

# ACCS

## Atwood Comfort Control System

By: ATWOOD MOBILE PRODUCTS



# Agenda

- Introduction
- Overview of components
- Command Center
- Modes Of Operation
- Trouble Shooting

# Introduction

- ACCS is a state-of-the-art climate control system.
- This presentation is designed to:
  - Give you an overview of ACCS components
  - Demonstrate how components interact and function.

# Overview

- The ACCS is used to manage the climate in each vehicle by controlling all of the:

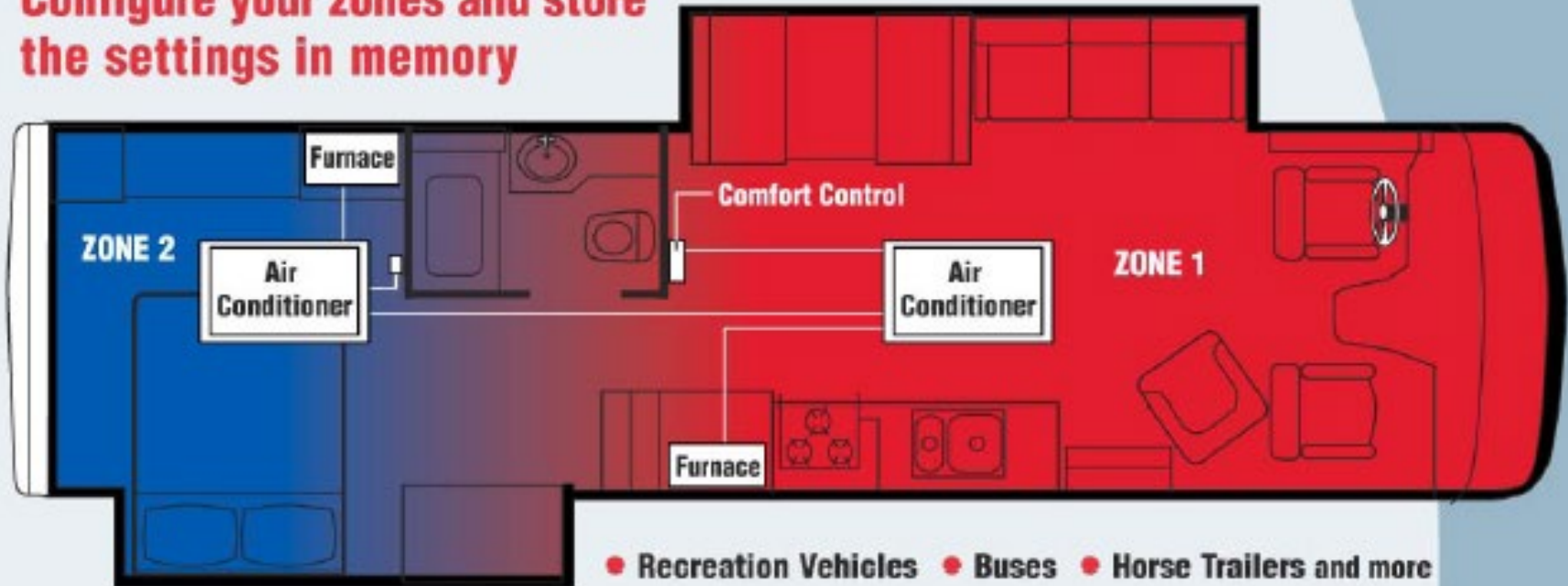
## **Control all of these appliances from one location!**

- All standard furnaces, including the New Atwood Excalibur XT™ 2-Stage Furnace
- Standard 3-stage and standard 2-stage air conditioners
- Standard 2-stage and standard 1-stage air conditioners with heat pump
- Electric heat strip
- Hydronic heating systems

