

External Control/Monitor Operation

Pin	Colour	Function
1	Green	Standby/Reset
2	Black	Manual On
3	Orange	Deice On Monitor
4	Red	Deice On Monitor
5	White	Return

An external control/monitor jack is provided on the **DS-2B**. Order the optional "C/M Cable" to access this feature. Connecting Black to White will activate the "Manual On" function. Connecting Green to White will activate the "Standby/Reset" function.

The Red/Orange leads are connected to an internal low power monitor relay. This relay, rated at 24 VAC/VDC at 400 ma, will close with the load relay and can be used to externally monitor activation of the sensor.

Moisture Grid Maintenance and Replacement

It is recommended that the **DS-2B** be powered down and the grid wiped clean with clear water at least once every 4 months. Heavy deposits may be removed using Scotch-Brite™. However, after a number of years, the corrosive elements left behind when water is evaporated out of the moisture grid will eventually damage the grid rings. The moisture grid can be easily replaced by ordering and installing a new MG-1 "Moisture Grid Assembly" and following the procedure below:

THIS PROCEDURE SHOULD ONLY BE PERFORMED BY QUALIFIED PERSONNEL!

Open all power and load breakers connected to the **DS-2B**. Open the front cover and remove the cable from the Grid Jack (see figure above). While holding the reducing bushing, unscrew and remove the old moisture grid. Install the supplied thread sealing tape, place the new grid into the top hole and screw the assembly into the reducing bushing. Tighten the grid hand tight plus ¼ turn. Reconnect the new cable to the Grid Jack. Confirm that the four connector pins are properly aligned with the jack. Close the front cover and reapply power.

LIMITED WARRANTY

The **DS-2B** is warranted against defects in workmanship and materials for two years from date of sale. This warranty does not apply to damage resulting from accident, misuse, or alteration nor where connected voltage is more than 5% above the configured operating voltage, nor to equipment improperly installed or wired or maintained in violation of this Owner's Manual. No other written or oral warranty applies. No employee, agent, dealer or other person is authorized to give any warranties on behalf of ASE.

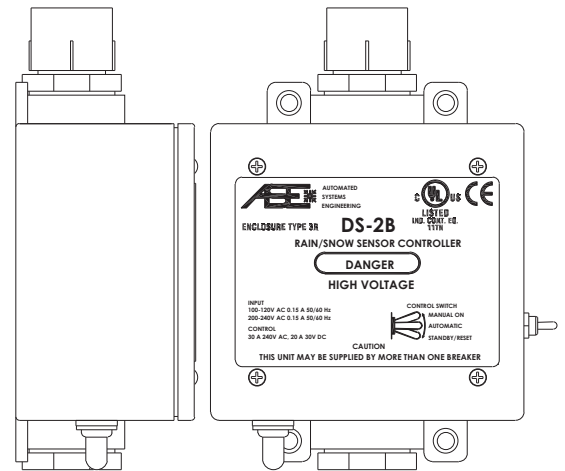
The customer shall be responsible for all costs incurred in the removal or reinstallation and shipping of the product for repairs. Within the limitations of this warranty, inoperative units should be returned, freight prepaid, to ASE, and we will repair or replace, at our option, at no charge to you with return freight paid by ASE. It is agreed that such repair or replacement is the exclusive remedy available from ASE and that ASE IS NOT RESPONSIBLE FOR DAMAGES OF ANY KIND, INCLUDING INCIDENTAL AND CONSEQUENTIAL DAMAGE.

CAUTION: Read all instructions carefully before installation. Save this Installation Manual for future reference.

DS-2B

RAIN/SNOW SENSOR CONTROLLER

Installation Manual



Manufactured By



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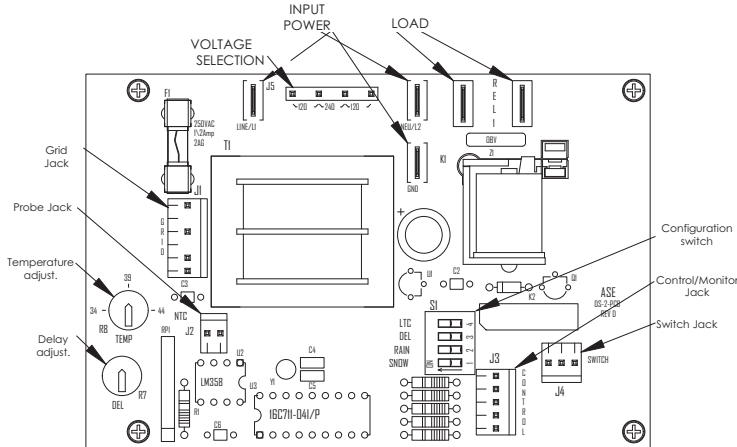
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DS-2B

