



CLEARNAV INSTALLATION MANUAL

VERSION 2.0 – APRIL 2014

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1 Installation

1.1 Power Considerations

1.1.1 Fuse Considerations

1.1.1.1 Fuse for the *ClearNav*

A 2 Amp fuse is recommended for the *ClearNav*. Either a “slow blow” or “fast-acting” fuse may be used. The purpose of the fuse is to protect the *ClearNav* in the case of an internal short and to protect the wiring between the battery and the *ClearNav*.

1.1.1.2 Fuse at the Battery

The battery fuse is designed to prevent any short circuit from causing a fire in the wiring between the battery and the instruments. The fuse can be connected to either the battery plus or common terminal.

1.1.2 Power Switch

A “ClearNav ON/OFF” power switch should be mounted in an easily accessible location (such as on the instrument panel).

Momentary power interruptions will not cause any problems with the flight log or flight parameters. The *ClearNav* is designed to resume the flight and continue the flight log as soon as the unit powers back up. Only a single flight log will be generated – even if power is interrupted momentarily during the flight.

1.1.3 How to Power Down

Wait at least 2 minutes after the flight ends before powering down the *ClearNav*. That will allow the flight log to show a solid ground reference line in the altitude log.

1.1.4 Mounting the ClearNav Display and Nexus Box

1.1.5 On Panel Mount

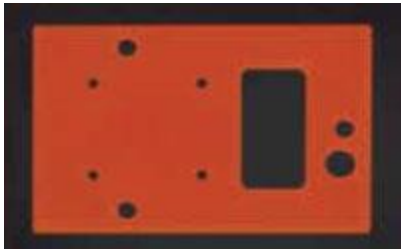


The ClearNav ships with the items required to mount it on the front (pilot side) of the instrument panel. That makes for a clean and simple installation. A template is included for use when drilling the mounting holes in the panel. The *Nexus Junction Box* mounts on the back of the ClearNav on the back (glider nose) side of the panel.

Note: The 4 mounting studs are positioned to match the 4 screw holes that surround a standard 57 mm (2 ¼") instrument hole.

To Mount the ClearNav on the front of the instrument panel:

1. Position Nexus box template on to panel and tape securely.



2. With a pencil, trace Nexus box template on to panel and cut holes.



3. Insert four studs on back of unit through panel.



4. Sandwich panel between ClearNav and mounting plate with the counterbore for studs facing away from the panel. Hand tighten the four stud extension standoffs onto the four studs.



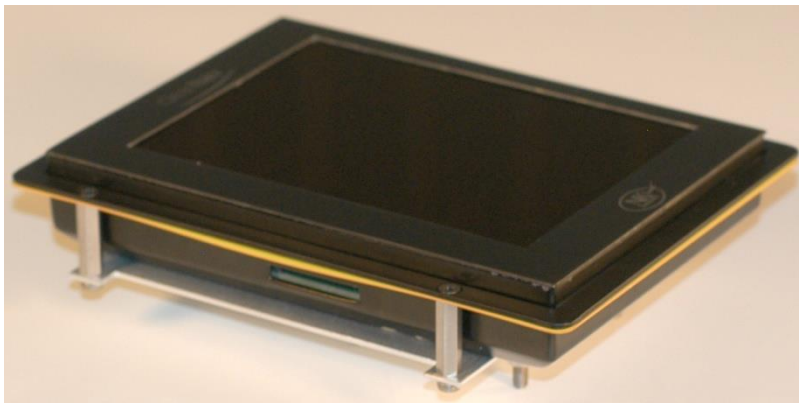
5. Slide Nexus box onto four studs while connecting 15-pin connector.



6. Hand tighten the four long standoffs onto the four stud extensions



1.1.6 Through Panel Mount



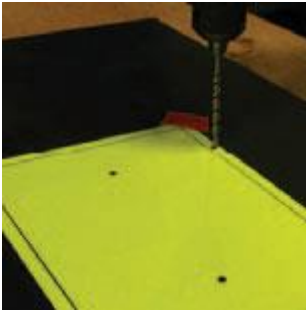
The optional *Through-Panel Mounting Kit* can be used to mount the ClearNav so it is recessed into the instrument panel. This option works fine, but it takes up a lot of panel real-estate, so it will likely fade away in favor of the Behind Panel and Tunnel mounting options. Only 9 mm (0.35 in) of the unit stands out on the pilot side of the panel.

Installation Instructions for Through Panel Mount

1. PREPARE: Position template and hold in place with tape.

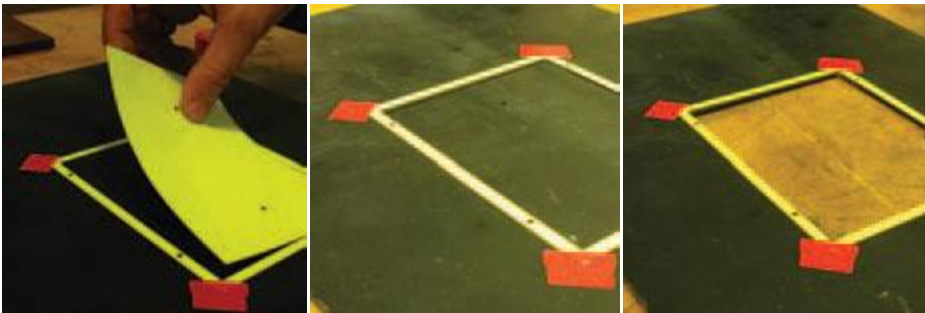


2. DRILL: Position template and hold in place with tape.

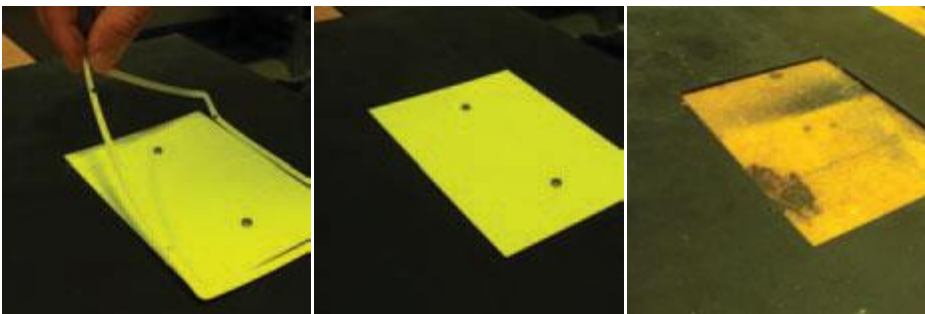


3. CUT: Using Outer Template OR Using Inner Template

Using Outer Template



Using Inner Template

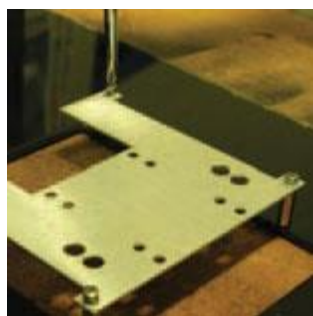


4. INSTALL:

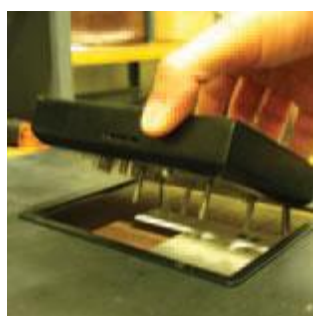
Place escutcheon on panel with beveled holes facing out. Attach with 4 flat head screws and standoffs.



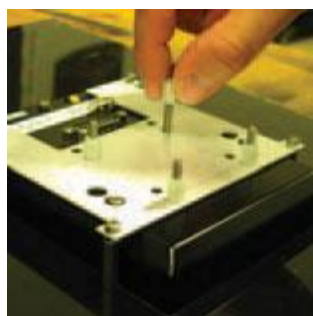
Place escutcheon on panel with beveled holes facing out. Attach with 4 flat head screws and standoffs.



