XIV. Electrical / Electronics
Temperature Controllers

Mini Vehicle Controller

**Specifications**
- Operating Voltage: +9VDC to 32V DC
- Operating Temperature: -40°C to 85 ºC (-40°F to 185ºF)
- Inputs: 5 Digital and 9 Analog
- Outputs: 6 High side, 2 Bidirectional, 1 Analog and 2 PWM
- Communication: RS-485 and CANBus (J1939)

Electronic Climate Control

P/N: 35-0583

P/N: 35-0559
Temperature Controllers

Mini Vehicle Controllers

**Specifications**
- Operating Voltage: +9VDC to 32V DC
- Operating Temperature: -40ºC to 85 ºC (-40ºF to 185ºF)
- Inputs: 5 Digital and 9 Analog
- Outputs: 9 Digital and 2 PWM
- Communication: RS-485 and CANBus (J1939)

ECC/MVC Display

**ECC Diagnostic Mode**
- Evap Time 12.5 Hrs. Rst-> Component running hours
- Voltage 13.8V Supply Voltage
- Low Press. Sw. 0 Times Rst-> Pressure Switch Trips
- Return Temp. 75ºF Open: 0 Short: 0 Rst-> Temperature Sensor Reading and errors

**MVC Diagnostic Mode**
- Output Parameter Status
- Component Error List
Defroster Controller

Data Logger

- Cabin set-point temperature
- Air sensor temperature readings and errors
- A/C compressor clutch cycle
- Battery supply voltage
- Refrigerant pressure
- Errors
- System current draw
- Differential air pressure
- Component total running hours
- Value of all input and outputs
- Evaporator blower speed
- Condenser fan speed
- Actuator position
Control Panel with Automatic Temperature Control

The Automatic Thermostat Module (ATM) uses a temperature set-point potentiometer, motorized heater valve and temperature sensor to maintain driver cab temperature.

The operator will choose a temperature setting which will be maintained by automatically adjusting the heater valve with the Automatic Thermostat Module.

The ATM will improve cab temperature stability and provide a more comfortable operating environment.

The blower speed and evaporator coil temperature are controlled by the production proven blower switch and Deicing Module.

Automatic Thermostat Module

Specifications:
- Operating Voltage: 16VDC to 32VDC
- Storage Temperature: -40°C to +105°C (-40°F to 220°F)
- Operating Temperature: -40°C to +85°C (-40°F to 185°F)
- Controls Cabin temperature from 16°C (60.8°F) to 28°C (82.4°F)
Automatic Thermostat System

The Automatic Thermostat Module uses a microprocessor to calculate an appropriate position of the water valve to maintain cab temperature set-point.

There are two temperature sensors installed in this unit. The inside temperature sensor measures temperature of the air going to the unit. The after coil sensor measures the temperature of the air that is passing the heater coil. By measuring the after coil temperature the ATM can calculate the rate of temperature change of the discharge air of the HVAC unit.

With the measurement from the sensors, the module calculates the difference between inside and set-point temperature. From this difference, the thermostat module opens or closes the water valve accordingly.

When the temperature set-point potentiometer is turned to minimum temperature position, the water valve closes completely regardless of the inside temperature. This is the coldest setting. When the temperature set-point potentiometer is turned to the maximum temperature position, the water valve will open completely regardless of inside temperature. This is the hottest setting.

The Automatic Thermostat Module is protected against vibration & contaminants by polyurethane potting compound.
Multiplex Nodes

Specifications
Operating Voltage: +9VDC to 32V DC
Operating Temperature: -40ºC to 85 ºC (-40ºF to 185ºF)
Inputs: 6 Digital and 10 Analog
Outputs: 14 Digital and 2 PWM
Communication: RS-485 and CANBus (J1939)

Specifications
Operating Voltage: +9VDC to 32V DC
Operating Temperature: -40ºC to 85 ºC (-40ºF to 185ºF)
Inputs: 6 Digital and 10 Analog
Outputs: 14 Digital and 2 PWM
Communication: RS-485 and CANBus (J1939)

Specifications
Operating Voltage: +9VDC to 32V DC
Operating Temperature: -40ºC to 85 ºC (-40ºF to 185ºF)
Inputs: 6 Digital and 9 Analog
Outputs: 6 High side, 2 Bidirectional, 1 Analog and 2 PWM
Communication: RS-485 and CANBus (J1939)
Basic ECC