# Overview

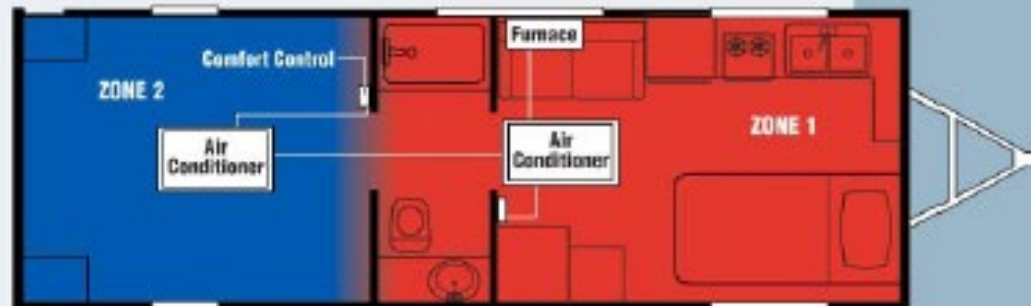
- The ACCS is used to manage the climate in each vehicle by controlling all of the:
  - Air Conditioning Units, Gas Heating Appliances

**Configure your zones and store the settings in memory**



## Plug-N-Play Operation

The Atwood Comfort Control Interface connects to a standard RJ-45 Ethernet cable. There's only one way to plug it in!



