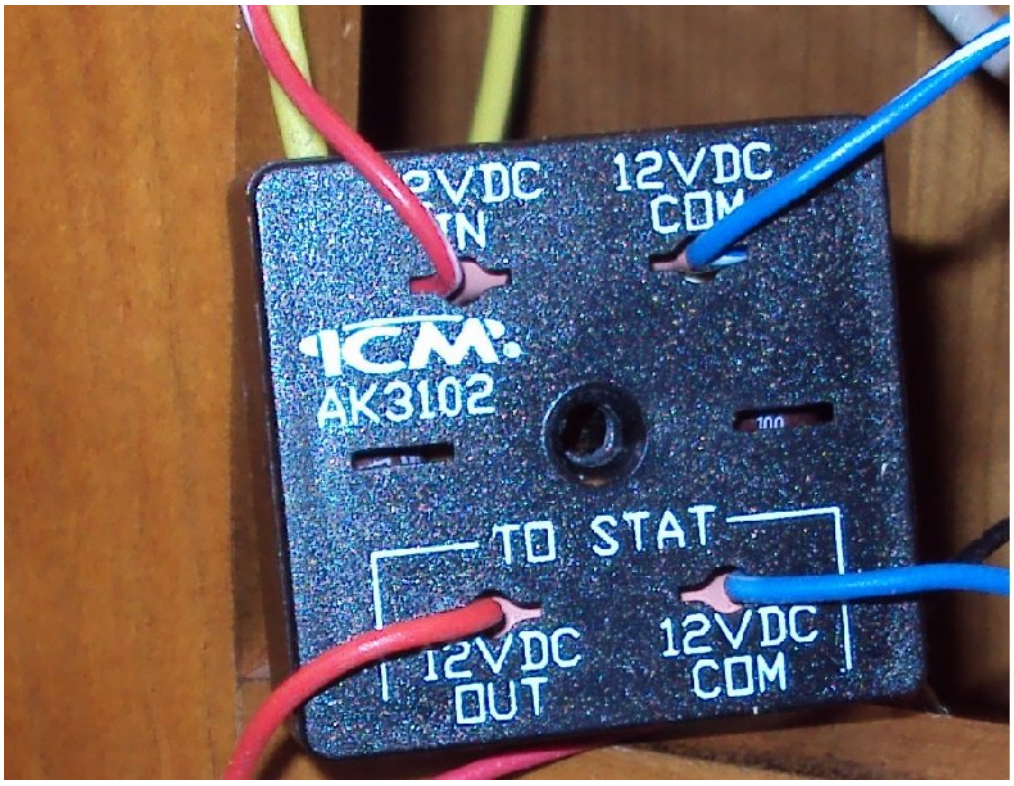
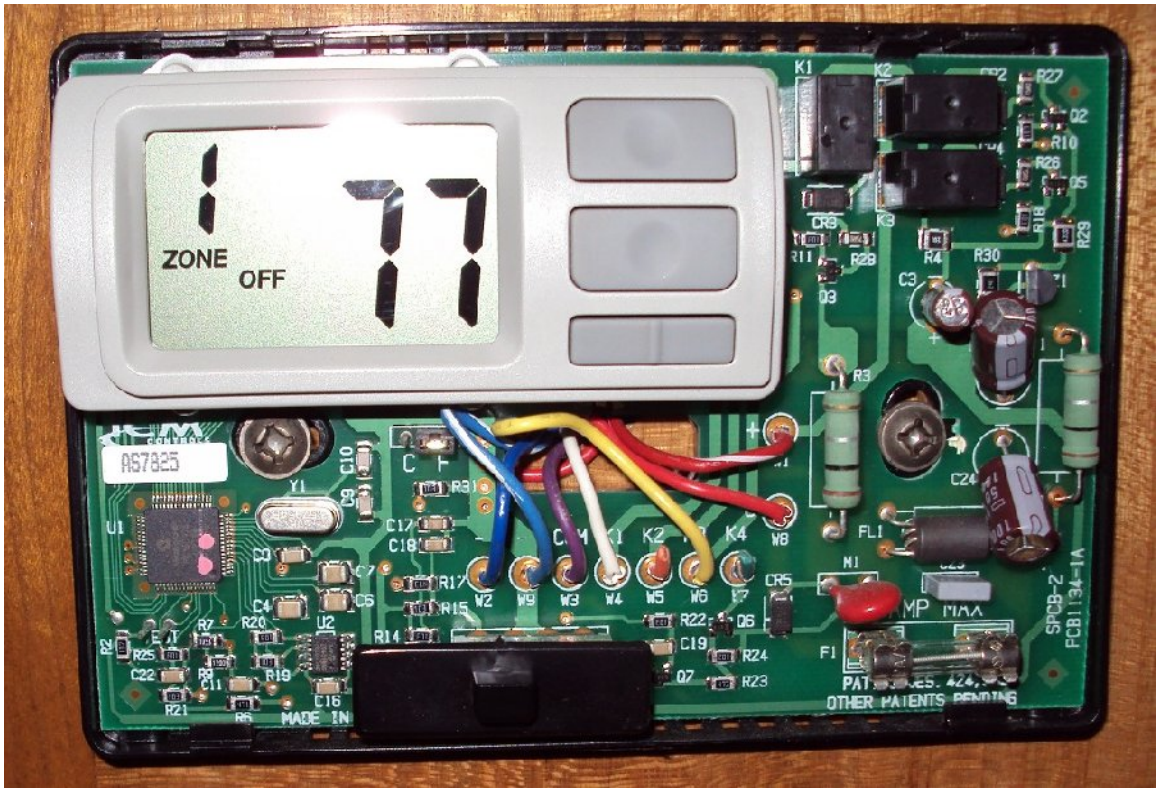
2010 43QGP Allegro Bus

