Model: ACE
AC Energy Monitor

INSTALLATION/OPERATION MANUAL

Introduction

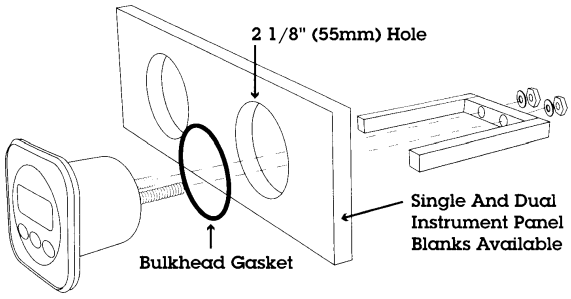
The ACE provides accurate digital metering for AC Volts, Amps, Frequency and Kilowatts. Low/high Voltage and Low/High Frequency alarms are easily set. When activated, the built-in 85 dB alarm will sound, the display will flash the out-of-limit condition and the optional generator cut-out can be used to turn off the faulty generator. Five levels of backlighting can be selected and all set-up, calibration and alarm values are saved to non-volatile memory. The ACE comes complete with precision voltage and current transformers mounted on a single PCB with input/output terminals and is factory calibrated to read within 1%. The large LCD display draws only .02 amps and only .04 amps with full backlighting.

Installation

Before starting the installation, please read this entire section first. The instrument may be installed in a bulkhead or in NEWMAR's Single Universal Meter Panel Blanks (contact factory). Remove the rear bracket, attach wiring as explained in the following section, then reassemble and install as shown in the diagram below. Finger tighten the nuts that secure the bracket - do not use tools. (You may use Lock-Tite to keep the nuts from vibrating loose.) Be sure to slide the bulkhead gasket over the instrument body before you install the instrument.

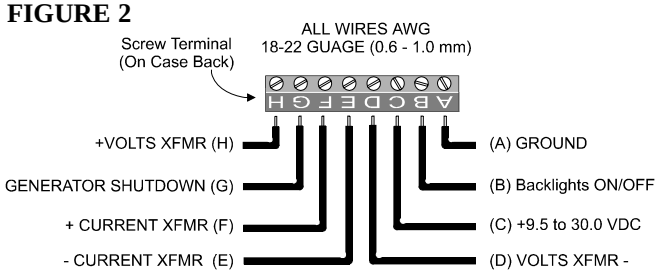
Drill a 2-1/8" (55mm) mounting hole (or use NEWMAR's Single Universal Meter Panel Blanks) as shown in FIGURE 1.

FIGURE1



Mount the transformer PCB/housing assembly in a convenient location, then route all necessary wiring through the mounting hole and use a small flat screwdriver to make the connections to the screw terminal on the instrument case back and PCB terminals as shown in Figures 2 and 3.

FIGURE 2



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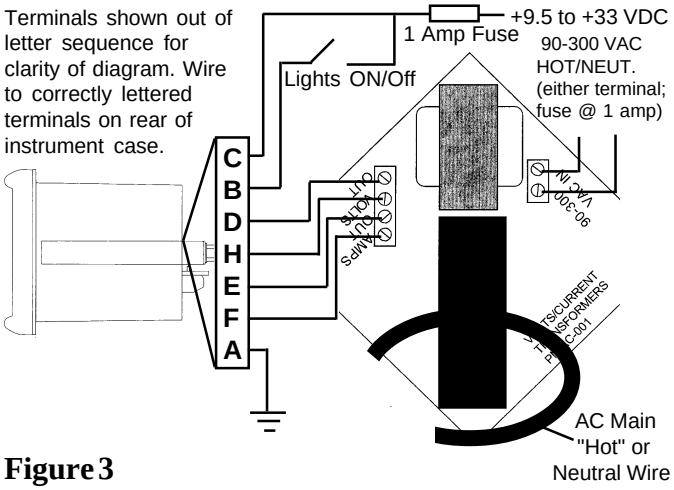

Figure 3

When all wiring has been double-checked, mount the ACE as shown on page 5. Be sure the gaskets are in place and use only finger tension to tighten the bracket hold-down nuts. *Do not overtighten the bracket or you may damage the case.*

Key Functions

The V A Hz keys are used to select what to display, backlight levels, set and turn on alarms on/off and calibrate the instrument. Information is automatically saved to memory.

Turning Alarms ON/OFF

Press the △ key 1/2 second to turn alarms ON. Press the ▽ key 1/2 second to turn the alarms OFF. The V/A/F (and V+A) annunciators blink when the alarms are ON and are steady when the alarms are OFF.