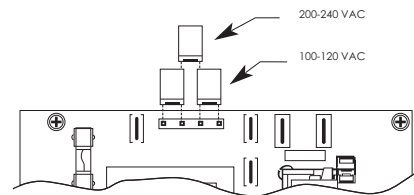
General Safety Instructions

1. **THIS UNIT SHOULD BE INSTALLED, OPENED, AND REPAIRED BY QUALIFIED PERSONNEL ONLY!**
2. To avoid shock hazard do not open the front cover with power connected to the **DS-2B** or any controlled equipment.
3. Confirm that the power selection jumpers are properly set prior to applying power.
4. To avoid fire hazard replace fuse F1 with a 1/2 Amp 250 VAC 2AG fast acting fuse **ONLY**.

Funcion	Trigger	Delay	LTC	DEL	Rain	Snow
Snow sensor without LTC	TT<AT	2 min	Off	Off	Off	On
Snow sensor with LTC	TT>>AT>15 °F (-9° C)	2 min	On	Off	Off	On
Snow controller without LTC	TT>AT	30-90 min	Off	On	Off	On
Snow controller with LTC	TT>AT>15 °F (-9° C)	30-90 min	On	On	Off	On
Precipitation sensor	Not used	2 min	X	Off	On	On
Precipitation controller	Not used	30-90 min	X	On	On	On
Rain sensor	AT>TT	2 min	X	Off	On	Off
Rain controller	AT>TT	30-90 min	X	On	On	Off



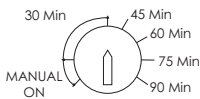
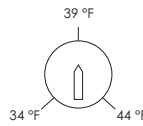
Voltage Selection, Power and Load Connection



Setting the Configuration Switches

The following table outlines the operating modes for the **DS-2B** and explains the functions of the adjustments.

Trigger temp (**TT**) is adjustable from 34° F-44° F using the "Temp Adjust" control. When ambient air temp (**AT**) is below this trigger point precipitation is assumed to be snow or freezing rain. When above, precipitation is assumed to be rain.



"Delay Off" refers to the drying cycle timer of the **DS-2B**. The timer allows the **DS-2B** to dry the heated surface through evaporation once precipitation has stopped. The drying cycle reduces the chance of moisture left behind refreezing into ice. This timer is restarted by each precipitation detection. Therefore, the **DS-2B** will continue to operate as long as precipitation is detected, then for the Delay Off period once precipitation has stopped. All "sensor" modes provide a minimum 2 minute closure to reduce cycling of an external controller or feed blower. When in "controller" mode the Delay Off time can be adjusted from 30-90 minutes using the "Delay Adjust" control. Note the "Manual On" function at the low end of the Delay Adjust control. The relay will close when this area is entered and open when exited.

The Low Temperature Cutoff (LTC) option is typically used on snow melting systems with limited output capacity. If selected, the sensor will not trigger if precipitation is detected below 15°F (-9° C). However, if the deicing system has been activated, precipitation continues, and the ambient temperature drops below 15°F (-9° C), LTC will be ignored. This assures that water on the surface from melting snow will not immediately refreeze into ice as a result of deactivating the deicing system. Reference the following table for configuration switch settings.

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The **DS-2B** requires a 100-120VAC or 200-240VAC power source. Install the voltage select jumpers as shown. Power consumption for the **DS-2B** is 15 Watts, 50-60 Hz. The controlled load is switched by the load relay through the "Load Connection" points. The load relay is rated for 30 Amps/277 VAC. Consult local electrical codes for the wire color and size for both power and load connections.

The **DS-2B** can be mounted by screwing the conduit hub onto an appropriate size conduit or by using the mounting holes in each corner of the enclosure. **DO NOT DRILL HOLES THROUGH THE ENCLOSURE FOR MOUNTING!** This can allow water into the enclosure causing a potential shock or fire hazard.

Manual Override Switch Operation

An override switch mounted on the side is provided for testing and special operational requirements. Placing the switch in the "Automatic" position will allow the sensor to operate normally, activating the controlled equipment as needed. Placing the switch in "Manual On" will close the load relay, activating the controlled equipment. The "Standby/Reset" position prohibits triggering of the unit, clears any active delay timer, and opens the load relay. The manual override switch works in concert with the external control/monitor inputs discussed below. A "Standby/Reset" input from one source will override an "Automatic" or "Manual On" input from the other source. **The "Manual On" mode will remain in effect for a maximum of 40 hours, then return to "Automatic" mode.**

A new feature has been added to the **DS-2B**. If the switch is placed in "Manual On" for less than 2 seconds, then switched back to "Automatic" the controller will execute one delay off cycle.

