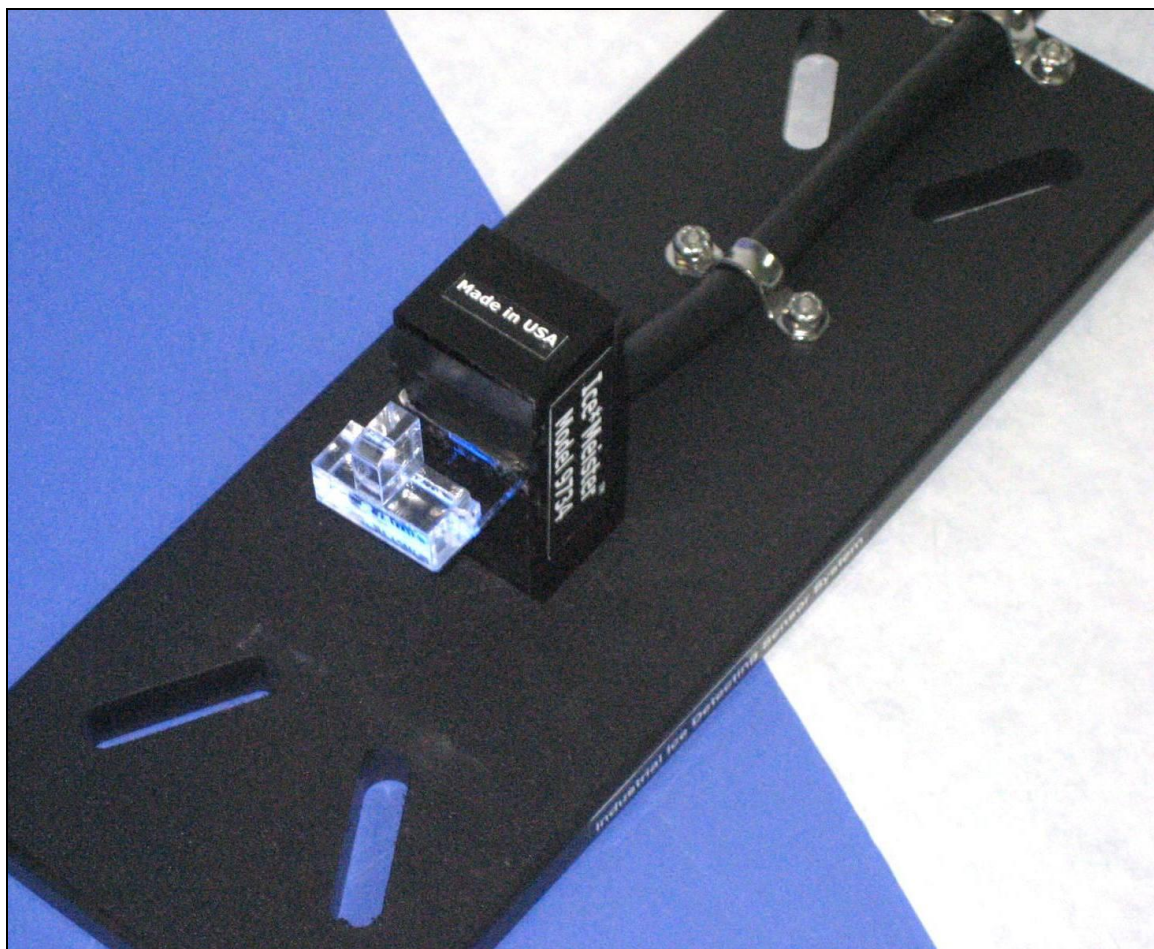


NewAvionics CORPORATION

Ice*Meister™ Model 9734-SYSTEM
INDUSTRIAL ICE DETECTING SENSOR SYSTEM
Technical Data Sheet



*Figure 1 Ice*Meister™ Model 9734-SYSTEM optical ice sensing detector system is easy to install and completely self-contained in one compact, lightweight unit. Senses H₂O in its solid and liquid phases. Indicates ice alert with output relay contacts and blue indicator LED.*

GENERAL DESCRIPTION

Ice*Meister™ Model 9734-SYSTEM industrial ice detecting sensor system is an optical go/no-go ice sensor for general purpose industrial applications, such as wind power turbines, HVAC cooling towers, radio and TV broadcast towers, oil and gas rigs, vehicular bridges, overpasses, etc. It is completely self-contained. No external components are required.