2/22/2013

81-1 – FYI – <u>AC-HP COMMUNICATIONS AND ELECTRICAL SYSTEM.</u> After two years of coach ownership it is finally time to document how this system is wired to and communicates with each individual component in the system.
In an effort to keep this file to a manageable size for uploading to the TRVN forum it will be broken into several parts.
Part 81-1 will consist of the **RV Comfort Zone Control Thermostat**, its wiring, operation and which system components it is directly connected with.
Thermostat wiring; 12 VDC power is connected to the thermostat thru an ICM AK3102 choke (Coleman Thermostat Electronic Noise Filter). The choke is used to filter out electrical noise in the DC power (both positive and negative voltage) which will cause communications problems between the thermostat and its connected components.



Two signals are sent to the three AC-HP's one is a negative 12 VDC signal and the other is a zone input signal. Two additional signals are sent to the Aqua-Hot's control panel, those signals tell the Aqua-Hot when to provide heat to either of the two heating zones as long as the Aqua-Hot is turned ON, either the diesel burner or the electrical element or both may be turned ON.
Thermostat Operation; included in this file is a description of what occurs depending on the setting of the slide switch, cool, OFF or heat and which mode, zone, or temperature setting has been selected.
The thermostat cover has been removed to show the wiring from the choke (Red and Blue) and to the three AC-HP's (Blue/White and Purple) and to the Aqua-Hot (White and Yellow). The Green, Orange and Red/White thermostat wires are not used in this coach therefor those wires were clipped off.



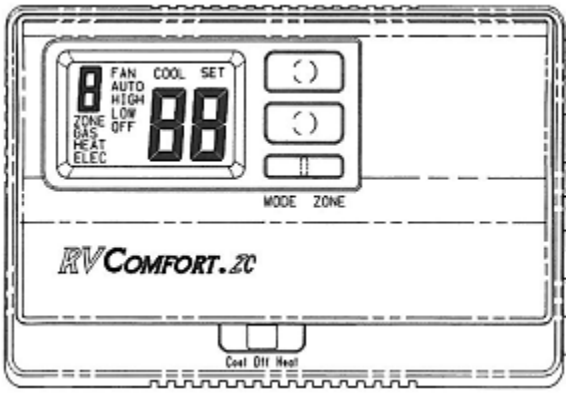
Thermostat Communications; the thermostat is connected to the following components, the coach fuse panel to power the thermostat, the Aqua-Hot and the three AC-HP control panels to signal there is a demand for heating or cooling.

8330C331 Zone Control Thermostat

Part Number: 8330C331 Black

Description: Zone Control Digital Wall Thermostat used with zone control boxes will control up to 4 single stage air conditioners or heat pumps and 4 furnaces.

Power: 12 VDC



PIN	FUNCTION		WIRE COLOR	USED/UNUSED
W8	+ 12VDC	IN	RED	From ICM AK3102 (Choke)
W1	+ 12VDC	OUT	RED/WHITE	UNUSED
W2	- 12VDC	IN	BLUE	From ICM AK3102 (Choke)
W9	- 12VDC	OUT	BLUE/WHITE	Orange/Black > Front AC Signal
W3	SIGNAL		PURPLE	Purple > Front AC Signal
W4	HEAT	1	WHITE	Belden - **Black** to Aqua-Hot - 1
W5	HEAT	2	ORANGE	UNUSED
W6	HEAT	3	YELLOW	Belden - **Red** to Aqua-Hot - 3
W7	HEAT	4	GREEN	UNUSED