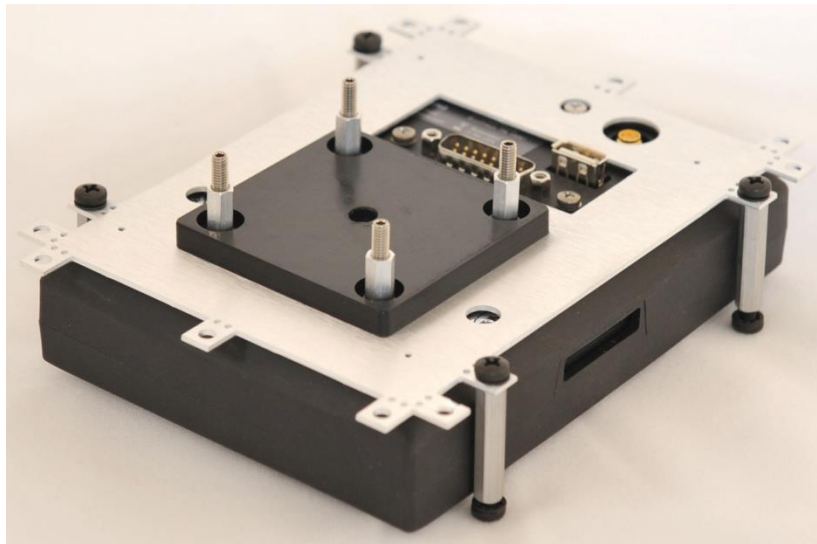
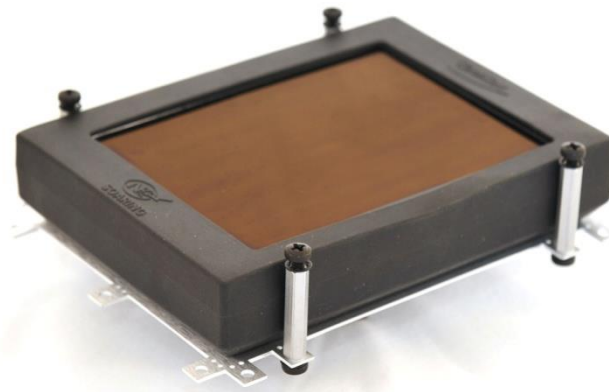
Insert ClearNav through panel.



Use nylon standoffs to tighten ClearNav to mounting plate.



1.1.7 Behind Panel Mount Kit



This optional mounting kit is designed to allow you to mount the ClearNav to the back of the instrument panel - while making the smallest hole in the panel possible. The hole in the panel is the same size as the LCD screen. That is much smaller than the hole that would be needed for the entire body of the ClearNav. The body of the ClearNav is concealed behind the panel.

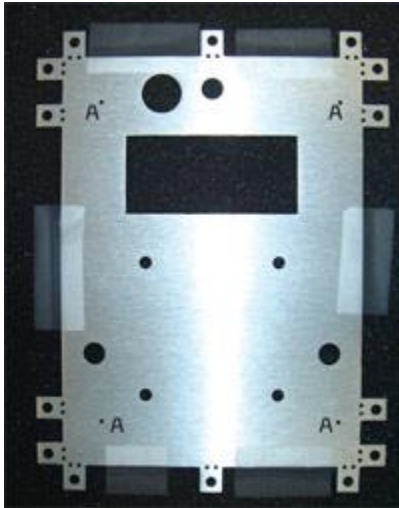
Installation Instructions for Behind Panel Mount

Parts

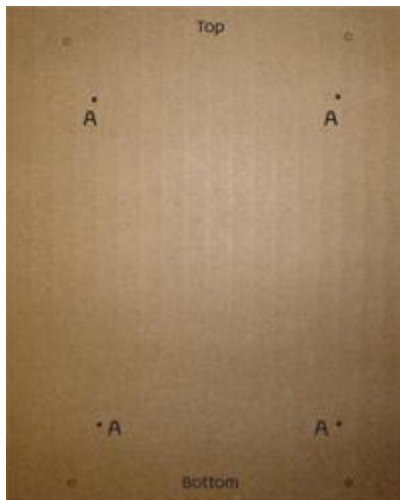
- (1) Rear Mount Plate
- (4) Standoffs
- (8) M4 Screws
- (8) M4 Washers

1. Prepare Panel

a. Use the rear mount plate as template. Tape template securely as shown (1a). (There are 14 breakaway tabs around the edge of this plate. Only 2 on the top half and two on the bottom half that suit the layout of your panel are necessary for secure attachment of assembly.) Unused tabs can be removed.



b. Mark the window cut-out corners using the 4 holes labeled A. Mark the top 2 and bottom 2 panel mount locations holes you plan to use.



c. Remove template and connect the 4 dots (A) (window cutout).

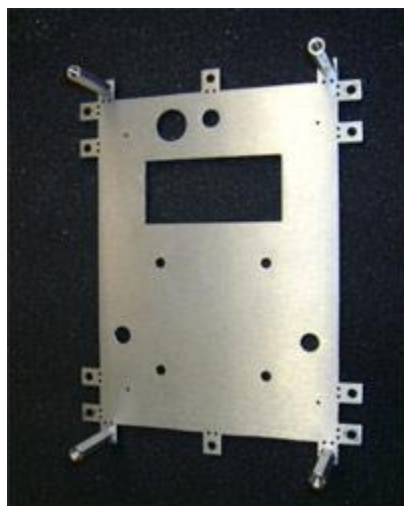


d. Cut window out and drill panel mount holes ($5/32$ ").



1. Prepare Rear Mount Plate

a. Attach 4 standoffs using 4 screws and 4 washers as shown.



b. Place ClearNav in mount as shown.



c. View from behind.



d. Attach back plastic plate and standoffs. These items were supplied with the ClearNav.



3. Mounting Assembly

a. Mount assembly to Panel using 4 screws and 4 washers.



1.1.8 Tunnel Mount

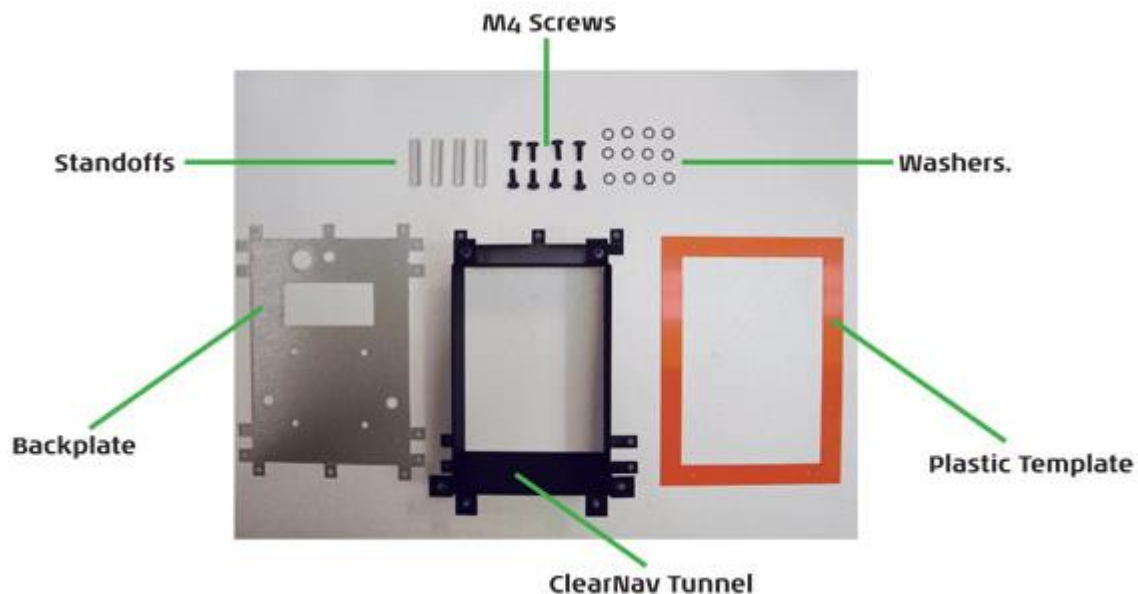




This is a popular mounting option for the ClearNav. A Powder-coated aluminum "tunnel" attaches to the rear of the panel to set the ClearNav unit 1.75" back from the panel surface. The cutout for this mount follows the perimeter of the ClearNav display window, and the recess allows installation of other instruments next to the panel cutout. The additional shading provided by the recess also allows the use of a lower brightness setting, reducing power consumption. The mounting kit includes all the required mounting hardware and even a template for marking the panel.