Specifications
- Operating Voltage: +9VDC to 32VDC
- Operating Temperature: -40°C to 85°C (-40°F to 185°F)
- Inputs: 3 Digital and 4 Analog
- Outputs: 1 PWM and 3 Digital

CANBus Controllers

Specifications:
- Operating Voltage: 9VDC to 32VDC
- Storage Temperature: -40°C to +105°C
- Operating Temperature: -40°C to +85°C (-40°F to 185°F)
- Communication: CANBus, RS-485 (-40°F to 220°F)
- Microprocessor: 10MHz 64k Flash Processor 1k EEPROM
EcoTemp NG Display

The EcoTemp NG Display is developed to meet the demanding requirements of the motor coach and transit bus HVAC systems. The EcoTemp NG Driver Display was designed as a programmable platform that can be easily customised to suit customer requirements.

The large 2.5” x 1.5” OLED display offers wide viewing angle and is able to show text, graphics and full system messages for easy diagnostics. It has six configurable “soft keys” can be customized for basic or advance functions as per customer requirements.

During vehicle maintenance, service personnel can enter diagnostic mode by pressing preset sequence of buttons or using optional MCC Coolview via CAN Bus (J1939) connection. In this mode, errors stored in memory and real-time data of inputs and outputs are displayed for easy trouble shooting.

The industry leading OLED display with wide viewing angle supports unlimited graphics and text.

1- Temperature Set-Point
   Adjust temperature for passenger compartment.

2- On/Off Button
   Turns HVAC system On or Off

3- Cursor
   Cursor and mode selection

4- Information
   Displays system information
EcoTemp NG Display

The EcoTemp NG controller is developed to meet the demanding requirements of the motor coach and transit bus HVAC systems. The Bus HVAC Controller was designed as a programmable platform that can be easily customised to suit customer requirements.

FET”. These MOS-FET have over current and temperature protection and have no moving parts. With built-in over current and temperature protection, it means less downtime due to controller failure.

During vehicle maintenance, service personnel can enter diagnostic mode by pressing preset sequence of buttons or using optional MCC Coolview via CAN Bus (J1939) connection. In this mode, errors stored in memory and real-time data of inputs and outputs are displayed for easy trouble shooting.

<table>
<thead>
<tr>
<th>Inputs</th>
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<tbody>
<tr>
<td>Operating Voltage</td>
<td>+9V to 32V DC</td>
</tr>
<tr>
<td>Operating Temperature</td>
<td>-40°C TO 85°C</td>
</tr>
<tr>
<td>Inputs</td>
<td></td>
</tr>
<tr>
<td>23 Digital</td>
<td>12V or 24V DC</td>
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<tr>
<td>12V or 24V DC</td>
<td>Cool, Heat, Defrost Vent, Auto and Off</td>
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<tr>
<td>12V or 24V DC</td>
<td>Condensor fan high/low</td>
</tr>
<tr>
<td>12V or 24V DC</td>
<td>Test Mode</td>
</tr>
<tr>
<td>11 Analog</td>
<td>10kΩ @25°C</td>
</tr>
<tr>
<td>0 to 4.5V DC</td>
<td>3 Temperature Sensors</td>
</tr>
<tr>
<td>0 to 4.5V DC</td>
<td>High Pressure Sensor</td>
</tr>
<tr>
<td>0 to 10kΩ</td>
<td>Low Pressure Sensor</td>
</tr>
<tr>
<td>0 to 10kΩ</td>
<td>Valve 1 Position Sensor</td>
</tr>
<tr>
<td>0 to 10kΩ</td>
<td>Valve 2 Position Sensor</td>
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<table>
<thead>
<tr>
<th>Outputs</th>
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<tbody>
<tr>
<td>5 Digital or Analog</td>
<td>0V to Supply Voltage</td>
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<tr>
<td>14 Digital</td>
<td>12V or 24V DC</td>
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<td>4 H Bridge</td>
<td>12V or 24V DC</td>
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<td>25kHz</td>
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<tr>
<td>Communication</td>
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<tr>
<td>RS485</td>
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<tr>
<td>2 CanBus</td>
<td>J1939</td>
</tr>
<tr>
<td>Micro Processor</td>
<td></td>
</tr>
<tr>
<td>Clock Speed</td>
<td>10MHz</td>
</tr>
<tr>
<td></td>
<td>64k Flash Processor 1k EEPROM</td>
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</table>
EcoTemp Lite

The EcoTemp Lite is a HVAC control unit designed for on-road use. It has a simple and easy to use layout, it is ideal for motor coaches and transit buses. The easy to ready read LED display shows temperature settings, blower speed or error display. The bus controller was designed as a programmable platform that could easily be expanded and customized. Several methods of compressor protection are available.

