IDEX CORPORATION

Class 1

ISO 9001 CERTIFIED

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SUITABLE FOR EXTERNAL DISTRIBUTION

TECHNICAL PRODUCT DATASHEET

ES-Key Climate Control Module

P/N 114942

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IDEX
607 NW 27th Ave
Ocala, FL 34475
Ph: 352-629-5020 or 1-800-533-3569
Fax : 352-629-290 or 1-800-520-3473

TECHNICAL DATA SHEET

				PAGE	1 OF 9
				DATE	8-23-2006
PRODUCT GROUP	ES-KEY	P/N	114942	REV	1.00
PRODUCT	Climate Control Module			BY	AMS

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TECHNICAL DATA SHEET

1. Revision Log

Rev	Date	Changes
1.00	8-23-2006	Initial requirements

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2. Module Overview

2.1. Scope

The ES-Key™ Climate Control Module (C1 p/n 114942) is an ES-Key node that controls a vehicle's air conditioning clutch, heating valve, and fan motor speed with high current digital outputs based upon received J1939 CAN commands from a supported ES-Key control device. The Climate Control Module has dedicated inputs/outputs for two analog temperature sensors (C1 p/n 108121) to determine internal and external vehicle temperatures.
The Climate Control Module has two modes of operation: automatic and manual.

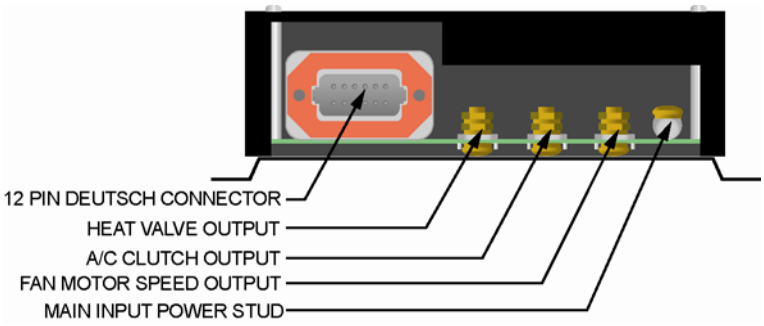

Figure 1. *Parts identification.*

2.2. Heat valve control output

The heat valve control output is a high current (25 Amps) positive polarity digital output used to activate the vehicle's heating system when applicable. This output is fully protected against shorts to ground and current overloads.
The physical output is a #10 stud configured for ring terminal installation.

2.3. Air conditioning clutch output

The air conditioning clutch output is a high current (25 Amps) positive polarity digital output used to activate the vehicle's A/C clutch when applicable. This output is fully protected against shorts to ground and current overloads.
The physical output is a #10 stud configured for ring terminal installation.

2.4. Fan motor speed output

The fan motor speed output is a high current (25 Amps) positive polarity digital Pulse Width Modulated (PWM) output used to drive the vehicle's blower fan at variables speeds. This output is fully protected against shorts to ground and current overloads.
The physical output is a #10 stud configured for ring terminal installation.

2.5. Temperature sensor inputs/outputs

The Climate Control Module utilizes two Class 1 temperature sensors (C1 p/n 108121) to determine the external and internal vehicle temperatures. The Climate Control Module's embedded firmware adjusts the fan speed and heat/cool operation based on the internal temperature detected while in the automatic mode of operation.
The external temperature data is transmitted to supported ES-Key modules for display purposes.

2.6. Main input power stud

Main power for the high current outputs is supplied thought this stud (configured for a #10 screw and ring terminal).

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3. Operation

3.1. Automatic mode

The Climate Control Module receives the desired set temperature from a supported ES-Key control module and evaluates against the detected internal temperature. Software algorithms then set the appropriate fan speed PWM output and heat/cool output to maintain the desired temperature.

3.2. Manual mode

The Climate Control Module strictly uses the commands from a supported ES-Key control module when setting the heat/cool output and fan speed PWM output. In manual mode the Climate Control Module does not attempt to maintain a certain temperature.