Model 9734 consumes little energy; powered by a 5W solar panel, is suitable for use in remote locations.

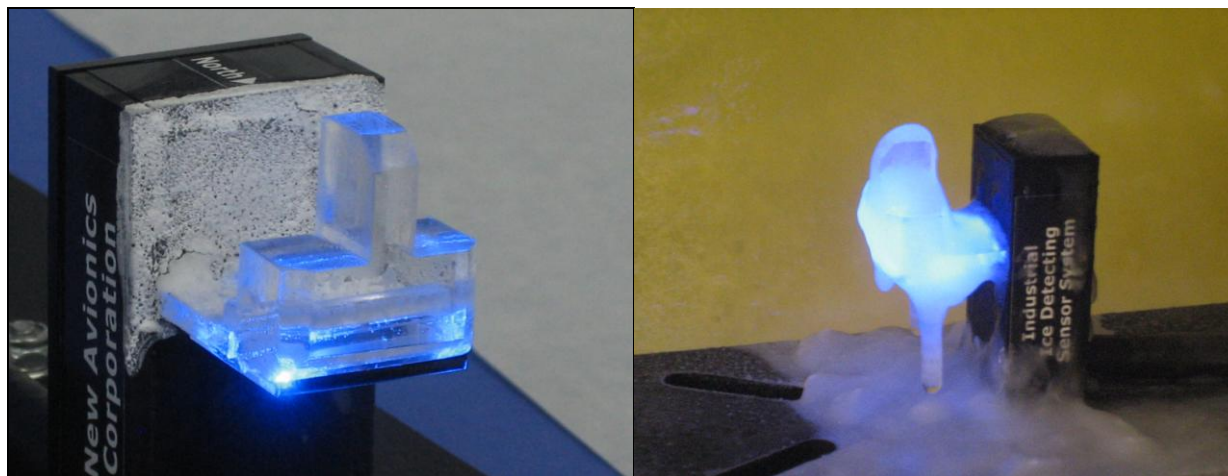
9734 monitors the optical characteristics of whatever substance is on the probe. If AIR is on the probe, output indicates NO ICE. If H₂O is on the probe, output indicates ICE ALERT. Liquid water simply runs off by gravity, but ICE adheres to the optical surfaces. There are no moving parts.

Unit detects H₂O in its solid and liquid phases, including rime ice, snow, frost, clear ice, standing water. Gravity removes ice melt from the optics.

This sensor has no specified accuracy, and is not intended to be used as an analog measuring instrument of any kind.

Model 9734 contains a small embedded circuit board, an optical probe, a plastic housing, and a lightweight blue cable that connects to its host system. Standard cable length is 6 feet, but the cable length can be greatly extended by if necessary.

Model 9734 indicates the presence of ice. An optional protective cage is available to help guard against falling debris. Various mounting options are available for diverse applications.



*Figure 2 a, b -- Ice*Meister™ Model 9734-SYSTEM senses frost (left) and ice (right).*

SPECIFICATIONS

SENSITIVITY TO ICE ACCUMULATION:

Better than 0.01 inch of rime or clear ice.

ORIENTATION:

Unit operates with the top of its housing facing UP.

OPERATING / STORAGE TEMPERATURE:

-40 deg C to + 50 deg C.

Not warranted to detect ice above 0 deg C.