<table>
<thead>
<tr>
<th>Features</th>
<th>Benefits</th>
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<tbody>
<tr>
<td>• Simple layout</td>
<td>• Large display and buttons. Less driver distraction</td>
</tr>
<tr>
<td>• Small foot print</td>
<td>• Takes up little space in dash board. Perfect for smaller size</td>
</tr>
<tr>
<td>• RS 485 and CAN BUS communication</td>
<td>• New feature! Allows easy and fast diagnostics. Able to</td>
</tr>
<tr>
<td>• Built-in diagnostics</td>
<td>• Upgrade HVAC system software while vehicle is running</td>
</tr>
<tr>
<td>• Easy software upgrade</td>
<td>• Less vehicle downtime</td>
</tr>
<tr>
<td>• Optional coolview system monitoring software</td>
<td>• Reduces maintenance, troubleshooting and minimise</td>
</tr>
<tr>
<td>• Easy to use and install</td>
<td>• Downtime</td>
</tr>
</tbody>
</table>
EcoTemp Lite

Technical Data

<table>
<thead>
<tr>
<th>Feature</th>
<th>Details</th>
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<tbody>
<tr>
<td>Operating Voltage</td>
<td>+9VDC to 32V DC</td>
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<tr>
<td>Operating Temperature</td>
<td>-40°C to 85 ºC (-40°F to 185°F)</td>
</tr>
<tr>
<td>Inputs</td>
<td>5 Digital and 9 Analog</td>
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<tr>
<td>Outputs</td>
<td>10 High side, 1 Analog / PWM</td>
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<tr>
<td>Communication</td>
<td>RS-485 and CANBus (J1939)</td>
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Viper 2000 Multi-Zone Control

Viper 2000 Control Unit

Zone 1 HVAC Unit

Viper 2000 Node 1

12V 15001
24V 15120

24V 15230
24V 14040

Viper 2000 Node 2

EASY 2000

Zone 2 HVAC Unit

Zone 3 HVAC Unit
Viper 2000 System

P/N: 16649

P/N: 14389

EasyTerm Quattro System

P/N: 17463

MCC's EasyTerm Quattro is an economically priced automatic climate controller for large vehicles such as buses and motor coaches in an easy to use design.
Viper Mark 1

The Viper Mark 1 is a complete HVAC control system that has the ability to control two separate HVAC systems simultaneously. Designed for mass transit and motor coach applications. With dual heating system control, passenger and driver temperatures can be controlled separately.

P/N: 11459

Viper Mark 1

Convector Unit  HVAC Unit

Heater Unit
Control Panels

26-0413 Control Panel 12V
26-0342 Control Panel 24V

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<th>Part No.</th>
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<td>2</td>
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<td>3</td>
<td>25-0444</td>
<td>Blower Switch</td>
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<td>4</td>
<td>26-0350</td>
<td>Rotary Control</td>
</tr>
<tr>
<td>5</td>
<td>25-0581</td>
<td>Knob</td>
</tr>
<tr>
<td>6</td>
<td>25-1105</td>
<td>Rocker Switch (G) 12V</td>
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<tr>
<td></td>
<td>25-1106</td>
<td>Rocker Switch (G) 24V</td>
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</table>

26-0445 Control Panel 12V
26-0446 Control Panel 24V

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<td>Potentiometer Assy.</td>
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<td>4</td>
<td>25-0581</td>
<td>Knob</td>
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<tr>
<td>5</td>
<td>25-1105</td>
<td>Rocker Switch (G) 12V</td>
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<tr>
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<td>25-1106</td>
<td>Rocker Switch (G) 24V</td>
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Connector Info: Connector 3-way Male Packard #12010717 with Male Terminal #12124582-L (3x) and Seal #12015323 (3x)

26-0415 Control Panel 12V
26-0416 Control Panel 24V

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<td>28-0224</td>
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<td>25-0444</td>
<td>Blower Switch</td>
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<tr>
<td>4</td>
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<td>Potentiometer Assy.</td>
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<td>5</td>
<td>25-0581</td>
<td>Knob</td>
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<tr>
<td>6</td>
<td>25-1105</td>
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<tr>
<td></td>
<td>25-1106</td>
<td>Rocker Switch (G) 24V</td>
</tr>
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Connector Info: Connector 3-way Male Packard #12010717 with Male Terminal #12124582-L (3x) and Seal #12015323 (3x)
# Control Panels

