

## PROTECTED JUNCTION BOX

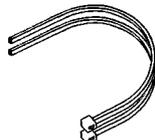
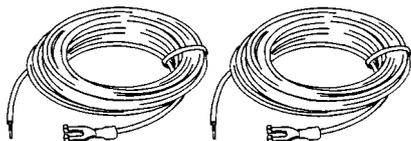
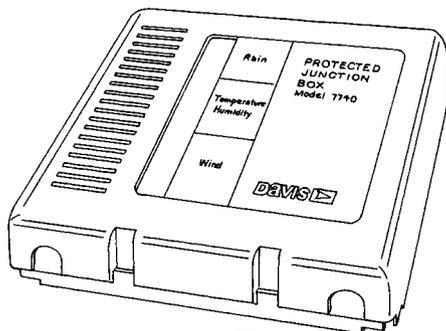
The Protected Junction Box may be used in place of the junction box supplied with your Davis Weather Monitor II™ or Weather Wizard III™. The Protected Junction Box offers limited protection from radio frequency interference (RFI) and limited surge protection. It may be placed out of doors, but only if placed inside one of Davis's shelters or other weather-proof enclosure. The cable run between the Protected Junction Box and the station console may be a maximum of 200' (60 m).

This instruction manual takes you step-by-step through the process required to connect and mount your Protected Junction Box. Please take the time to read this manual before beginning the process.

### COMPONENTS

The Protected Junction Box includes the following components. Please make sure you have all listed components before continuing.

- ◆ Protected Junction Box
- ◆ Two 16.5-foot (5 m) Ground Wires (12 AWG)
- ◆ Three #6 x 1" (25 mm long) Self-Threading Screws
- ◆ Two Cable Ties
- ◆ Four Adhesive Pads



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## TOOLS AND MATERIALS NEEDED

In addition to the components listed above, you may need some of the following tools and materials. Please be sure you have everything you need before beginning the installation.

- ◆ Medium Slotted Screwdriver
- ◆ Sheet of Small Labels

## DISCONNECTING THE EXISTING JUNCTION BOX

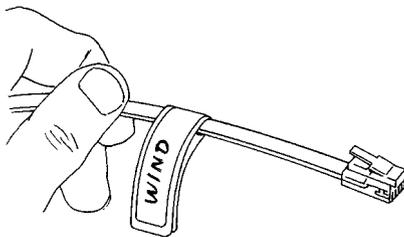
If necessary, consult your weather station manual for instructions on disconnecting the cables from your existing junction box and removing the existing junction box from its mounting location.

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**Note:** Do not throw away your existing junction box. The surge absorbers in the Protected Junction Box may “blow” if they absorb a direct or near lightning strike. In this case, you may use your old junction box to keep the station operating while the Protected Junction Box is repaired (provided your sensors haven’t “blown” as well).

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We recommend that you label the end of each cable as you disconnect it. For example, write “WIND” onto one half of a small label (not provided) and then wrap that label around the anemometer cable about 3” (75 mm) from the phone plug. This will help you identify the cables when attaching to the Protected Junction Box.



