

# 2MM

## Motor Protector/Thermal Cut-Out

### Introduction

Sensata Technologies builds the 2MM motor protector to meet almost any requirement of protection in a wide range of small motors, small transformers, solenoids, etc.. This compact motor protector is the best solution to protect the wide variety of motors used in industrial and domestic appliances against locked rotor and overload situations.



### Design and Operating Principles

The motor protector 2MM consists of a metal housing that holds and protects the inner components against infiltration as well as mechanical deformation.

The can contains the calibrated Klixon® disc carrying a silver contact. The fixed contact is placed on the opposite side, separated from the terminal by an insulator. The 2MM is available in two versions: with epoxy insulation and with additional sleeve.

The operating principle of the 2MM is both simple and effective. A current flows through the resistive Klixon® bimetal disc. When a fault condition occurs, the increased current and ambient temperature make the bimetal disc snap open the contacts. The contacts close again automatically as the device cools down to a safe running temperature.

### Applications

The 2MM operates as a sensitive safety cut-out for applications like:

- Small motors
- Coils
- Solenoid valves
- Transformers

In single phase motors it can be mounted directly in the main circuit to serve as on- or in-winding protector. It's compact size provides ease of installation, even in small spaces. At this time there is practically no small motor the 2MM cannot protect against overheating and overloading. Sensata Technologies 2MM provides you with a cost effective solution in terms of maximum quality and reliability.

## SPECIFICATIONS

|   |                               |
|---|-------------------------------|
| <b>Standard Operating Temperature Range</b> | from 70°C - 160°C in 5K steps |
| <b>Tolerance on Open Temperature</b>        | ± 10K (UL type ±5, ±7)        |
| <b>Max. Ambient Temperature 175°C</b>       | 175°C                         |
| <b>Differential</b>                         | 20K minimum                   |



Declarations

| Declarations to EN60730-2-9                 |  | Declarations to EN60730-2-2 / EN60730-2-3          |
|---|--|--|
| <b>Purpose of the Control</b>               | Thermal Cut-Out                                    | Thermal Motorprotector / Thermal Ballast Protector |
| <b>Construction</b>                         | Incorporated, non electric                         |  |
| <b>Degree of Protection</b>                 | IP00   |  |
| <b>Terminals for Ext. Conductors</b>        | For internal conductors only                       |  |
| <b>Temperature Limits of the Switchhead</b> | 175°C  |  |
| <b>PTI of Insulation Materials</b>          | PTI 250  | PTI 250  |
| <b>Method of Mounting</b>                   | On-winding or by special means in the appliance    | On-winding or by special means in the appliance    |
| <b>Operating Time</b>                       | For continuous operation                           |  |
| <b>Type of Action</b>                       | Type 2B  | Type 3C / Type 2C                                  |
| <b>Reset Characteristic</b>                 | Automatic  | Automatic  |
| <b>Extent of Sensing Element</b>            | Whole control                                      |  |
| <b>Control Pollution Degree</b>             | Epoxy version: Degree 3<br>Naked version: Degree 1 | Epoxy version: Degree 3<br>Naked version: Degree 1 |

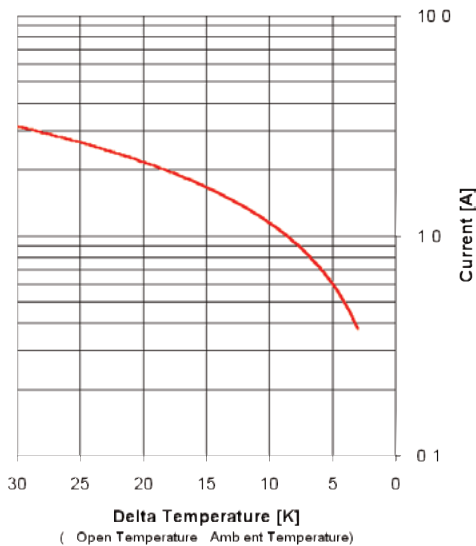
Maximum Contact Rating

7.0 (2.0) A 250 Vac (3.000 cycles)