# Components

- Command Center



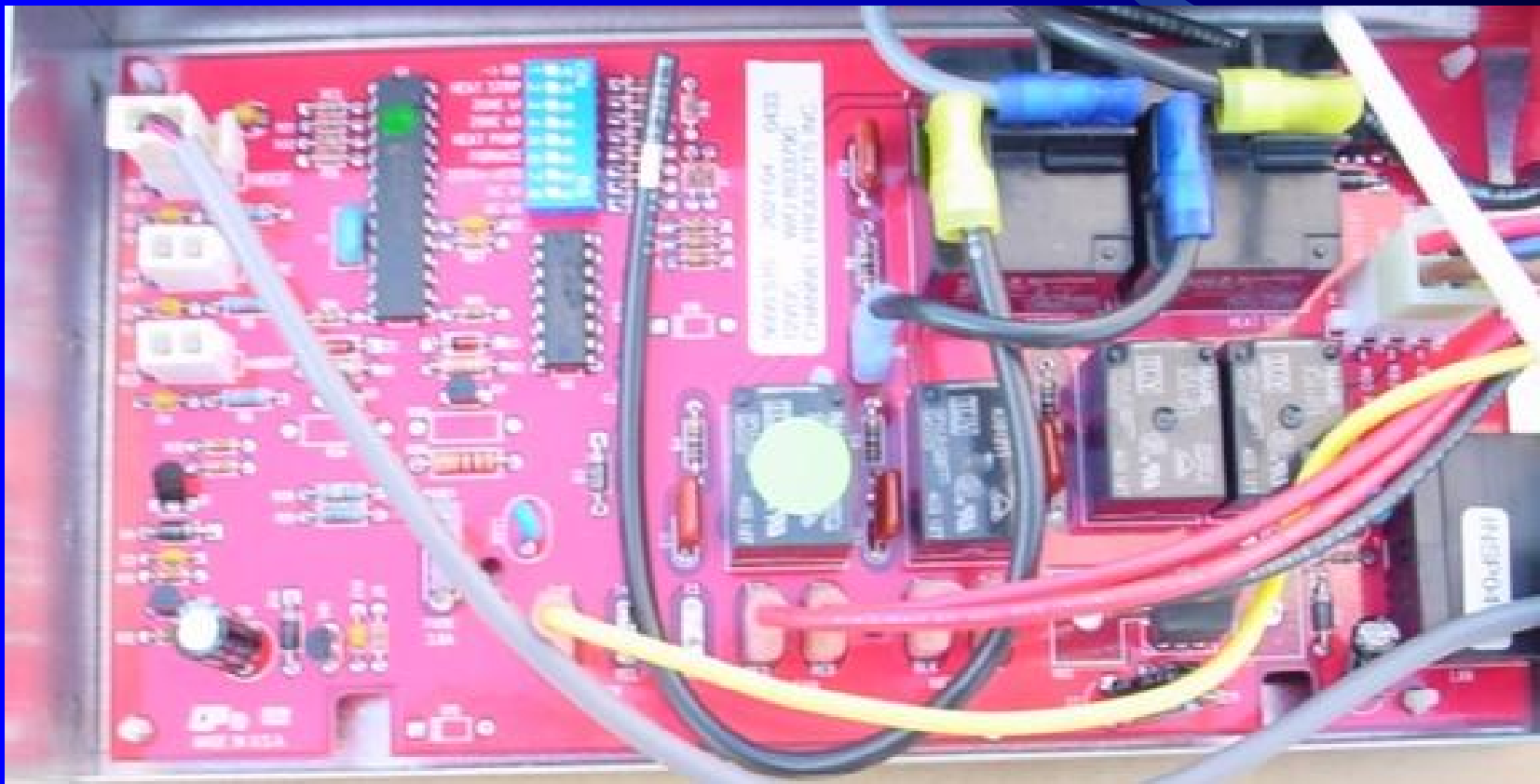
# Components

- Control Board



# Components

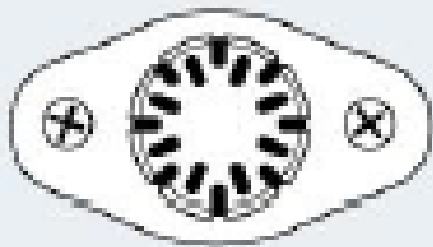
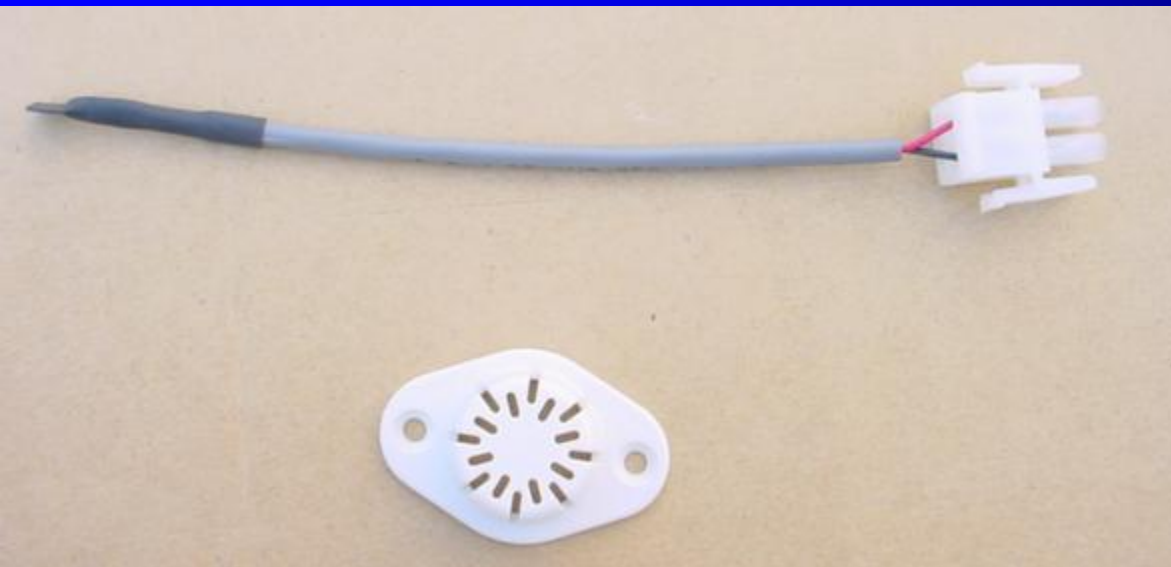
- Control Board





# Components

- Remote Sensor



## Remote Sensors

Atwood Zone Control Modules (AZCM) provide the flexibility to configure zones throughout the vehicle.

