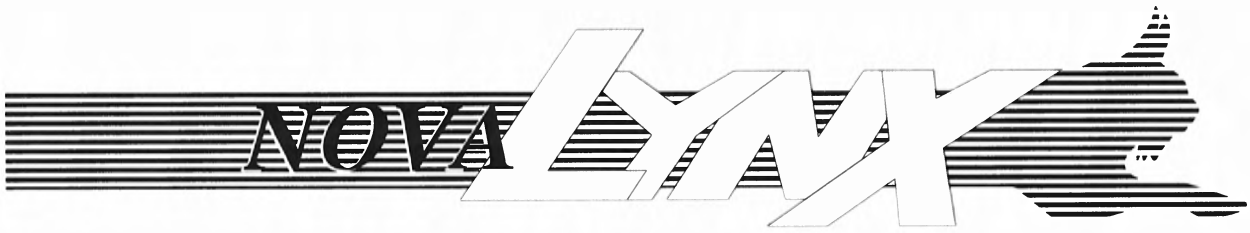
NOVALYNX CORPORATION

MODEL 260-2590
PRECIPITATION DETECTOR

INSTRUCTION MANUAL



Receiving and Unpacking

Carefully unpack all components and compare to the packing list. Notify NovaLynx Corporation immediately concerning any discrepancy. Inspect equipment to detect any damage that may have occurred during shipment. In the event of damage, any claim for loss must be filed immediately with the carrier by the consignee. Damage to equipment sent via Parcel Post or UPS require the consignee to contact NovaLynx Corporation for instructions.

Returns

If equipment is to be returned to the factory for any reason, call NovaLynx between 8:00 a.m. and 4:00 p.m. Pacific Time to request a Return Authorization Number (RA#). Include with the returned equipment a description of the problem and the name, address, and daytime phone number of the sender. Carefully pack the equipment to prevent damage or additional damage during the return shipment. Call NovaLynx for packing instructions in the case of delicate or sensitive items. If packing facilities are not available take the equipment to the nearest Post Office, UPS, or other freight service and obtain assistance with the packaging. Please write the RA# on the outside of the box.

Warranty

NovaLynx Corporation warrants that its products are free from defects in material and workmanship under normal use and service for a period of one year from the date of shipment from the factory. NovaLynx Corporation's obligations under this warranty are limited to, at NovaLynx's option: (i) replacing; or (ii) repairing; any product determined to be defective. In no case shall NovaLynx Corporation's liability exceed product's original purchase price. This warranty does not apply to any equipment that has been repaired or altered, except by NovaLynx Corporation, or that has been subjected to misuse, negligence, or accident. It is expressly agreed that this warranty will be in lieu of all warranties of fitness and in lieu of the warranty of merchantability.

Address

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Precipitation Detector

1.0 INTRODUCTION

1.1 NovaLynx Corporation manufactures a Precipitation Detector, Model 260-2590. The purpose of the 260-2590 is to sense the onset of rain and to provide a switch contact during the rain event. The switch contact may be used to record rain events or to operate other equipment through external relays.

1.2 The NovaLynx Precipitation Detector employs a gold plated grid sensor. The grid sensor becomes a short circuit whenever it becomes wet. Upon becoming wet, the Precipitation Detector circuit triggers an integrated circuit that in turn activates an internal relay. The relay output is an isolated Form A contact. The integrated circuit and relay are reset as soon as the grid dries off. By using internal heaters to continuously dry the grid, the Precipitation Detector can be used to determine the difference between light precipitation events such as dew or rain showers and longer events such as fog and rain storms. The heater will reset the circuit for the next rain event by drying off the grid. During normal rain storms, rain is being continuously deposited onto the grid's surface causing the output relay to remain energized until the rainfall ceases and the grid dries off.

1.3 For applications requiring the use of the Precipitation Detector to act as a controller, an external time delay relay may need to be added between the output relay of the detector and the device that is being controlled. The time delay relay is necessary to prevent the rapid cycling of the control signal during light rains and showers. The type of device being controlled by the detector may be a skylight, movable roof, irrigation system, fountains, large doors, etc.