ELECTRICAL INPUT:

Any clean DC voltage from 6 VDC to 30 VDC

Current draw at 24 VDC < 100 mA max

red wire = + 24 volts DC

black wire = earth ground, - 24 volts DC

ELECTRICAL OUTPUT:

1 set of single pole, single throw, normally open relay contacts,

Rated at 1 Amp, 50 volts non-inductive (see attached relay data sheet)

Close when frost is present,

Open when frost is absent.

Green and white wires = relay contacts

VISUAL OUTPUT:

Probe turns **BLUE** to indicate ice is present and relay contacts are closed.

CONNECTING CABLE (figure 4):

0.1 inch diam lightweight four-conductor shielded cable, stripped and tinned

Red, black wires: 24 VDC in

Green, white wires: Relay contacts out

Length: 6 feet

DIMENSIONS:

Sensor head:

Height: 2½ inches

Width: 1¼ inches

Depth: 1 inch

Probe extension from housing: 1 inch

Mounting plate:

Length: 11 inches

Width: 4 inches

Thickness: ½ inch

WEIGHT:

4 ounces

exclusive of mounting hardware

CONNECTING CABLE

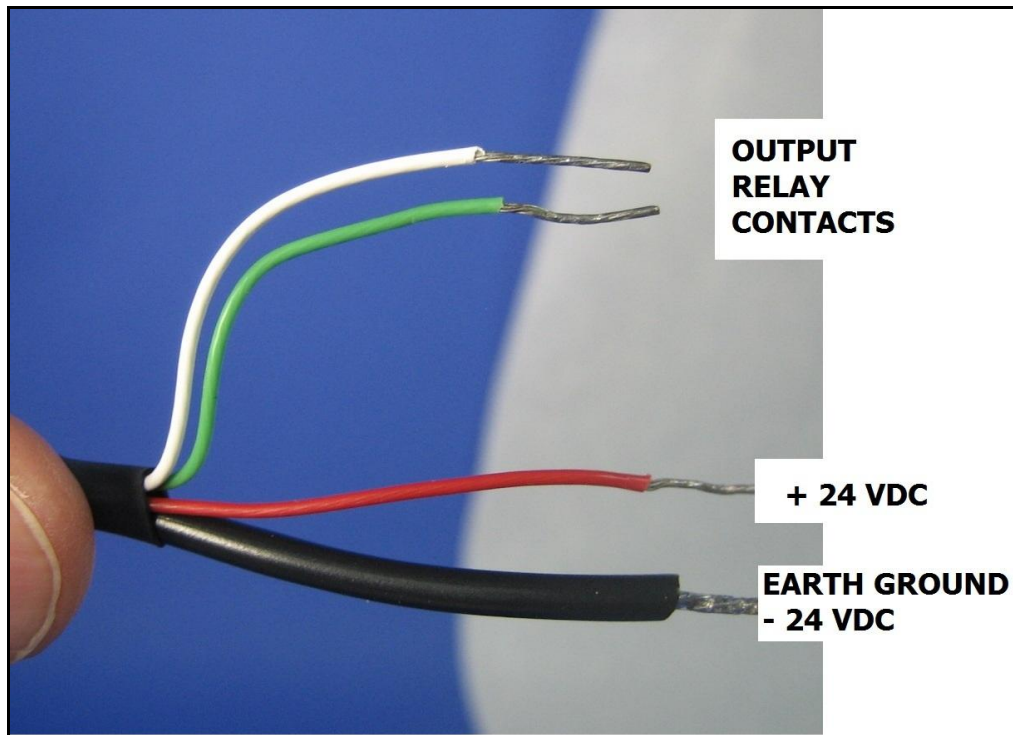


Figure 3 -- Lightweight blue cable features rugged Teflon outer jacket, internal aluminum shield with ground wire, and four stranded, tinned copper wires.