Installation Instructions for Tunnel Mount

Parts

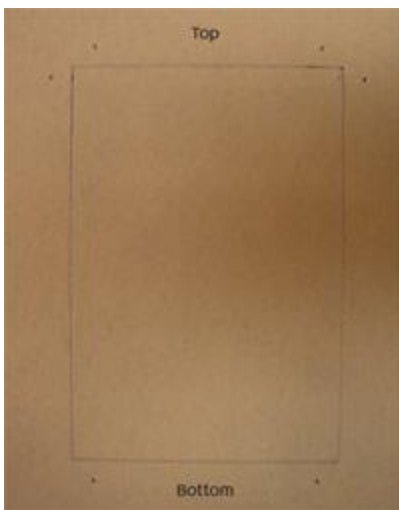


Panel Preparation

1. Tape plastic template to panel. (note: there are 4 holes on the top and 2 on the bottom)



2. Using the template as a guide, mark the mounting holes and scribe the Tunnel display opening.



3. Cut the Tunnel opening (minimum dimensions - 3.62" x 5.28") and drill mounting holes (5/32"). Only the top 2 holes are used in this example. The side 2 are unused.



Assembly Preparation

4. Attach 4 standoffs using 4 screws and washers as shown. Note: Any 2 of the top 4 tabs can be used. Any 2 of the bottom 3 tabs can be used. Bevel is on the top.



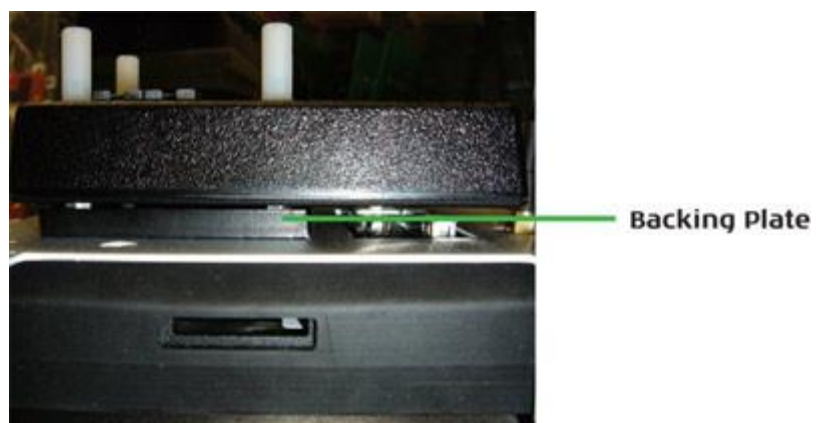
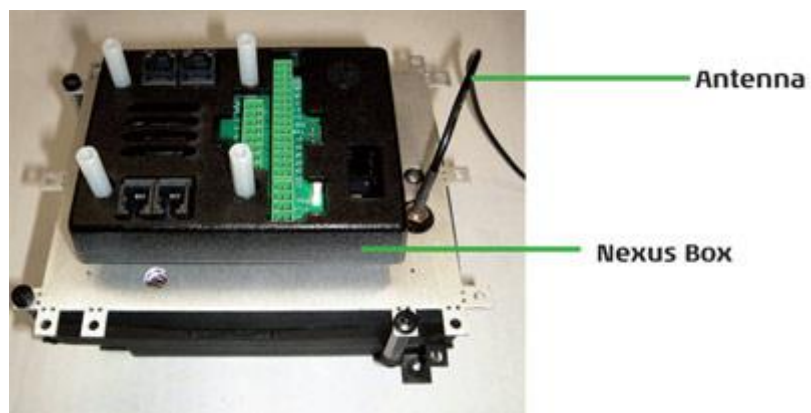
5. Place the ClearNav in the mount assembly as shown. Then secure with rear mounting plate using 4 screws and 4 washers.



6. Mount assembly to panel.



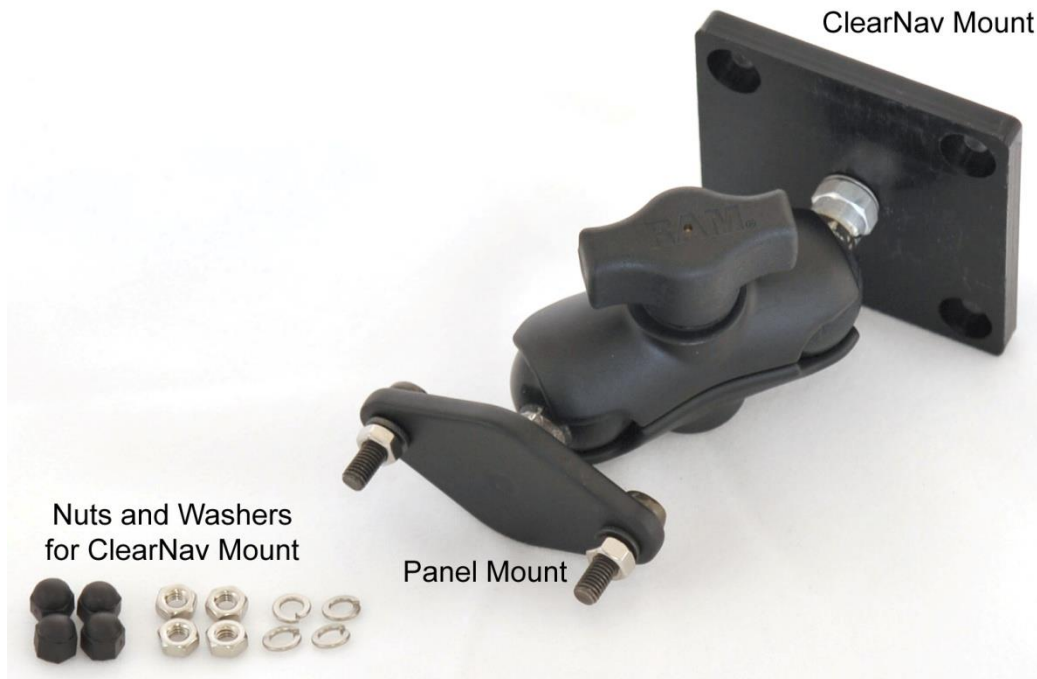
7. Attach backing plate, nexus box and antenna.



1.1.9 On a RAM Mounting Arm



RAM Mount Kit used to mount a ClearNav to the instrument panel



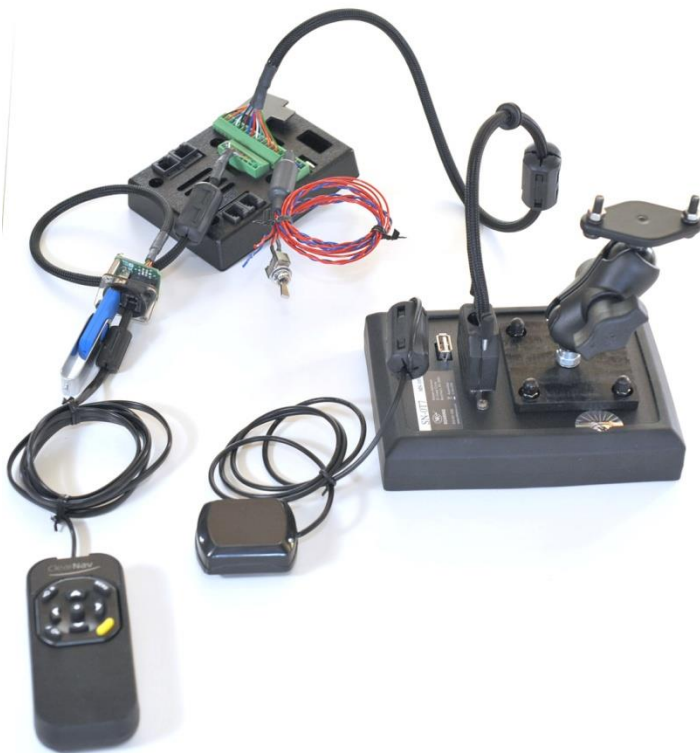
Items included in the RAM Mount Kit

In some gliders it is preferable to mount the display on a mounting arm that is attached to the instrument panel. This is the case when there is not enough room in the panel to mount the unit on the panel. When mounted on a mounting arm, the unit takes-up less panel real estate. It is sometimes acceptable to partially block some instruments. Most customers will find that mounting the ClearNav directly on the instrument panel makes for a cleaner and classier installation than the RAM arm option, but those that prefer the RAM arm option will find that it is a rugged and reliable option. The 2 foot *DB15 Extension* cable is required for a neat installation. The *Nexus Junction Box* is normally mounted behind the instrument panel with the *DB15 Extension* cable running from the *ClearNav Display* to the *Nexus Junction Box*.

