

### Warranty

Each unit is carefully tested and adjusted at the factory before shipping and is warranted for one full year against original defects in materials or workmanship. This warranty does not include damage to the product resulting from accident or misuse.

If the product should become defective within the warranty period, we will repair or replace it free of charge, including free return transportation, provided it is delivered prepaid to the dealer from whom it is originally purchased.

This warranty gives you specific legal rights, and you may also have other rights which vary from state to state, or country to country.

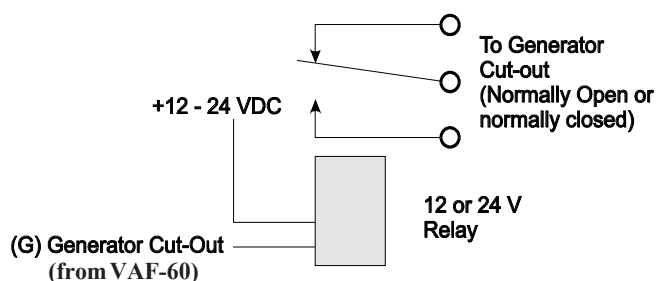
# CruzPro<sup>®</sup>



## VAF-60



## AC Volts/Amps/ Frequency/kW Monitor



**Figure 4 - Automatic Generator Cutout**

To toggle screw terminal "G" between being a Generator Shut-Off or a 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 reapply power to the instrument while holding down the keys for three seconds (until the beep stops).

### Introduction

The CruzPro VAF-60 provides accurate digital metering for AC Volts, Amps, Frequency and Kilowatts. Low/high Voltage, Low/High Frequency and High KW alarms are easily set. When activated, the built-in 85 dB alarm will sound and the display will flash the out-of-limit condition. Screw terminal "G" can be programmed to turn off a faulty generator or as a NMEA 0183 serial data output. Five levels of backlighting can be selected and all setup, calibration and alarm values are saved to nonvolatile memory. The VAF-60 comes complete with precision voltage and current transformers and is factory calibrated to read within 1%. The large LCD display draws only .02 amps and only .04 amps with full backlighting.

## Table of Contents

Introduction . . . . .	3
Specifications . . . . .	4
Installation . . . . .	5
Operation . . . . .	8
Key Functions . . . . .	8
Turning Alarms ON/OFF . . . . .	8
Backlight Intensity . . . . .	8
Displaying AC Volts/Amps/Frequency/Kilowatts . . . . .	9
Setting Volts, Frequency, KW Alarms . . . . .	10
Calibration . . . . .	12
Calibrating AC Volts . . . . .	12
Calibrating/Zero AC Amps . . . . .	12
Calibrating Frequency . . . . .	13
Generator Cutout or NMEA 0183 Output . . . . .	13

©1999 CruzPro Ltd.  
<http://www.cruzpro.com>

VAFMAN-I  
Made in New Zealand

## Other CruzPro Products

- DepthSounder & Fishfinder/w Water Temperature
- Speed/Log/w Water Temperature Display
- DC Volts/Amps/Amp-Hour Monitors
- Remote NMEA 0183 Data Repeater/w 4 Input Channels
- LPG/Petrol Gas Detectors/Alarms
- Bilge Water Detector/Alarms & Pump Controllers
- Windlass Controller/Chain Counter
- Digital Fuel Gauge/Consumption Calculator
- Smart 4 Step Alternator Regulator
- Marine Security System
- RPM/Engine Hours/Elapsed Time Gauge/w Alarms
- Digital Oil Pressure Gauge/Alarm
- Digital Water Temperature Gauge/Alarm
- Digital Amps Gauge
- 3 Bank Digital Volts Gauge/Alarm
- Digital Clock/Watch/Race Timers/w 8 Alarms
- 8 and 16 Amp Light Dimmers
- Digital Tank Level Gauges/w Alarms
- Solar Panel Charge Controllers
- 4 & 8 Channel NMEA Combiners/RS-232 Convertors
- Engine/Exhaust Temperature Pyrometer/w Alarm

See full details at <http://www.cruzpro.com>  
Email to: [info@cruzpro.com](mailto:info@cruzpro.com)

## 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:** 1 % for Volts, Amps, 0.5% for Frequency.

**Ranges:** Volts (90 to 300 VAC), Amps (0 to 150 Amps), Freq. (40 to 70 Hz), KW (0.0 to 45.0 KW).

**Alarms:** Built-in 85dB High Volts, Frequency and KW alarms. Low Volts and Frequency alarms.

**Auto-Shutdown:** Output sinks 30V, 100mA max. or programmable as a NMEA 0183 data output.

**Display:** 4 digit LCD, 5 levels of backlighting.

**NMEA 0183:** Terminal "G" can be programmed as NMEA 0183 data output of AC Volts, Amps, Frequency and KW or generator shutdown control line.

displayed value read correctly. Press the **+** key for 1/2 second to save the new calibration constant.

