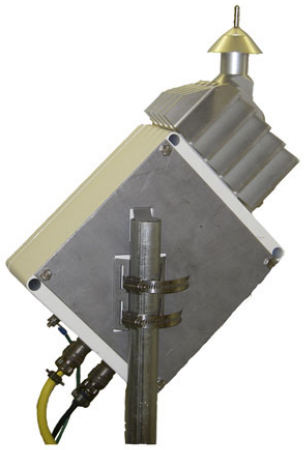
Campbell SCIENTIFIC

0872F1

Ice Detector (2400 Baud Output) without Cable



Advanced Technology

Self de-icing and water-shedding capability

Overview

The 0872F1 Ice Detector, manufactured by Goodrich, measures precipitation transitions between liquid and solid states. The sensor is designed to measure the intensity and duration of ice storms and differentiates rain from freezing rain as temperatures approach freezing. Ice accumulations as low as 0.13 mm (0.0005 in.) are detected.

The 0872F1 is currently used in the following weather research production programs:

- The United States National Weather Service (NWS) Automated Surface Observing System (ASOS)
- The Meteorological Service of Canada (formerly known as the Canadian Atmospheric Environmental Service or AES) automated weather station program
- Various test programs in North America, Europe, and Asia

Benefits and Features

- Proven in the most severe environmental conditions
- Sensing technology to eliminate false signals
- Self de-icing and water-shedding capability
- Continuous, built-in testing to verify sensor functions

Detailed Description

The 0872F1 detects ice accumulation on an ultrasonic axially vibrating tube and communicates the associated frequency changes through an RS-232 or digital current loop data link. The ice detector is mounted on a pole, designed for continuous operation in an outdoor environment.

The 0872F1 consists of four functional assemblies:

- Main circuit card assembly (CCA)
- Output interface CCA
- Filter assembly
- Strut and probe assembly

The CCAs and all electrical connections are contained within the 0872F1 housing.

The 0872F1 requires only periodic recalibration; no other maintenance is normally required.

Specifications

Operating Temperature Range	-50° to +50°C (-58° to +122°F)
Operating Humidity Limits	74% RH @ 35°C to 100% RH @ 25°C (74% RH @ 95°F to 100% RH @ 77°F)
Power Requirements	115 Vac ±10%, 50 to 60 Hz
Wind Speed Maximum (Steady)	55.5 km (30 kn)
Wind Speed Maximum (Gust)	85.2 km (46 kn)
Rain Intensity	76.2 mm/h with 55.5 km winds (3.0 in./h with 30 kn winds)
Freezing Rain Ice Accretion	25.4 mm with a 37 km wind at a rate of 12.7 mm/h (1 in. with a 20 kn wind at a rate of 0.5 in./h)
Mating Connector 1 (J1)	PT06J-12-13S
Mating Connector 2 (J2)	PT06J-12-10S
Cable 0872E3CBL1-L (J1) Description	Three-conductor, 16 AWG, Super Vu-Tron III jacket
Cable 0872E3CBL2-L (J2) Description	Multiconductor, two-pair, 22 AWG, shielded, Santoprene jacket
Ingress Protection	IPX4
Compliance	*Note: The 0872F1 is not CE or RoHS2 compliant.*
Maximum Cable Length	30.48 m (100 ft)
Electrical Housing Dimensions	230 x 200 x 110 mm (9.055 x 7.87 x 4.33 in.)
Sensing Element and Heat Sink Dimensions	164 x 173 x 110 mm (6.46 x 6.81 x 4.33 in.)
Weight	5.7 kg (12.55 lb)

Power Consumption

Sensing Mode	10 W (0.087 A)
De-Icing Mode	385 W (3.35 A)
Output Format	RS-232 or RS-232 current loop (2400 baud)

RS-232 Configuration

Configuration	Eight data bits, one stop bit, no parity, full duplex, configured as data terminal equipment (DTE)
Measurement Range	0 to 2.5 mm (0 to 0.10 in.) of ice
Minimum Measurement Threshold	0.13 mm (0.005 in.) of ice
Resolution	±4 Hz

For comprehensive details, visit: www.campbellsci.ca/0872f1