Backlight Intensity

Press ✣ the key 1/2 second to adjust the backlight level for night-time viewing. Each time you press the ✣ key the level will get brighter 1, 2, 3, 4, 1, 2, etc. The backlights only come on if screw terminal B is energized with 9.5 to 33 VDC.

Displaying AC Volts/Amps/Frequency/Kilowatts

Press one of the V A Hz keys to select AC Volts, Amps or Frequency display. Press both the V and A keys to together to display kilowatts.

Setting High/Low Volts Alarm

While viewing Volts, press and hold the △ key for ten (10) seconds. You will hear a beep and see the current High Volts alarm value. Use the △ and ▽ keys to set the desired alarm value. Press the ✣ the key 1/2 second to save the High Volts alarm value to memory and return to the Volts display mode.

While viewing Volts, press and hold the ▽ key for ten (10) seconds. You will hear a beep and see the current Low Volts alarm value. Use the △ and ▽ keys to set the desired alarm value. Press the ✣ the key 1/2 second to save the High Volts alarm value to memory and return to the Volts display mode.

Setting High/Low Frequency Alarm

While viewing Frequency, press and hole the △ key for ten (10) seconds. You will hear a beep and see the current High Frequency alarm value. Use the △ and ▽ keys to set the desired alarm value. Press the ✣ the key 1/2 second to save the High Frequency alarm value to memory and return to the Frequency display mode.

While viewing Frequency, press and hold the ▽ key for ten (10) seconds. You will hear a beep and see the current Low Frequency alarm value. Use the △ and ▽ keys to set the desired alarm value. Press the ✣ the key 1/2 second to save the Low Frequency alarm value to memory and return to the Frequency display mode.

Calibrating AC Volts

Apply power to the ACE while holding down the V key. Use the △ and ▽ keys to make the displayed value read correctly. Press the ✣ key for 1/2 second to save the calibration data to memory.

Calibrating AC Amps

Apply power to the ACE while holding down the A key. Use the △ and ▽ keys to make the displayed value read correctly. Press the ✣ key for 1/2 second to save the calibration data to memory.

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Calibrating Frequency

Apply power to the ACE while holding down the Hz key. Use the △ and ▽ keys to set the desired alarm value.

Press the ✣ key for 1/2 second to save the calibration data to memory.

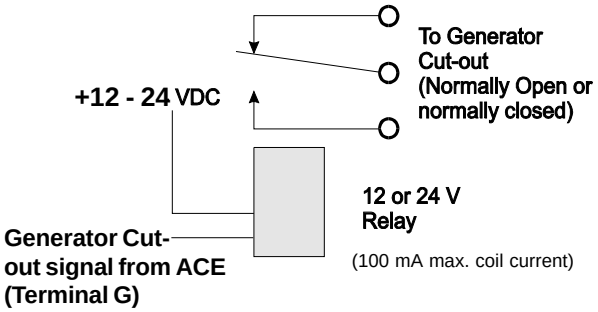
Monitoring Multiple AC Sources

Multiple AC sources may be monitored on a single instrument by using a four pole selector switch wired between two or more transformer assemblies and the D, H, E and F sense inputs on the instrument rear terminal block. Additional transformer assemblies are available from NEWMAR. Request model CT.

Generator Cut-Out or NMEA 0183 Output

The ACE provides for automatic generator cut-out if the alarms are ON and either AC Volts or Frequency falls outside the set alarm limits. To use this feature, connect screw terminal pin G to a relay (not supplied) as shown in Figure 4 below.

Figure 4 - Automatic Generator Cut-out



To toggle the screw terminal "G" between being a Generator Cut-out or an NMEA 0183 serial data output of AC Volts, AC Amps, AC Frequency and AC kW, turn off the power, then press and hold both the △ and ▽ keys and re-apply power to the instrument while holding down the keys for three seconds (until the beep stops).

Specifications

Power supply: 9.5 to 33.0 VDC, .018 amps nominal
Operating temperature: 32 to 122° F (0 to 50° C)
Size: 2.5" dia X 4.1" deep (61mm x 104 mm).
Accuracy: +/- 0.1% for Volts and Ampss and +/-5% for Frequency.

Ranges:	Volts	-	9.5 to 33.0 VDC
	Amps	-	0 to 150 Amps
	Frequency	-	40 to 70 Hz
	Kilowatts	-	0.0 to 45.0 Kw

Alarms: High, Low Voltage & Frequency
Display: 4 digit LCD, 5 levels of backlighting.

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