INSTALLATION INSTRUCTIONS
PRO-CONTROL STEPPER MOTOR
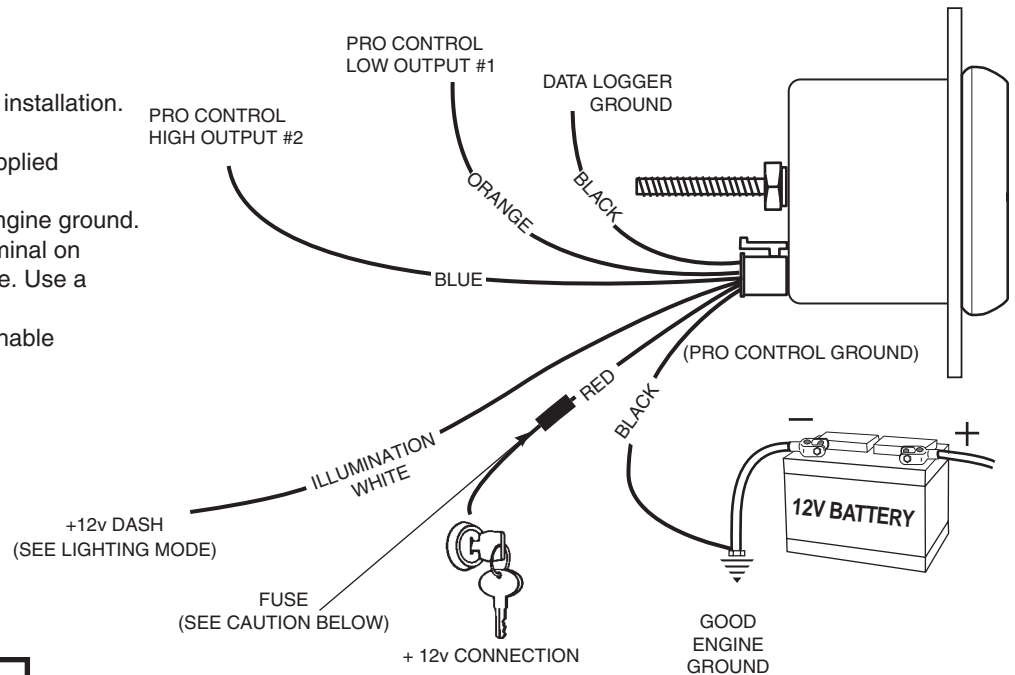## VOLTMETER GAUGE

IMPORTANT
WEAR
SAFETY GLASSES

Installation

1. Check that you have all parts required for installation.
2. Disconnect the negative (-) battery cable.
3. Gauge mounts in a 52.4mm hole. Use supplied brackets and nuts to secure to dash.
4. Attach black wire from harness to good engine ground.
5. Attach red wire from harness to +12V terminal on ignition switch or other +12V power source. Use a switched power source.
6. Attach white wire to dash lighting or switchable +12V light source.
7. Reconnect negative (-) battery cable.

PRO CONTROL
LOW OUTPUT #1

DATA LOGGER
GROUND

PRO CONTROL
HIGH OUTPUT #2

ORANGE

BLACK

BLUE

(PRO CONTROL GROUND)

RED

BLACK

ILLUMINATION
WHITE

+12v DASH
(SEE LIGHTING MODE)

12V BATTERY

FUSE
(SEE CAUTION BELOW)

+ 12v CONNECTION

GOOD
ENGINE
GROUND

CAUTION!
As a safety precaution, the +12V terminal of this product should be fused before connecting to the 12V ignition switch. We recommend using a 1 Amp, 3AG fast-acting type cartridge fuse.

Power-Up

The pointer will move counter clockwise to the stop pin and then moves to the current gauge reading. This procedure is an auto-calibration function and is performed on every power-up. While this test is being performed, the gauge may make a clicking sound. This is normal.

Peak Recall

Press and hold the **PEAK** button to recall the highest voltage reading since the memory was last cleared. To clear the memory, press and hold the **PEAK** button, and while still holding the **PEAK** button, press the **WARN** button. The pointer will move to the stop pin to indicate that the memory has been cleared. Release the **PEAK** and **WARN** buttons to resume normal operation. The peak recall point is retained when power is removed from the gauge.

Full Dial Warning

This gauge features full dial warning. When a warning point is reached, the entire dial illuminates in the programmed warning color. This feature is available for both a high and low warning set point. In addition, the warning color will flash when an over warn point is reached.

Pro Control High Warning Set Point

To adjust the high warning set point, press and release the **WARN** button. The warning light will begin to flash and the pointer will move to the previous high warning set point signifying that warning set mode has been selected. Once in set mode, press the **WARN** button to move the pointer down, or press the **PEAK** button to move the pointer up. Three seconds after the last button press, the warning light will stop flashing and the pointer will return to the current reading. The warning set points are retained when power is removed from the gauge.