This can be used to clear antennas with a frost or hail buildup without the danger of leaving the system in a continuous "Manual On" condition. "Standby/Reset" can still be used to clear this delay off cycle.

Snow Melt Control - 120/208/240V

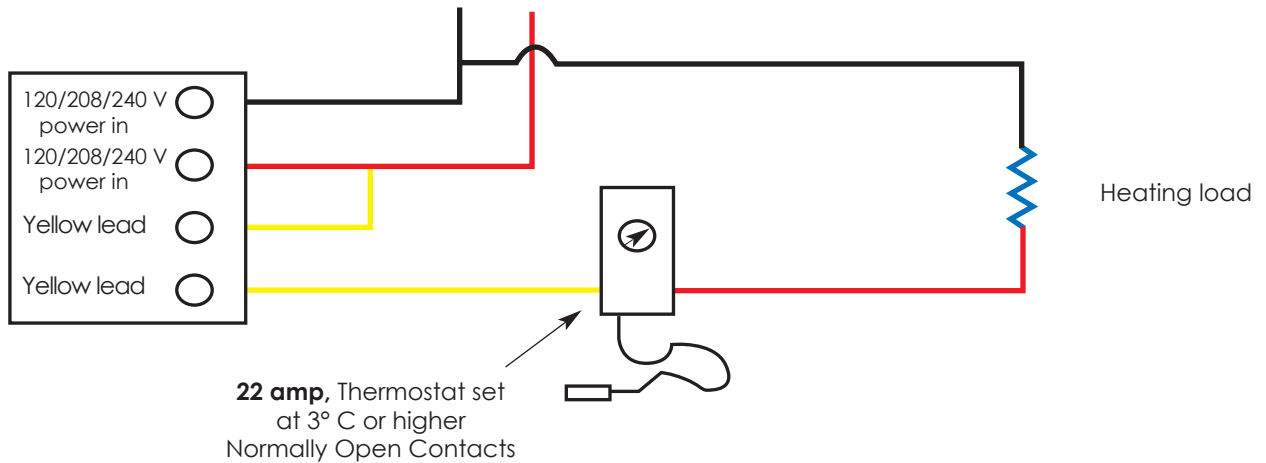
Maximum 22 amp, 120/208/240 Volt supply to sensor and thermostat

DS-2B SCHEMATIC

(DIRECT CONNECTION - **FOR LOADS UNDER 22A**)

Field selectable for
120/208/240 volt
(factory set 240 volt)

120/208/240
volt supply



Check instruction manual to ensure the timer, temperature setting and dip switches are set.

Timer should be set for 90 minutes "ON".

Temperature switch set to 34 to 35° F.

Dip switches set as follow:

LTC :	OFF
DEL :	ON
RAIN :	OFF
SNOW :	ON

NOTE :