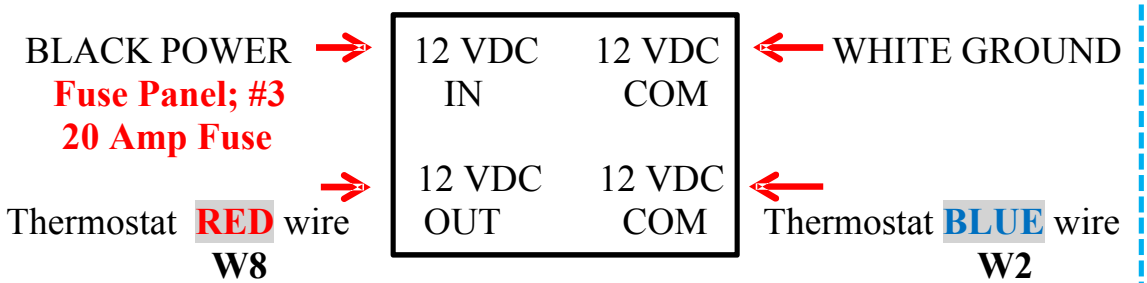
This thermostat controls three AC/HP's on our 2010 43QGP Allegro Bus, each zone can operate independent of the other two zones.
Zone 1, Zone 2, or Zone 3 can individually be set for AC or they can ALL be set for AC.
Zone 1, Zone 2, or Zone 3 can individually be set for HP or they can ALL be set for HP.

This thermostat also controls the Aqua-Hot's operation using Heat 1 and Heat 3 circuits to control the two Aqua-Hot heating zones.
The W1, W5 and W7 wires have been removed from the thermostat as they are not used.

Thermostat to AC/HP Wiring

1	W2	BLUE	NEGATIVE 12VDC COM	(ICM AK3102 - CHOKE)	
2	W9	BLUE/WHITE	Out To	ORG/BLK (Front A/C Signal)	
3	W3	PURPLE	COM Out To	PURPLE (Front A/C Signal)	
4	W4	WHITE	K1	BELDEN	(BLACK) Aqua-Hot Circuit 1
5	~~W5~~	~~ORANGE~~	K2	No Connection	
6	W6	YELLOW	K3	BELDEN	(RED) Aqua-Hot Circuit 3
7	~~W7~~	~~GREEN~~	K4	No Connection	
8	W8	RED	POSITIVE 12VDC	(ICM AK3102 - CHOKE)	
9	~~W1~~	~~RED/WHITE~~	+	No Connection	

Coleman Thermostat Electronic Noise Filter, ICM AK3102 CHOKE



2010 Allegro Bus
Operation of Zone Control
Thermostat (8330C331)

SLIDE SWITCH	MODE	ZONE	DEMAND	HP JUMPER	OPERATION OF UNIT
Off	N/A	N/A	N/A	N/A	LCD is Displaying Temperature in Zone 1: User Can Toggle thru Zones to see Temperature in each Zone
Cool	Cool Auto	1	No	N/A	Nothing is Operating since there is No Cooling Demand LCD is Displaying Temperature in Zone 1
Cool	Cool Auto	1	Yes	N/A	AC Compressor is Energized: If 1 Degree above Setpoint then Fan Low is Energized; If 2 + Degrees above Setpoint, then Fan High is Energized and Locked in on High until the Setpoint is Satisfied
Cool	Cool High	1	No	N/A	Fan High is Energized
Cool	Cool High	1	Yes	N/A	AC Compressor is Energized; Fan High is Energized.
Cool	Cool Low	1	No	N/A	Fan Low is Energized
Cool	Cool Low	1	Yes	N/A	AC Compressor is Energized; Fan Low is Energized.
Cool	Fan High	1	N/A	N/A	Fan High is energized **
Cool	Fan Low	1	N/A	N/A	Fan Low is energized **
Cool	Off	1	N/A	N/A	Turns Off Air Conditioner Operating in Zone 1 **
Heat	Elec	1	No	HP	Nothing is Operating in this Mode since there is No Heating Demand
Heat	Elec	1	Yes	HP	AC Compressor and Reversing Valve are Energized; Fan High is energized; System uses Backup Aqua-Hot if Necessary
Heat	Gas	1	No	N/A	Nothing is Operating in this Mode since there is No Heating Demand
Heat	Gas	1	Yes	N/A	Thermostat Output to Aqua-Hot is Energized
Heat	Off	1	N/A	N/A	Turns Off Aqua-Hot Operating in Zone 1 **
Thermostat Operates the same when Zone 2, or Zone 3 are selected: ** Setpoint is not adjustable in this mode.					