Electronic De-icing Thermostat

1. Description

The MCC Electronic De-icing Thermostat (EDT) is a microcontroller based module that measures evaporator coil temperature and cycles the compressor clutch to maintain a constant evaporator temperature. Onboard circuit protection and diagnostics are also built into the module. The EDT is very compact and can be mounted on a vehicle where space is limited.

The EDT is fully programmable so the software can be easily configured for different applications.

2. Basic Operation

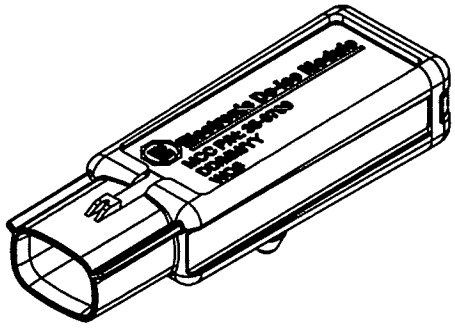
The EDT will turn the clutch on when the evaporator coil temperature is above +2°C. If the EDT does not detect any malfunction, it will continue to operate and the status light will be lit continuously.

When the evaporator temperature is below -2°C, the EDT with turn off the clutch output and status light.

The EDT has built-in algorithm to protect A/C system from clutch over current, short circuit, open circuit and temperature sensor failure.

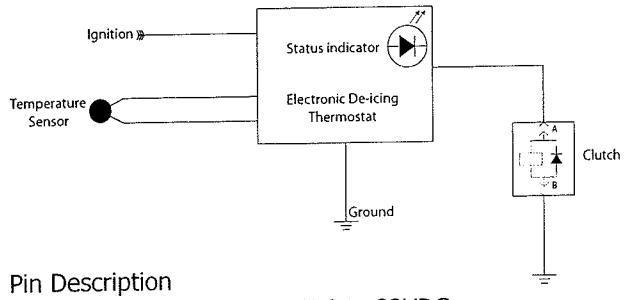
When the EDT detects an open or short from the temperature sensor, the status light will blink once per second and the output signal to the clutch will be turned off. The status light will flash two times per second when EDT detects an open circuit (current draw less then 200mA), short circuit or over current (current draw greater then 7A) from the clutch output. The status light will flash three times per second when the compressor clutch is shorted to ground.

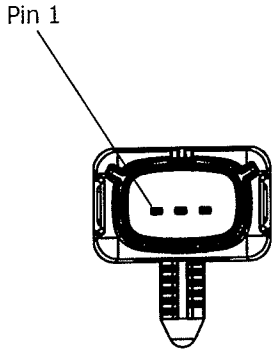
The EDT will attempt to restart every 20 seconds until fault is repaired. Furthermore,a 6 second power up delay is added to EDT software to protect the compressor clutch.



Digital De-icing Module
P/N: 35-0709

3. Application Schematic and Pin Out





Pin Location
1. Clutch
2. Ground
3. Ignition (Power)

Pin Description	
Ignition:	9VDC to 32VDC
Ground:	Connection to Ground
Clutch:	Ouput connection to Compressor Cluctch
Temperature Input:	Connection to NTC type thermistor (10k @ 25°C)

4. Diagnostics

The EDT has the following protection built-in:

Over Temperature
Over Current from clutch output
Voltage protection (Above and below operational limits or reverse voltage)
Short Circuit protection (Output shorted to ground)
Tempterature sensor open and short detection
Status light

Malfunction	Detection interval	Status LED
Temperature Sensor	Continuous	1x per second
Compressor clutch open circuit, short circuit or excess current	At cut-in	2x per second
Compressor clutch short to battery	Continuous	3x per second

Important Note:
When the status light is flashing, it does NOT mean the module is OFF. It may restart in approximately 20 seconds. Please keep away from all rotating parts to prevent injury.

The EDT is able to detect short circuit from clutch output to ground. When a short is detected, the output will be turned off, turning back on in approximately 20 seconds while the status light will flash to indicate there is a malfunction.

5. Specifications

Voltage
Operating Voltage: 9VDC to 32VDC

Temperature
Storage Temperature: -40°C to +105°C
Operating Temperature: -40°C to +85°C

Output
Clutch: 7A

Cut in/Cut out Temperature
Cut in: +2°C ±0.4°C
Cut out: -2°C ±0.4°C

6. Physical Characteristics and Dimensions

The Digital De-icing Module measures approximately 78 mm long, 25 mm wide and 36 mm high including male Molex® MX150™ type connector. The printed circuit board is mounted in a plastic case and is completely enclosed in a polyurethane potting compound.