MULTICONDUCTOR SIGNAL CABLE STRANDED SHIELDED FEP TEFLON NEC TYPE CL2P/CMP -70DEG C +200DEG C							
CONSTRUCTION:							
CONDUCTOR: STRANDED TINNED COPPER.							
INSULATION: FEP TEFLON							
COLOR CODE: BLACK-WHITE-RED-GREEN.							
ASSEMBLY/SHIELD: INSULATED CONDUCTORS CABLED WITH ALUMINUM							
FOIL SHIELD AND STRANDED TINNED COPPER DRAIN.							
JACKET: GRAY FEP TEFLON JACKET.							
Charlotte Wire Part#	Size AWG	Number of Cond'r's	Number of Strands	Insulation Thickness (in.)	Jacket Thickness (in.)	Overall Diameter (in.)	Approx. Net Wt. (Lbs/Mft.)
CW09102-FEP	24	4	7	.006"	.010"	.12"	13
Application:				Standards:			
Suitable for general purpose use. Used in sound/audio systems, intercom/P.A. systems, security systems, power limited controls and remote control signalling.				NEC Article 800 (Type CMP).			
				NEC Article 725 (Type CL2P).			

Figure 4 -- Specifications for connecting cable.

TESTING

STANDARD TEST CONDITIONS for testing in a laboratory		
ambient temperature	energize unit, soak at ambient temp ½ hour	25 deg C (normal office temp)
ambient lighting	fluorescent illumination (from ceiling)	500 lux (normal office lighting)
	white LED illumination	no limit
	sunlight	0.0
	incandescent lamp	0.0
mechanical	mounting plate orientation	horizontal
	sensor air-gap orientation	up
testing I	desktop test with 9-volt battery and foam dunnage chip.	convenient out-of-the-box test
testing II	desktop CLEAR ICE test with transparent tumbler of tap water.	differentiates clear ice from frost
testing III	field test with commercial component cooler cold spray.	simulates actual frost ice

TESTING I (out-of-the-box)

Convenient, simple, first-thing-out-of-the-box desktop or field test with supplied 9-volt battery and foam dunnage chip:

Connect 9734's red wire to the 9-volt battery's positive (+) terminal, and the black wire to the battery's negative (-) terminal.

Insert foam dunnage into 9734's air gap.

Observe blue indicator LED glows, indicating the foam has simulated FROST threshold.

Listen for relay activation *click* inside the solid 9734 housing.

Using a suitable continuity checker, confirm output relay contacts close between white and green wires.

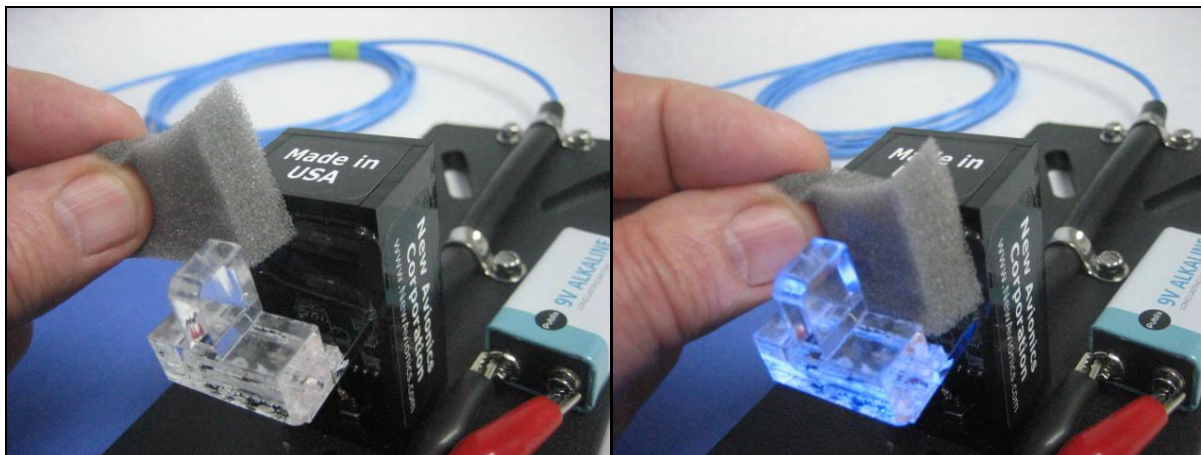


Figure 5 a , b -- Desktop test with supplied 9-volt battery and opaque charcoal test foam.

