IDEX CORPORATION

Class 1

ISO 9001 CERTIFIED

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SUITABLE FOR EXTERNAL DISTRIBUTION

TECHNICAL PRODUCT DATASHEET

ES-KEY Climate Control Display

P/N 120179

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TECHNICAL DATA SHEET

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PRODUCT GROUP	ES-KEY	P/N	120179	REV	1.00
PRODUCT	CLIMATE CONTROL DISPLAY			BY	AMS

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1. Revision Log

Rev	Date	Changes
1.00	2/16/2010	Initial revision

Product specifications in this manual are subject to change without notice.

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2. System Overview

2.1. Part numbers

ES-Key Climate Control Display *(for use with Climate Control Module p/n 114942)*	120179

Optional items

Power connector pigtail *(12")*	103874-A
CAN communication harness *(12")*	103886-C
CAN communication harness *(24")*	103388-G

2.2. ES-Key Climate Control system

The ES-Key Climate Control Display (p/n 120179) provides status and control functions for an ES-Key Climate Control system (air conditioning and heat) utilizing a Climate Control Module (p/n 114942).

2.3. ES-Key Climate Control Display component identification

The Climate Control Display (**Figure 1**) has a display (4 lines, 20 characters each) and six (6) buttons.

Display	Shows climate control system information
System power button	Toggles the climate control system between **STANDBY** and **OPERATING**
Automatic/manual button	Toggles the climate control system between **AUTOMATIC** and **MANUAL** operation
Display units button	Toggles the displayed temperature between degrees **FAHRENHEIT** and degrees **CELSIUS**
Mode button	Toggles the climate mode through **HEAT**, **COOL**, and **VENT** *(manual operation only)*
Increase button	Increases desired temperature *(automatic operation)* or increases fan speed *(manual operation)*
Decrease button	Decreases desired temperature *(automatic operation)* or decreases fan speed *(manual operation)*

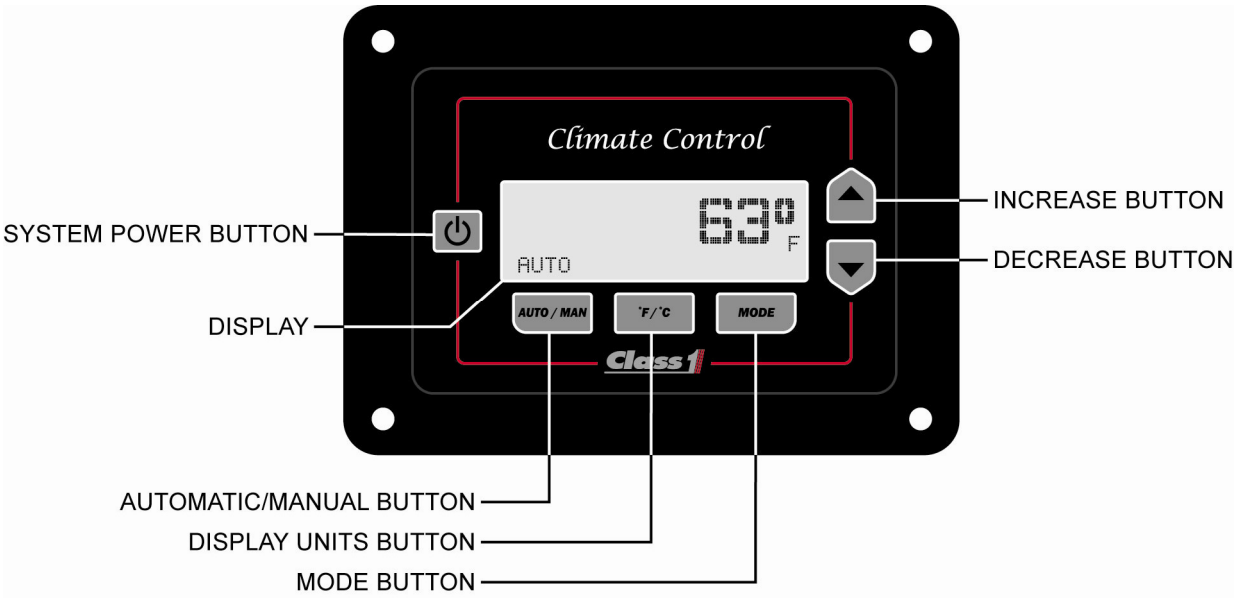

Figure 1. ***Climate Control Display identification***

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2.4. ES-Key Climate Control system diagram

The Climate Control system requires a Climate Control Display (p/n 120179), a Climate Control Module (p/n 114942), and temperature sensor (p/n 108121).
The Climate Control Display controls the mode of the Climate Control Module with communication messages via J1939 CAN. The Climate Control Module receives temperature data from the temperature sensor and controls the state of the OEM's climate components (fan motor, A/C clutch, and heat valve).
The temperature sensor must be mounted within the climate controlled area.