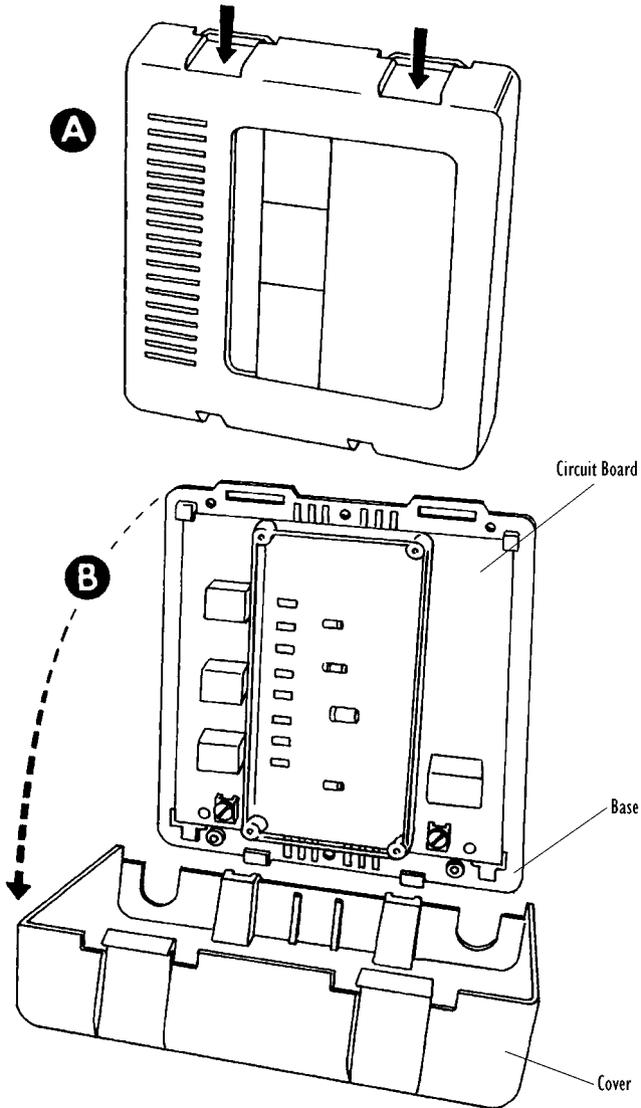
LABELING YOUR CABLES

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## MOUNTING THE PROTECTED JUNCTION BOX

You may mount the Protected Junction Box against a wall or other vertical surface or you may simply set it down on a horizontal surface.

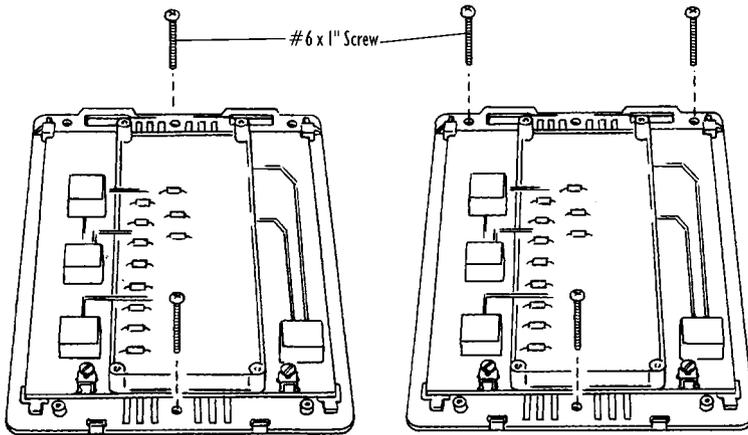
1. Remove the cover from the Protected Junction Box by pushing down on the tabs at the top until you can remove the tabs from the slots.



REMOVING THE COVER

2. If you plan to mount the Protected Junction Box against a wall or other vertical surface, attach the base to the mounting surface using the #6 x 1" screws. Otherwise, skip this step.

Use two screws (as pictured below) when attaching to a stud. Use three screws (as pictured below) in any other case. Tighten the screws until the base is securely fastened to the mounting surface. Do not overtighten.

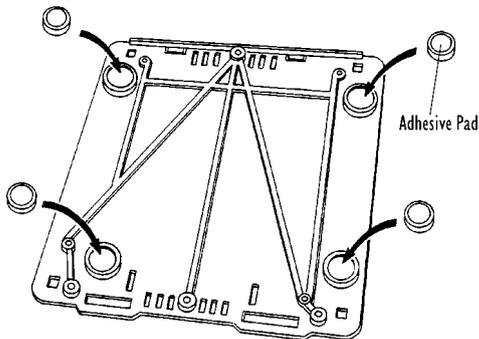


Use two screws if attaching to a stud.

Use three screws if attaching anywhere else.