## 26-0387 Control Panel 12V  
26-0386 Control Panel 24V

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<td>35-0036</td>
<td>Potentiometer Assy</td>
</tr>
<tr>
<td>5</td>
<td>25-1105</td>
<td>Rocker Switch (G) 12V</td>
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<tr>
<td></td>
<td>25-1106</td>
<td>Rocker Switch (G) 24V</td>
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Connector Info: Connector 3-way Male Packard #12010717 with Male Terminal #12124582-L (3x) and Seal #12015323 (3x)

## 26-0398 Control Panel 12V  
26-0444 Control Panel 24V

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<td>25-1105</td>
<td>Rocker Switch (G) 12V</td>
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<td></td>
<td>25-1106</td>
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## 26-0455 Control Panel 12V  
26-0444 Control Panel 24V

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<td>4</td>
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## Control Panels

26-0361 Control Panel 12V  
26-0362 Control Panel 24V

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<th>Part No.</th>
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</tr>
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Connector Info: Connector 3-way Male Packard #12010717 with Male Terminal #12124582-L (3x) and Seal #12015323 (3x)
# Control Panels

## 56-0093 Control panel 12V

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## 56-0079 Control panel 12V

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<td>8</td>
<td>35-0989</td>
<td>Board Assembly</td>
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</tbody>
</table>
Temperature Sensors

Temperature sensors are an essential part of an automatic climate control system. These sensors send temperature information to the climate controller so set-point temperature can be maintained.

There are four types of sensors used in MCC HVAC systems.

- Device sensor is located near the evaporator coil to prevent the coil from freezing.
- Outside sensor is used to measure air temperature that is coming in to the HVAC unit’s air inlet.
- Return air sensor is used to measure re-circulated air temperature.
- Inside sensor is used to measure cabin air temperature.
PWM Stepless Motor Drive

A Stepless Motor Drive Module controls motor speed by interrupting the current flow. The motor's speed is controlled by the duty cycle of output signal. At top speed (100% duty cycle), there is no current interruption. Without any moving parts, the power is delivered to the motor in “infinite” steps. A Stepless motor Drive allows more precise control, requires no maintenance and operates efficiently.

At low speed, current flow is switched on for a short time.

At high speed, current flow is not interrupted.
Standard Stepless Motor Drive

**Specifications**

Operating Voltage: 9VDC to 32VDC
Storage Temperature: -40°C to +105°C (-40°F to 220°F)
Operating Temperature: -40°C to +85°C (-40°F to 185°F)
PWM Signal Input: 9V to 32V
Output: 300W

The Stepless Motor Drive Module is a stand-alone motor drive that uses an external PWM source to control the blower’s speed.

The Stepless Motor Drive Module uses a 10kΩ potentiometer to control the blower’s speed.
Standard Stepless Motor Drive

**Specifications**
- Operating Voltage: 9VDC to 32VDC
- Storage Temperature: -40°C to +105°C (-40°F to 220°F)
- Operating Temperature: -40°C to +85°C (-40°F to 185°F)
- PWM Signal Input: 9V to 32V
- Output: 2700W

P/N: 35-0067

PWM Module with 400Hz input
Converts 400Hz PWM input signal to 25kHz output.
# Brushless Motor Drives

### Specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
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<tbody>
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<td>Operating Voltage:</td>
<td>16VDC to 27VDC</td>
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<tr>
<td>Storage Temperature:</td>
<td>-40°C to +105°C (-40°F to 220°F)</td>
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<tr>
<td>Operating Temperature:</td>
<td>-40°C to +85°C (-40°F to 185°F)</td>
</tr>
<tr>
<td>Signal Input:</td>
<td>0V DC to 5V DC</td>
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<tr>
<td>Output:</td>
<td>800W</td>
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![Brushless Motor Drive Diagram](attachment:image_url)
PWM Interface Module

Specifications:
Supply Voltage: 9V DC to 32V DC
Input Signal: PWM
Output Voltage: 0V DC to 10V DC

Specifications:
Supply Voltage: 9V DC to 32V DC
Input Signal: PWM
Output Voltage: 0V DC to 5V DC
Relays