1.4 The Precipitation Detector has been designed for installation onto a pipe or mast having a maximum diameter of 1 5/8" O.D. A U-bolt is provided for mounting the assembly onto the pipe.A wind screen is provided for exposed locations that experience frequent winds,. The wind screen shields the grid sensor to prevent premature drying of the surface and to prevent rain from blowing past the sensor. The wind screen is designed to simulate a standard 8" rain gauge collection funnel.

1.5 NovaLynx has designed the Precipitation Detector for operation from a +12 VDC power source making it suitable for use with remote, battery powered, weather stations. A 100-240 Vac power adapter is provided. The power adapter must be not be exposed to rain and should be located indoors or inside a rain resistant electrical box.

1.6 The standard Precipitation Detector is supplied equipped with a five-conductor signal and power cable. Three wires are used for the relay contact output and two other wires are used for the +12 Vdc power.

2.0 SPECIFICATIONS

2.1 Precipitation Detector:

Sensor:	Gold Plated Grid
Output:	Form A Relay Contact Rating 0.5 amp @ 125 Vac 1.0 amp @ 24 Vdc
Power:	+12 Vdc @ 235 mA Max (100-240 Vac 50-60 Hz to 12 Vdc Adapter)
Cable:	25 ft, 5 Conductor, 24 AWG, with PVC Jacket
Size:	4" Dia x 2" High
Mounting:	U-bolt for 1.3" to 1.6" O.D. Mast
Windscreen:	8" Dia x 5" High
Weight:	2 lbs
Shipping:	5 lbs

3.0 INSTALLATION

3.1 NovaLynx recommends that the Precipitation Detector be installed to provide the best possible exposure for local rain conditions. For use in open areas, the wind screen should be placed around the detector to prevent high winds from blowing the rain past the detector grid. The wind screen is 8" in diameter and should provide the same exposure as an 8" rain gauge. Special applications may not permit use of the wind screen.

3.2 Use a 1.3" to 1.6" outside diameter pipe or tube for standard mounting of the Precipitation Detector. A 1 5/8" inside diameter u-bolt is provided for mounting the Precipitation Detector assembly onto the mast.

>Tilt the detector body to allow rain to flow across the grid.
>Align the Wind Screen slots with those of the u-bolt.
>Place the u-bolt around the mast and insert it through the slots of the Wind Screen and the u-bracket.
>Adjust the Wind Screen and u-bolt until they are level.
>Tighten u-bolt hex nuts.
>On aluminum towers avoid over-tightening the u-bolt nuts.
>Drape cable down through Wind Screen.
>Fasten cable to pipe to prevent movement in high winds. Use wire ties.

3.3 Generally, the detector cable will terminate inside an electrical box or the housing of another piece of equipment. Use a shielded terminal block or insulated electrical wire nuts to provide protected termination of the cable wires. The power adapter, when used, should be placed inside the same enclosure as the cable terminals, whenever possible. The +12 VDC power wires from the adapter should attach to the detector wires at the terminal block. If the power adapter is to be placed into a nearby electrical box, the box should be water-proof and the wires run inside conduit whenever possible.

3.4 **Caution:** After power has been applied to the Precipitation Detector, the grid sensor surface will become heated. Under certain conditions the grid surface can become hot. Avoid touching the grid sensor directly. Oils in human skin may affect the grid sensor operation.

3.5 Check the operation of the Precipitation Detector. Sprinkle or spray water onto the grid sensor. Observe the output signal wires for a change from open to short (infinite resistance to zero resistance). Operation can also be checked by listening for the relay switching and touching the grid with a damp cloth or paper towel. Observe the grid to detect a drying of the grid followed by switching of the relay. The relay output signal should switch back to the open (infinite resistance) status at this time.

4.0 THEORY OF OPERATION

4.1 The purpose of the Precipitation Detector is to provide local or remote sensing of rain events without regard to the amount of rain. The output of the detector circuit is a relay contact that can be used to initiate data collection or to control other equipment. The Precipitation Detector is suited for use in any application where the on-set of rain or moisture must be detected and a switch closure is required to indicate the event.