The kit includes:

- Short RAM "B" size arm
- RAM-B-238 metal diamond base with 1" ball for use on instrument panel
- RAM "B" size ball mounted to a square mounting base for use on back of the ClearNav
- Mounting screws and nuts

The standard 1.75" (44 mm) long arm plus the bases on both ends gives a total length of about 4 inches (102 mm) from base to base. If the standard short RAM arm is not long enough, contact your dealer about the optional 3 inch (76 mm) and 5.25 inch (133 mm) arms.



RAM Mount Kit Assembled on the back of the ClearNav Display. Also shown is the 0645 DB15 Extension cable and its' connection to the Nexus Junction Box.

RAM Mount Installation Instructions

RAM Mount Installation

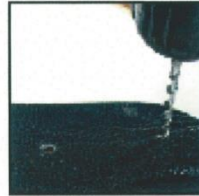
①

Use ball mount as drilling template.
Mark hole locations with a pen.



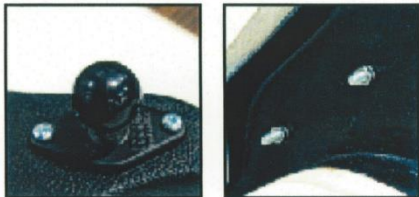
②

Drill holes using 13/64" or 5mm
drill bit.



③

Use pan head screws, split
washers, and nuts to secure
ball mount to panel.



④

Attach mounting plate with ball
mount to ClearNav using split lock
washers, nuts, and acorn nuts.



⑤

Tighten RAM arm to both
ball mounts.

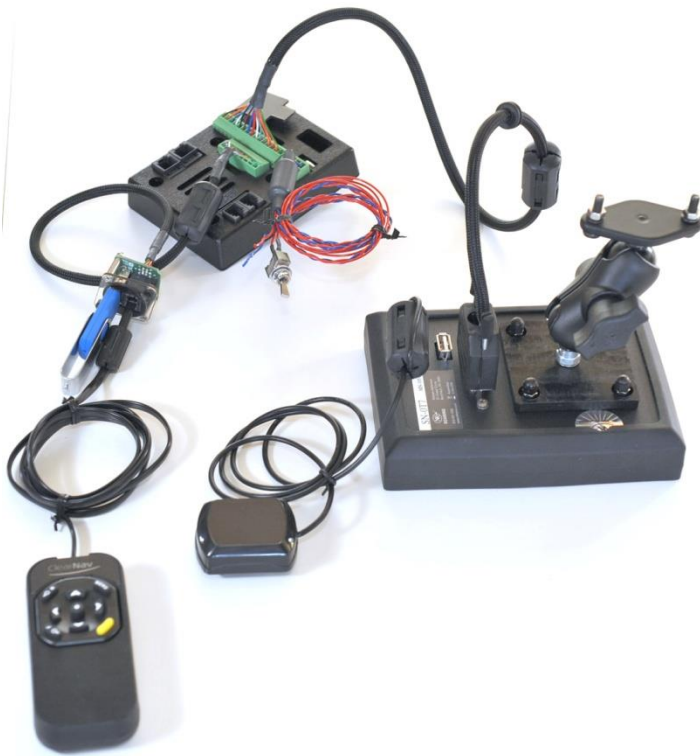


1.2 DB15 Extension Cable

The *ClearNav DB15 Extension* cable is designed to connect a *ClearNav display* on a RAM mount to the *Nexus Junction Box* that is installed behind the panel. The cable is a custom 14-conductor 2' cable with low-profile DB15 female connector. The cable is extremely flexible and has an abrasion resistant jacket. The cable is run through a rubber grommet which fits into a 7/16" (11 mm) hole in the panel. One end is connected to the DB-15 connector on the back of the *ClearNav display* and the other end connects to screw-terminals on the *Nexus Junction Box*. The conductors are pre-stripped and tinned. A rubber grommet is included on the cable for use in the panel hole. A wiring diagram is included.

Note: One of the wires in the wiring harness is not used. The DB15 connector has 15 pins but the screw terminal on the *Nexus Junction Box* has only 14 connections. Cut off the tip of the unused wire and use electrical tape to isolate the conductor.

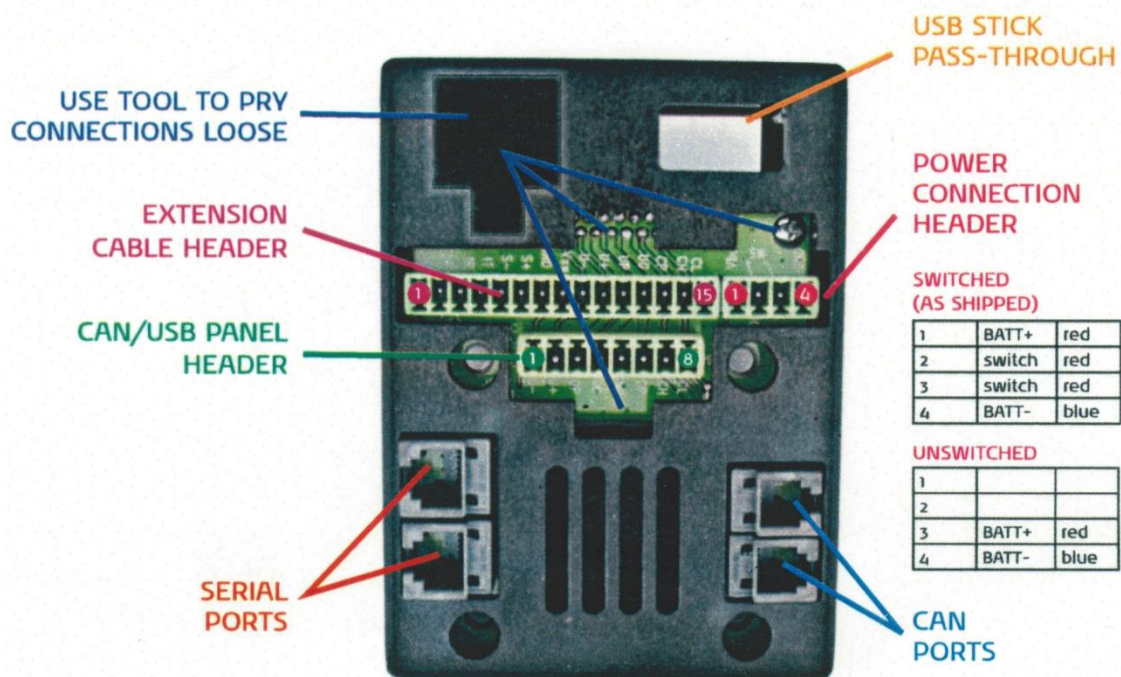




1.3 Nexus Junction Box Installation

The *Nexus Junction Box* is used to connect a variety of accessories to the ClearNav system. It connects to the *ClearNav Display* through a 15-pin D-Sub connector that is located on the back of the *ClearNav Display*. When using a RAM mounting arm the *Nexus Junction Box* is mounted behind the instrument panel and connected to the *ClearNav Display* using a *DB15 Extension* cable. The *Nexus Junction Box* includes a built-in speaker and includes the 7 connectors shown in the photograph below.