#### ATTACHING THE BASE TO THE MOUNTING SURFACE

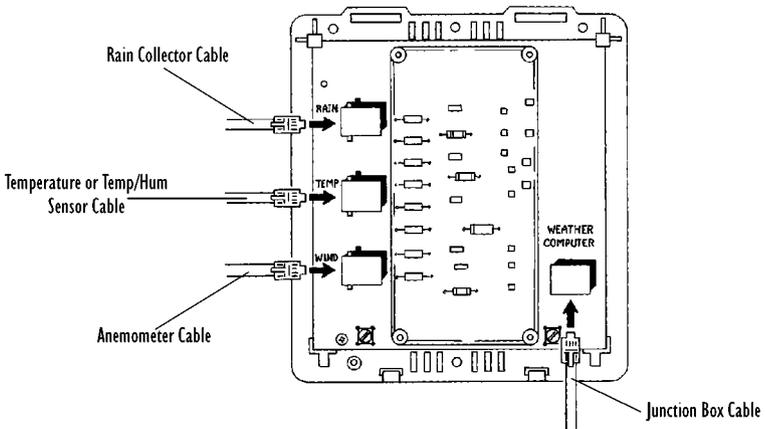
3. If you plan to place the Protected Junction Box on a horizontal surface, attach one of the adhesive pads to each of the four raised circles on the underside of the base. Otherwise, skip this step.



#### ATTACHING ADHESIVE PADS

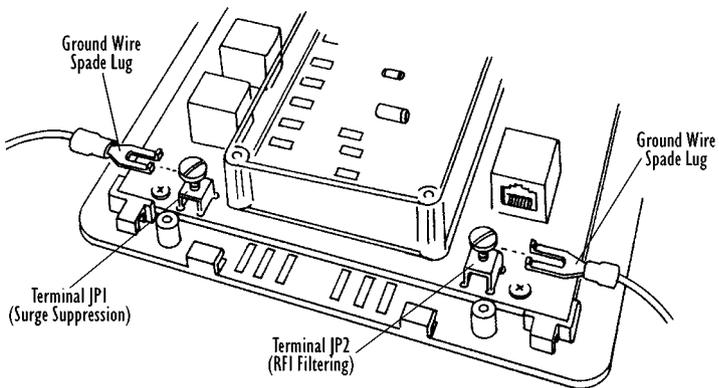
4. Insert the Rain Collector cable into the connector marked RAIN.
5. Insert the cable from your External Temperature Sensor, External Temperature/Humidity Sensor, or Stainless Steel Temperature Sensor into the connector marked TEMP.
6. Insert the anemometer cable into the connector marked WIND.

7. Insert the junction box cable into the connector marked WEATHER COMPUTER.  
The length of cable between the station console and the Protected Junction Box may be a maximum of 200' (60 m).



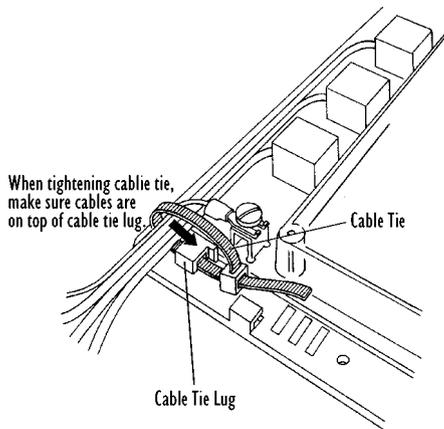
CONNECTING THE CABLES

8. If you want to use the Protected Junction Box's surge suppression capabilities, loosen the screw in terminal JP1 (the lower left of the circuit board).  
See "Surge Protection" on page 7 for more information.
9. Place the spade lug at the end of the ground wire under the screw head.
10. Secure the ground wire by re-tightening the screw in terminal JP1.
11. If you want to use the Protected Junction Box's RFI protection, repeat steps 8-10 using the other ground wire and terminal JP2 (the lower right of the circuit board).  
See "RFI Filtering" on page 8 for more information.



GROUNDING THE PROTECTED JUNCTION BOX

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12. Gather the RAIN, TEMP, and WIND cables and the ground wire from JP1 and secure them to the cable tie lug using a cable tie.
- When tightening the cable tie, make sure the cables are on top of the lug.