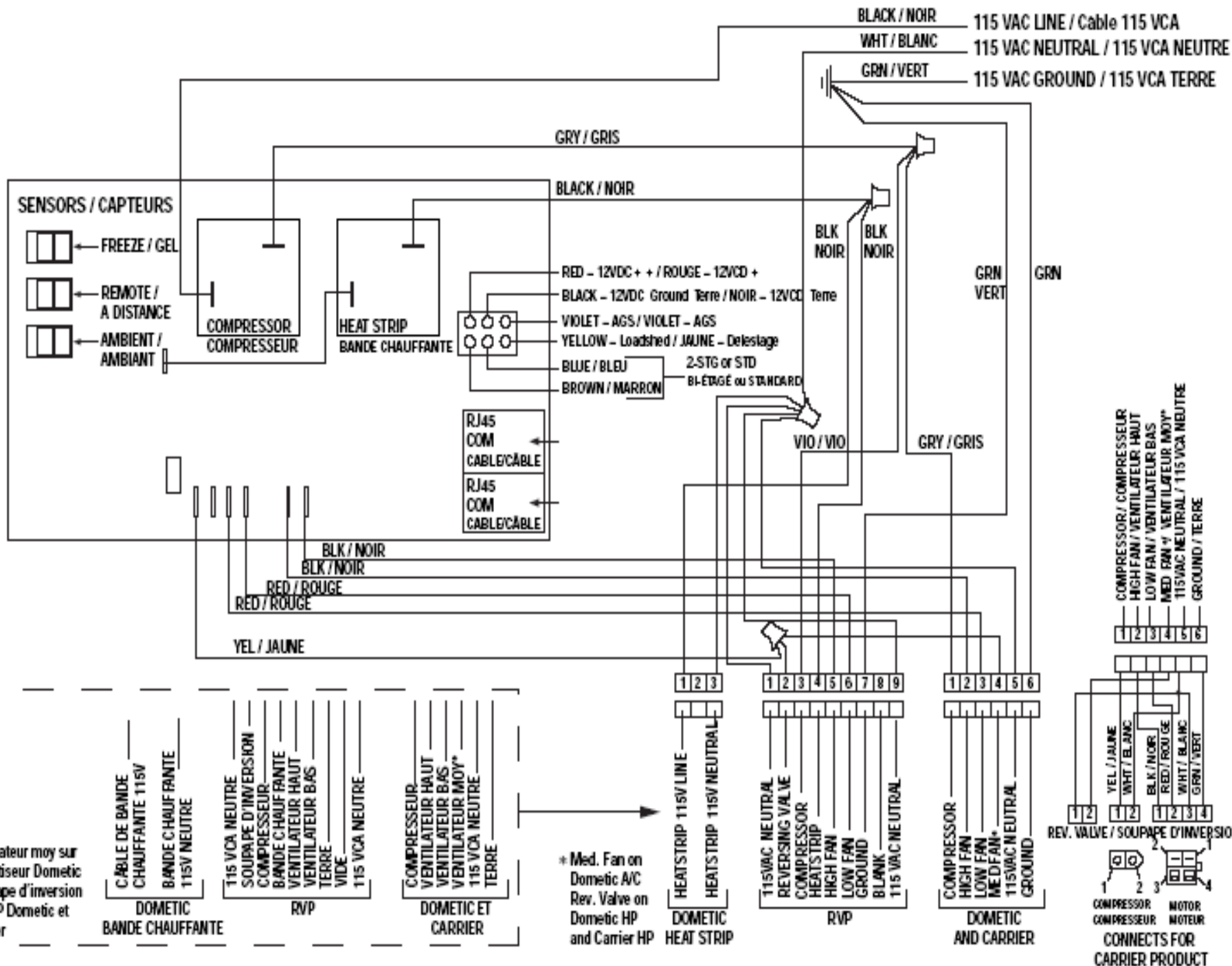
# Components

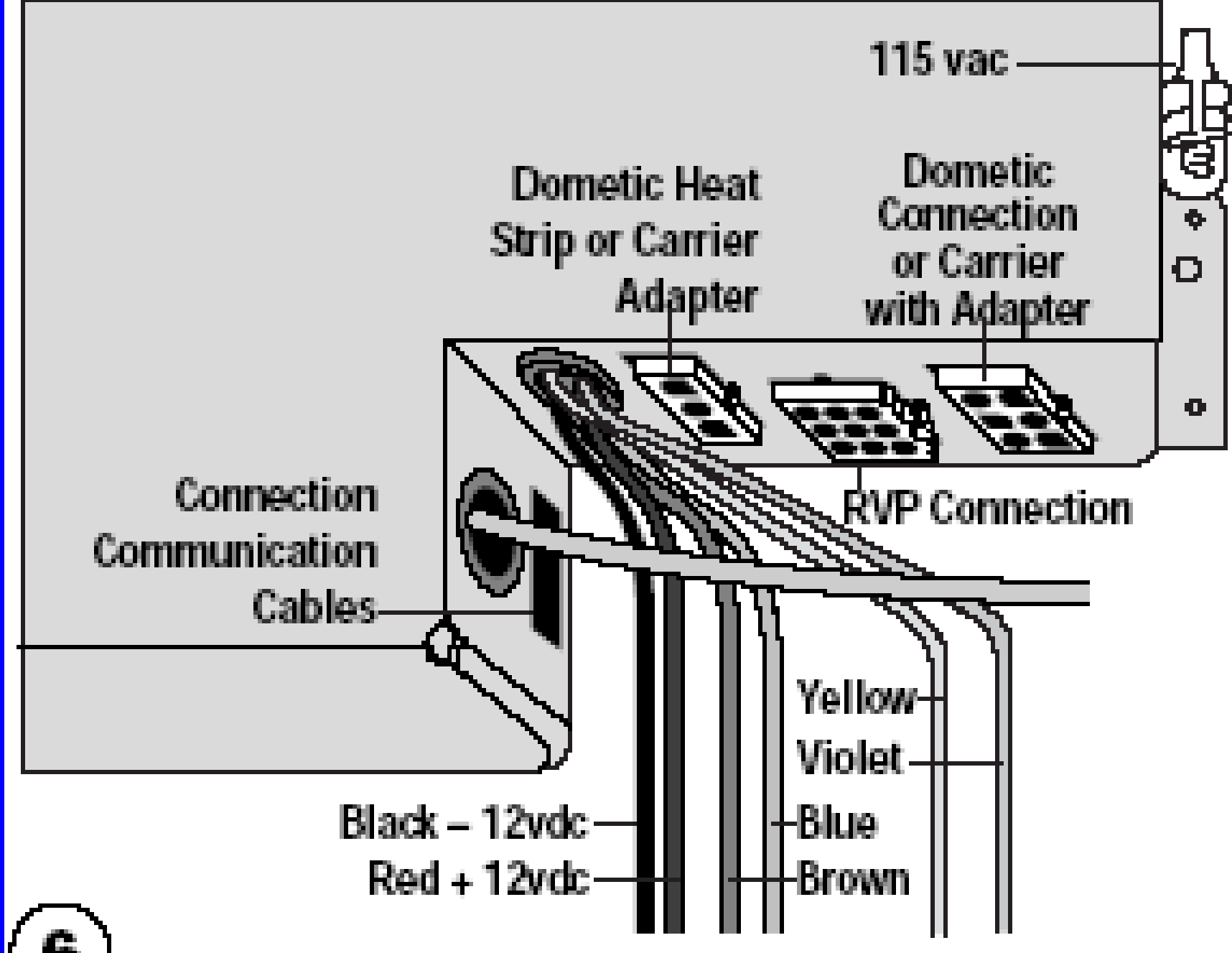
- RJ-45 Cable CAT-5
  - TWISTED PAIR
  - SHIELDED



# INSTALLATION

- Command Center
- Zone Control
- Communication Cable
- 12 VDC Low Voltage Connections
- 120 VAC High Voltage Connections
- Remote Thermistors
- Freeze Sensor
- No Ambient Sensor (RVP)





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## Typical Installation / Installation typique