Curves

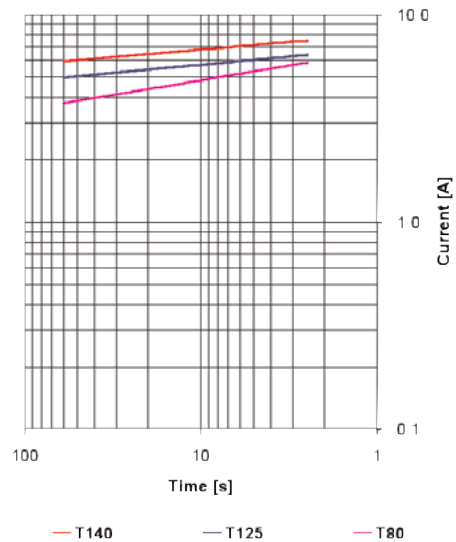
**Ultimate Trip Current vs. Ambient Temperature (non-circulating air)**

Approx. to be used for selecting samples for verification tests



**Average First Cycle Tripping Time vs. Current (ambient is 25°C)**

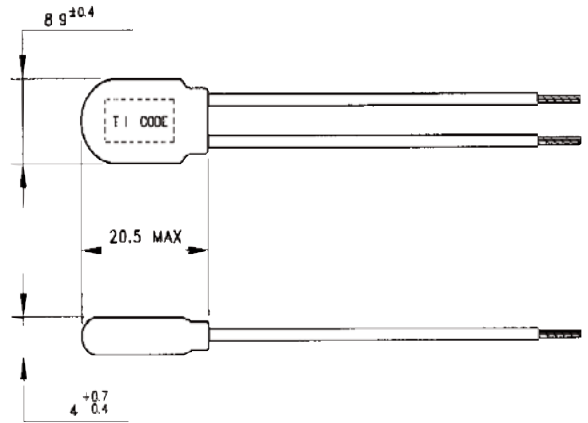
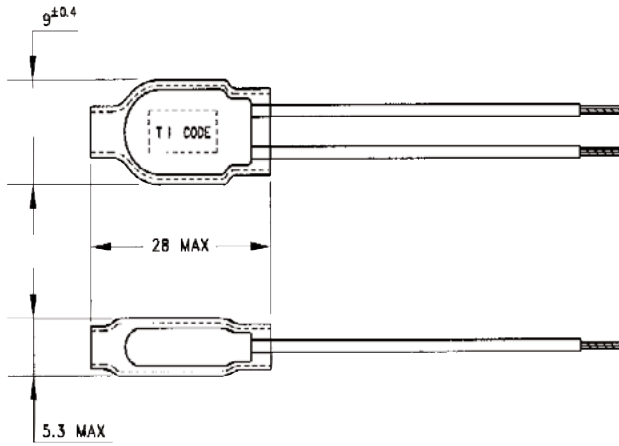
Approx. to be used for selecting samples for verification tests





# DIMENSIONS

Dimensions in mm [Inch]





**(\*)2MMT/F**

**XXX**

**YYY**

**Family**

- Blank:** Epoxy or Sleeve Epoxy Provided
- N:** Naked, No Epoxy or Sleeve Provided
- NS:** Naked, No Epoxy, but with Sleeve Provided
- C:** Naked, Sealed in Housing Provided

**Standard Opening Temperature**

70, 75, 80, 85, 90, 95, 100, 105, 110, 115, 120, 125, 130, 135, 140, 145, 150, 155, 160

**Wire Lead Code\*\***

\*\* Size and length on customer request

Available also: Doublet and Triplet types

- (\*)2MMT: Open Temperature Tolerance  $\pm 7K$ ,  $\pm 10K$
- (\*)2MMF: Open Temperature Tolerance  $\pm 5K$



## AGENCY APPROVALS & CERTIFICATIONS



| Agency    | File Number | Standard                  | Note                      |
|-----------|-------------|---------------------------|---------------------------|
| UL / C-UL | E 15962     | UL2111 / CSA C22.2 No. 77 | Motor Protecting Device   |
| ENEC      | 2014531.06  | EN60730-2-9               | Thermal Cut-Out           |
| ENEC      | 2014531.06  | EN60730-2-2               | Thermal Motor Protector   |
| ENEC      | 2014531.06  | EN60730-2-3               | Thermal Ballast Protector |

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