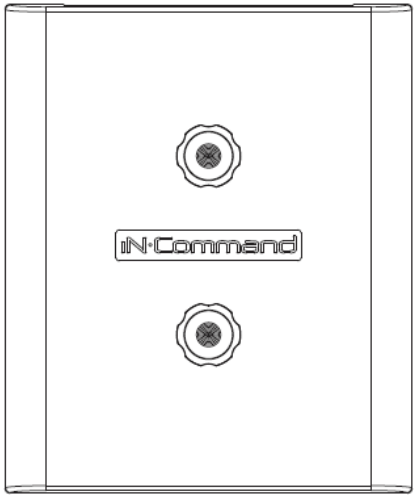
iN·Command®

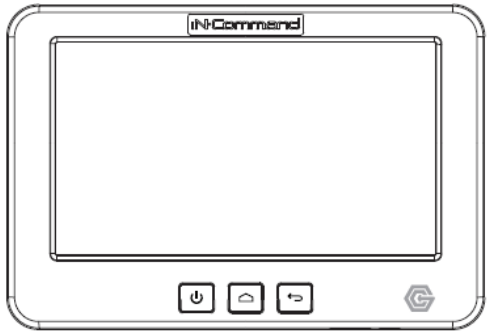
CONTROL SYSTEMS

NCSP3

RV CONTROL AND MONITORING SYSTEM