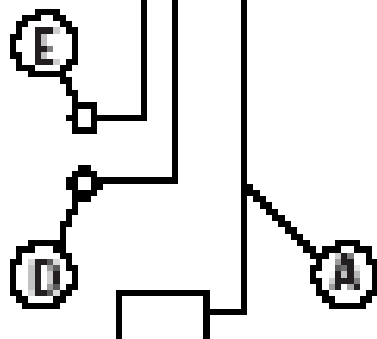
ZONE 1

12 VDC

ZONE 2

A/C - Heat Pump  
Clim - Thermopompe

A/C - Heat Pump  
Clim - Thermopompe



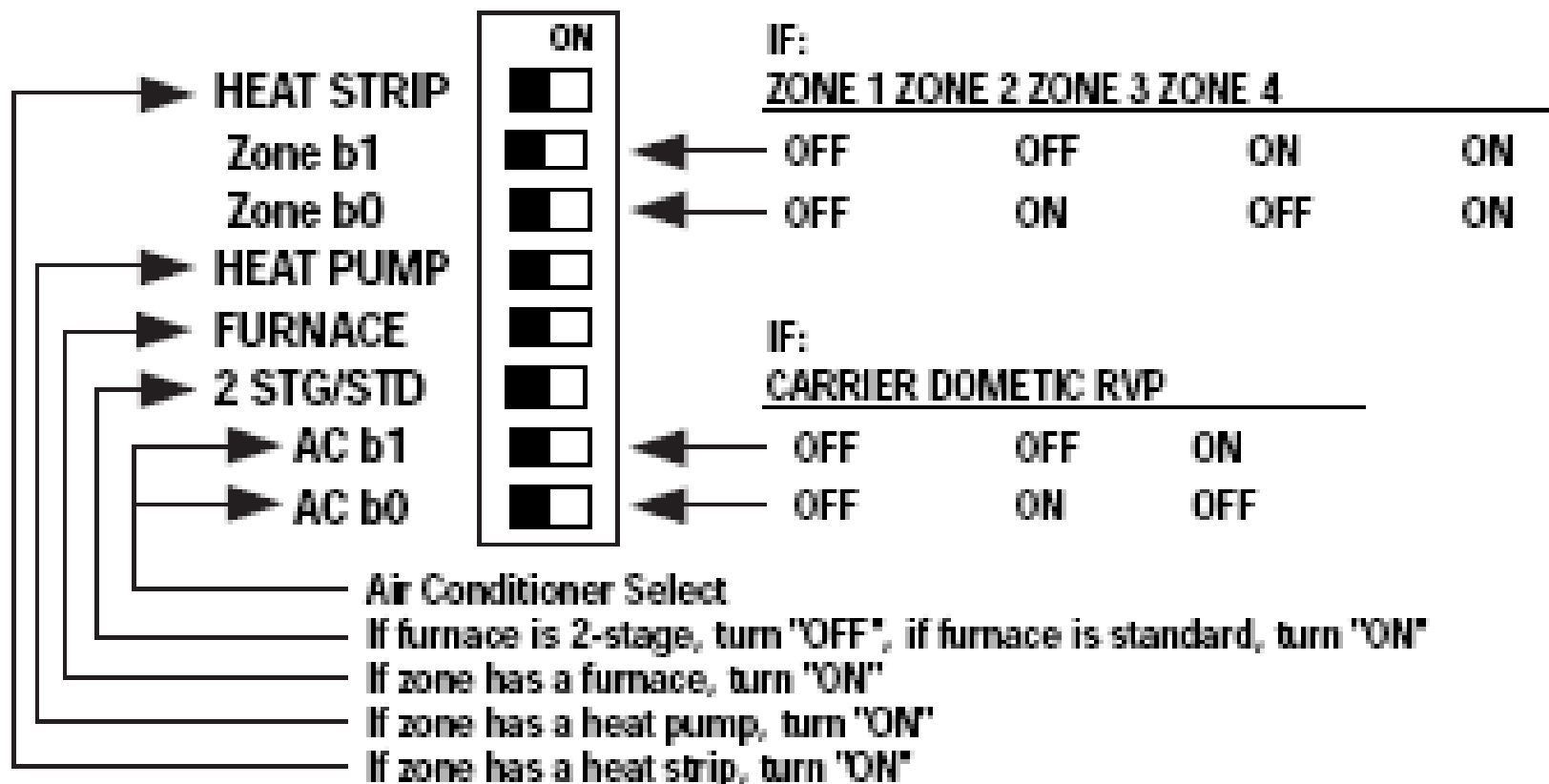
Command Center  
Poste de commande

XT 2334  
Furnace  
(Chauffage)

XT 1522  
Furnace  
(Chauffage)

12 VDC

## Zone Control Dip Switches / Micro-interrupteurs de contrôle de zone



Air Conditioner Select

If furnace is 2-stage, turn "OFF", if furnace is standard, turn "ON"

If zone has a furnace, turn "ON"

If zone has a heat pump, turn "ON"

If zone has a heat strip, turn "ON"

NOTE\* Switches are pictured in "OFF" position

Sélection climatiseur

Si l'appareil est bi-étagé, mettre sur "OFF",

si l'appareil est standard, mettre sur "ON"

Si zone équipée d'un appareil de chauffage, mettre sur "ON"

Si zone équipée d'une thermopompe, mettre sur "ON"

Si zone équipée d'une bande chauffante, mettre sur "ON"

REMARQUE \*Les interrupteurs sont sur "OFF" dans les illustrations

# Command Center

- The Command Center is the backbone of the ACCS system.
  - Allows the user to program the running of individual “Zones”, up to four zones. One zone per air conditioner.