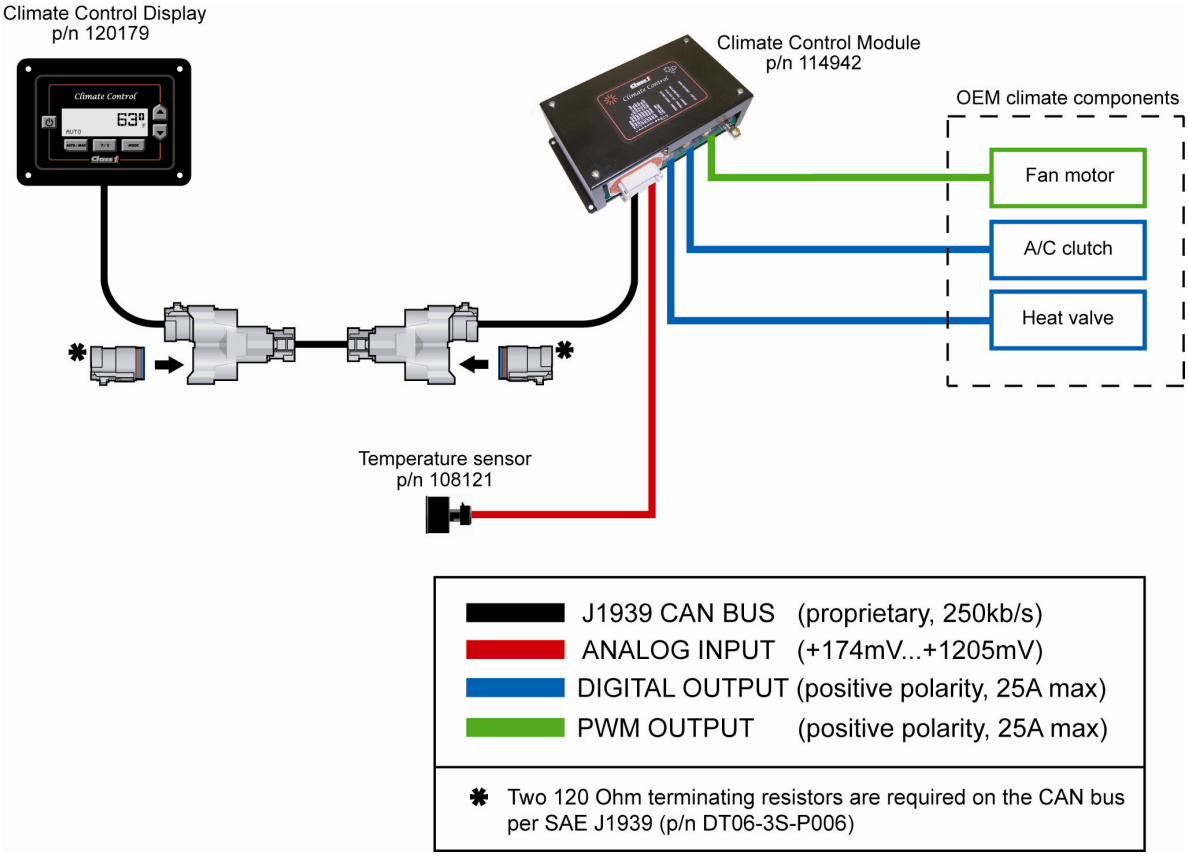

Figure 2. ***Typical climate control system layout***

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3. Operation

3.1. Initialization Screen

The Climate Control Display shows the initialization screen for four seconds during a power ON cycle (Figure 3). The initialization screen shows the software version.

The Climate Control Display shows the operation screen after the initialization cycle. The Climate Control Display has three operation screens: **standby**, **automatic** and **manual**.

The system remembers the operation screen from the last power cycle and will start in that operation screen.

Figure 3. ***Initialization screen***

3.2. Operation screens

The Climate Control system utilizes both automatic and manual control methods.

The Climate Control Display's **system standby** screen (section 3.2.1) maintains all of the climate control functions OFF.