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4. System diagram

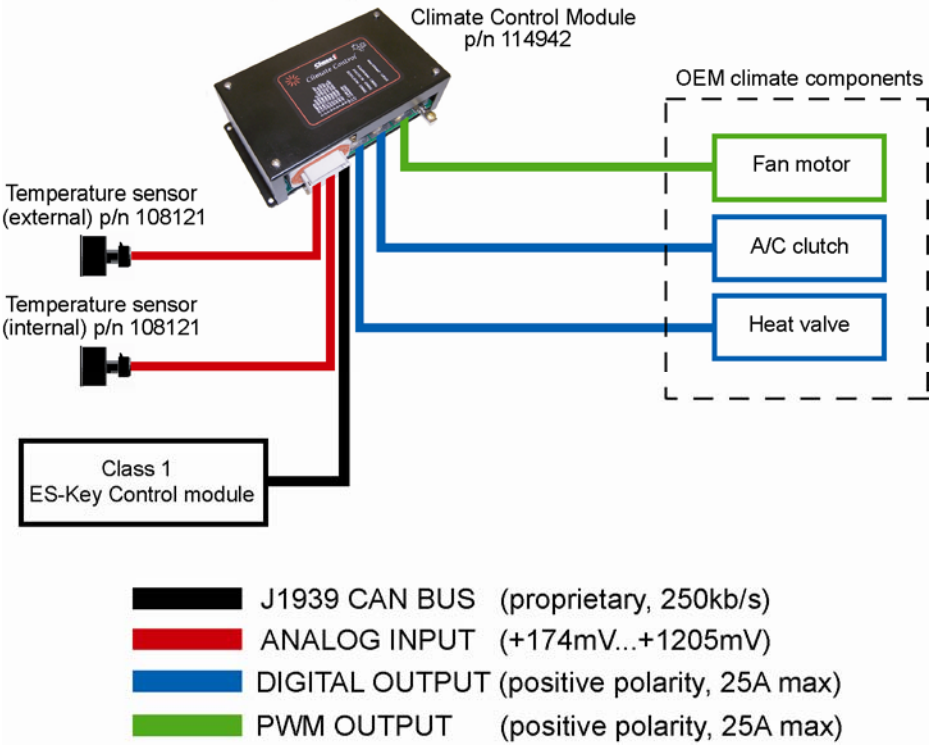

Figure 2. *System diagram.*

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5. Connector Description

The Climate Control Module has one connector and the following definitions apply:

Mating connector: Deutsch DT06-12SA GRAY
Mating sockets: 0462-201-16141
Wedge lock: W12S Recommended wire gage: 16-18 AWG

PIN	CIRCUIT	DESCRIPTION
1	Supply +	Module supply (+9VDC…+16VDC) [fused 2.5A]
2	CAN High	ES-Key CAN, SAE J1939 Proprietary, 250 kbits/S
3	CAN Shield	ES-Key CAN, SAE J1939 Proprietary, 250 kbits/S
4	Temp Ref (-) EXT	External temperature ground reference
5	Temp Signal EXT	External temperature signal input (+174mV…+1205mV)
6	Temp Ref (+) EXT	External temperature positive reference (+5VDC regulated)
7	Temp Ref (+) INT	Internal temperature positive reference (+5VDC regulated)
8	Temp Signal INT	Internal temperature signal input (+174mV…+1205mV)
9	Temp Ref (-) INT	Internal temperature ground reference
10	-	Not used
11	CAN Low	ES-Key CAN, SAE J1939 Proprietary, 250 kbits/S
12	Supply -	Module supply (vehicle ground)