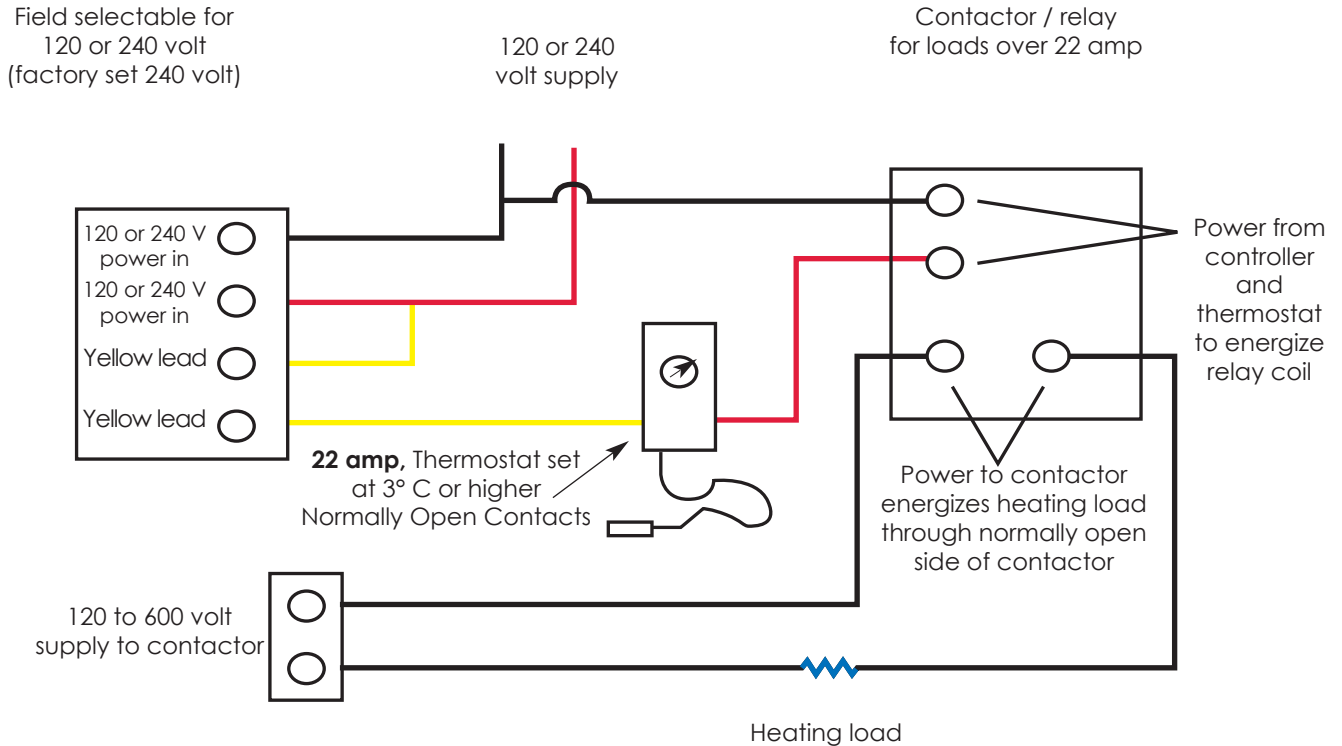
FAILURE TO ACCURATELY SET ALL FUNCTIONS WILL RESULT IN POOR PERFORMANCE.

Snow Melt Control - 120 to 600 V

Maximum 22 amp, **120 OR 240** Volt supply to sensor and thermostat

DS-2B SCHEMATIC

(CONTACTOR/RELAY - **FOR LOADS OVER 22A**)



Check instruction manual to ensure the timer, temperature setting and dip switches are set.

Timer should be set for 90 minutes "ON".

Temperature switch set to 34 to 35° F.

Dip switches set as follow:

LTC :	OFF
DEL :	ON
RAIN :	OFF
SNOW :	ON

NOTE :

FAILURE TO ACCURATELY SET ALL FUNCTIONS WILL RESULT IN POOR PERFORMANCE.

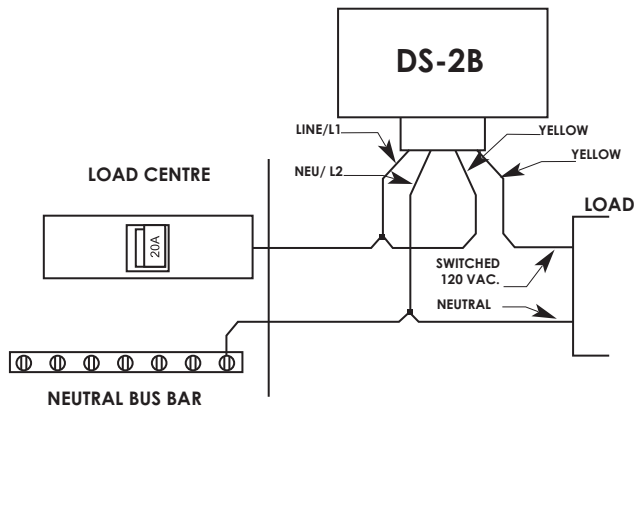
Pre-Season Testing: DS-2B

It is always a good idea to test the operation of the **DS-2B** prior to the winter season. Procure some clean water and, if the outdoor temperature is above the trigger point, a can of spray component cooler (Radio Shack -The Source - Part #64-4321 or equivalent). Clean the moisture grid following the procedure outlined above and allow it to dry. Apply power to the **DS-2B** and confirm that the lamp shows a steady indication. Drip some of the water onto the moisture grid, and then spray the temperature sensor protruding from the base of the **DS-2B** enclosure with the component cooler. Once the temperature sensor has reached the trigger point with water still present on the grid the **DS-2B** will activate. The user should hear the internal control relay close and the indicator will begin flashing. Proper operation has now been confirmed. To clear the Delay-Off timer place the override switch into "Standby/Reset", and then back to "Automatic."

