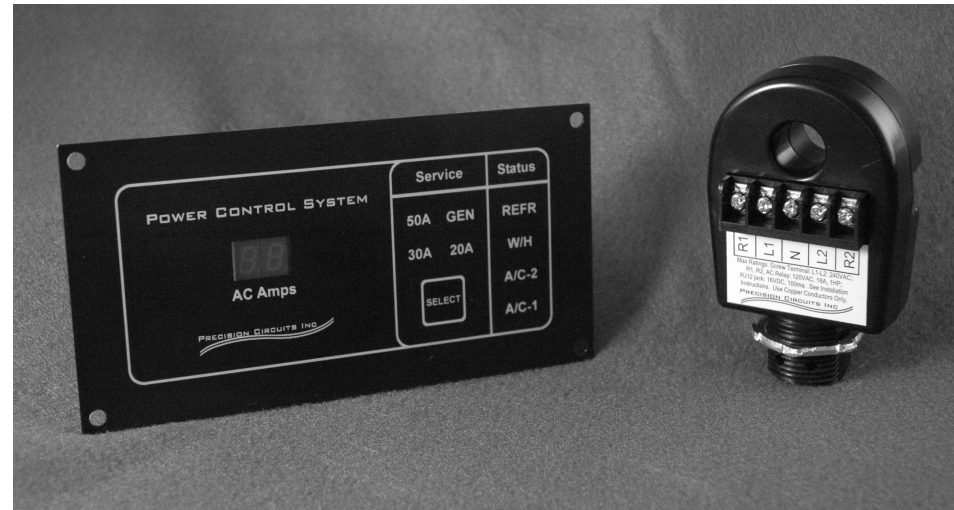


Mini-PCS

PRECISION CIRCUITS INC

Key Features:

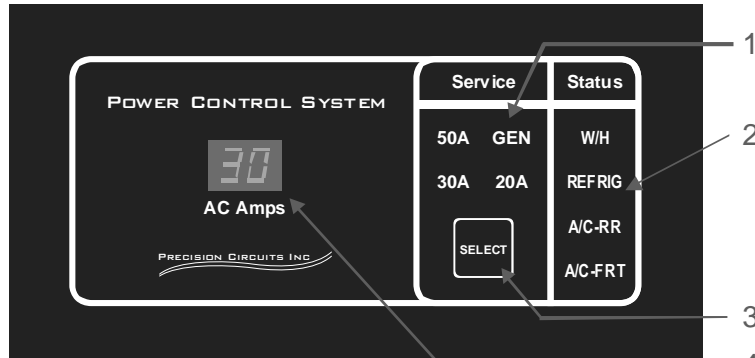
- Helps owners who mostly use 50amp service, deal with the common situation of camp grounds where only 30amp service is available.
- Limits total current to 30 amps, when 50amp service is not available.
- Minimizes Circuit Breaker Tripping.
- Monitors current draw for entire RV including owner added loads.
- Learns controlled appliance current draw.
- Allows 2 air conditioners to run on 30 amp service when other appliances are not in use.
- I/O Module fits into a standard 3/4" knock-out with Two Relays capable of 120VAC 18 amp load.
- 120VAC Sense
I/O Module has built in 120VAC sense circuitry so that it knows when shore power is available and does not draw on the battery when dry camping.
- Display Panel has built in relays to control two air conditioners.
- All relays are normally closed allowing full operation of appliance in case of fault.



Mini-PCS

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Display Panel: # 00-10025-400



The Display Panel has all the brains, has a Data connector to the I/O Module and also another connector to control the air conditioner units through low voltage signals. (1) In the Service Type Window, Mini-PCS automatically detects and displays the type of Power the RV is connected to. When "30A" is illuminated, the owner can press the (3) "Select" button and toggle between 30A and 20A service. (2) The Status Window illuminates each of the appliances that it controls. If the indicator is out, that means Mini-PCS has temporarily removed power to prevent the circuit breaker from tripping. Power will be automatically restored and the indicator illuminated, once other appliances in the RV have been turned off, and 2 minutes have passed. (4) The AC Amps displays the total current being drawn by the RV.

I/O Module 00-10024-000



The I/O Module is installed inside the circuit breaker panel. (5) The screw terminals are used to make the 120VAC connections. (6) It has a built in Current Sensor to Monitor Total RV Power. (7) Outside the circuit breaker panel a data cable is connected which goes to the Display Panel.