The Climate Control Display's **automatic operation** screen (section 3.2.2) allows the user to select a desired temperature and the Climate Control system automatically chooses the temperature mode (cool, heat, or vent) and the fan speed (low, medium, or high) to maintain the desired temperature.

The Climate Control Display's **manual operation** screen (section 3.2.3) allows the user to set the temperature mode (cool, heat, or vent) and the fan speed (low, medium, or high) as desired.

3.2.1. System standby

The system standby screen indicates that all functionality of the Climate Control system is OFF. The system is toggled between standby and operating (automatic or manual) by pressing the **system power** button.

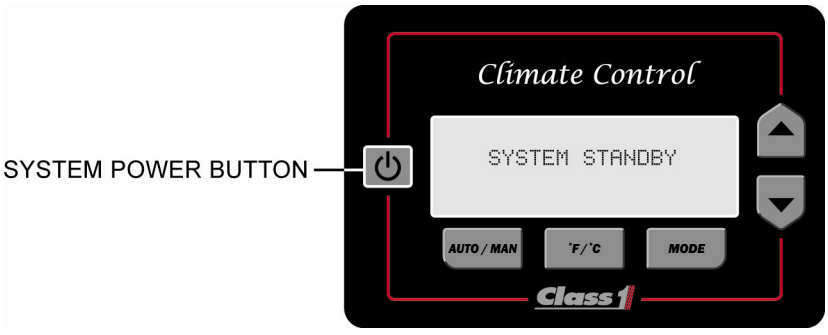

Figure 4. ***System standby screen***

3.2.2. Automatic operation screen

Automatic operation allows the user to set a desired temperature and the Climate Control system fully controls the temperature mode and fan speed to maintain the set temperature.

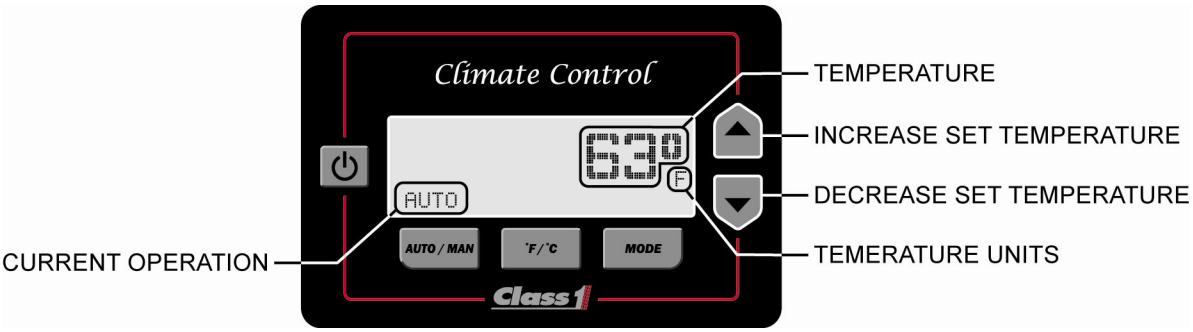

Figure 5. ***Automatic operation screen***

Displayed information

- The display shows the current temperature with large numbers.
- The temperature units (**F** = Fahrenheit, **C** = Celsius) is shown next to the temperature value.
- "AUTO" is shown in the bottom left corner to indicate that the system is in automatic operation.

Temperature control

- Change the desired (set) temperature by pressing the **increase** and **decrease** buttons. The available range is from 60℉ (15℃) to 90℉ (33℃). The displayed temperature flashes while the increase/decrease buttons are pressed to indicate that the value shown is the ***desired*** temperature. The displayed temperature stops flashing three seconds after the last increase/decrease button press to indicate that the value shown is the ***current*** temperature (see Table 1).
- Switch to manual control by pressing the **AUTO/MAN** button.

Temperature display	Description
STEADY	*Showing **current** temperature*
FLASHING	*Showing **desired** temperature*

Table 1. ***Temperature display indications.***

Temperature units

Change the unit of the displayed temperature between Fahrenheit and Celsius by pressing the **℉/℃** button.

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3.2.3. Manual operation screen

Manual operation allows the user full control over the temperature mode and fan speed.