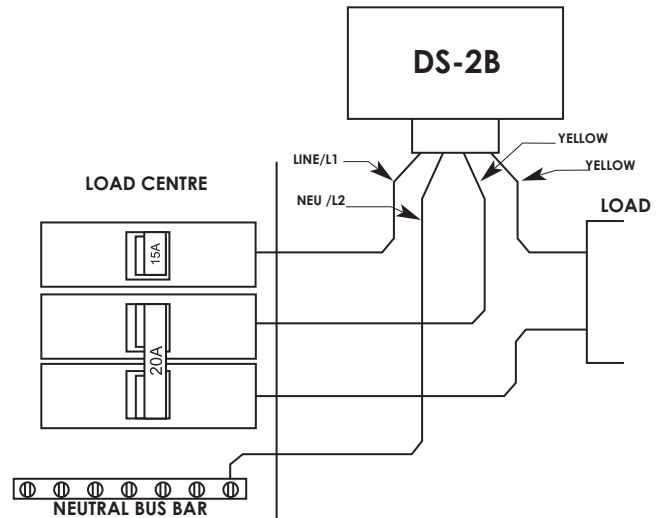
Typical load wiring:

The two load leads of the **DS-2B** do **not** supply power directly to your load. The relay inside the **DS-2B**, like a switch or thermostat, is used to switch a voltage of your choice. While not as convenient as directly supplying power for the load this allows you to operate the **DS-2B** from one voltage while controlling a load of a different voltage without adding an external relay or contactor. For example, the **DS-2B** can be powered from 120VAC but can directly control a 24VAC signal for a boiler system or 240VAC for heating wire. The following diagrams show some possible wiring schemes for connecting the **DS-2B** to your load. Your load may be a direct connection to a heater, a contactor, or a control voltage. For clarity the safety GROUND leads are **not** shown.

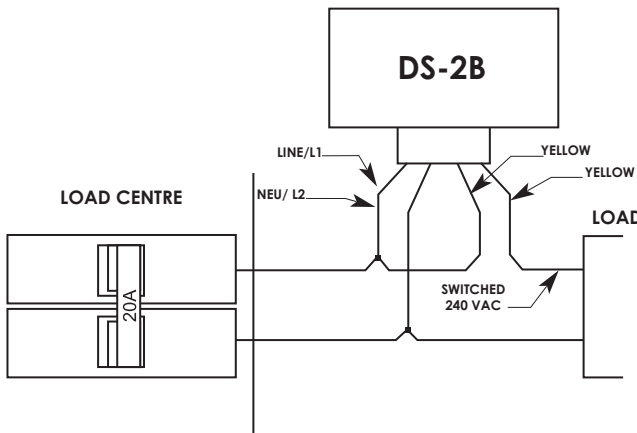
These are just some of the possible wiring schemes that can be used to connect the **DS-2B** to your load for control. The **DS-2B** should always be strapped for the voltage that is connected to Line/L1 and Neu/L2. **Remember, these are only suggestions. You should always check with a qualified electrician to insure conformance with local electrical codes!**



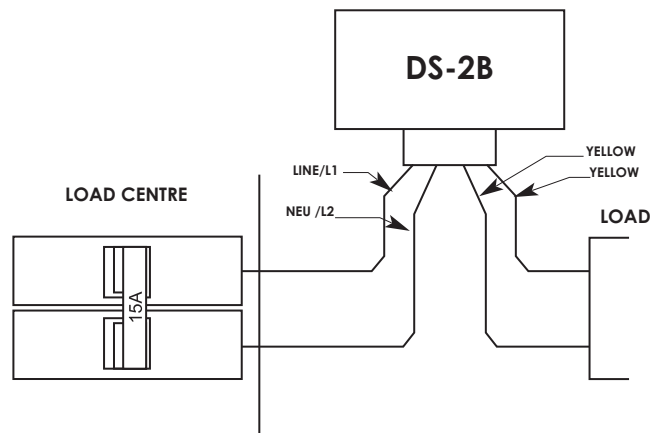
120VAC In, 120VAC Load Shared Feed (Strap DS-2B for 120VAC Power)



120VAC In, 240VAC Load Separate Feed (Strap DS-2B for 120VAC Power)



240VAC In, 240VAC Load Shared Feed (Strap DS-2B for 240VAC Power)



240VAC In, Thermostat-Style Control (Strap DS-2B for 240VAC Power)