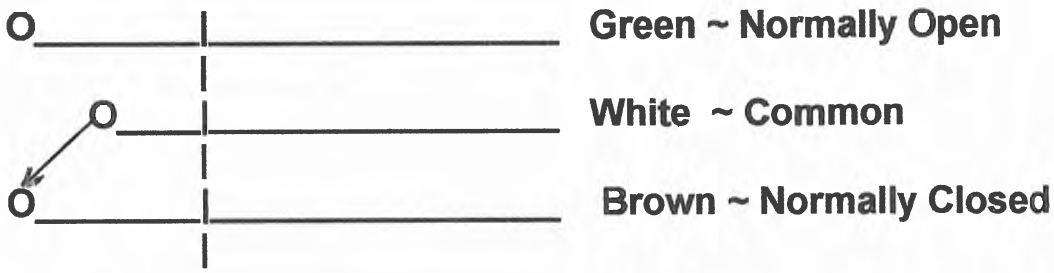
4.2 Through the use of solid state, surface mount technology, NovaLynx has designed a low-cost Precipitation Detector that provides an instantaneous relay contact closure as soon as moisture contacts any part of the grid sensor. An internal relay provides an isolated switch closure that can be used with data loggers, computers, larger external control relays, and other switch or relay driven equipment.

4.3 The sensing element is a gold plated grid that becomes a short circuit whenever moisture is deposited between the grid fingers. The grid circuit is gold plated to prevent corrosion and degradation due to the composition of rain water and due to exposure to atmospheric contaminants. An alternating current excitation is used to power the grid sensor to prevent plating over of the metal contacts as is the case for DC powered grids.

4.4 Four resistive heaters continuously attempt to dry out the grid sensor. The purpose of the drying is to enable rapid detection of the start of the next rain event as is the case in light rain showers. The heater is also used to keep the grid dry to help prevent fog or dew from triggering the circuit. As soon as the grid sensor is dry, the detector circuit opens the relay and waits for the next moisture contact. The heater circuit is powered by the +12 VDC input power.

4.5 The detector circuitry drives an internal, miniature relay that produces a Form A, switched output. As soon as power is applied to the detector circuit, the relay becomes energized and the output switch contacts are opened. The switch contacts will close whenever the grid is wet or whenever power is disconnected. All three Contacts are available, Common N.O and N.C.

CAUTION : ~~~~ DO NOT EXCEED Relay Contact Ratings ~~~~~
(.5 amps @ 125 vac or 1 amp @ 24vdc)



In Some ~ **Rare Cases** ~ with extended periods of rainfall and Environmentally Clean Areas, the rainfall will become 100% pure distilled water and become non-conductive, If this occurs the relay output will Open when it is raining. If this happens, You may try suspending a piece of rock salt 8" to 10" above the grid, or something to add impurities back into the rain This will make the 100% pure Rain, conductive once again.

5.0 MAINTENANCE

5.1 Maintenance of the Precipitation Detector is limited to routine cleaning and regular inspections. Keep the area inside the wind screen free of debris. Rinse off the grid sensor using clean tap water. Use a clean cloth to remove dirt and debris from the grid sensor. For grid sensors that are extremely dirty, gently clean the grid fingers using a soft, rubber eraser. Use slightly more pressure to clean the board surfaces between the grid fingers. Do not use anything that is abrasive on the grid sensor. Remember to brush off the eraser dust.