NEXUS REAR CONNECTIONS



The “business side” of the *Nexus Junction Box* includes a speaker, 12V power connections and a variety of data connectors. The serial ports are used to connect to external soaring devices such as the Cambridge 302 and/or FLARM. The CANbus ports are used to connect to other ClearNav compatible products such as a remote control or another ClearNav.

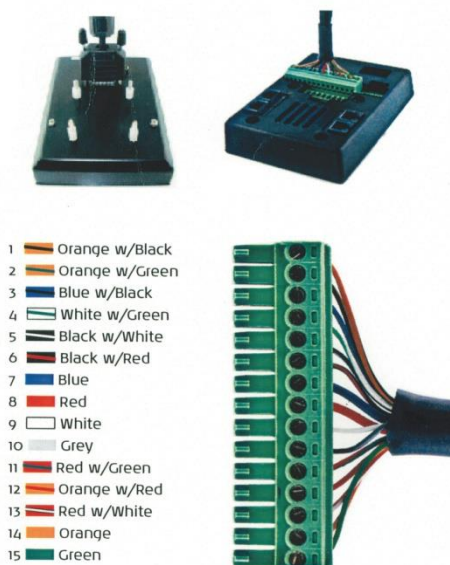
CLEARNAV
CONNECTOR

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When the ClearNav is mounted on a RAM mounting arm the *Nexus Junction Box* is mounted behind the instrument panel and connected to the *ClearNav Display* using the *DB15 Extension* cable as shown above.

EXTENSION CABLE



DB15 Extension Cable

1.4 Mounting the GPS Antenna

The ClearNav has a built-in GPS engine but an external antenna is required. It is included in the standard ClearNav kit. It consists of an amplified external GPS antenna and Dual-Lock mounting strips. The connector attaches directly to the back of the ClearNav.

The antenna must be mounted in a location with the top (rounded side) so it has a good view of the sky. It should be mounted with the top pointing straight up. GPS signals go through wood and fiberglass just fine so it is OK to mount the antenna under the instrument panel cover as long as it is made out of fiberglass or wood. GPS signals cannot pass through metal or carbon fiber so the antenna must not be mounted in a location where its' view of the sky is blocked by metal or carbon fiber.

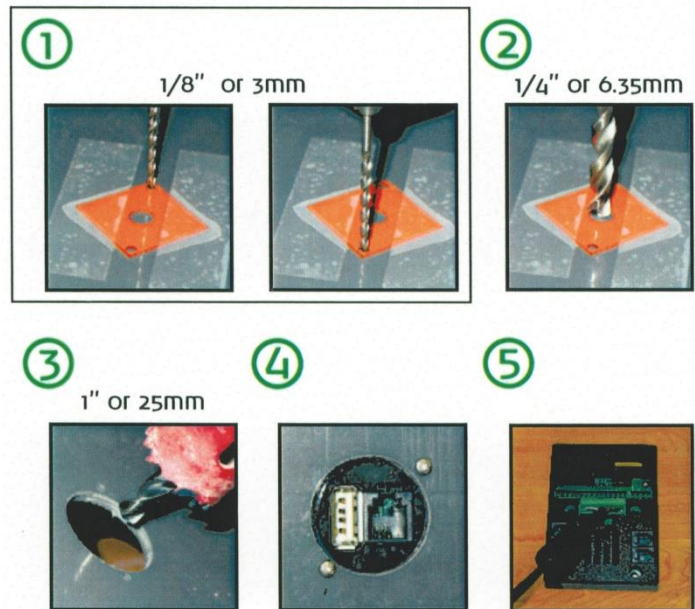


1.5 Installing the Panel Mounted CAN/USB Extension

The *Panel Mounted CAN/USB Extension* brings USB and RJ-22 connectors out to a convenient panel mounted connector. It fits into a 1" (25 mm) round hole in the panel. The USB connector is used as a receptacle for a USB Flash Drive for transferring flight logs from the ClearNav and uploading waypoint and airspace files and software updates to the ClearNav. The RJ-22 connector is used by the *Handheld Remote*. This item is included in the standard ClearNav system kit. A template is included for making the required holes in the panel.



CAN/USB PANEL EXTENSION



1.6 Connecting the Handheld Remote Control

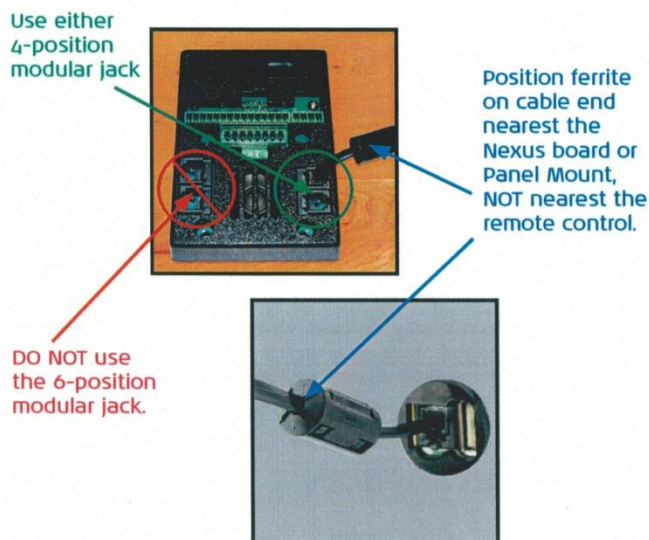


The *Handheld Remote Control* is normally connected to the panel mounted connector of the *Panel Mounted CAN/USB Extension*. It can also be connected to either of the small RJ-22 connector on the top of the *Nexus Junction Box*.

The ferrite tube on the cable should be positioned so that it is located at the end opposite the remote – close to the panel mounted connector or the *Nexus Junction Box*.

Note: Do **not** plug the 4-conductor RJ-22 connector used for the remote into the larger RJ-11 connectors found on the lower part of the *Nexus Junction Box*. Doing so can damage the contacts in the RJ sockets on the *Nexus Junction Box*.

REMOTE CONTROL CONNECTIONS



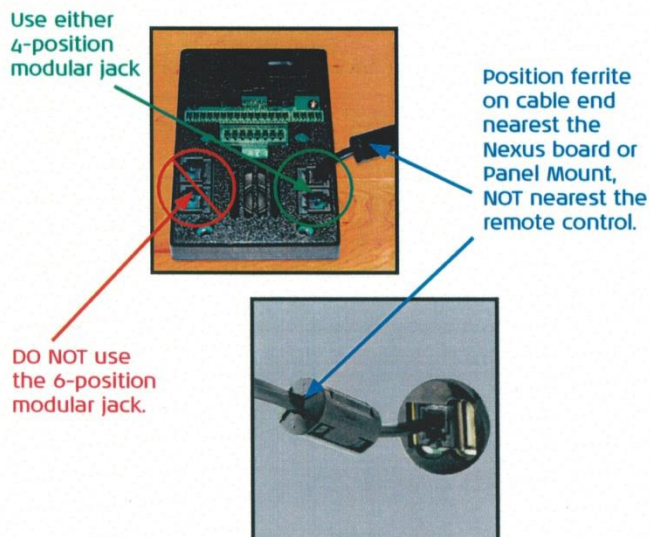
1.7 Installing the Optional Stick Mounted Remote Control

The optional *Stick Mounted Remote* includes a keypad that is identical to the one on the handheld remote. It also includes a Push-to-Talk button for use with the radio.



Note: Do **not** plug the 4-conductor RJ-22 connector used for the remote into the larger RJ-11 connectors found on the lower part of the *Nexus Junction Box*. Doing so can damage the contacts in the RJ sockets on the *Nexus Junction Box*.

REMOTE CONTROL CONNECTIONS



1.8 Connecting to a Cambridge 302



The following data can be received from the 302:

- Vector Wind (speed and direction)
- Real Time Headwind
- True Airspeed from the 302

The Vector Wind (speed and direction) and Real Time Headwind can be displayed on the map screen. The Vector Wind is used for final glide (as the auto wind) if it is available. The wind information supplied by the 302 is a little more accurate and can be calculated when cruising as well as when circling by comparing the True Airspeed to the GPS measured speed and direction.