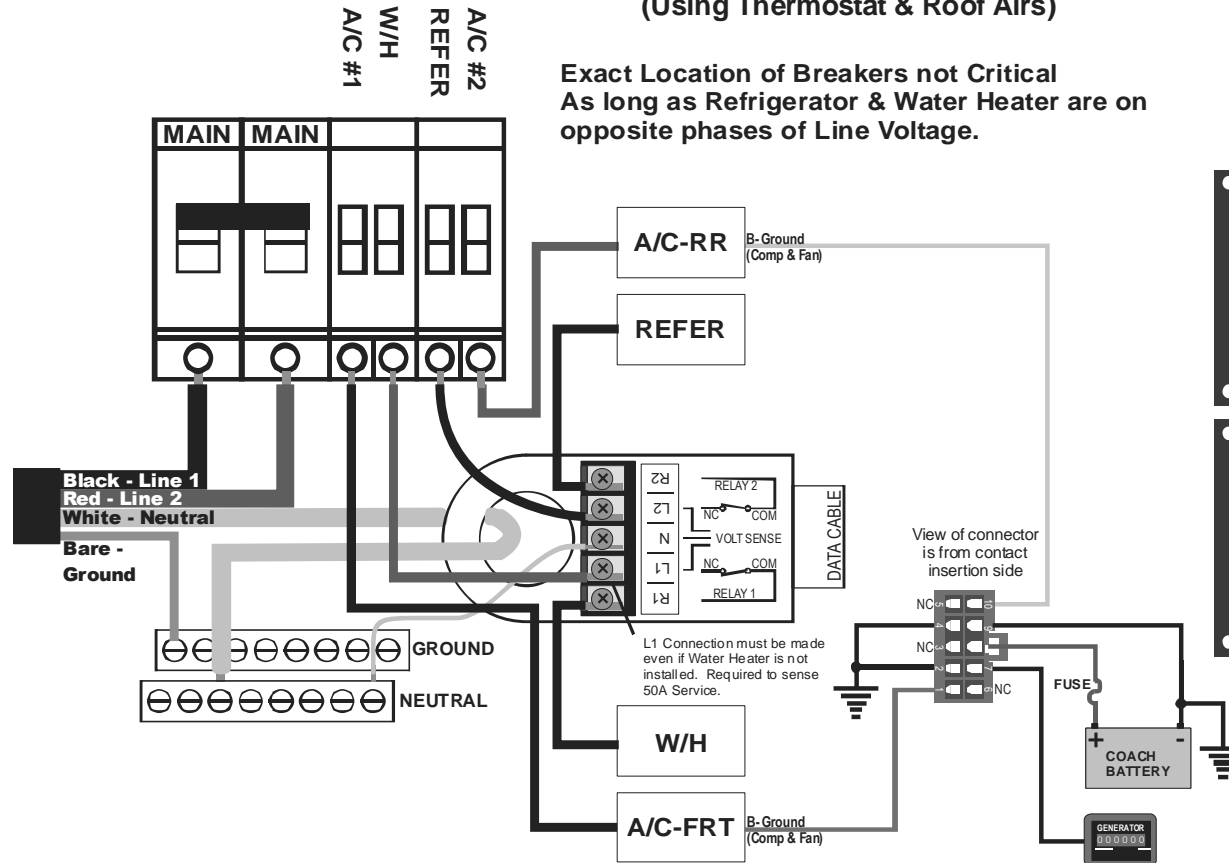
Mini-PCS Model 500

PRECISION CIRCUITS INC

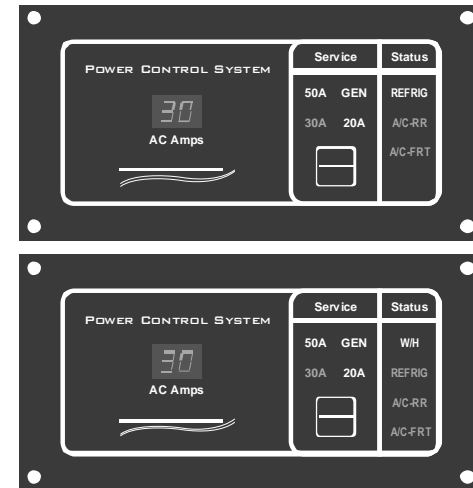
WINNEBAGO WIRING DIAGRAM REV E

(Using Thermostat & Roof Airc)

Exact Location of Breakers not Critical
As long as Refrigerator & Water Heater are on
opposite phases of Line Voltage.



