

AD121R16 Installation Instructions

The AD121R series of Socket Mount Ampere Demand Meters are designed to replace socket mount thermal ammeters. The stable, accurate, digitally calibrated (no mechanical adjustments) circuitry requires no calibration under normal usage, and provides high resolution data to accurately monitor a system. When used in a simple front panel only mode, the Minimum and Maximum can be displayed. When used with the FREE DEMICOMM interface software, your portable computer can download one minute resolution timestamped data, including 13 months of time-stamped Minimums and Maximums. For more information see the DEMICOMM Interface Software User's Guide. The software is compatible with DOS Emulator software such as the free DOSBOX package running under Windows.

Mechanical Requirements

The meter is designed to fit into a standard meter socket. The backup power capacitor is designed to lay inside a standard rectangular meter socket enclosure below the terminals. If necessary, the capacitor can be mounted several feet away from the meter in a separate enclosure.

Wiring Requirements

The power for operation of the AD121R16 is drawn from the current being measured. The power consumption is about 2 VA. The backup capacitor is connected to terminals #1 and #5 on the meter. The **RED** wire from the backup capacitor module should be connected to terminal 1 and the **BLACK** wire connected to terminal 5. The standard AC current input range is 0 to 5 Amps. A minimum current of 1-2 Amps is required to charge the backup capacitor. The socket should be wired with the CT wires to terminals #2 and #6. Polarity is not required. All current input ranges have a 50% over-range ability. This means that a 5 Amp input meter will read correctly up to 7.5 Amps. No batteries are used in this meter. Backup power for the Real Time Clock is stored on separate internal supercapacitor inside the meter. The Clock will run for several weeks from a fully charged capacitor. See the wiring diagram labels on the rear of the meter and on the backup capacitor module.

Detailed Installation Procedure

- 1. Caution! The backup power supercapacitor is shipped partially charged. You may verify the charge state of the module by measuring the DC Voltage on the ends of the module where the wiring connections are exposed. Minimum functional charge is 1.8Vdc. Maximum is 2.7Vdc. An inline fuse holder prevents accidental discharge until the unit is securely installed. A 1 Amp low Voltage automotive type fuse is taped to the fuse holder. Do not install the fuse until the module is installed and its wire connections secured.**
2. Short the Current Transformer (CT) wires before removing old meter.
3. Remove old meter.
4. Place backup power module in the bottom of the meter socket enclosure.
5. Follow wiring diagram on the backup power module. Connect the **RED** wire to terminal 1 and the **BLACK** wire to terminal 6.
6. Install the 1 Amp fuse into the fuse holder. Verify that a positive Voltage of 0 -2.7 Vdc is across terminals 1 and 6.
7. Connect CT wires to terminals 2 and 5 as shown on the wiring diagram on the back of the meter.
8. Install AD121R meter by pressing it into the socket. If there is enough charge in the backup capacitor, the meter will briefly display "PU" (PowerUp) and then display the present Ampere Demand value, zero. If there is close to enough charge to run the meter, the meter will alternately display "PU" and "PF" (Power Fail). If the charge is very low or zero, the meter will remain blank until the backup storage module is charged. A charge level sufficient to run the meter may take 4 or 5 hours at full scale current (5A). Maximum continuous current should be 7.5 Amps.
9. Remove the CT wires short. Adjust the scale setting to the display value desired for a CT current of 5 Amps and the time constant desired.

Setup and Operating Procedures for Front Panel Operation

The AD121R can be used as a stand-alone meter operated from the front panel only, or it can be interfaced to a computer using free powerful DOS interface software available from our website. A free DOS emulator program, DOSBOX is compatible with our DEMICOMM program and is used here in our factory under Windows 7. The meter has 4 sealed front panel switches which can be used to set up the meter and read the stored data available from the front panel display. All other data can be read only by a computer. In normal operation, the display shows the present logarithmic average Amperage based on the time constant selected (Ampere Demand). The meter will automatically return to normal operation from any display mode by stepping through the remaining display modes starting 60 seconds after pressing the last front panel switch. The normal operation of the meter continues to operate in the background while in any display mode. The four front panel pushbuttons control the modes and setup. Each display mode has a corresponding alphanumeric prompt, which can be displayed at any time by pressing the "TOGGLE PROMPT" pushbutton. Pressing "TOGGLE PROMPT" while in normal operation will display a "0-A" for Display Mode "0" and Average Demand. Front Panel Setup Functions

1. Press "MODE" one time and the meter momentarily displays "1-In" for Display Mode "1" and Instantaneous Amperage. Then the value of the present Instantaneous Amperage appears.
2. Press "MODE" one time and the meter momentarily displays "2-Pd" for Display Mode "2" and Peak demand. Then the value of the Peak Demand since the last reset appears. Press  once and the meter will display "L-Pd" (Last Peak demand) momentarily and then the Peak demand value before the last reset will appear.
3. Press "MODE" again while in Display Mode "2" and the meter momentarily displays "3-Ld" for Display Mode "3" and Lowest demand. Then the Lowest Demand value since the last reset appears. Press  once and the meter will display "L-Ld" (Last Lowest demand) momentarily and the Lowest Demand value before the last reset will appear.
4. Press "MODE" again while in mode 4 and the meter momentarily displays "4-rE" for Display Mode "4" and rEset. If the meter is set up through the computer software for automatic reset only, the meter cannot be reset from the front panel. When front panel reset is enabled, press  to reset the meter. After the meter is reset, "donE" appears momentarily before returning to Display Mode "0". The Reset mode has a second function that allows the "set up parameters" and the "reset" function to be **locked** so that they can be displayed but not inadvertently changed. To lock or unlock these parameters, press and hold  and then press "MODE". The display returns to Display Mode "0" immediately but with the Front Panel Lock enabled. This function can be reversed by repeating the operation.
5. Press "MODE" again while in Display Mode "4" and the meter momentarily displays "5-Sc" for Display Mode "5" and Scale. Then the present C.T. Scale appears. The C.T. scale can be changed by pressing  to select the digit to change. The selection is made by pressing  and observing the decimal of the digit, the two center digits are each selected when there is a decimal on each side of a digit and the left digit is selected when the decimal is to the right of the digit. When the digit you wish to change is selected, press  until the desired number is present. Press "MODE" to store the new scale and display the next mode.
6. Press "MODE" again while in Display Mode "5" and the meter momentarily displays "6-Co" for Display Mode "6" and Time Constant. Then the present Time Constant appears, and can be changed in the same manner as outlined in #5.
7. Press "MODE" again while in Display Mode "6" and the meter momentarily displays "7-nu" for Display Mode "7" and Meter Identification number which is assigned by the owner and can be used for identifying data downloaded through a computer or from manual front panel readings. Then the present Meter Number appears, and can be changed in the same manner as outlined in #6.
8. Press "MODE" again while in Display Mode "7" and the meter momentarily displays "8-CL" for Display Mode "8" and CLock. Then the present 24-hour clock setting (hh:mm) appears, and can be changed in the same manner as outlined in #6.
9. Press the mode switch again while in Display Mode "8" and the meter momentarily displays "9-dA" for Display Mode "9" and dAte. Then the present date (mmdd) appears, and can be changed in the same manner as outlined in #6.
10. Pressing "MODE" again displays "hour" for a second. Then approximate number of hours of operation the backup power capacitor has stored is displayed before returning to Mode "0", displaying present Ampere Demand.