# Command Center Display



# Command Center

- Liquid Crystal Display (LCD) displays the current room temperature with set point in Fahrenheit or Celsius, mode of operation, and fan speed setting.
- The LCD identifies each zone with all activity in any particular zone.

# Command Center

- OFF/ON SWITCH:
  - Main system on/off control
  - 10 second programming period and the letters "Pr" will display on the LCD. After the programming period, the CC will display the current settings for zone one.

# Command Center

- ZONE BUTTON:
  - Increments the zone display.
- MODE BUTTON SELECTS:
  - FAN ONLY, FAN ONLY COOL, FAN ONLY FURNACE, COOL, FURNACE, OFF, HEAT STRIP, OR HEAT PUMP.  
(The number of available modes is determined by the system installed in the vehicle.)

# Command Center

- UP/DOWN BUTTONS:
  - SETS THE FAN SPEED IN EACH ZONE
  - SETS THE TEMPERATURE IN EACH ZONE

# Command Center

- APPLIANCE OPERATION INDICATOR:
  - The small line below the number designating zone is turned on when there is an appliance active in a zone. This dash remains turned on for each zone regardless of what zone is currently being programmed.

# Command Center

- LOAD SHED INDICATOR:
  - A small dot will flash when a Load has been Shed. This flashing dot indicates the compressor in that zone is temporarily suspended until such time as sufficient current is again available.

# MODES OF OPERATION

- FAN ONLY

- The FAN ONLY mode is the best way to exchange the air throughout your vehicle because both the air conditioner and furnace fans are operated to maximize the amount of air circulation.



# MODES OF OPERATION

- FAN ONLY

FAN ONLY Fan Speed	Resulting Operation
HIGH	The air conditioner fan and furnace fan are run on high speed.
MED*	The air conditioner fan is run on medium and the furnace fan is run on low.
MED* (with 2 blower heat pump)	The air conditioner fan is run on low and the furnace fan is run on high.
LOW	The air conditioner fan is run on low and the furnace fan is run on low.

# MODES OF OPERATION

- FAN ONLY, COOL
  - In this mode both FAN ONLY and COOL are illuminated on the LCD. This mode runs the air conditioner fan only at the chosen fan speed (HIGH, MED, or LOW depending on the system installed in your vehicle).

# MODES OF OPERATION

- FAN ONLY, FURNACE:

- This mode is only available if the zone is equipped with an Atwood Excalibur XT 2-Stage Furnace.

The Excalibur XT 2-stage furnace is capable of running the fan without gas heating. The available fan speeds are HIGH and LOW.

# MODES OF OPERATION

- COOL

- This mode runs the air conditioner in cooling. The operation is different depending on what fans speed is selected.

Difference between SET POINT and Room Temperature	COOL, AUTO Fan Speed
0°F to 4°F	LOW
4°F to 8°F	MED (3-blower A/C only) HIGH (2-blower A/C)
Greater than 8°F	HIGH

# MODES OF OPERATION

- FURNACE

- Atwood Excalibur XT 2-Stage Furnace has more functions to choose from. With a 2-stage furnace, you can select between AUTO, HIGH, or LOW.
- HIGH and LOW to cycle the furnace (in high or low BTU) on and off to maintain the selected set point.

# MODES OF OPERATION

- FURNACE

Difference between SET POINT and Room Temperature	FURNACE, AUTO Fan Speed
0°F to 4°F	LOW
Greater than 4°F	HIGH

**OFF:** When the selected zone is turned off, all **connected** appliances will shut down and LCD will display the room temperature for that zone.

# MODES OF OPERATION

- **HEAT STRIP:** This mode is only available with air conditioners that are equipped with an electric heat strip. The operation is different depending on what fan speed is selected.
- **HEAT STRIP, AUTO:** The fan blower in the air conditioner is cycled on and off with the heat strip. The fan speed is LOW. Notice that the unit enters an auxiliary heat (AUX. HEAT) mode if the differential is too large for the heat strip to overcome.

# MODES OF OPERATION

- **HEAT STRIP, AUTO, AUX. HEAT:** If the room temperature falls below the set point by more than 6°F, the unit will turn off the heat strip and turn on the gas furnace. AUX. HEAT will be illuminated on the LCD screen. The gas furnace will run in HIGH until the room temperature rises to 5°F below the set point. At that point, the gas furnace will turn off and the heat strip will begin to operate again. If this happens five times, the heat strip will be locked out for two hours and only the gas furnace will operate.