CONVULATED FOAM SETS					
MODEL NO.	SHEET SIZE L x W x H	TYPE OF FOAM	SETS/ CARTON	SOLD IN CARTON QUANTITIES	
				1 CARTON	3+ CARTONS CTN.
S-12789	6 x 6 x 2"	Charcoal	64	\$1.25	\$1.15
S-6435	8 x 6 x 2"		48	2.05	1.80
S-11751	10 x 10 x 2"		24	2.85	2.65
S-8394	12 x 12 x 2"		24	3.90	3.65
S-6436	16 x 16 x 2"		12	5.90	5.45
S-6437	24 x 24 x 2"		6	11.85	11.10
S-6438	24 x 36 x 2"		9	14.90	14.00
S-15663*	24 x 36 x 4"		4	30.70	28.60
S-14641	48 x 96 x 2"		1	97.00	90.00

*Total set height is 4"; base, 1 1/2"

Cut thick convoluted polyurethane to the size you need.

- Total set height is 2"; base, 3/4".
- Sets are 2 sheets of interlocking foam.

12575 Uline Drive
Pleasant Prairie, WI 53158

THREE WAYS TO ORDER

Phone 1-800-295-5510

Fax 1-800-295-5571

Online uline.com

Figure 6-- Opaque charcoal test foam is readily available from office supply stores. A 9-volt battery and foam sample are supplied with 9734 order.

TESTING II (water CLEAR ICE test)

Simple, CLEAR ICE test with a clear glass tumbler of clean tap water.

With 9734 still connected to the battery or a suitable DC power supply, submerge the probe into a tumbler of clean tap water. The tumbler must be transparent glass, as shown below.

Observe the blue LED illuminates, the relay *clicks* closed, and continuity tester confirms the relay contacts are closed, as Testing I, above.

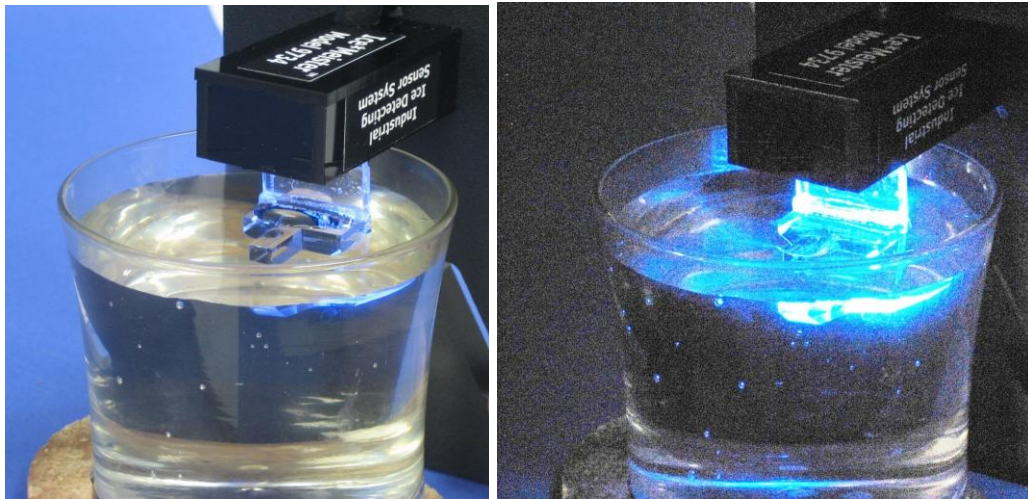


Figure 7 a, b -- CLEAR ICE test with 9-volt battery and clear glass tumbler of clean tap water.