Program Options:
Relay Shed Order:
2-Refrigerator
4-A/C-RR (Rear) Comp & Fan
3-A/C-FRT (Front) Comp & Fan
0-(4th Load not Shed)
50A Service = Enable Sleep Mode
Generator = Blank Display



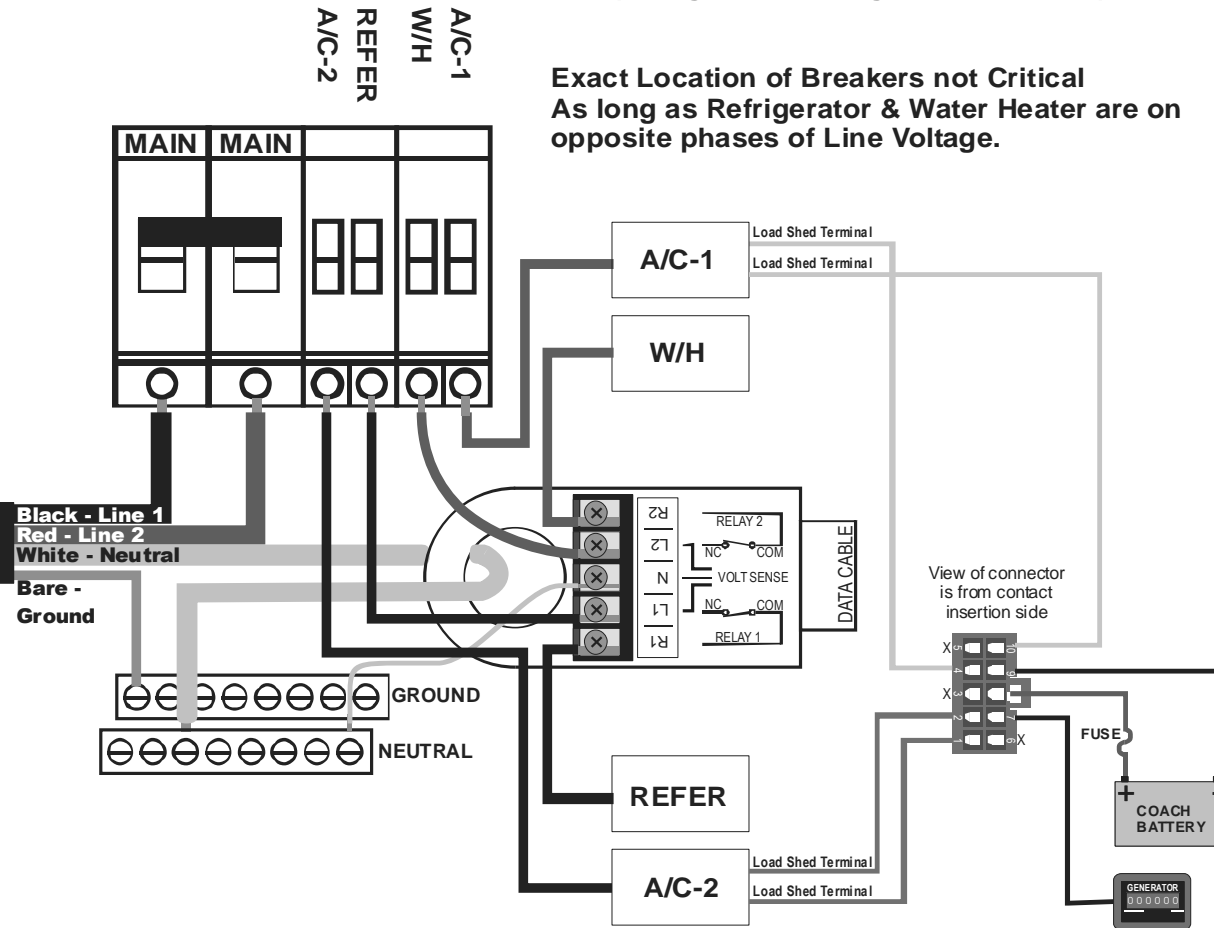
Program Options:
Relay Shed Order:
1-Water Heater
2-Refrigerator
4-A/C-RR (Rear) Comp & Fan
3-A/C-FRT (Front) Comp & Fan
50A Service = Enable Sleep Mode
Generator = Blank Display

Mini-PCS Model 500

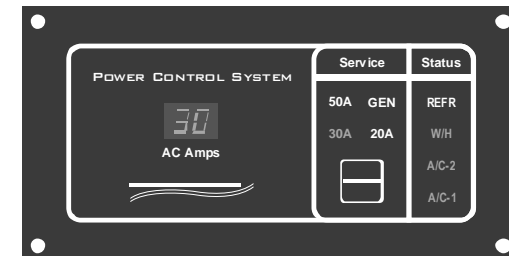
PRECISION CIRCUITS INC

WIRING DIAGRAM (Using Dometic Digital Thermostat)

Exact Location of Breakers not Critical
As long as Refrigerator & Water Heater are on
opposite phases of Line Voltage.