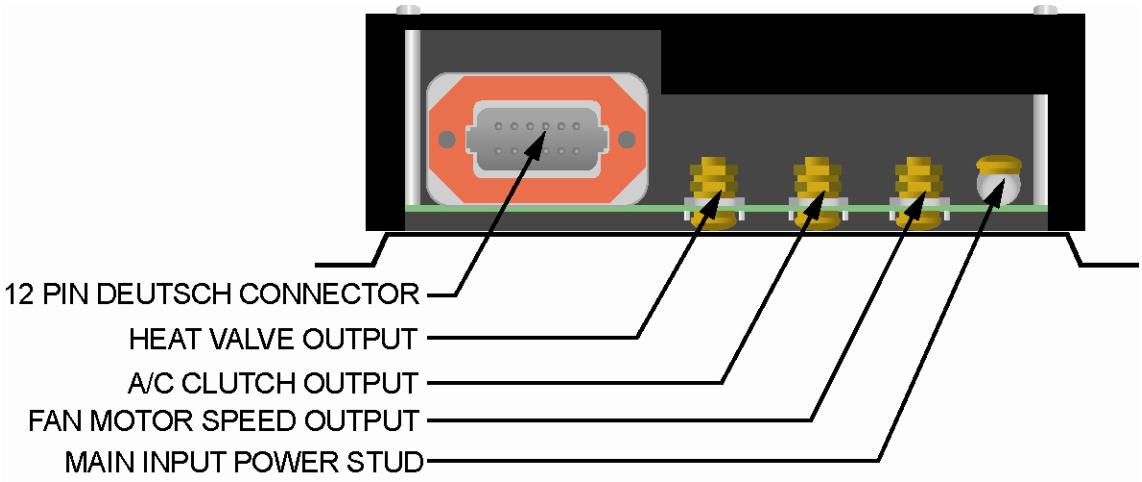

Figure 3. ***Connector/stud identification.***

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6. Diagnostic LEDs

The Climate Control Module has seven diagnostic LEDs located beneath the protective metal enclosure.

LED	COLOR	FUNCTION	STATUS
BUS PWR	yellow	Shows status of the Main Input Power Stud	ON when voltage is present
PWR	yellow	Shows status of the logic supply power (pins 1 & 12)	ON when voltage is present
VCC	red	Shows status of internal voltage (after internal fuse)	ON when voltage is present
COMM	green	Shows the communication status of the module	ON solid = communicating Flashing slow = not communicating Flashing fast = CAN bus error Double flash = CAN bus shorted or Missing terminating resistor
FAN MOTOR	green	Shows the state of the fan motor output	ON when output is active
A/C CLUTCH	green	Shows the state of the A/C clutch output	ON when output is active
HEAT VALVE	green	Shows the state of the heat valve output	ON when output is active

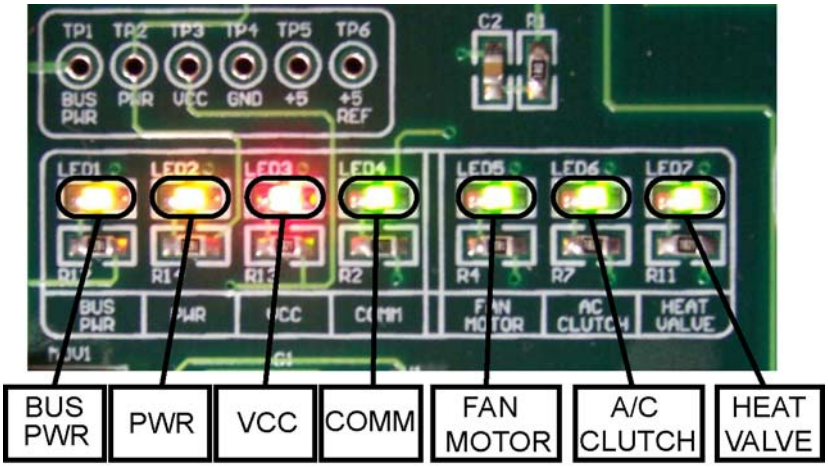

Figure 4. ***Diagnostic LED identification.***

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7. Mounting

The Climate Control Module is mounted with four #8 screws.