Relay: 12V 30A (Fuse protected)
Inputs: 10 Channel 500mA
Outputs: 10 Channel Supply Switching 10A

Relay: 24V 30A (Fused protected)
Inputs: 8 Channel 24V 5A
Outputs: 3 Channel 24V 20A
2 Channel 12V 1A
5 Channel Ground Switching 10A
1 Channel Supply Switching 10A
4 Channel for Actuator Flapper Door Control
Relays

Relay: 12V/24V DC Fuse protected
Inputs: 16 Channels Supply Switching 500mA
Outputs: 10 Channel single output 20A
         2 Bus outputs 20A
         12V Output for Actuator
Flapper door angle can be adjusted by resistor network.

Relay: 12V DC/24V DC Fuse protected
Inputs: 10 Channel Supply Switching 500mA
Outputs: 6 Channel Supply Switching 20A
         1 Ground Switching 20A

Relay: 12V DC/24V DC
Inputs: 5 Channels 500mA
Outputs: 3 Channel dual outputs 20A each
         1 Actuator output
         2 Channel bus

Relay: Solid state 12V/24V DC
Inputs: 5 Ground Switching high impedance inputs 500mA
         2 PWM input
Outputs: 6 Supply Switching Output (Fuse protected) 20A
         5 Low side output 20A
         Bused 10V PWM for 3 Blowers 20A
         Bused 5V PWM for 3 Condenser Fans 20A
ECC Applications

RS-485/ CANBus

DataLogger Viewer

Cool View
Multiplex Nodes Applications

- Cool View
- RS-485/ CANBus
- Data Logger Viewer
EasyTurn Family

The EasyTurn Defroster module is designed to control driver defroster temperature from mini buses to highway coaches.

This module is designed to control floor temperature in a passenger compartment in transit bus and highway coaches.

The EasyTurn Compartment module is designed to control temperature in passenger compartment in transit bus and highway coaches.

The EasyTurn Automatic Temperature Module (ATM) is ideal for controlling cabin temperature in mini-buses and off-road equipments.

EasyTurn A/C
The EasyTurn A/C Module controls A/C compressor and fan speed for fresh and recycled air. It is ideal for off-road and highway applications.

Features:
- CANBus ready
- Flash memory – easily reprogrammable
- Designed to control interior climate in mini bus to full size bus
- Integrated backlighting
- Easy to install
Automatic Thermostat Module

Specifications:
- Operating Voltage: 16VDC to 32VDC
- Storage Temperature: -40°C to +105°C (-40°F to 220°F)
- Operating Temperature: -40°C to +85°C (-40°F to 185°F)
- Controls Cabin temperature from 16°C (60.8°F) to 28°C (82.4°F)

Electronic De-icing Thermostat

Specifications:
- Operating Voltage: 9VDC to 32VDC
- Cut in/Cut out Temperature: Cut in: +2°C ±0.4°C, Cut out: -2°C ±0.4°C
- Clutch: 7A
- Storage Temperature: -40°C to +105°C (-40°F to 220°F)
- Operating Temperature: -40°C to +85°C (-40°F to 185°F)
Electronic De-icing Thermostat (EDT)

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 coil temperature. Onboard temperature sensor diagnostics are also built into the module. The EDT is very compact and with the same footprint as the older mechanically operated thermostats.

2. Basic Operation
If the EDT does not detect any temperature sensor failure, it will turn the compressor clutch and status light on when the evaporator coil temperature is above +2°C. When the evaporator coil temperature is below -2°C, the EDT will turn off the compressor clutch output and status light.

The EDT has built-in algorithm to protect the A/C system in case of temperature sensor failure.

3. Application and Pin Out

- **Power:** 10VDC to 32VDC
- **Ground:** Connection to Ground
- **Clutch:** Output connection Compressor Clutch (10 Amps Max)
Electronic De-icing Thermostat (EDT)

4. Diagnostics
In an event of temperature sensor error, the compressor clutch output is turned off and the status light will indicate the type of error detected.