Troubleshooting Guide

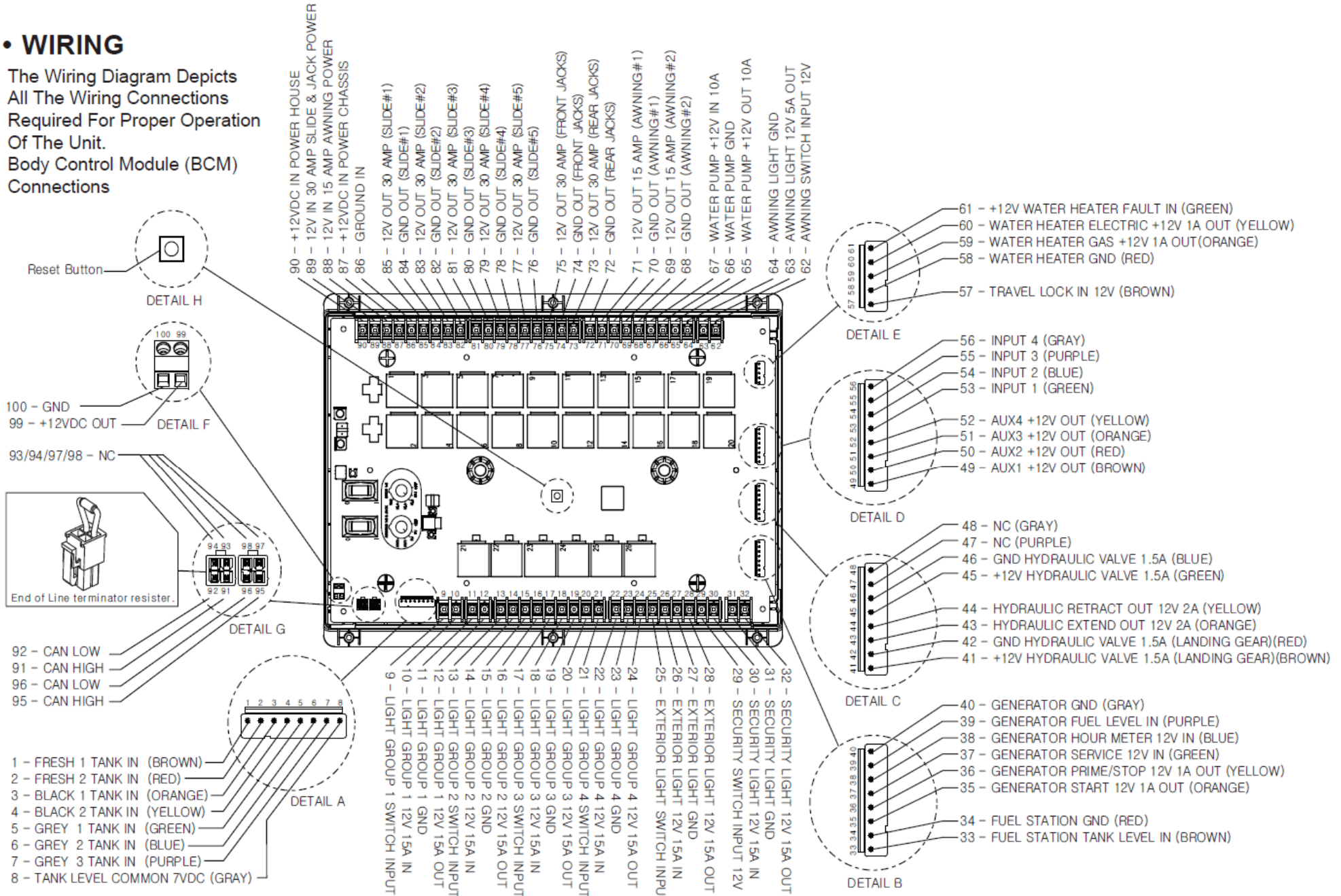




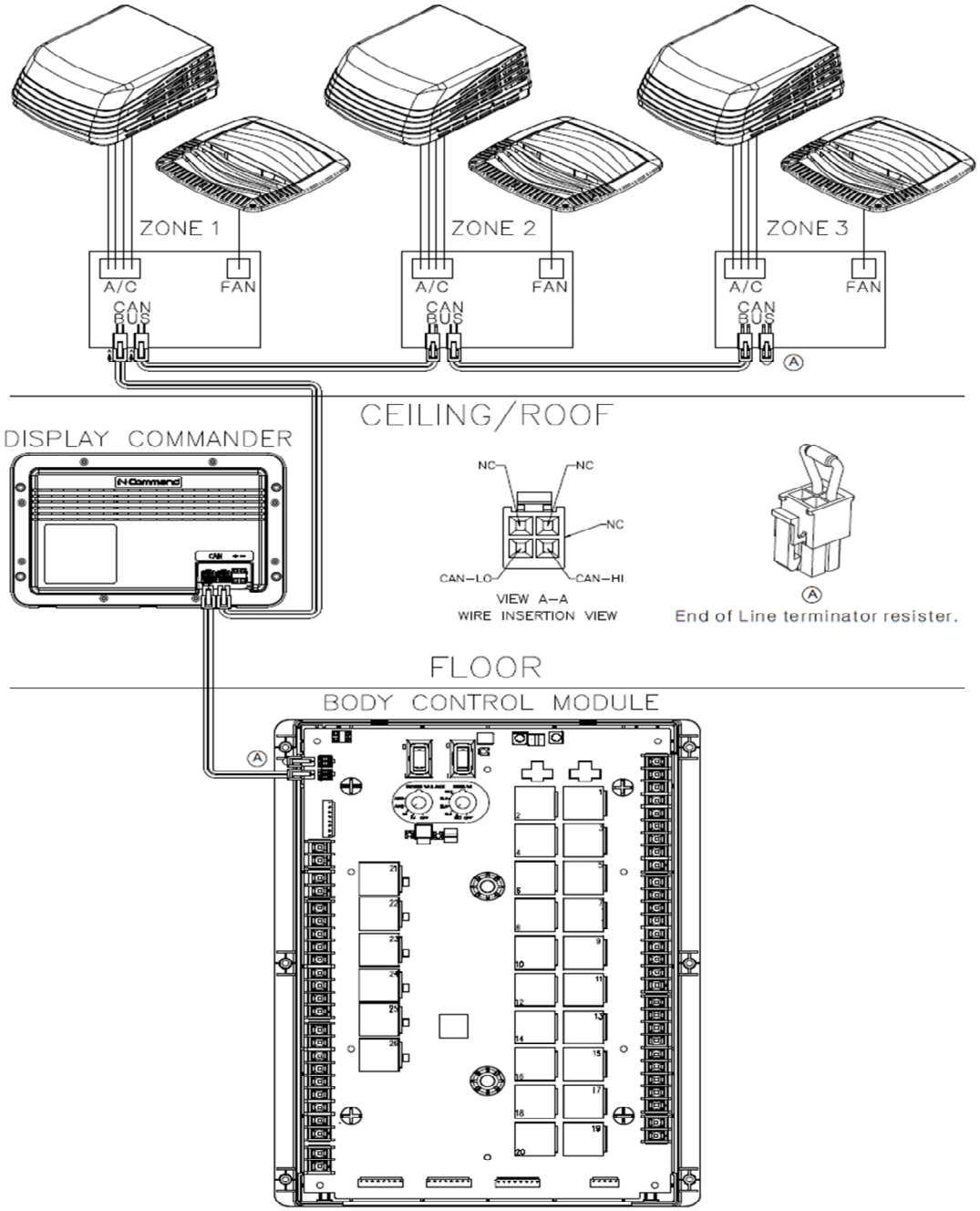
Patent # (D776,068)
Patent # (D762,644)
Patent # US 9,679,735

