LUMASENSE™
TECHNOLOGIES

Uses:

- Measures actual surface temperature
- Provides input for thermal comfort evaluations
- Evaluates thermal discomfort from floors

Features:

- Measurements are stable and accurate
- Robust design
- Mounted on a spring to provide good contact between transducer and surface
- Reacts quickly to temperature changes
- Low heat capacitance – reducing conductance of heat from the object
- Uses extension cables without loss of accuracy
- Complies with ISO 7726

Introduction

The Surface Temperature Transducer MM0035 measures the actual temperature of the given object.

In order to do this, it is essential to keep the contact surface area of the transducer as small as possible. This prevents the transducer from affecting the temperature of the object while at the same time being able to maintain a good contact between the sensor and the object. It is also important that the materials the transducer is constructed from have a low heat capacitance. These features are incorporated into the transducer's design.

The results provided by this transducer are used to evaluate the thermal discomfort from floors as well as provide input for mean radiant and plane radiant temperature calculations, according to ISO7730.
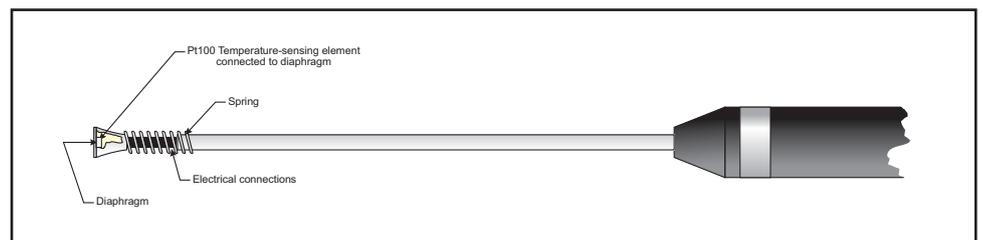
The transducer can be used with the following instruments: Thermal Comfort Data Logger – INNOVA 1221, Multipoint Sampler and Doser – INNOVA 1303 and Multipoint Sampler – INNOVA 1309.

Transducer Design

The actual sensor in the transducer is a Pt100 sensor. To provide a good contact between the sensor and the object to be measured, the sensor is bonded to a very thin metal foil, which has a high conductivity but a low heat capacitance. The sensor is mounted on a spring. This reduces the heat conducted to the shaft of the transducer and enables a good contact to be achieved even if the transducer is not held exactly perpendicular to the surface.

By choosing a Pt100 sensor and a 4-wire connection, it is possible to connect the transducer using an extension cable without a loss of accuracy.

The transducer is built to operate in the temperature range -20 to 100°C.

Pt100 Temperature-sensing element connected to diaphragm

Spring

Electrical connections

Diaphragm

Pt100 Sensor
This is a resistor sensor (resistance of 100Ω at 0°C) made of platinum, which provides excellent stability and accuracy.

The actual sensors chosen for this transducer provide results within a narrow tolerance range. This enables the transducer to be moved around and connected to other instruments without requiring any pre measurement adjustments to be made.

Although the transducer will operate without ever requiring recalibration, it should be checked regularly for possible physical damage, which may impair its functionality.

Specifications – INNOVA MM0035

SURFACE TEMPERATURE TRANSDUCER:
Measurement Range:
–20 to 100˚C (–4 to 212˚F)

Response Time:
2s to 50% of step change, 7s to 90% in still air

Accuracy:
   5 to 40˚C range: ±0.5˚C
 (41 to 104˚F range: ±0.9˚F)
 –20 to 100˚C range: ±1.0˚C
 (–4 to 212˚F range: ±1.8˚F)

Electrical Output:
A Pt100 signal in a 4-wire connection

Integral Connection Cable:
Length 2.5m; connected to associated equipment via a 4-pin DIN plug JP0404

WEIGHT:
Approx. 120g (including cable)

DIMENSIONS:
Length: 250mm

CE	**COMPLIANCE WITH STANDARDS** CE-mark indicates compliance with EMC Directive and Low Voltage Directive.
Safety	EN 61010-1 (1993) & IEC 1010-1 (1990): Safety requirements for electrical equipment for measurement, control and laboratory use.
EMC Emission	EN 50081-1 (1992) : Generic emission standard. Part 1: Residential, commercial and light industry. EN 50081-2 (1993): Generic emission standard. Part 2: Industrial environment. CISPR 22 (1993): Limits and methods of radio disturbance characteristics of information technology equipment. Class B Limits. FCC Class B limits.
EMC Immunity	EN 50082-1 (1992): Generic immunity standard. Part 1: Residential, commercial and light industry. EN 50082-2 (1995): Generic immunity standard. Part 2: Industrial environment. **Note:** The above is guaranteed using accessories listed in this Product Data sheet only.
Temperature	IEC 68-2-1 & IEC 68-2-2: Environmental Testing. Cold and Dry Heat. Operating Temperature: 5 to 40°C (41 to 104°F) Storage Temperature: -25 to +70°C (-13 to 158°F)
Humidity	IEC 68-2-3: 90% RH (non-condensing at 40°C).
Mechanical	IEC 68-2-6: Vibration: 0.3 mm, 20m/s², 10-500 Hz. IEC 68-2-27: Shock: 1000 m/s². IEC 68-2-29: Bump: 1000 bumps at 250m/s².

Ordering Information

MM0035 Surface Temperature Transducer

Optional Accessories

1221	Thermal Comfort Data Logger
1303	Multipoint Doser and Sampler
1309	Multipoint Sampler
DH0492	Tripod Mounting Adaptor for 3 Transducers
UA1347	Tripod Mounting Adaptor for 4 Transducers

KE0357	Transducer Carrying Case
UA0803	Tripod
UA1348	Tripod Extension Rods (3)
UA0588	Transducer Mounting Adaptor
WL0690	Extension Cable (std. length 6m)
WL0690/y	Extension Cable (definable length up to 100m; y is length in meters)