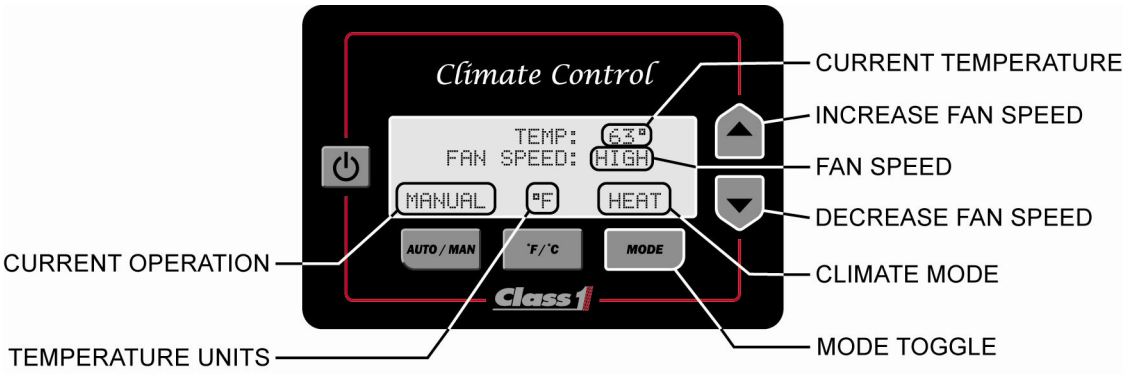

Figure 6. ***Manual operation screen***

Displayed information

- The current temperature is shown to the right of the text “TEMP”.
- The temperature units (**F** = Fahrenheit, **C** = Celsius) is shown in the middle of the bottom line.
- “MANUAL” is shown in the bottom left corner to indicate that the system is in manual operation.
- The current fan speed (**LOW**, **MEDIUM**, or **HIGH**) is shown to the right of the text “FAN SPEED”.
- The climate mode (**HEAT**, **COOL**, or **VENT**) is shown in the bottom right corner.

Temperature control

- Change the fan speed between (**LOW**, **MEDIUM**, and **HIGH**) by toggling the **increase** and **decrease** buttons.
- Change the climate mode between (**HEAT**, **COOL**, and **VENT**) by toggling the **MODE** button.
- Switch to automatic control by pressing the **AUTO/MAN** button.

Temperature units

Toggle the unit of the displayed temperature between Fahrenheit and Celsius by pressing the **°F/°C** button.

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4. Mounting & installation

4.1. Mounting conditions

The ES-Key Climate Control Display is NOT water-tight and should be mounted in an area free from potential water spray.

4.2. Panel cutout dimensions

The ES-Key Climate Control Display is designed to be mounted within a panel cut-out (**Figure 7**) with four (4) #10 screws and nuts.