Pro Control High Over Warn Set Point

To adjust the high over warn set point, press and hold the **WARN** button. After three seconds the warning light will begin to flash and the pointer will move to the previous high over warning set point signifying that over warn set mode has been selected. Release the warn button. Once in set mode, press the **WARN** button to move the pointer down, or press the **PEAK** button to move the pointer up. Three seconds after the last button press, the warning light will stop flashing and the pointer will return to the current reading. The over warn set points are retained when power is removed from the gauge.

Pro Control Low Warning Set Point

To adjust the low warning set point, press and hold the **WARN** button, and while still holding the **WARN** button, press and release the **PEAK** button. The warning light will begin to flash and the pointer will move to the previous low warning set point signifying that warning set mode has been selected. Once in set mode, press the **WARN** button to move the pointer down, or press the **PEAK** button to move the pointer up. Three seconds after the last button press, the warning light will stop flashing and the pointer will return to the current reading. The warning set points are retained when power is removed from the gauge.

Pro Control Low Over Warn Set Point

To adjust the low over warn set point, press and hold the **WARN** button, and while still holding the **WARN** button, immediately press and hold the **PEAK** button. After three seconds the warning light will begin to flash and the pointer will move to the previous low over warning set point signifying that over warn set mode has been selected. Release both buttons. Once in set mode, press the **WARN** button to move the pointer down, or press the **PEAK** button to move the pointer up. Three seconds after the last button press, the warning light will stop flashing and the pointer will return to the current reading. The over warn set points are retained when power is removed from the gauge.

Change Backlight Color

To change the backlight color:
With power off, press and hold the warning button. Apply power to the gauge. Release the **WARN** button. Press and release the **PEAK** button. The pointer will move to half scale and the dial will illuminate with the current Backlight Color. Press and hold the **PEAK** button to cycle through the available colors. Once you have selected the desired color, release **PEAK** and don't press any buttons for about three seconds. The dial will flicker white several times to indicate the desired setting has been saved and the gauge will return to normal operation with your new color selection. Color selections are saved when power is off.

Change Low Warn Color

(Region A color)

Warn Color Set Mode:
With power off, press and hold the **WARN** button. Apply power to the gauge. Release the **WARN** button. The pointer will be at the stop pin and the dial illumination will be off. Press and release the **WARN** button to cycle between **HIGH** warn color set and **LOW** warn color set modes. In High Warn color set mode, the pointer will move to full scale and the dial will illuminate with the current High Warn color. In Low Warn color set mode, the pointer moves to the minimum position and the dial will illuminate with the current Low Warn color.

To change Low Warn Color:
When the Low Warn color set mode has been selected (see above), press and **HOLD** the **WARN** button to cycle through the available colors. Once you have selected the desired color, release the **WARN** button. Don't press any buttons for about three seconds. The dial will flicker white several times to indicate the desired setting has been saved and the gauge will return to normal operation with your new Low Warn color selection. Color selections are saved when power is off.

Change High Warn Color

(Region C color)

Warn Color Set Mode:
With power off, press and hold the **WARN** button. Apply power to the gauge. Release the **WARN** button. The pointer will be at the stop pin and the dial illumination will be off. Press and release the **WARN** button to cycle between **HIGH** warn color set and **LOW** warn color set modes. In High warn color set mode, the pointer will move to full scale and the dial will illuminate with the current High Warn color. In Low Warn color set mode, the pointer moves to the minimum position and the dial will illuminate with the current Low Warn color.

To change High Warn Color:
When the High Warn color set mode has been selected (see above), press and hold the **WARN** button to cycle through the available colors. Once you have selected the desired color, release the **WARN** button. Don't press any buttons for about three seconds. The dial will flicker white several times to indicate the desired setting has been saved and the gauge will return to normal operation with your new High Warn color selection. Color selections are saved when power is off.

Lighting Mode

(Region B Color)

This gauge allows the dial lighting to operate in two modes, Full On or Dimmable. Factory default is Full On.

Full On: In this mode, the white lighting wire is ignored. The gauge dial lighting is always on at full brightness. (unless you select NO color when setting the Backlight Color). If using Full On mode, white wire hook-up is not needed.

Dimmable: In this mode, the white wire is used to set the intensity of the dial lighting from full brightness down to off.

To change the Lighting Mode:
With power off, press and hold the **PEAK** button. Apply power to the gauge. Release the **PEAK** button and the dial face will illuminate with either white lighting or blue lighting. Press and release the PEAK button to toggle between Full On (dial is illuminated white) and Dimmable (dial is illuminated blue). Once you have selected the desired mode, don't press any buttons for about three seconds. The dial will flicker white several times to indicate the desired setting has been saved and the gauge will return to normal operation with your new mode selection. Mode selections are saved when power is off.

Gauge Reset

It may be desired to reset the gauge. This clears programmable settings to a system default.
With power off, hold in both buttons. Apply power to the gauge, wait two seconds,
and release both buttons. The dial face will flicker white several times and return to
normal operation. At this point, the gauge has been reset.