• WIRING

The Wiring Diagram Depicts
All The Wiring Connections
Required For Proper Operation
Of The Unit.
Body Control Module (BCM)
Connections



RV-C System Layout



BCM Pin Values

	Pin	Name	BCM Function	Note	A	DMM
Tanks	1	Fresh 1 Tank In	Input from Sending Unit	0-.74V = EMPTY (○○○) .75-1.74V = 1/3 (●○○) 1.75-3.59V = 2/3 (●●○) 3.6V = FULL (●●●) MEASURE FROM PIN 11 TO EACH INPUT		VDC
	2	Fresh 2 Tank In	Input from Sending Unit			VDC
	3	Black 1 Tank In	Input from Sending Unit			VDC
	4	Black 2 Tank In	Input from Sending Unit			VDC
	5	Gray 1 Tank In	Input from Sending Unit			VDC
	6	Gray 2 Tank In	Input from Sending Unit			VDC
	7	Gray 3 Tank In	Input from Sending Unit			VDC
	8	Tank Common	7 VDC Output to all Tanks			7 VDC
Interior Lighting I/O	9	Light Group 1 12V Switch IN	Input	From External Momentary Switch	15A	12VDC
	10	Light Group 1 12V 15A IN	Input	From Main Breaker Box		12VDC
	11	Light Group 1 Ground	Common Ground			GND
	12	Light Group 1 12V 15A Out	Output 12VDC to LG 1			12VDC
	13	Light Group 2 12V Switch In	Input	From External Momentary Switch		12VDC
	14	Light Group 2 12V 15A In	Input	From Main Breaker Box		12VDC
	15	Light Group 2 Ground	Common Ground			GND
	16	Light Group 2 12V 15A Out	Output 12VDC to LG 2			12VDC
	17	Light Group 3 12V Switch In	Input	From external Momentary Switch		12VDC
	18	Light Group 3 12V 15A In	Input	From Main Breaker Box		12VDC
	19	Light Group 3 Ground	Common Ground			GND
	20	Light Group 3 12V 15A Out	Output 12V to LG 3			12VDC
	21	Light Group 4 12V Switch In	Input	From External Momentary Switch		12VDC
	22	Light Group 4 12V 15A In	Input	From Main Breaker Box		12VDC
	23	Light Group 4 Ground	Common Ground			GND
	24	Light Group 4 12V 15A Out	Output to LG 4			12VDC
Exterior Lighting I/O	25	Exterior Light 12V Switch In	Input	From External Momentary Switch		12VDC
	26	Exterior Light 12V 15A In	Input	From Main Breaker Box		12VDC
	27	Exterior Light Ground	Common Ground			GND
	28	Exterior Light 12V 15A Out	Output 12V to Exterior Light			12VDC

BCM Pin Values (Cont.)

	Pin	Name	BCM Function	Note	A	DMM
Security Light I/O	29	Security Light 12V Switch In	Input	From External Momentary Switch		12VDC
	30	Security Light 12V 15A IN	Input	From Main Breaker Box		12VDC
	31	Security Light Ground	Common Ground			GND
	32	Security Light 12V 15A Out	Output 12V to Security Light			12VDC
Fuel Station	33	Fuel Station Tank Level In	Input from Sending Unit	33 OHM= FULL (●●●), 49 OHM= 2/3 (●●○) 127 OHM= 1/3 (●○○), 240 OHM= Empty (○○○)		Ω
	34	Fuel Station GND	GND Pass Through Connection			GND
Generator	35	Generator Start Ground Out	Output Ground until button is released			GND
	36	Generator Prime/Stop Ground Out	Output Ground			GND
	37	Generator Service 12V In	12V Pulse Input			12VDC
	38	Generator Hour Meter 12V In	12V Input triggers timer to start			12VDC
	39	Generator Fuel Level In	Input from Sending Unit	33 OHM= FULL (●●●), 49 OHM= 2/3 (●●○) 127 OHM= 1/3 (●○○), 240 OHM= Empty (○○○)		Ω
	40	Generator Ground	Common Ground			GND
HYD Landing Gear	41	+12V Hydraulic Valve 1.5A (Landing Gear)	Output 12V		1.5A	12VDC
	42	Ground Hydraulic Valve (Landing Gear)	Common Ground			GND
	43	Hydraulic Extend Out 12V 2A	Output 12V for Extend Valve		2A	GND
	44	Hydraulic Retract Out 12V 2A	Output 12V for Retract Valve		2A	GND

BCM Pin Values (Cont.)

