3MP

Motor Protector / Thermal Cut-Out

Introduction

As world leader in appliance motor protection, Sensata Technologies has developed the 3MP for 120 and 250 Vac applications to operate in wider temperatures and current ranges than offered by existing protection solutions. In providing consistent performance characteristics and excellent reliability, its features anticipate future technical protection requirements on the AC motor market.

Design and Operating Principles

The 3MP consists of a metal housing with an integrated terminal. The housing holds the pre-set Klixon® snap action bimetal disc. The split plate carries a resistive S-shaped wire which provides additional current sensitivity. The advanced contact system - one on the bimetal disc and one on the plate - in combination with the strong disc guarantees a long life and reliable cycling. The combination of a variety of standard terminal configurations and carefully selected materials provides easy handling and mounting. Customized terminal configurations are available on request. Wires including connectors can be automatically attached to the standard crimp terminal. Sensata Technologies supplies a range of standard lead configurations; customized solutions are available on request. In construction where the 3MP device is contacting conductive parts of the motor assembly, Sensata Technologies can deliver the devices with a Mylar™ insulation sleeve. Customized coding and colouring of the coding tape is an option on request.

The operating principle of the 3MP is both simple and effective. The protector is actuated by current passing through it and by the heat received from the surrounding parts. The electrical circuit is interrupted when the disc reaches its pre-set temperature. As the device cools down to a safe temperature, the contacts will automatically reset. The bimetal disc provides excellent thermal and current sensitivity in an overload situation. Under locked rotor conditions the integrated heater in combination with the bimetal disc provide very accurate trip times for maximum protection.

Applications

The 3MP is widely used throughout the world in electric motors for washing machines, dishwashers, dryers, vacuum cleaners and industrial applications in the 120 and 250 Vac applications. 3MP features permit to move the motor protector location outside the winding, providing the motor manufacturer extra flexibility during the manufacturing process. The recent certification as a thermal cut-out device combined with its unique current sensitivity, positions the 3MP as an advanced and cost effective solution to protect toroidal transformers.

SPECIFICATIONS

Standard operating temperature range	from 80°C - 170°C (Increments 5K)
Tolerance on open temperature	± 5K
Peak Temperature (5 Min)	200°C
Max. Ambient Temperature	T-Open +20°C
Time Check at T-Ambient 25°C	4 to 10 Seconds
Contact Rating	27.5 A @cos 1 / 250Vac / 500 cycles 18 A @cos 0.6 / 250Vac / 1.000 cycles 18 A @cos 0.6 / 120Vac / 15.000 cycles