To display the Real Time Headwind received from the 302 simply enable that option under *Personal Preferences / Map Display / Wind and Bearing / Head wind Component*. The 302 supplied *True Airspeed* data is used for the total energy final glide computation. When not connected to a 302, the airspeed is calculated using the measured wind and ground speed.

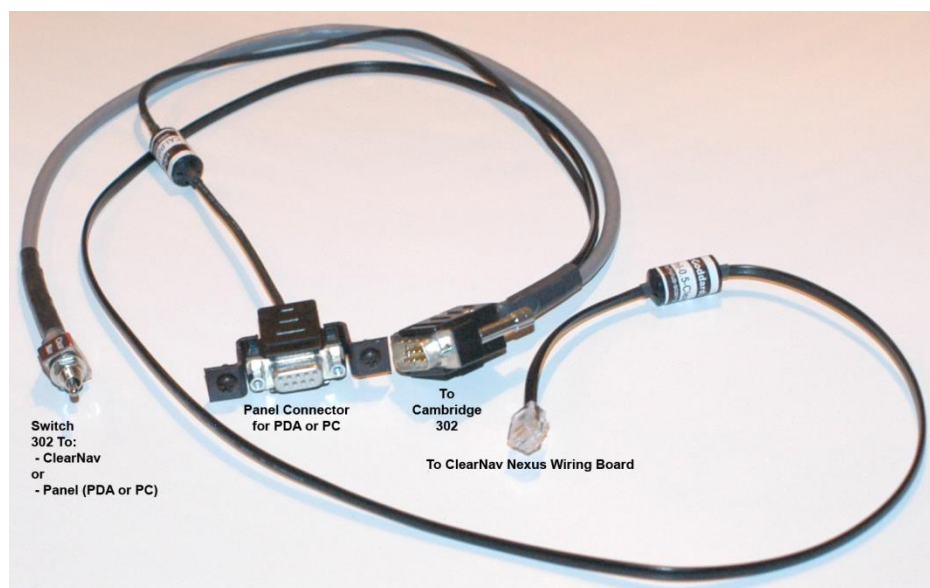
The Cambridge 302 can be connected to either of the RS-232 serial port connectors on the *Nexus Junction Box*. The *Cambridge 302 to Nexus Junction Box Cable* can be used for the connection. It is shown below.

Note: Although the 0646 302 to ClearNav cable look nearly identical to the Cambridge CAA-098 cable that is used to connect a 302 to a panel mounted RJ adapter for the Cambridge PDA mount system, it is not wired the same. Do not use a Cambridge CAA-098 cable to connect the 302 to the ClearNav.



0646 302 to ClearNav Cable

The Goddard CAI-Pnl-0.5-ClearNav-1 Y-cable is available from Cumulus Soaring, Inc. It makes it easy to send Cambridge 302 data to either the ClearNav or a panel mounted connector for a PC or PDA. It is used for downloading flight logs from the 302 or uploading waypoint files to the 302. Includes 1 m cable from Cambridge 302 to ClearNav Nexus Junction Box, and 0.5 m cable from 302 to DB-9f panel mounted connector for PDA or PC. It has a DB-9m connector at the 302 end and an RJ22 connector at ClearNav end. It includes a panel mounted "PDA / ClearNav" switch for selecting whether the 302's data receive line is connected to the panel connector (for PDA or PC) or the ClearNav. The 302's transmit line is always connected to both the panel connector and the ClearNav. 5 v power from the 302 is made available at the panel connector at all times for powering a PC.



Goddard CAI-Pnl-0.5-ClearNav-1 cable

1.9 Connecting to a FLARM Unit



FLARM has a built-in GPS, pressure sensor and radio transmitter and receiver. It broadcasts its position and altitude so that other FLARM units in the area will be alerted to its presence. It gives alerts if a collision is predicted using data received from other FLARM devices in the area.

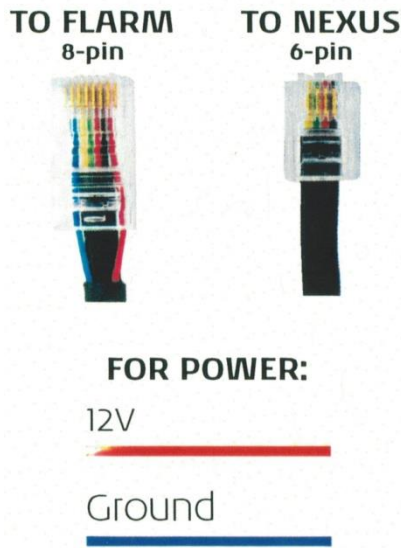
The ClearNav displays other FLARM equipped aircraft on the map and displays relative altitude and climb rate for each. The FLARM data is only visible when zoomed-in to certain zoom levels. It hides the data when zoomed-out since FLARM's range is only about 3 km. This feature is sometimes referred to as "FLARM Radar".

The FLARM unit can be connected to either of the RS-232 serial port connectors on the *Nexus Junction Box*. The *FLARM to Nexus Junction Box Cable* can be used for the connection. It is shown below. Wiring details are included at the end of this manual.



0647 FLARM to Nexus Junction Box Cable

FLARM Cable



0647 FLARM Cable Connection Details

1.10 Connecting to a 2nd Seat ClearNav Installation

The same mounting options and components are used when installing the ClearNav in the second seat of a two-seat glider. Two ClearNav systems installed in one glider will operate completely independently as they each contain a GPS and full functionality. If one ClearNav is connected to a Cambridge 302 for airspeed data or a FLARM for traffic data, a CANbus extension cable may be used to connect the two Nexus Boards to enable sharing of the data. Additional data and function sharing may be available in the future. The cable connects to CANbus connectors on the Nexus Junction Box connected to both ClearNav units.



2nd Seat CAN-Bus Extension Cable



2 Wiring Diagrams and Cable Schematics

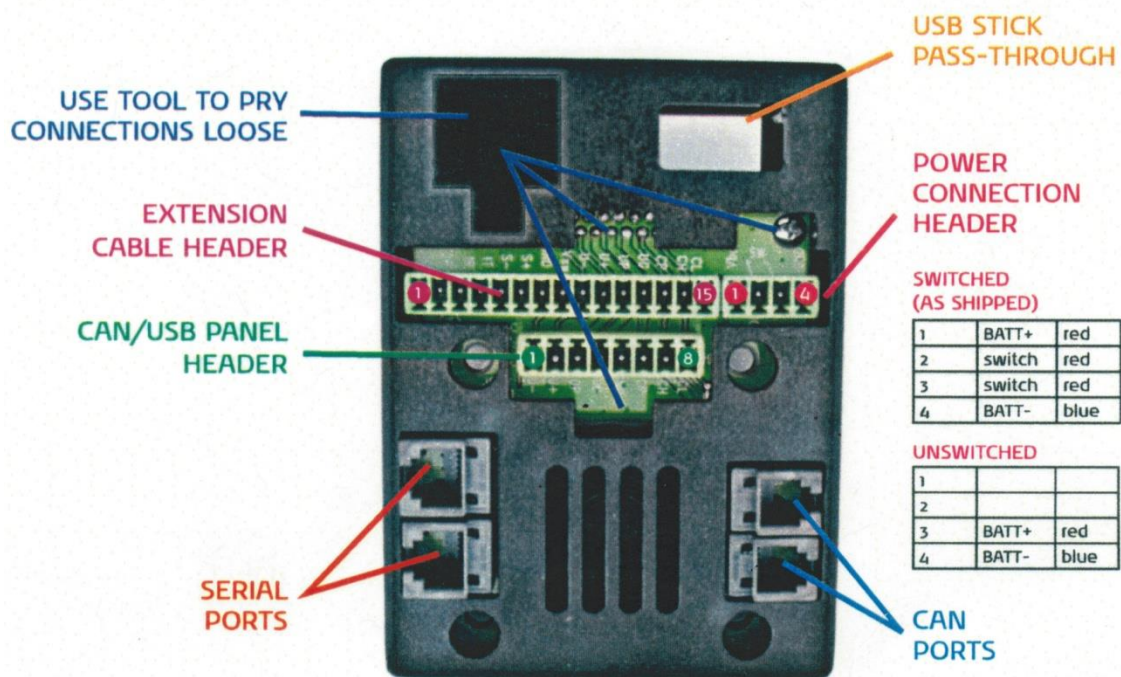
2.1 ClearNav Display DB-15m Connector

The ClearNav Display unit has a DB-15m (male) connector on the back of the unit. It is used for all data and power connections to the display except the GPS Antenna. The connections include 12V power, speaker connections, 2 RS-232 serial ports, a CANbus port and a USB (master) port. ClearNav users should never need to connect to this port directly. Most connections are done on the *Nexus Junction Box* which breaks out the connections listed here onto multiple connectors. When the *ClearNav* is mounted on a RAM arm the *DB15 Extension* is used to connect the *Nexus Junction Box* to this connector.