	Pin	Name	BCM Function	Note	A	DMM
HYD Slides	45	12V Hydraulic Valve 1.5A (Slide Solenoid)	Output 12V		1.5A	12VDC
	46	Ground Hydraulic Valve (Slide Solenoid)	Common Ground			GND
	47	No Connection				
	48	No Connection				
AUX Triggers	49	Trigger 1 12V Out	Programmable 12V Latch or Momentary		1A	12VDC
	50	Trigger 2 12V Out	Programmable 12V Latch or Momentary			12VDC
	51	Trigger 3 12V Out	Programmable 12V Latch or Momentary			12VDC
	52	Trigger 4 12V Out	Programmable 12V Latch or Momentary			12VDC
Alarm Inputs	53	Alarm 1 12V In	Programmable 12V On or Off Input		1A	12VDC
	54	Alarm 2 12V In	Programmable 12V On or Off Input			12VDC
	55	Alarm 3 12V In	Programmable 12V On or Off Input			12VDC
	56	Alarm 4 12V In	Programmable 12V On or Off Input			12VDC
Travel Lockout	57	Travel Lockout 12V In	12V Input from Tow Vehicle Brake signal	Locks out all motor functions when signal is present		12VDC
Water Heater	58	Water Heater Ground	Common Ground			GND
	59	Water Heater Gas 12V 1A Out	12V Output to Gas Ignitor		1A	12VDC
	60	Water Heater Electric 12V 1A Out	12V Output to Electric Ignitor			12VDC
	61	Water Heater 12V Fault In	Receive 12V Fault Signal			12VDC

BCM Pin Values (Cont.)

	Pin	Name	BCM Function	Note	A	DMM
Awning Light	62	Awning Light 12V Switch In	Input	From External Momentary Switch		12VDC
	63	Awning Light 12V 3A Out	Output 12V to Awning Light	Power from Awning 15A Input	3A	12VDC
	64	Awning Light Ground	Common Ground			GND
Water Pump	65	Water Pump 12V 10A Out	Output 12V to Water Pump		10A	12VDC
	66	Water Pump Ground	Common Ground			GND
	67	Water Pump 12V 15A In	Input	From Main Breaker Box	10A	12VDC
Awning Motors	68	Awning 2 Retract Out	Output	Reversing Polarity DC Motor	15A	12V/GND
	69	Awning 2 Extend Out	Output	Reversing Polarity DC Motor		12V/GND
	70	Awning 1 Retract Out	Output	Reversing Polarity DC Motor		12V/GND
	71	Awning 1 Extend Out	Output	Reversing Polarity DC Motor		12V/GND
Jacks	72	Rear Jack Retract Out	Output	Reversing Polarity DC Motor	30A	12V/GND
	73	Rear Jack Extend Out	Output	Reversing Polarity DC Motor		12V/GND
	74	Front Jack Retract Out	Output	Reversing Polarity DC Motor		12V/GND
	75	Front Jack Extend Out	Output	Reversing Polarity DC Motor		12V/GND
Electric Slide Motors	76	Slide 5 Retract Out	Output	Reversing Polarity DC Motor		12V/GND
	77	Slide 5 Extend Out	Output	Reversing Polarity DC Motor		12V/GND
	78	Slide 4 Retract Out	Output	Reversing Polarity DC Motor		12V/GND
	79	Slide 4 Extend Out	Output	Reversing Polarity DC Motor		12V/GND
	80	Slide 3 Retract Out	Output	Reversing Polarity DC Motor		12V/GND
	81	Slide 3 Extend Out	Output	Reversing Polarity DC Motor		12V/GND
	82	Slide 2 Retract Out	Output	Reversing Polarity DC Motor		12V/GND
	83	Slide 2 Extend Out	Output	Reversing Polarity DC Motor		12V/GND
	84	Slide 1 Retract Out	Output	Reversing Polarity DC Motor		12V/GND
	85	Slide 1 Extend Out	Output	Reversing Polarity DC Motor		12V/GND
Power	86	Ground In	Input	From Chassis Ground		GND
	87	Power Chassis 12V In	Input	From Chassis Battery (Motorized)		12VDC
	88	Awning Power 12V 15A In	Input	From Main Breaker Box	15A	12VDC
	89	Electric Slide/Jack Power 12V 30A IN	Input	From 12V 30A mini reset fuse	30A	12VDC
	90	Main Power 12V 15A In	Input	From Main Breaker Box	15A	12VDC