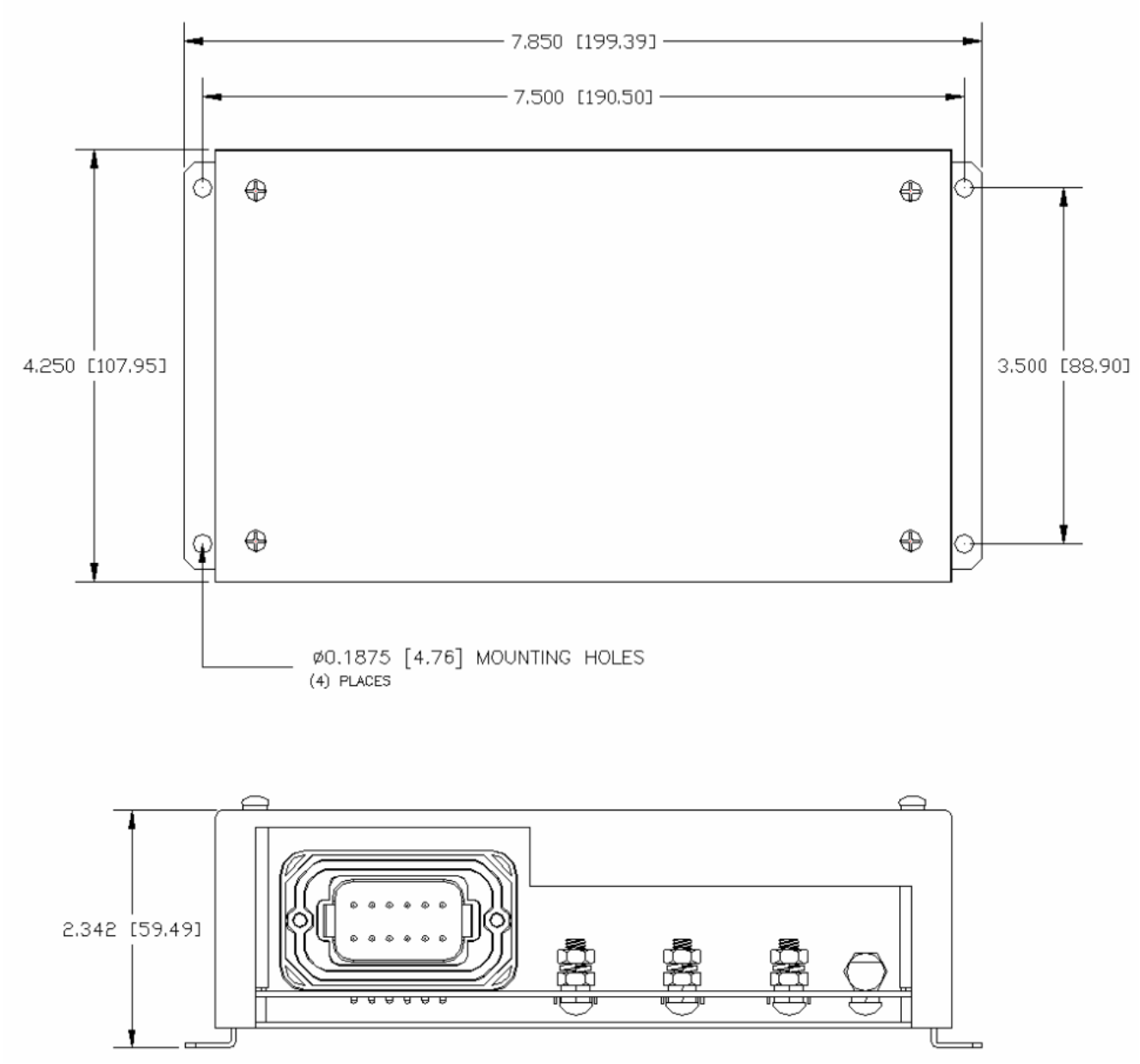

Figure 5. *Mounting dimensions – inches [millimeters].*

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8. Technical details

Product category	ES-KEY
Voltage range	+9VDC…+16VDC
Power consumption @13.8VDC	Logic supply+ input (pin 1) 72mA
Output power Fan motor A/C clutch Heat valve	25A maximum
Operational temperature range	-40ºC…+85ºC
Environmental range	IP 10
CAN specification	SAE J1939 proprietary, 250 Kbits/second
Protection	Internal thermal fuse (750mA on pin 1) Reverse voltage protection (pins 1 and 12) CAN buses protected to 24V ESD voltage protected to SAE J1113 specification for heavy duty trucks (12V) Transient voltage protected to SAE J1113 specification for heavy duty trucks (12V) Load dump voltage protected to SAE J1113 specification for heavy duty trucks (12V) Outputs protected for short circuit and thermal overload
Dimensions (W x L x H) in inches [mm]	7.850 [199.39] x 4.250 [107.95] x 2.35 [59.50]