#0600 CLEARNAV DB-15m
1 COM2 TXD
2 COM2 RXD
3 COM1 RXD
4 COM1 TXD
5 Speaker -
6 Speaker +
7 -VBatt
8 +VBatt (SW)
9 USB N
10 USB P
11 USB PWR
12 USB GND
13 CAN PWR
14 CANH
15 CANL

2.2 Nexus Junction Box

NEXUS REAR CONNECTIONS



The *Nexus*

Junction Box is used to connect data cables and power to the *ClearNav*. It also includes a speaker.

2.2.1 Screw Terminal Connector for DB15 Extension Cable

The 14-pin or 15-pin screw terminal connector is used to connect the *Nexus Junction Box* to the *ClearNav* with the *DB15 Extension* cable when the *ClearNav* is mounted on a RAM arm.

The “First Flight” versions of the *Nexus Junction Box* have 14-pin connectors. Future versions of the *Nexus Junction Box* will probably have a 15-pin connector in place of the current 14-pin connector – to match the 15 connections on the back of the *ClearNav*. The *DB15 Extension* already includes 15 wires. When connecting it to the 14-pin version of the *Nexus Junction Box* the unused wire is the orange wire with the red stripe. Put electrical tape on the end of that wire to protect the wire from accidental connection. Don’t remove or cut back the wire as it is likely to be used in the future.

#0641 Nexus Junction Box 14-pin Screw Terminal Connector (First Flight ClearNav Units Only)		
Pin # (from left to right)	Function	DB15 Extension Wire Color
1	COM2 TXD	Orange/Black
2	COM2 RXD	Orange/Green
3	COM1 RXD	Blue/Black
4	COM1 TXD	White/Green
5	Speaker -	Black/White
6	Speaker +	Black/Red
7	-VBatt	Blue (20AWG)
8	+VBatt (SW)	Red (20AWG)
9	USB N	White
10	USB P	Gray
11	USB PWR	Red/Green
		Orange/Red
13	CAN PWR	Red/White
14	CANH	Orange
15	CANL	Green

#0641 Nexus Junction Box 15-pin Screw Terminal Connector		
Pin # (from left to right)	Function	DB15 Extension Wire Color
1	COM2 TXD	Orange/Black
2	COM2 RXD	Orange/Green
3	COM1 RXD	Blue/Black
4	COM1 TXD	White/Green
5	Speaker -	Black/White
6	Speaker +	Black/Red
7	-VBatt	Blue (20AWG)
8	+VBatt (SW)	Red (20AWG)
9	USB N	White
10	USB P	Gray
11	USB PWR	Red/Green
12	USB GND	Orange/Red
13	CAN PWR	Red/White
14	CANH	Orange
15	CANL	Green

2.2.2 CANbus/USB Remote Connector

The 7 or 8-pin CANbus/USB connector allows easy connection of the Panel Mounted CANbus/USB Extension. The end of the cable that connects to the *Nexus Junction Box* has a pre-wired connector. Simply slide it onto the receptacle on the *Nexus Junction Box*.

The “First Flight” versions of the *Nexus Junction Box* have 7-pin connectors. Future versions of the *Nexus Junction Box* may have an 8-pin connector in place of the current 7-pin connector – for the USB Ground connection. The “First Flight” units have both the –Vbat and USB Ground on a single connection.

#0651 Panel Mounted CANbus/USB Extension Cable 7-pin Connector		
Pin # (from left to right)	Function	Panel Mounted CANbus/USB Extension Wire Color
1	USB Power	Red/Green
2	USB N	White
3	USB P	Gray
4	-VBat & USB Ground	Blue/Black & Orange/Red
5	CAN Power	Red/White
6	CANH	Orange
7	CANL	Green

#0651 Panel Mounted CANbus/USB Extension Cable 8-pin Connector		
Pin # (from left to right)	Function	Panel Mounted CANbus/USB Extension Wire Color
1	USB Power	Red/Green
2	USB N	White
3	USB P	Gray
4	USB Ground	Orange/Red
5	-VBatt	Blue/Black
6	CAN Power	Red/White
7	CANH	Orange
8	CANL	Green

2.2.3 12V Power Input Connector

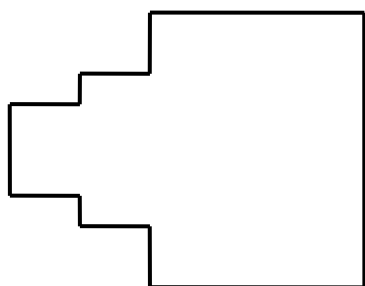
The 4-pin connector on the *Nexus Junction Box* is for connection of 12V power. Four connections are used to make it easy to connect an ON/OFF switch.

#0641 Nexus Junction Box 4-Pin Power Connector			
Pin # (from left to right)	Function	Switched	Un-Switched
1	+V Battery	Battery +	
2	Switch +	Switch	
3	+V Battery or Switch	Switch	Battery +
4	-V Battery	Battery -	Battery -

2.2.4 2 x RJ-11 (6P4C) RS-232 Modular Jacks

The 2 RJ-11 6P4C (6-pin / 4-contact) connectors on the *Nexus Junction Box* allow the *ClearNav* to exchange RS-232 serial data with an external device such as a Cambridge 302 variometer or a FLARM device.

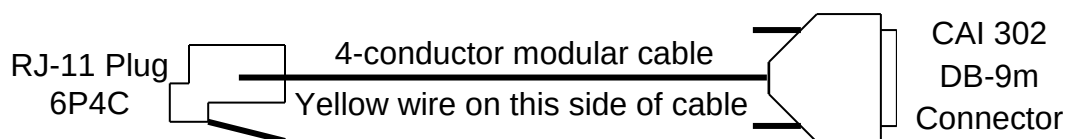
Facing the Nexus Junction Box, contacts on the two 6P4C Modular Jacks have the following functions:



#0641 Nexus Junction Box RJ-11 6P4C Connector for RS-232 Serial Data			
Pin # (Top to Bottom)	ClearNav Function	Wire Color	Attached Device Function
1	No Function		
2	Transmit (TXD)	Yellow	Receive (RXD)
3	Receive (RXD)	Green	Transmit (TXD)
4	Ground	Red	Ground
5	No Function	Black	No Function
6	No Function		