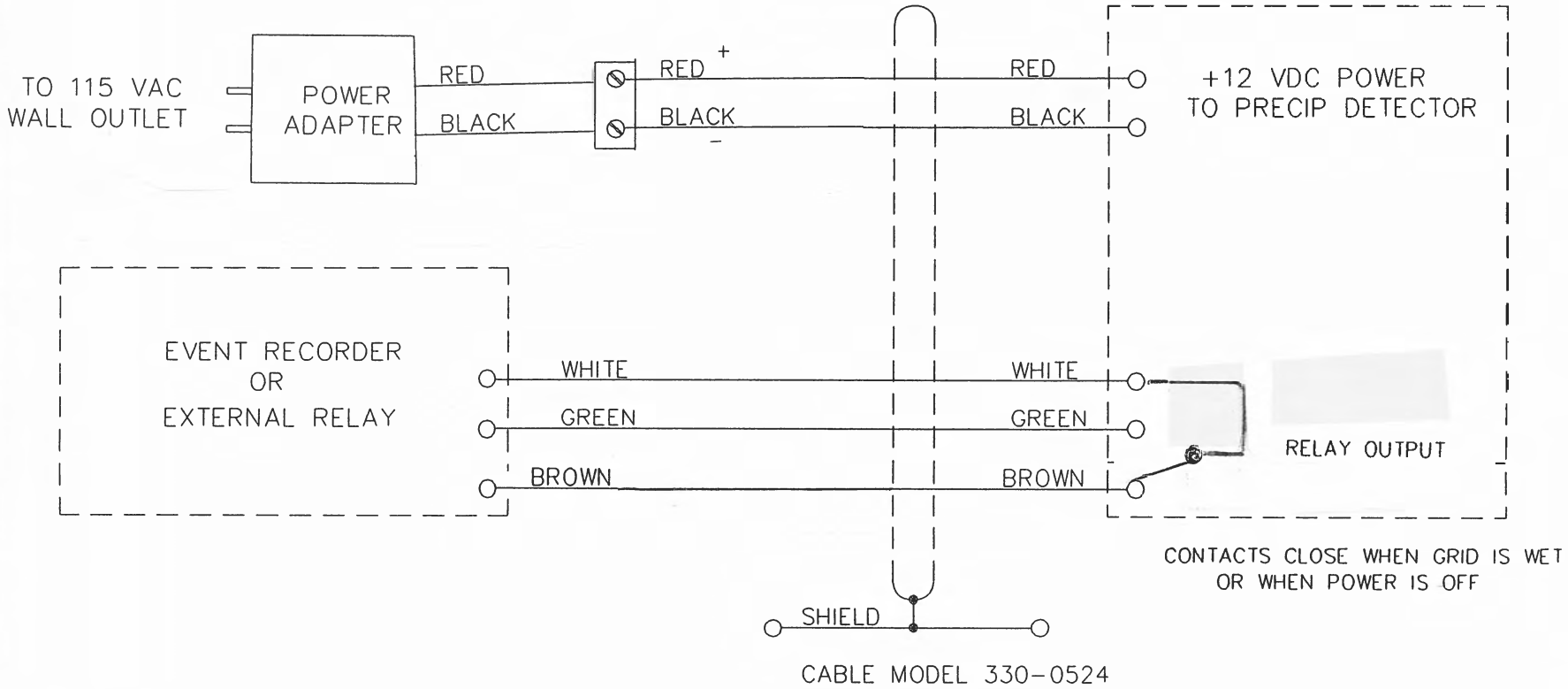
5.2 Inspect the shield's painted surfaces for corrosion. Repaint with a glossy white paint if necessary. Do not use paint next to the grid sensor. Perform any painting functions at another location to avoid getting paint on the grid sensor's surface.

5.3 Replace any rusted or corroded hardware such as mounting bolts, hex nuts, and washers.

5.4 Check for loose or missing mounting hardware.

6.0 DRAWINGS

6.1 The following pages contain drawings showing the Precipitation Detector assembly, schematic, and installation details. Refer to these drawings for information during installation and maintenance procedures.



NOTES:
1. POWER ADAPTER IS FURNISHED WITH PRECIP DETECTOR.
2. EVENT RECORDER OR EXTERNAL RELAY IS CUSTOMER FURNISHED.
3. WIRING CONNECTIONS MAY BE MADE USING TERMINAL STRIPS, WIRE NUTS, OR DIRECT WIRE SPLICE.
4. WEATHER PROOF ENCLOSURE RECOMMENDED FOR WIRING CONNECTIONS THAT WILL BE EXPOSED TO WEATHER.