### Calibrating Frequency

Apply power to the VAF60 while holding down the **Hz** key. Use the **▼** and **▲** keys to make the displayed value read correctly. Press the **+** key for 1/2 second to save the new calibration constant to memory

### Generator Cut-Out or NMEA 0183 Output

The CruzPro VAF-60 provides for automatic generator cutout if the alarms are ON and AC Volts, Frequency or KW falls outside the set alarm limits. To use this feature, connect screw terminal pin G to a relay as shown in Figure 4:

## Calibration

### Calibrating AC Volts

Apply power to the VAF60 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 new calibration constant to memory

### Calibrating/Zero AC Amps

To zero the amps display, press and hold the **A** key for 10 seconds while viewing amps. To enter amps calibration mode, first remove power then reapply power to the VAF60 while holding down the **A** key. Use the **▼** and **▲** keys to make the

Page 12

## Installation

Before starting the installation, please read this entire section first. Be sure to install the bulkhead gasket before you install the instrument. Finger tighten the screws that mount the instrument bracket - do not use tools.

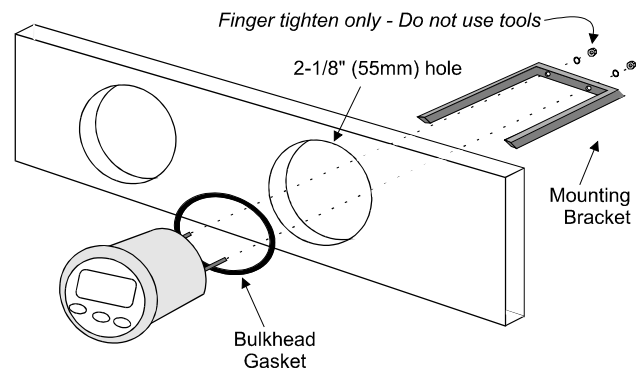


Figure 1

Page 5

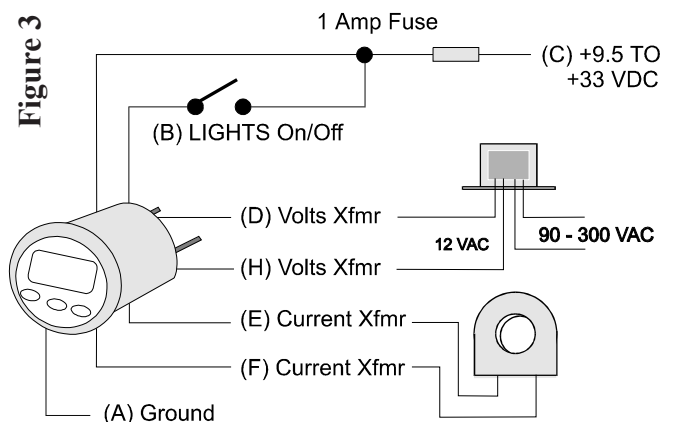
### Setting High/Low Volts, Frequency, KW Alarms

Press the **V** or **Hz** key to select AC Volts, or Frequency display. Or press both the **V** and **A** keys together to display Kilowatts.

Once the desired function is displayed, press the **▲** key for ten (10) seconds to set a high Volts, Frequency or KW alarm. You will hear a beep and see the High alarm value. Use the **▼** and **▲** keys to set the desired alarm value. Press the **+** key for 1/2 second to save the High alarm value to memory and return to the display mode.

Press the **▼** key for ten (10) seconds to set a low

Page 10



● Check all your wiring against those shown in Figures 2 and 3. If wired correctly, mount the VAF-60 in the instrument hole. Be sure the bulkhead gasket is 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.

Page 7

- Drill a 2-1/8" (55mm) mounting hole where you desire to mount the instrument (Figure 1).
- Bring the voltage and current transformer wires, ground and power lines, etc. out of the mounting hole and use a small flat screwdriver to make the connections to the screw terminal on the instrument case back as shown in Figure 2 and Figure 3.

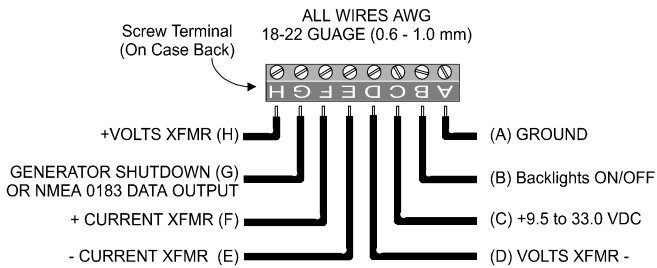


Figure 2

Volts or Frequency alarm. You will hear a beep and see the Low alarm value. Use the ▼ and ▲ keys to set the desired alarm value. Press the + key for 1/2 second to save the Low alarm value to memory and return to the display mode.

No provisions have been made to set a Low KW alarm.

## Operation

### Key Functions

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

### Turning Alarms ON/OFF

Press the ▲ key for 1/2 second to turn alarms ON. Press the ▼ key 1/2 second to turn 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 nighttime 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 together to display Kilowatts