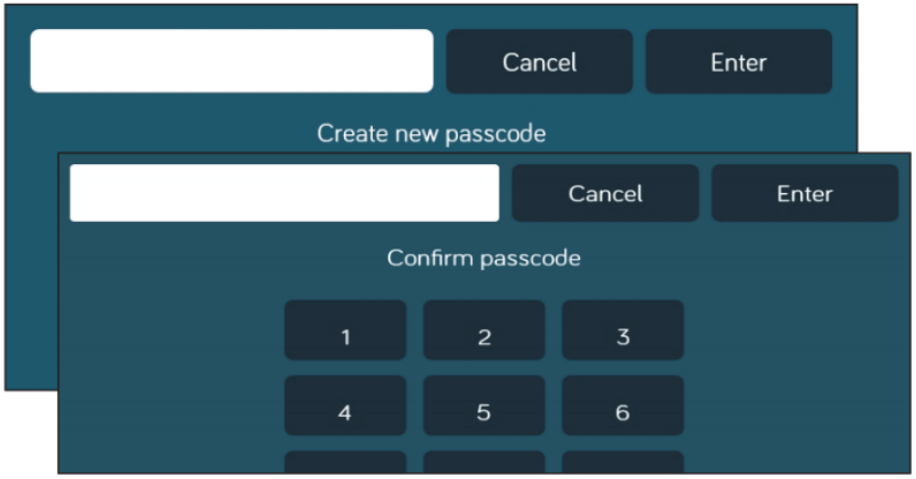
NCSP3 Functionality Test

The Body Control Module (BCM) should be wired correctly, without loose connections, and connected to 12 VDC at pin 90. A **RED** LED will indicate that the BCM is receiving 12 VDC.

The 2 toggle switches on the BCM correspond to the 2 dials underneath them. (In the event where communication between the Display Commander (DC) and BCM is non-functioning, these switches will enable "manual" functions of the selected devices) The Left switch and knob are used for Electric Awnings and Jacks. (Hydraulic Jacks are manually controlled at the Hydraulic Pump. See the Hydraulic Pump Manual Override in the RV owner's manual), and the Right switch and knob are used for Electric Slides 1 - 5.

The BCM and DC communicate with each other through an RV-C (CAN BUS) connection. This RV-C communication also allows the DC to connect to a third party AC translator module (gateway) so that you can perform the HVAC functions from the DC.

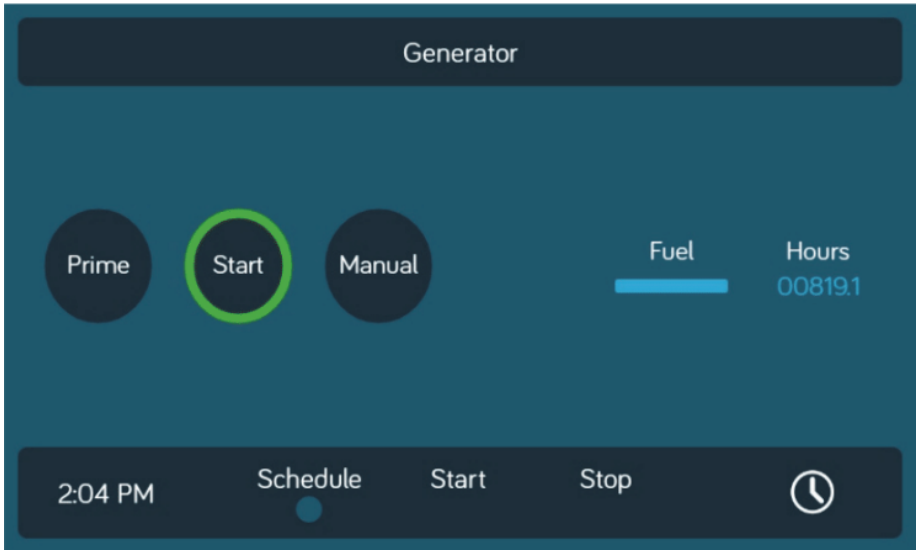
The Display Commander (DC) will be mounted in an "all access" area near the entrance. On the DC, press and release the Power button (the left button) to wake up the DC. After a moment, the Passcode Screen will appear. Enter your Passcode. If this is the first time the DC has been powered on, an End User License Agreement (EULA) screen will appear. Upon accepting the EULA, an “Enter New Passcode” screen will appear. Enter your new passcode and confirm.



The DC will now bring up the Home Screen If the Floor Plan has been loaded, all of the devices should be listed with corresponding actitation buttons

Go through all the functions and make sure they are operating properly. All the functions should be smooth and instantaneous. Ensure all the Home Page Hot keys actuate/turn on the corresponding functions.