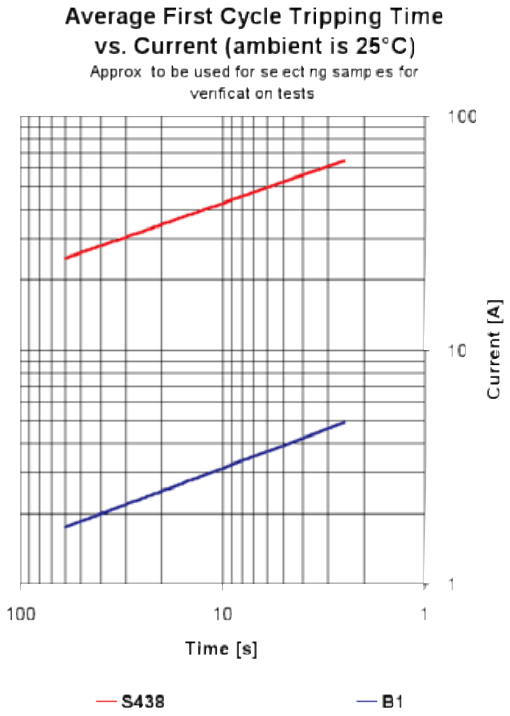
TECHNICAL SPECIFICATIONS

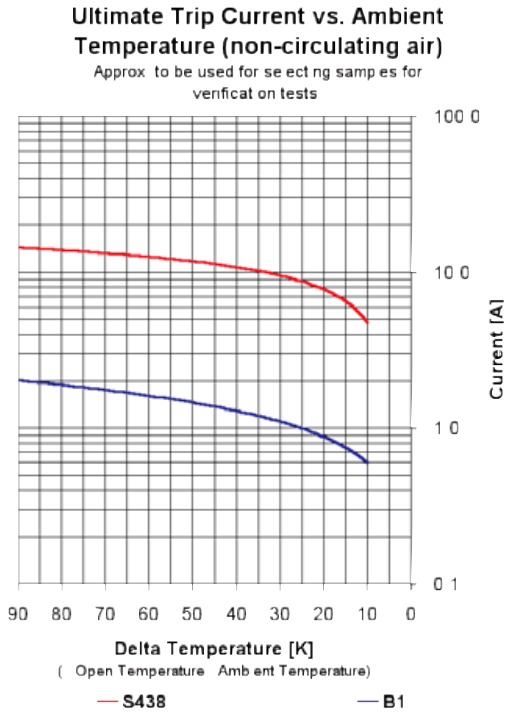
Declarations

Declarations to EN60730-2-9		**Declarations to EN60730-2-2**
Purpose of the Control	Thermal Cut-Out	Thermal Motorprotector
Construction	Incorporated, non-electric	
Degree of Protection	IP00	
Terminals for Ext. Conductors	For internal conductors only	
Method of (Dis)Connection of Terminals	Soldering, spotwelding	
Temperature Limits of the Switchhead	170°C	
PTI of Insulation Materials	PTI 175	PTI 175
Method of Mounting	Off-winding, fixed position, no mounting limitation	Off-winding, fixed position, no mounting limitation
Operating Time	For continuous operation	
Type of Action	Type 2B	Type 3C
Reset Characteristic	Automatic	Automatic
Extent of Sensing Element	Whole control	
Control Pollution Degree	Degree 1	Degree 2

Curves

The curves of First Cycle Tripping time and Ultimate trip current are meant to be for selecting samples to perform verification tests only. In the figures two curves of a wide range of possibilities are shown. The level and slope can be varied by making an other selection for the pre-set temperature, bimetal disc and/or heater.

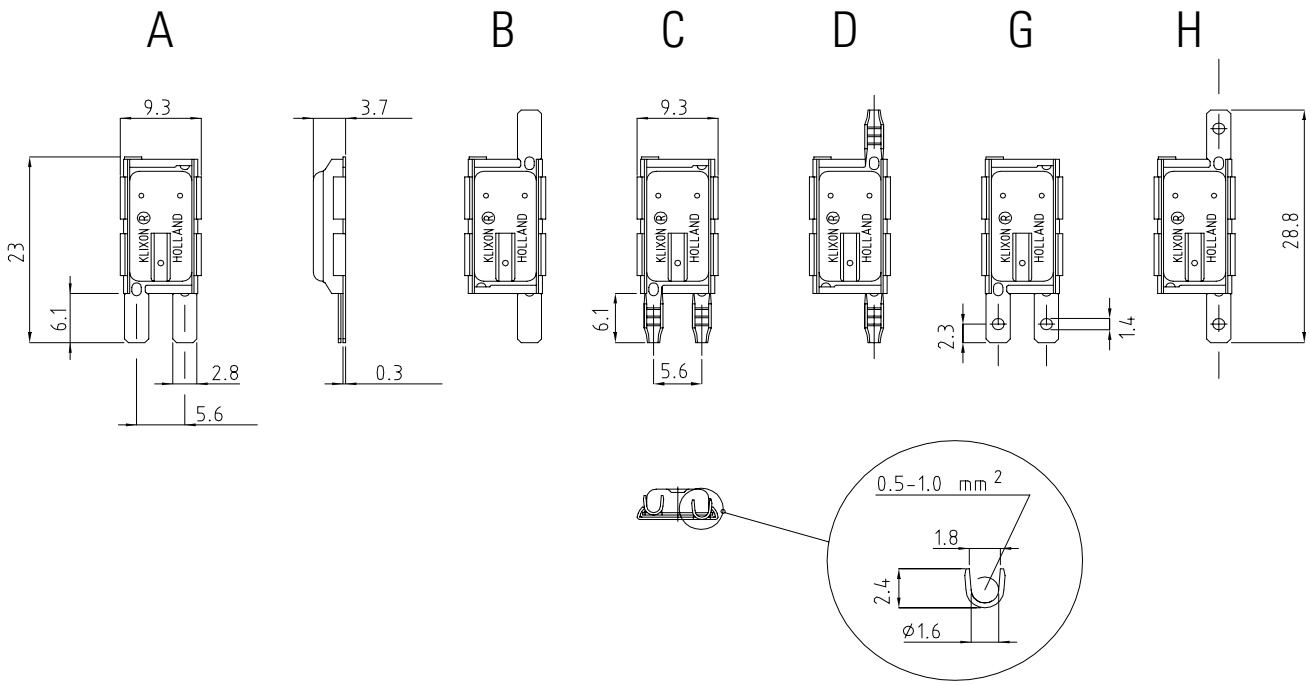




DIMENSIONS (mm)

Dimensions in mm [Inch]

Terminal Configurations



AGENCY APPROVALS & CERTIFICATIONS

Agency	File Number	Standard
ENEC	2014531.07	EN60730-2-2 Thermal motor protector
ENEC	2014531.07	EN60730-2-9 Thermal cut-out
UL / C-UL	E15962	UL / C-UL E15962 UL2111/ CSA-C22.2 No. 0-M91

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