<table>
<thead>
<tr>
<th>Status LED</th>
<th>Sensor Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single blink</td>
<td>Open</td>
</tr>
<tr>
<td>Double blink</td>
<td>Short to ground</td>
</tr>
</tbody>
</table>

5. Specifications

Operating Voltage: 10VDC to 32VDC

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

Temperature
Storage Temperature: -40°C to +105°C
Operating Temperature: -40°C to +85°C
Clutch Output: 10A Maximum

Electrical Connections:
Connector
Delphi: 02984378 MCC: 31-1029

- 18GA Delphi P/N: 02965510 MCC: 31-1369
- 10GA-12GA TE: 4-520448-2 MCC: 31-1247
- 14GA-16GA TE: 3-350820-2 MCC: 31-1100
- 18GA TE: 2-520184 MCC: 31-1106

- 14GA Delphi: 02965867 MCC: 31-1018
Electronic De-icing Thermostat (EDT)

6. Physical Characteristics and Dimensions

The EDT measures approximately 68 mm long, 32 mm wide and 23 mm high. The printed circuit board is mounted in a plastic case and is encased in a polyurethane potting compound.
Electronic Actuators

Temperature Control

Flapper Door Control

Sealed Type 12V or 24V
P/N: 25-1277 12V
P/N: 25-2660 24V

P/N: 26-1021
Water Valve Assembly

Unsealed type 12V
P/N: 12-1128 12V
Electronic Power Supplies

Water valve with sealed actuator

Water valve with unsealed actuator

Actuator Flow Rate

Flow Rate @ 2.5 PSID (GPM)

Actuator Angle Degrees
Status Module

Specifications:
- Operating Voltage: 9V DC to 32V DC
- Operating Temperature: -40°C to +85°C (-40ºF to 185ºF)

Differential Pressure Transducer

Specifications:
- Input Voltage: 4.8V to 15V DC
- Pressure Range: 0.1 mbar (0.5V) to 10mbar (4.5V)
- Storage Temperature: -40°C to +85°C (-40ºF to 185ºF)
- Operation Temperature: -20°C to 70°C (-5ºF to 160ºF)
- Humidity: 0% to 95% RH
Electronic Power Supplies

35-0244 and 35-0478 are voltage converters designed to convert 24V DC to 12V DC.

Specifications:
- Input Voltage: 24V DC
- Output Voltage: 14V DC
- Operation Temperature: -40°C to +85°C (-40°F to 185°F)

DC to AC converter for EL backlights in control panels.

Specifications:
- Input Voltage: 12 DC
- Output Voltage: 120V AC @ 600HZ
- Operation Temperature: -40°C to +85°C (-40°F to 185°F)
Coolview

Since the ECC, MVC, Multiplex nodes and Electronic Thermostat are micro controller based, the control algorithm can be customized to each customer’s individual requirements.

Each software contains customized climate control algorithm to control different HVAC components.

**ECC**

- Evap Time: 12.5 Hrs. Rst->
- Low Press. Sw.: 0 Times Rst->

Component running hours

Supply Voltage

- Voltage: 13.8V
- Return Temp.: 75°F

Pressure Switch Trips

Temperature Sensor

**MVC**

Output Parameter Status

Component Error List

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© Mobile Climate Control

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Coolview

MCC's Coolview is designed to assist in diagnosing, monitoring and troubleshooting a vehicle's HVAC system.

Coolview Displays:
- Sensor Temperatures
- Status of Inputs and Outputs
- HVAC Mode (Cool, Heat, Defrost, Auto and Diesel Heat)
- Blower Speed, Actuators Position, Display Contrast and Brightness

System History:
- ECC, Compressor and Blower Hours
- Errors
- Clutch Cycles
ECC Downloader

Using any PC running Windows™ 2000/XP/VISTA/7 platform via RS-232 or USB port, software upgrades can be make. ECC Downloader that can reprogram the ECC while the vehicle is running.

RS-485 Communication

The RS-485 to USB converter is design for communication between a computer and ECC controller via USB port. It is compatible with MCC Coolview and ECC Downloader.

The RS-485 to RS-232 converter is design for communication between a computer and ECC controller via RS-232 port. It is compatible with MCC Coolview and ECC Downloader. Simple Plug and Play setup requires no special drivers to install.

P/N: 35-0735

P/N: 35-0202
Data Logger Downloader

The MCC Data Logger Downloader retrieves data that is saved in the Data Logger’s on board memory via RS-485 or USB connection. The saved data can be in Raw or Decoded data format which can be used for troubleshooting and diagnostics.

Coolview Fleet Tracking

MCC Coolview Fleet Tracking is a standard ECC with an optional WiFi or 3G GSM transceiver. Coolview Fleet Tracking allows real-time monitoring and diagnostic. Data stored ECC’s memory can be downloaded anytime to be analyzed by MCC and local service personnel.