# MODES OF OPERATION

- **HEAT STRIP, MED/LOW:** Only those fan speeds available with the current system will be available to choose on the ACCS. The fan blower in the air conditioner will remain on in the selected fan speed and the heat strip will be cycled on and off to maintain the room temperature. Auxiliary Heat is not available in these fan speeds.

# MODES OF OPERATION

- **HEAT PUMP:** This mode is only available with air conditioners that are equipped with an electric heat pump. The operation is different depending on what fan speed selected.
- **HEAT PUMP, AUTO:** The fan blower in the air conditioner is cycled on and off with the heat pump. The fan speed is set to LOW.

# MODES OF OPERATION

- **HEAT PUMP, HIGH/LOW:** Only those fan speeds available with the current system will be available to choose on the ACCS. The fan blower in the air conditioner will remain on in the selected fan speed and the compressor will be cycled on and off to maintain the room temperature.

# GREEN DOT PARTS

- RED CIRCUIT BOARDS LATEST REVISION.

# COMMUNICATION

- The ACCS system utilizes the I2C-bus.

# FAILURE MODES

- LOCK OUT
  - DISPLAY FREEZES
  - LOAD SHED LOOKS A LOT LIKE LOCK OUT
  - LOCK OUT IS A COMMUNICATION FAILURE

# FAILURE MODES

- THERMISTOR LOCATION
- THERMISTOR OPEN
  - WILL REVERT TO COMMAND CENTER FOR THAT ZONE

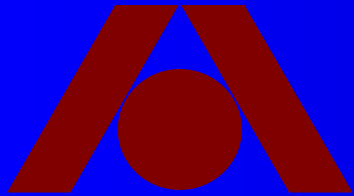
# FAILURE MODES

- GROUND PROBLEMS
  - POOR GROUND CONNECTION MAY RESULT IN ZONE CONTROL SOURCING GROUND THROUGH COMMUNICATION CABLE



# FAILURE MODES

- THERMISTOR
  - THERMISTOR LOCATION ON BOARD
    - AMBIENT
    - REMOTE
  - AMBIENT CONNECTION IS NOT USED IN RVP



# Atwood ACCS Thermistor Resistance Chart

T (in F)	R(k Ohms)
30	35.827
35	30.921
40	26.765
45	23.234
50	20.225
55	17.653
60	15.449
65	13.554
70	11.921
75	10.510
77	10.000
80	9.288
85	8.226
90	7.302
95	6.496
100	5.790
105	5.172
110	4.629
115	4.151
120	3.730
125	3.357

# FAILURE MODES

- TEMPERATURE OVERSHOOT
  - ALMOST ALWAYS A THERMISTOR PROBLEM
    - LOCATION
    - UNPLUGGED
      - REVERTING TO COMMAND CENTER

# FAILURE MODES

- A/C SCENARIO
  - TEMP DROPS RAPIDLY
  - TURN ON AIR 50 deg WITHIN 30 SEC.
  - REMOTE SENSOR IS REVERSED WITH FREEZE SENSOR
  - FREEZE SENSOR PLUGGED INTO REMOTE CONNECTOR

# TROUBLESHOOTING

1. Reset System by turning it off and on.
2. Determine the appliances in each zone.
3. Check DIP switches
4. Check Wiring
5. While depressing the Mode and Zone button, turn the switch “ON” position. When “Fr” appears on the LCD, release the buttons and wait for 10 seconds.
6. Operate and confirm all zones and functions operate correctly.

# Command Center

- ERROR CODE MESSAGES:
  - Alternating “lb/current temperature”, indicates a battery level/power level too low for the system to function properly. **Correct the battery or power levels to the proper level of 12 volts.**
  - “:” these segments of the numbers in the LCD flashing indicates the the Command Center has a faulty thermistor and is not sensing the temperature correctly for operation. **Replace Thermistor or Command Center.**

# LOAD SHED

- LOAD SHED
  - 50 AMP Load Shed
- SEQUENCE
  - WASHER/DRYER
  - WATER HEATER
  - ZONE 3

# QUESTIONS?



# Where to Get More Information

- IOM
- INSTALLATION MANUAL
- ATWOOD MOBILE PRODUCTS

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ELKHART, IN 46514

(574)262-2655

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