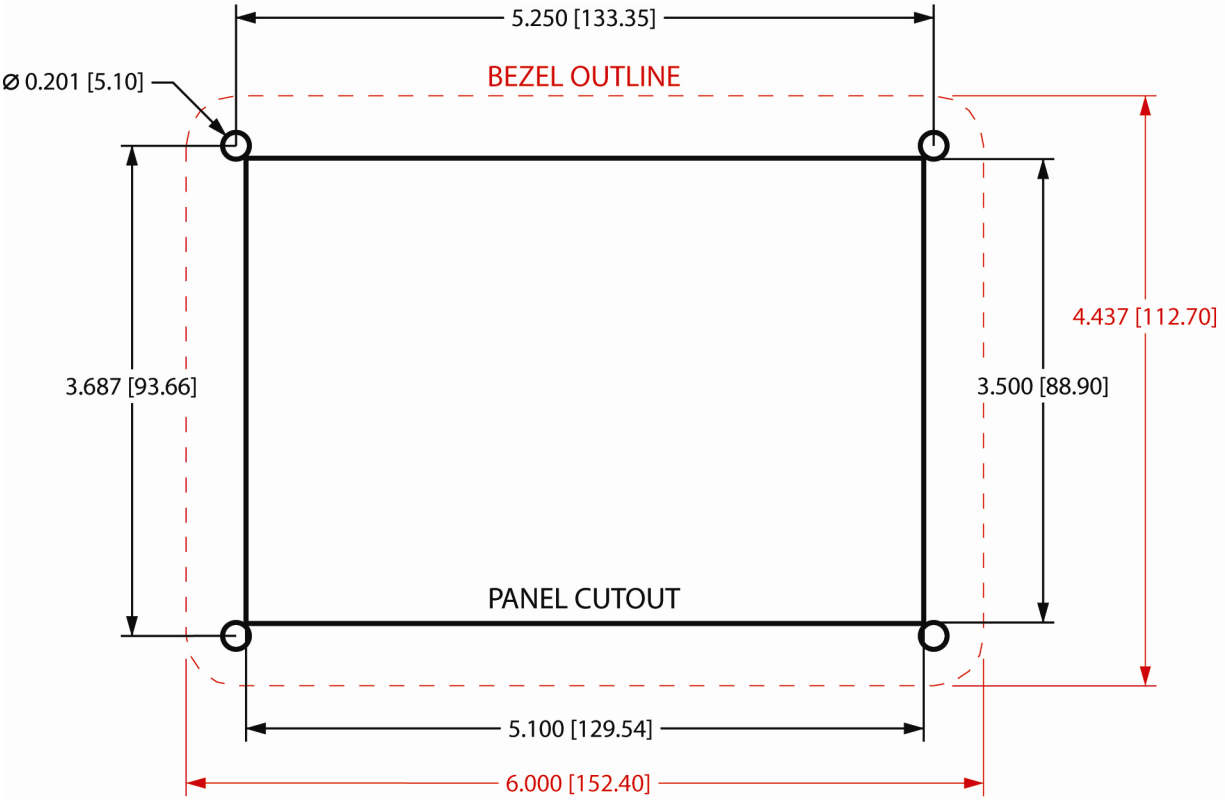

Figure 7. ***Installation dimensions in inches [millimeters].***

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5. Connector Description

The module has two connectors (power and communication, **Figure 8**) and the following definitions apply:

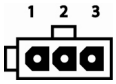
5.1. Power connector

Mating connector:	**Amp 172165-1 – Mini-Universal Mate-N-Lok**
Mating sockets:	**Amp 770988-1**
Connector seal:	**Amp 794772-8**
Recommended wire gage:	**16 – 20 AWG**

PIN	CIRCUIT	DESCRIPTION
1	SUPPLY (+)	(INPUT) – battery voltage (+9VDC...+16VDC)
2	SUPPLY (-)	(INPUT) – battery ground

5.2. Communication connector

Mating connector:	**Amp 172166-1 – Mini-Universal Mate-N-Lok**
Mating sockets:	**Amp 770988-1**
Connector seal:	**Amp 794772-8**
Recommended wire gage:	**16 – 20 AWG**



PIN	CIRCUIT	DESCRIPTION
1	CAN HIGH	(DATA) – SAE J1939 CAN 2.0B, 250Kbits/s *
2	CAN LOW	(DATA) – SAE J1939 CAN 2.0B, 250Kbits/s *
3	CAN SHIELD	(DATA) – SAE J1939 CAN 2.0B, 250Kbits/s *

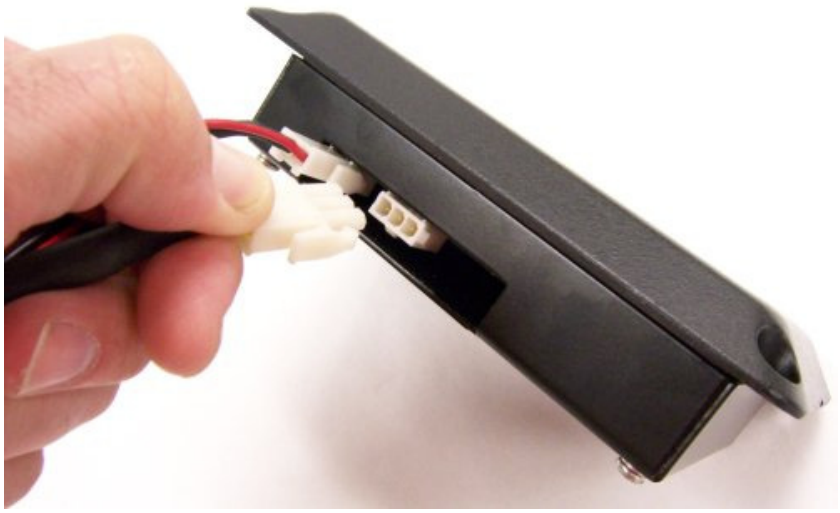


Figure 8. ***Connectors.***

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6. Technical Details

Product category	ES-KEY
Voltage range	+9VDC…+32VDC
Power consumption	Logic supply+ input (pin 1)
@13.8VDC	102mA
@27.6VDC	70mA
Operational temperature range	-40ºC…+85ºC
Environmental range	IP 10
CAN specification	SAE J1939 proprietary, 250 Kbits/second
Protection	Internal thermal fuse (2.5A on pin 1)
	Reverse voltage protection (pins 1 and 2)
	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)
	(backlighting is not protected from load dump)
Dimensions (W x L x H) in inches [mm]	6.000 [152.40] x 4.437 [112.70] x 1.530 [38.86]