2.2.4.1 Cable for Connection to Cambridge 302

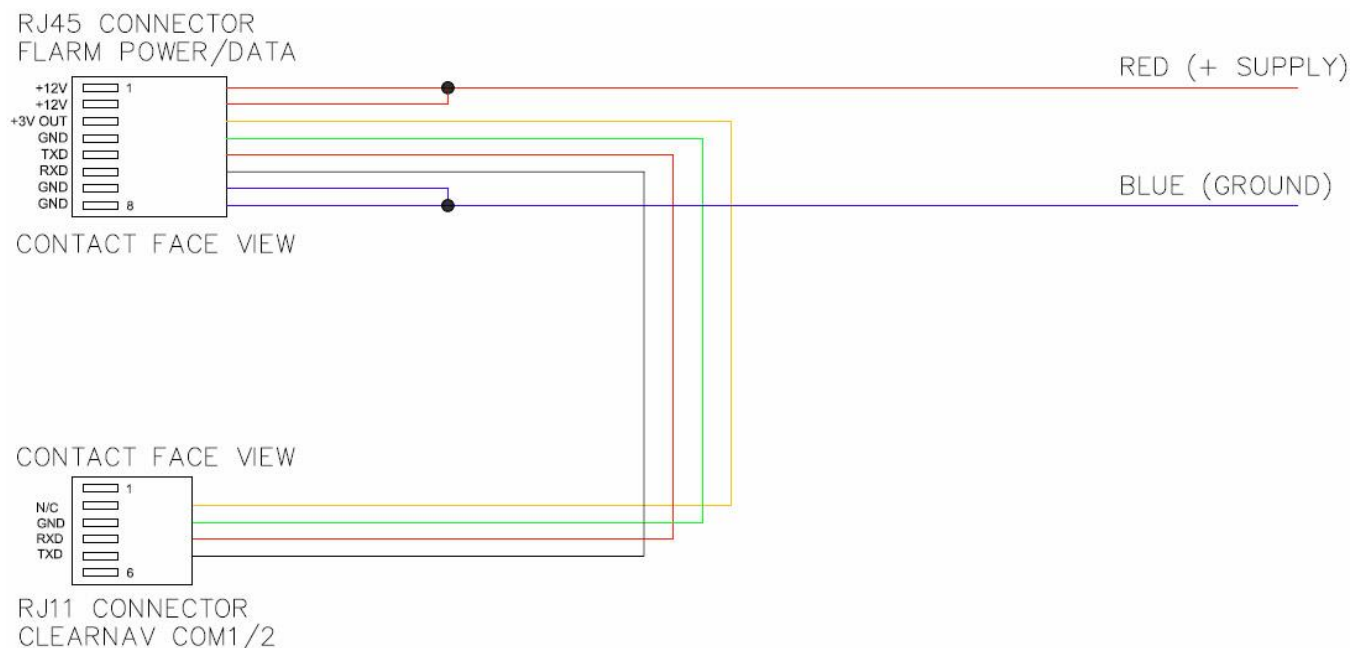
The 0646 data cable is used to connect a Cambridge 302 to the *Nexus Junction Box*. The connections are shown below.



0646 Data Cable Cambridge 302 DB-9m to Nexus Junction Box RJ-11 6P4C Connector for RS-232 Serial Data				
Pin # (Top to Bottom)	ClearNav Function	Wire Color	CAI 302 Function	CAI 302 DB-9m Connections
1	No Function			
2	Transmit (TXD)	Yellow	Receive (RXD)	3
3	Receive (RXD)	Green	Transmit (TXD)	2
4	Ground	Red	Ground	5
5	No Function	Black	No Function	
6	No Function			

2.2.4.2 FLARM Data Cable

The 0647 data cable is used to connect a FLARM device to the *Nexus Junction Box*. It includes an 8-pin RJ45 connector for the FLARM unit, an RJ-11 6P4C (6 pin, 4 conductor) connector for the ClearNav, and 12V power leads for powering the FLARM. The connections are shown below.



0647 Data Cable FLARM RJ45 to Nexus Junction Box RJ-11 6P4C Connector for RS-232 Serial Data				
FLARM Pin #	FLARM Function	Wire Color	ClearNav Function	ClearNav Connections
1	+12 V Input	Red		
2	+12 V Input	Red		
3	+ 3 V Output	Yellow	No Connection	2
4	Ground	Green	Ground	3
5	Transmit (TXD)	Red	Receive (RXD)	4
6	Receive (RXD)	Black	Transmit (TXD)	5
7	Ground	Blue		
8	Ground	Blue		

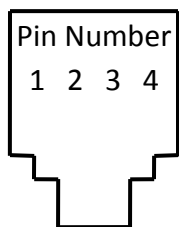
2.2.5 2 x RJ-22 (4P4C) CANbus Jacks

CANbus communication bus is a high-speed communication bus used for communication between *ClearNav* products – and future soaring instruments. Multiple devices can be connected to a single CANbus port. CANbus is used for the connection between the *ClearNav Nexus Junction Box* and the handheld and stick mounted remote control units. It is also used in 2-seat gliders to connect two *ClearNav* units together so they can share data – such as air data from a Cambridge 302 or other air data source. It is also used to connect the *ClearNav* to other Soaring instruments.

All Soaring CANbus devices (except the remote controls) have 2 CANbus jacks – to allow multiple units to be easily daisy-chained together. The *Nexus Junction Box* therefore has 2 CANbus connectors. Both CANbus jacks have the same function.

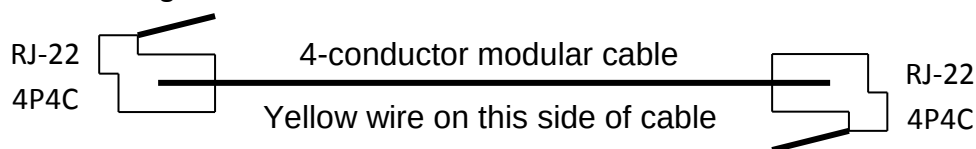
The CANbus connectors are RJ-22 4P4C (4-pin, 4 conductor) connectors. They are the same type connectors used to connect a phone handset to the phone base unit.

CANbus Connector RJ-22 4P4C Modular Connector on ClearNav Nexus Junction Box			
Pin # (Left to Right)	ClearNav Function	Wire Color	
1	- Ground	Black	
2	+ Voltage	Red	
3	CAN High	Green	
4	CAN Low	Yellow	



2.2.5.1 CANbus Cable

A simple 4-conductor modular cable can be used to connect Soaring CANbus devices together. The cable is configured as shown below.

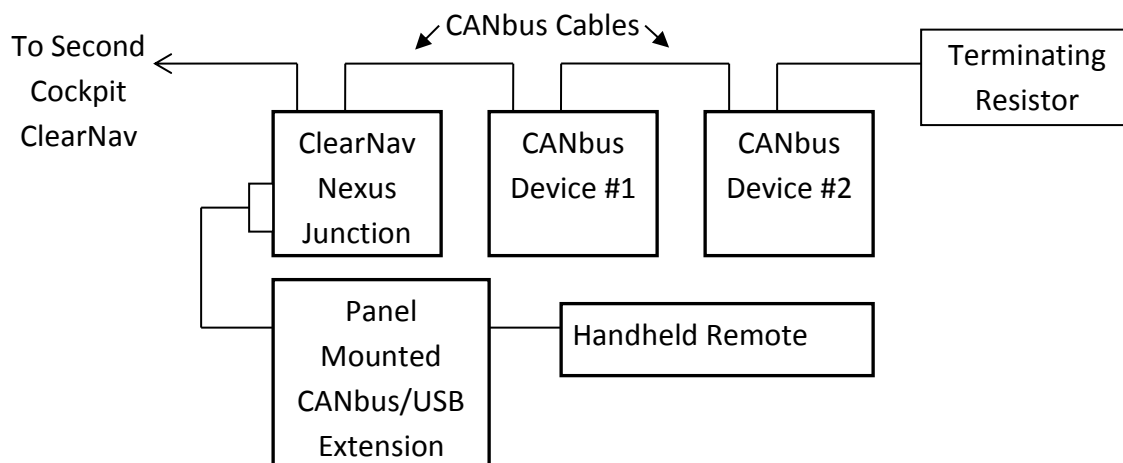


2.3 CANbus System Overview

CANbus communication bus is a high-speed communication bus used for communication between *ClearNav* products – and future soaring instruments. Multiple devices can be connected to a single CANbus port. CANbus is used for the connection between the *ClearNav Nexus Junction Box* and the handheld and stick mounted remote control units. It is also used in 2-seat gliders to connect two *ClearNav* units together so they can share data – such as air data from a Cambridge 302 or other air data source. It is also used to connect the *ClearNav* to other Soaring instruments.

All Soaring CANbus devices (except the remote controls) have 2 CANbus jacks – to allow multiple units to be easily daisy-chained together. The *Nexus Junction Box* therefore has 2 CANbus connectors. Both CANbus jacks have the same function.

Below is an example CANbus network which includes a handheld remote control:



Below is an example CANbus network which includes a stick-mounted remote.