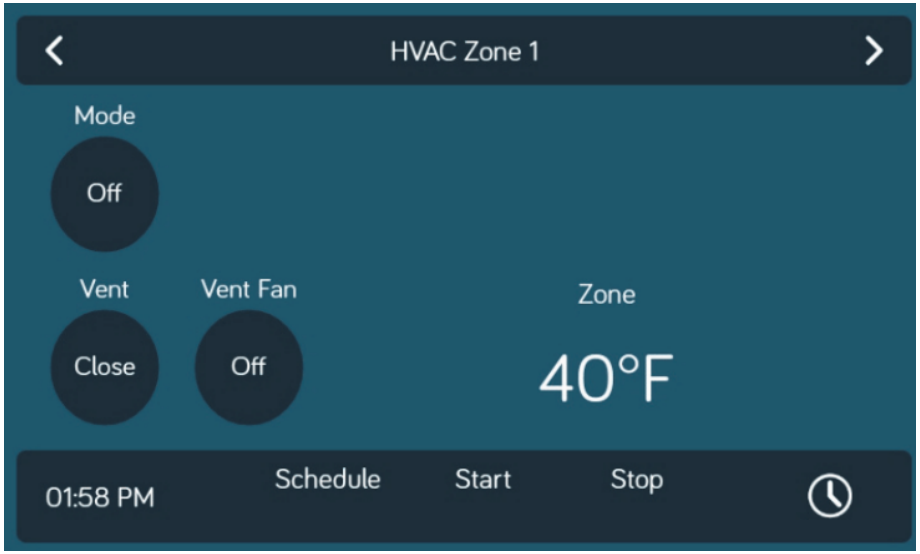
Cycle the Generator. When the Generator is being cycled for the first time (or if it has been a while since it has been used), it will need to be primed. Hold the Prime button down to 2 -5 seconds, then press and hold the Start button down until the generator starts.

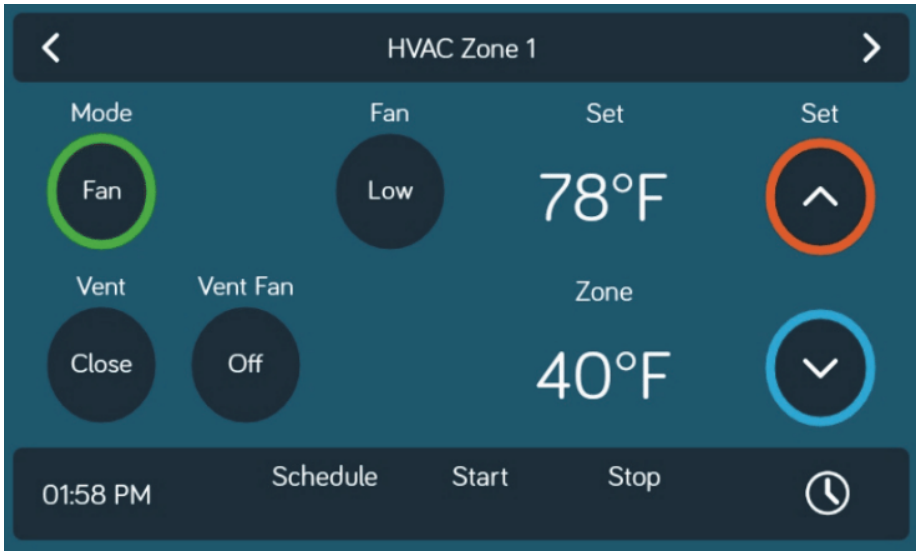


iN-Command is also equipped with an Auto Gen start. Press the "Manual" button to switch to "Auto" to activate the Auto Gen start function. If the battery voltage is less than 11.8V for 3 minutes, the system will start the generator. If the generator is started, the generator will run for 60 Minutes. Also, the system will attempt to start the generator 3 times. If the generator fails to start after the 3rd attempt, the system will turn off the Auto feature and display a "Check Generator" Fault Message.

