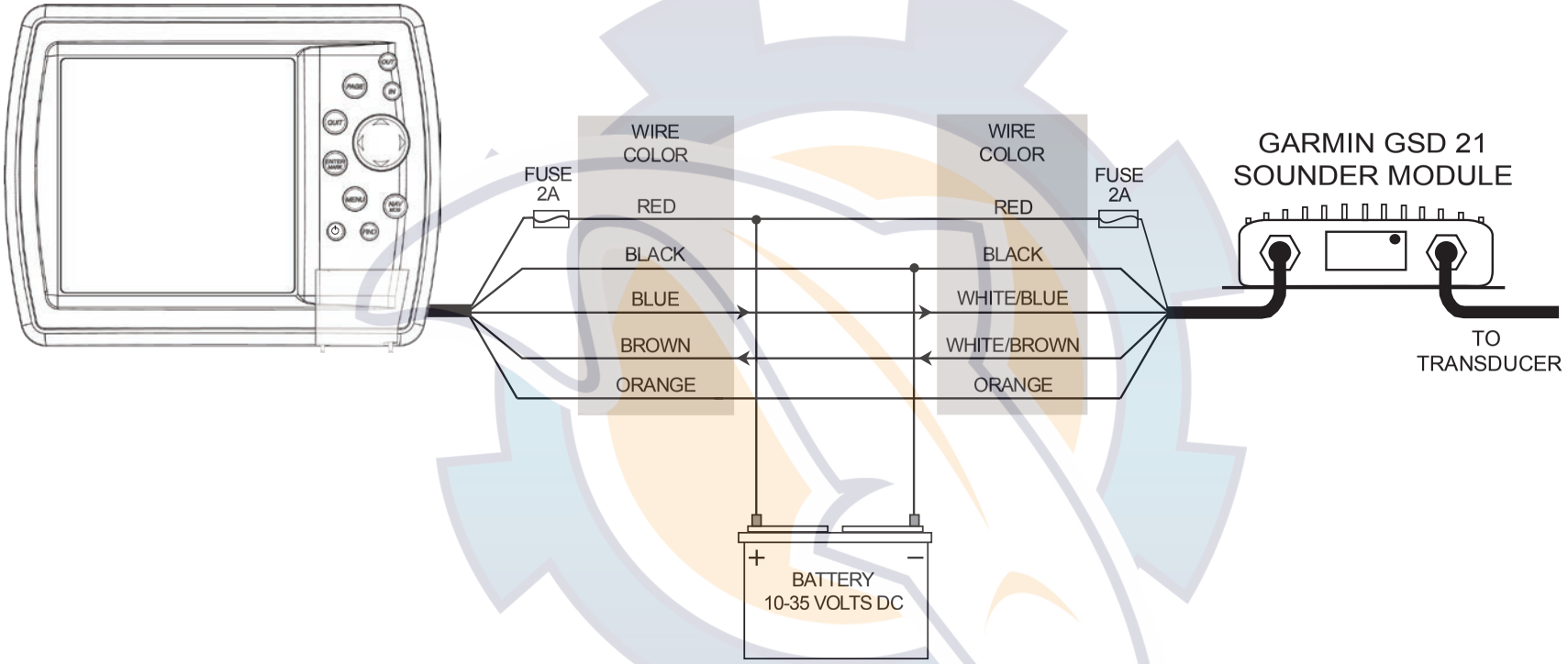
   Option 1: If the GSD 21 is wired to a circuit that is switched on the Red (+) wire, connect the Orange wire to ground. The GSD 21 and the GPSMAP 182/182C/192C/232/292/392/492 turns on or off when power is applied or removed from the Red wire.

   Option 2: If the Red (+) wire is applied directly to a power source, install a switch between the Orange wire and ground. The GSD 21 turns on or off when ground is applied or removed from the Orange wire.
4. When crimping the 3-wire connector, use a standard pair of pliers and make sure the button is fully depressed into the connector.

www.reelschematic.com

www.reelschematic.com

# Serial Wiring for the Garmin GSD 21 to a Single GPSMAP 172/172C




**Notes:**

1. You can extend the serial/power wiring of the GSD 21 power/data cable up to 100 ft (30 m) total length. Use the CANet Extension Cable or 22 AWG, 4-conductor shielded cable for data connections and 18 AWG for power.
2. Ground the drain wire at the display unit. Do not ground the drain wire on the sonar unit.
3. Refer to the *GPSMAP 172/172C Owner's Manual* for wiring the GPS 17 sensor and other devices.
4. When crimping the 3-wire connector, use a standard pair of pliers and make sure the button is fully depressed into the connector.

www.reelschematic.com



## Blink Codes

When the unit is installed, it switches on when the display unit is powered on (or the GSD remote power line is pulled low, with power applied). The two-color (Green/Red) LED on the GSD 21 indicates the current operational status of the module. Codes are:

| Code | Status |
|---|---|
| Green blinking, on for 1 second, off for 1/2 second (slow blink) | GSD 21 is servicing one directly wired connection and the display device is operating properly.<br>The user should see sonar data on the display unit. |
| Red blinking, on for 1 second, off for 1/2 second (slow blink) | GSD 21 is powered on but is waiting to connect to a display device. In this state, the GSD 21 does not transmit any sonar signals and is not sending out any sonar information to display units. If a display unit is connected and this code persists, check the wiring. |
| Solid Red (no blink) | Software failure - Call Garmin Product Support. If the cause is a software error, the display unit can show the error. Power must be cycled to clear the error. |
| Red blinking, on for 1/10 second, off for 1/10 second (very fast blink) | System alarm. The display device gives a message indicating the type of failure. After the alarm condition is fixed, power must be cycled on the GSD 21 to clear the alarm. |

www.reelschematic.com


# Specifications

## Physical

**Size:** 6.75" L x 4.75" W x 2.00" H
(17.2 cm x 12.1 cm x 5.1 cm)

**Weight:** 1.5 lbs. (.680Kg)

**Case:** Fully gasketed, high-impact plastic and aluminum alloy, waterproof to IEC 529-IPX-7

**Temp Range:** 5°F to 158°F (-15°C to 70°C)

## Electrical

**Source:** 10-35 Vdc

**Usage:** 18 watts max.

**Fuse:** AGC/3AG - 2.0 Amp

**Steering Compass Safe Distance:** 3.95" (10.00 cm)

## Sonar

**Sounder Power:** 500 watts (RMS) dual frequency, 400 watts (RMS) dual beam
4,000 watts (peak to peak)

**Frequency:** 50/200 kHz dual frequency,
80/200 kHz dual beam

**Depth:** 1,500 foot max depth* dual frequency,
900 foot max depth* dual beam

* Depth capacity is dependent on water salinity, bottom type, and other water conditions.

## Data Output

**Source:** Proprietary Garmin data format over CANet or Serial

www.reelschematic.com

www.reelschematic.com



© Copyright 2006 Garmin Ltd. or its subsidiaries

Garmin International, Inc.
1200 East 151st Street, Olathe, Kansas 66062, U.S.A.

Garmin (Europe) Ltd.
Unit 5, The Quadrangle, Abbey Park Industrial Estate, Romsey, SO51 9DL, U.K.

Garmin Corporation
No. 68, Jangshu 2nd Road, Shijr, Taipei County, Taiwan

www.garmin.com

Part Number 190-00630-00 Rev. A