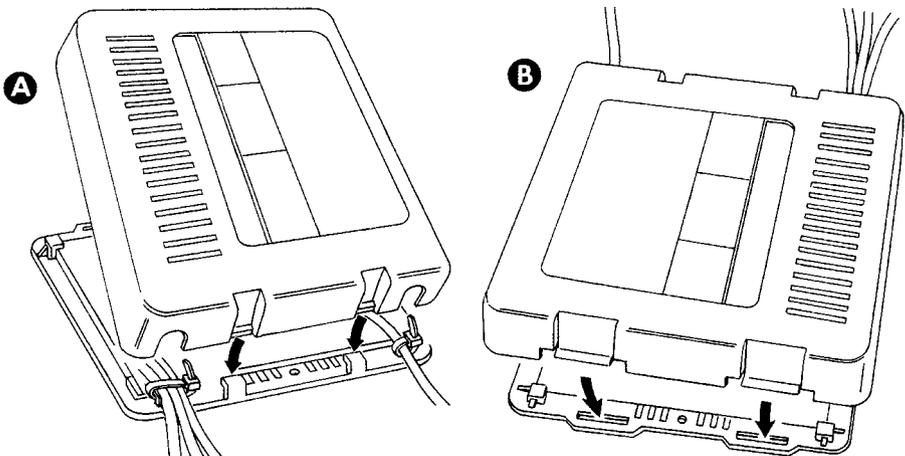


SECURING CABLES TO CABLE TIE LUG

13. Gather the junction box cable and the ground wire from JP2 and secure them to the cable tie lug using a cable tie.
- When tightening the cable tie, make sure the cables are on top of the lug.

**Note:** Even if you are not using a ground wire at terminal JP2, secure the junction box cable to the cable tie lug for strain relief.

14. Reattach the Protected Junction Box cover to the base.
- Make sure the tabs on top of the cover snap back into their slots, locking the cover in place.



REATTACHING THE COVER

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## GROUNDING THE PROTECTED JUNCTION BOX

Grounding the Protected Junction Box at terminals JP1 and JP2 provides both surge protection and filtering of radio frequency interference (RFI).

### Surge Protection

The Protected Junction Box includes a microgap surge absorber on each sensor input wire that shunts current pulses to ground. The surge absorbers operate when the voltage exceeds 200 Volts (the weather station is designed to withstand short pulses at 200 Volts) and can handle current pulses of up to 500 Amps. They provide excellent protection against electrostatic discharge (ESD) and most secondary surges caused by lightning. Surge absorbers will not, however, withstand a direct or near lightning strike.

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**Note:** *You may see blue flashes inside a surge absorber when they are operating. This is a normal indication that surges are being absorbed.*

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If the current load is too great, surge absorbers will “blow” (when “blown,” they will appear black inside). It is possible, in extreme cases, for an absorber to shatter, so it is important that you keep the clear plastic cover on the Protected Junction Box at all times. Unless it has been otherwise damaged, the Protected Junction Box will continue to function normally when surge absorbers “blow,” however the surge protection will no longer be present.

In order for surge protection to be effective, you must connect the Protected Junction Box to an earth ground from terminal JP1. This connection should use as heavy and as short a wire as possible. The 16.5-foot (5 m) 12AWG wire provided works well. Connect one end of the ground wire to terminal JP1 and connect the other end to a suitable earth ground. The best earth ground is a copper rod driven into the earth. Alternatively, you may connect to a grounded metal cold water pipe.

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## RFI Filtering

The Protected Junction Box includes built-in RFI filtering capabilities. In order for these capabilities to be most effective, however, you must connect the Protected Junction Box to an earth ground from terminal JP2. This connection should use as heavy and as short a wire as possible. The 16.5-foot (5 m) 12AWG wire provided works well. Connect one end of the ground wire to terminal JP2 and connect the other end to a suitable earth ground. The best earth ground is a copper rod driven into the earth. Alternatively, you may connect to a grounded metal cold water pipe.

Be aware that connecting JP2 to ground can cause measurement errors (especially in temperature) in some cases. To correct the problem, you should isolate the weather station from any other connections to ground:

- ◆ Use an ungrounded power adapter for the weather station.
- ◆ Use a Link Isolator (#7764) to isolate the weather station from the computer's ground.
- ◆ If RFI is not a problem in your installation, you may omit grounding the Protected Junction Box at terminal JP2.

## MAINTENANCE INSTRUCTIONS

You should periodically look at the surge absorbers to insure that none of them has "blown" (turned black inside). If an absorber blows you may obtain a replacement part from Davis or send the Protected Junction Box back for repairs. Call the service department before returning the Protected Junction Box. While your Protected Junction Box is being repaired, you may use your old junction box to keep the weather station operating.

Product Number: 7740

Davis Instruments Part Number: 7395-098

Protected Junction Box

Rev. B Manual (7/7/99)

This product complies with the essential protection requirements of the EC EMC Directive 89/336/EC.

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