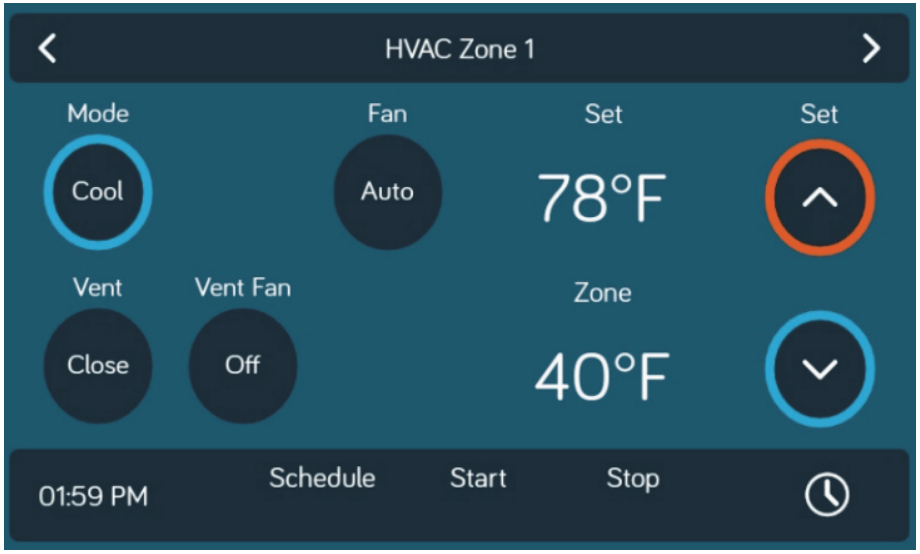
HVAC Testing

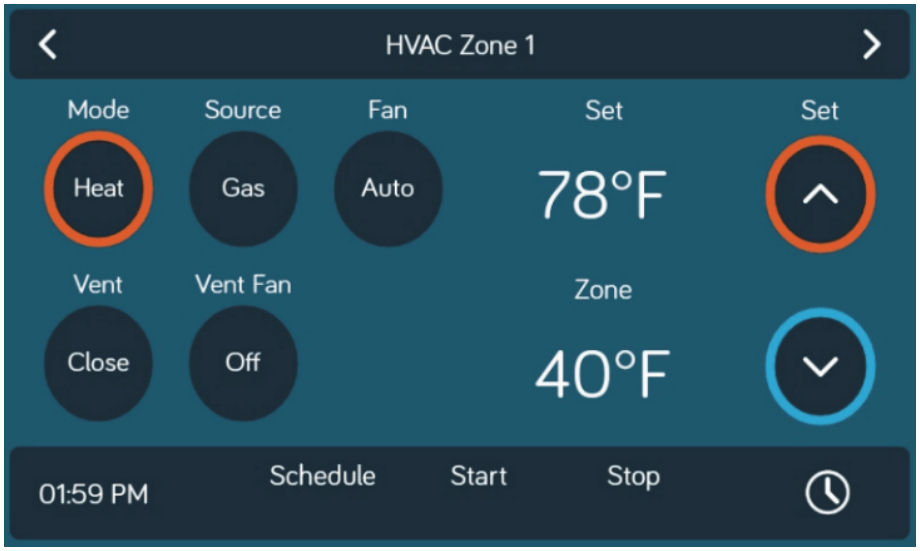
When testing the HVAC (Climate Function), make sure each "Zone" is displaying a room (Zone) temperature. Use the "Mode" button to cycle through Fan, Cool, Heat and Auto modes. (Heat and Auto modes availability depend on the floor plan.)

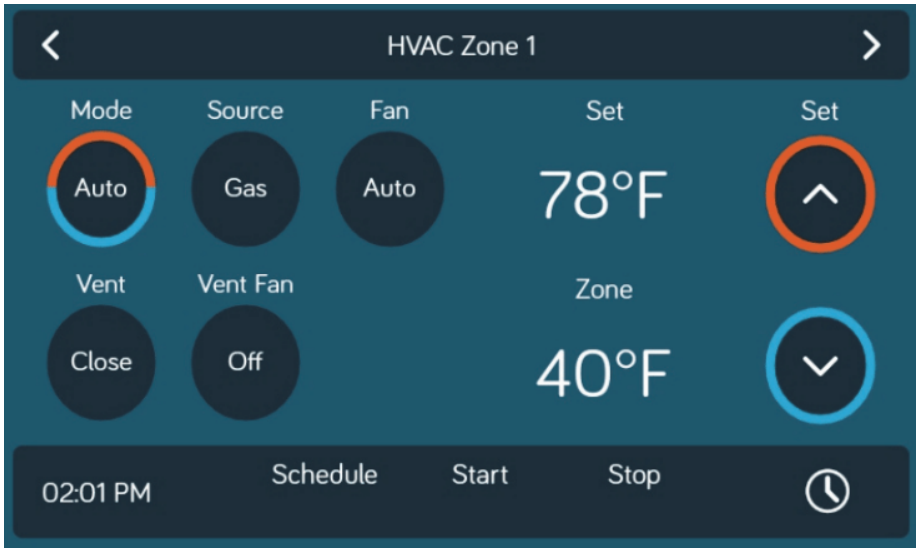




Use the “Set” temperature up and down arrows to set the desired temperature. The “Set” temperature can be adjusted between 55 to 90F.