NOVALYNX CORPORATION

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TITLE: SCHEMATIC, WIRING DIAGRAM
PRECIPITATION DETECTOR

MODEL USAGE 260-2590 | SHEET 1 OF 1

BY RGN | SCALE NONE | DWG. NO. 10000289

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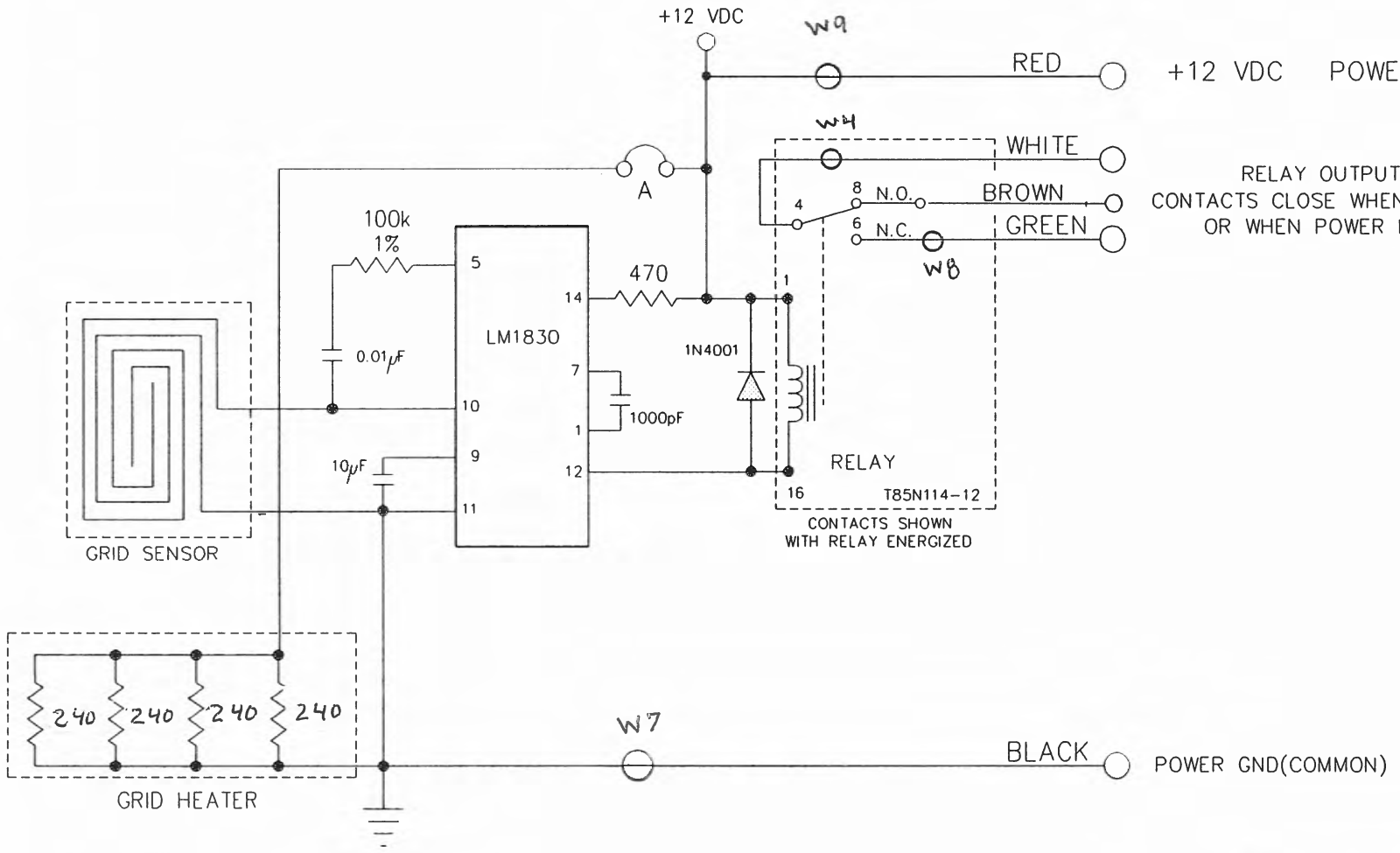

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TITLE: SCHEMATIC, PRECIPITATION DETECTOR		
MODEL USAGE 260-2590		SHEET 1 OF 1
BY RGN	SCALE NONE	DWG. NO. 10000288
DATE 4-1-01		

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TITLE INSTALLATION, PRECIPITATION DETECTOR, MODEL 260-2590			
MODEL USAGE 260-2590		SHEET 1 OF 1	
BY RGN	SCALE 1:1	DWG NO.	10000233
DATE 1-20-05