Program Options:
Relay Shed Order:
1-Refrigerator
2-Water Heater
3-A/C-2 (Bedroom Comp Only)
4-A/C-1 (Living Comp Only)
50A = Sense 50A Service
Blank Amps Display
Energize All Loads
GEN = Display Current
No Load Shed



Mini-PCS Wiring Notes

- Mini-PCS just provides Relays Contacts to control low voltage signals to Air Conditioner (A/C). Common (Com) , Normally Closed (NC), & Normally Open (NO) contacts are provided. Com contact is always used, NC or NO is chosen depending on A/C being installed.
- Analog Thermostats will use NC contact, and be wired in series with the Y Compressor Lead going from the Thermostat to the A/C.
- Digital Thermostat systems will generally have Two terminals at the Roof Top A/C Control. They can be marked Cool Shed, Load Shed, EMS, etc. Disconnecting these two wires from the vehicle wiring, will help identify which contacts should be used. If shorting or closing the two A/C terminals runs the compressor, used NC & Com contacts. If opening the two A/C terminals runs the compressor, used NO & Com contacts.

Mini-PCS

PRECISION CIRCUITS INC

- Automatic Operation:
- Sleep Mode –5 Minutes after the last press of the Set Button, the Monitor Panel goes to sleep to save battery power, and the entire display goes Blank. The system continues to work. Pressing the Set Button awakens Mini-PCS.
- 30-amp Service - PCS senses 0VAC between L1 and L2. The I/O Module has a current sensor which monitors the current on the neutral wire. When the current exceeds the 30-amp limit, because possibly the owner has turned on the Microwave, the Mini-PCS will limit the current by shedding appliances. Once the total RV current has dropped, for example because an owner-operated appliance has been turned off, the Mini-PCS will reverse the above procedure, returning power to appliances whose operation was not immediately critical. Appliance shed order is easily determined by the manufacturer by wiring the appliances to the appropriate number relay.
 - Mini-PCS has a built in Load Shed 2-Minute Timer . Power will not be restored until 2 minutes have passed since the last Load was Shed. This allows A/C Compressor pressure to reduce before restarting. If RV Current has head room to turn on the next Load, but 2 minutes have not passed, then the two decimal points will display (1.2 amps) to indicate Mini-PCS is waiting 2-minutes.
- 20-amp Service - Mini-PCS senses 0VAC between L1 and L2, and the owner selects 20A on the Remote Display. Mini-PCS performs the same functions as above except that it limits total current to 20amps.
- Generator - Mini-PCS senses power to the Generator Hour Meter. In this mode Mini-PCS just displays current, but does not shed loads. Two other options exist:
 1. Mini-PCS performs the same functions as above except that it limits total current to a specified threshold.
Mini-PCS max current level range is 18-90 amps and set at Precision Circuits.
 2. Not even displaying current, for RV's with a 240V generator.
- 50-amp Service - Mini-PCS senses 240VAC between L1 and L2 to determine this mode of operation. In this mode Mini-PCS assumes enough power is available and goes to sleep. It displays the fact that 50-amp Service is available and that all Loads are powered.
(An option exists when the RV will never use 50A Service so this option is ignored and not displayed.)
- I/O Module - Features include:
 - Current Sensor
 - Two 18amp Relays
 - Power Line sensing
- Display Panel - Features include:
 - Displays Service Type
 - Displays the Status of the Controlled Appliances

Mini-PCS

PRECISION CIRCUITS INC

Trouble Shooting

- If System displays 50A Service when plugged into 30A Service.
 1. Check Data Cable (pin out may be reversed)
 2. Make Sure all Circuit Breakers are on.
 3. Check Voltage between L1 and L2 DIRECLTY ON Mini-PCS I/O Module, should be 0Vac.

- If System displays 30A Service when plugged into 50A Service.
 1. Check Voltage between L1 and L2 DIRECLTY ON Mini-PCS I/O Module, should be 240Vac.
 - Shore Power Receptacle improperly wired
 - L1 & L2 terminals are NOT wired to different phase breakers in the Panelboard.

- If System does not recognize when the Generator is running
 1. Check for 12Vdc on Pin 2 of 10 Pin connector on the Monitor Panel (Gen-Set Hour Meter)

- If System does not display Current in 50A Service.
 1. That is the way the System Works.

- If System never displays Current.
 1. Check that Neutral wire routed through the Mini-PCS I/O Module Current Sensor.
 2. Check Data Cable.

- If System display Current Reads 99. Probably hit by lightning.

- If Air Conditioner compressors not working. Check RV wiring:
 1. Unplug 10 Pin Low Voltage connector at the Monitor Panel.
 - If compressor is wired to NO pins, compressor should be working.
 - If wired to NC pins, short the NC and COM wires to operate the compressor.