Please review the NCSP3 User Manual for further HVAC operational instructions. You can scan the QR code shown below or use the following link: https://in-command.net/wp-content/uploads/2018/08/owners-manual_ncsp3.pdf

Troubleshooting

HVAC

- (Dometic Systems) If the room temp reads 100F, remove the room sensor cover and pull the room sensor out of the holding clip. The temp should read normally. Adjust the holding clip down on the room sensor so that it is not pinching it.
- (RVP Systems) If the room temp reads 111F, the room sensor was connected to the cool shed connections on the RVP control box. Swap the wires between the cool shed and room sensor pins. The room temp should start reading correctly without a reset.
- (Both Systems)If no HVAC function, check to see if the room (zone) temp is blank. If it is, make sure the RV-C cables are connected to the gateways and make sure there is an EOL (End of Line) terminator resistor at the last gateway in the line. Make sure the address on the gateway is correct. If that is correct, redo the power, ground and communication wires between the gateway and control box. Verify the gateway has proper +12VDC.
- (Dometic)If there are multiple rapid clinking sounds when operating the furnace function, the gateway has old software and needs to be swapped out.
- (Dometic)If a zone will not change functions (i.e. stuck on furnace mode), try adjusting the fan speed. Most likely it will show Auto, try and get it to either low or high. This indicates the gateway is in a locked state. If you can get the fan mode to change, you should then be able to change the zone function to off. Once it stays in off mode, power cycling the system.
- If changing an HVAC function in a Zone, and the function changes in a different zone, the dip switches are not set correctly. The front AC is Zone 1, middle is Zone 2 and rear is Zone 3.

(RV-C) Communication issues

- Make sure the CAN-Low does not have a short to +12V.
- Make sure the CAN-High does not have a short to ground.
- Make sure there is not a short between CAN-Low and CAN-High.
- Check RV-C plugs and pins to make sure there is not a loose connection. Try and power cycle all the components.
- Make sure the RV-C connector is pinned correctly.
- Try a different RV-C cable.
- Press the reset button on the BCM.
- If the generator or auxiliary fuel I/O's from the BCM are connected directly to +12VDC, all low current functions on the BCM will not operate properly. I.E: The RV-C will not communicate properly and the water tanks will not read correctly.

No BCM Power

- Check if the Red Power indicator is lit.
- Press the reset button on the BCM.
- Verify 12V on Pin 90 and Ground on pin 86.
- Check Fuse in Main Breaker Box.
- Cycle RV Power at the Main Breaker Box.

No DC Power

- Cycle power with the Power Button. (Press and hold the power button for 5 seconds.)
- Verify 12V and Ground at the back of the DC.
- Verify no blown fuses in the Main Breaker Box.

Slide Rooms do not move

- Verify 12V on pin 89.
- If the Battery Disconnect switch is off, turn it on. (Some models pull the slide power through the battery disconnect.)

Awnings do not move

- Verify 12V on pin 88.
- Check fuse in Main Breaker Box.

Water Tank

- Make sure the common pin (Pin 8) is outputting +7VDC. If no voltage, disconnect the tank harness and test the pin on the BCM. If there is voltage now, that indicates the common wire has a short to ground.
- If one of the tanks is reading, but another tank does not read, remove the wires from the bell caps and swap the tank wires. If the opposite tank now reads, that indicates the BCM is fine and there is an issue in the tank line.
- The tank level voltages are as follows:
    - 1/3: .75 to 1.74
    - 2/3: 1.75 to 3.59
    - 3/3: 3.6 and above

Generator

- If the generator will not start:
    - Make sure the Gen Start wire (Pin 35, orange) is making a good connection.
    - To check the signal output, connect the negative lead from a DMM (volt multi-meter) to Pin 35 and the positive lead to Main power Pin 90. Then press the Gen Start button on the DC. The voltage reading on the DMM will jump to full voltage if the circuit is working correctly.
- If the generator prime/stop function does not work:
    - Make sure the Gen Prime/Stop wire (Pin 36, yellow) is making a good connection.
    - To check the signal output, connect the negative lead from a DMM (volt multi-meter) to Pin 36 and the positive lead to Main power Pin 90. Then press the Gen Start button on the DC. The voltage reading on the DMM will jump to full voltage if the circuit is working correctly.
- The generator is running, but the start button has not switched to stop and the hour meter is not counting:
    - Make sure the Gen Hour Meter wire (Pin 38, blue) is making a good connection.
    - If the generator is running, the generator should be outputting a 12V signal to the Hour Meter input Pin 38 on the BCM. If no voltage present, check signal from generator.

Note: The DC will display generator fault codes provided by the generator. If you get a generator fault popup (like “Low Oil”), consult the generator owner’s manual for further troubleshooting on the generator.

For additional troubleshooting, call ASA Electronics Technical Support at 1-877-845-8750, email info@asaelectronics.com or visit our iN-Command support page at https://in-command.net/