TESTING III (field test)

9734 can be tested with Radio Shack brand component cooler p/n 64-4321 cold spray.

Be certain to use only TETRAFLUOROETHANE COMPONENT COOLER to avoid damaging the acrylic optical components in the air gap.



Figure 8 a, b -- Commercial component cooler spray freezes moisture out of the ambient air, simulates detectable ice.

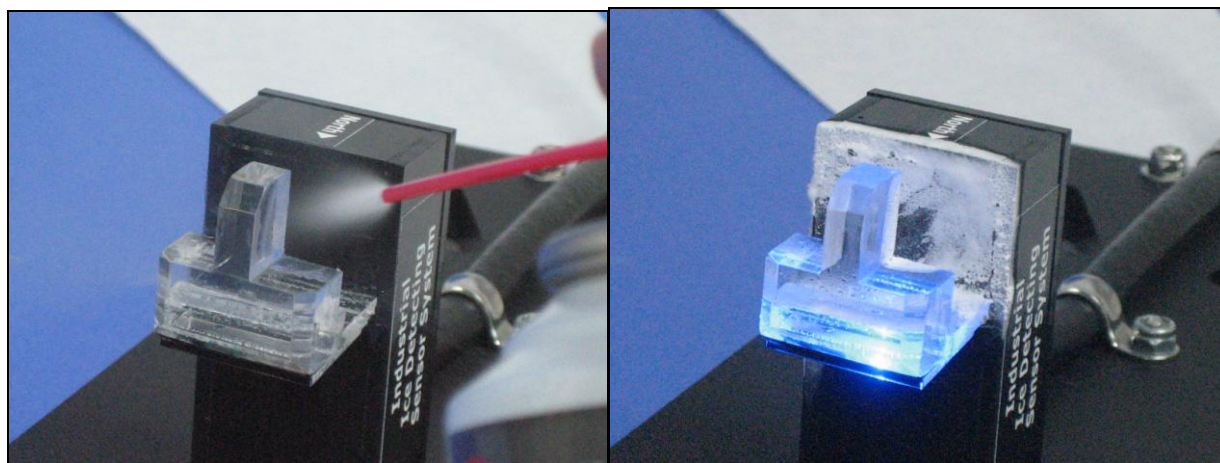


Figure 9 a, b Test 9734 for frost and rime ice with sprayed stream of Radio Shack tetrafluoroethane component cooler p/n 64-4321; leaves no residue. Cold spray freezes moisture out of the ambient air, creates detectable surface frost.

DISCLAIMERS

1. Specifications and other contents are subject to change at any time without notice.
2. This document is not contractual. Nothing in it constitutes or implies a warranty or guaranty of any kind, explicit or implicit. Warranty information is given only in separate "warranty" statement.
3. Plastic optical probe is made of Polymethylmethacrylate, also called PMMA, acrylic, or Plexiglas®. It should be protected from mechanical abuse, abrasion and harsh chemicals. Damage to the probe voids the warranty.
4. No warranty is given as to the suitability of this product for any particular application.
5. Initial thermal shocking of the sensor may cause condensation to form on the optics and register as "frost".
6. This unit is not a measuring instrument, and provides no specific calibration.
7. When installed on a met tower, probe should face NORTH to minimize sunlight contamination.
8. Allow unit to soak at ambient temperature before evaluating. Test under fluorescent or energy-saving LED lighting; see STANDARD CONDITIONS.

NOTES

1. Ice*Meister™ is a trademark of New Avionics Corporation.
2. Ice*Meister™ is protected under one or both US Patents # 0000000 and # 00000000.

Ice*Meister™ Model 9734-SYSTEM
INDUSTRIAL ICE DETECTING SENSOR SYSTEM

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