Reset Settings:

High Warning Set Point: Max Value
Low Warning Set Point: Lowest Value
Peak: Lowest Value
High Warning Color: Red
Low Warning Color: Green
Backlighting Color: White
Lighting Mode: Full On
High Warning Pro Control State: Active High
Low Warning Pro Control State: Active Low
High Over Warn Set Point: Max Value
Low Over Warn Set Point: Lowest Value

Pro Control Active States

The active region for Pro Control outputs are user configurable. For example, consider a pressure gauge with a low warning set point at 20 PSI . The gauge can be configured so the associated Pro Control output is active when the pointer falls below the set point [less than 20 PSI] (active low) OR when the pointer is beyond the set point [greater than 20 PSI] (active high). Likewise, consider a pressure gauge with high warning set point at 95 PSI. Again, the gauge can be configured so the associated Pro Control is active when the pointer falls below the set point [less than 95 PSI] (active low) OR when the pointer progresses beyond the set point [greater than 95 PSI] (active high).

To change the active state:
With power off, press and hold the **PEAK** button. Apply power to the gauge. Release the **PEAK** button. Press and release the **WARN** button. The gauge is now in Active State Set Mode. The pointer will point straight up at the value in the top center of the dial. Press and release the **WARN** button to toggle back and forth between the low and high warning point active state modes. Doing so will cause the dial to change back and forth between green and red. When setting the low warning active state the dial face will be green. When setting the high warning active state the dial face will be red.

Once the designated warning mode is selected (green or red) press and hold the **WARN** button to toggle between active high and active low. As you hold the button the pointer will continuously sweep from the left of center and to the right of center pausing at each side. Left of center is active low and right of center is active high. Release the **WARN** button when the pointer is in the position of the desired active state. Once you have selected the desired state, don't press any buttons for about three seconds. The dial will flicker white several times to indicate the desired setting has been saved and the gauge will return to normal operation with your new state selection. State selections are saved when power is off.

NOTE: The Pro Control Active State does not affect the color of each dial region.

Pro Control

The Pro Control feature activates a switched ground output at a user defined set point. Pro Control can be used to switch on a relay to activate ignition kill, cooling fans, lamps, alarms, etc. The set points define three regions on the gauge dial, the region below the low set point, between the set points, and above the high set point.

Low Set Point - ACTIVE STATE LOW (ORANGE WIRE)

Pointer Region	Pro Control Output #1	Normally Open Contact	Normally Closed Contact	Dial Color
A	Active (ON)	CLOSED (ON)	OPEN (OFF)	Low Warn Color
B	OFF	OPEN (OFF)	CLOSED (ON)	Backlight Color
C	OFF	OPEN (OFF)	CLOSED (ON)	High Warn Color

Low Set Point - ACTIVE STATE HIGH (ORANGE WIRE)

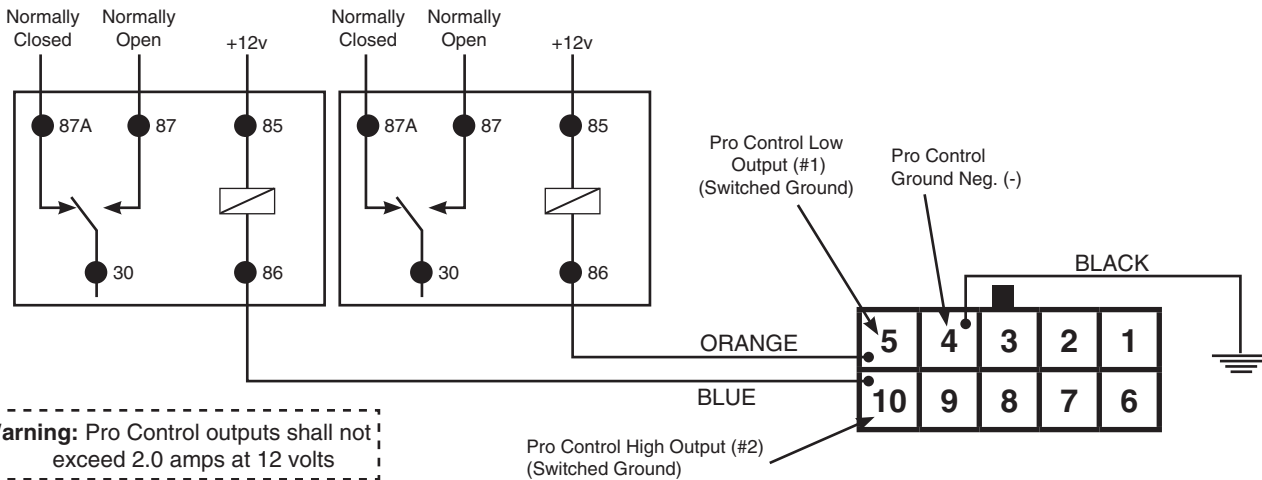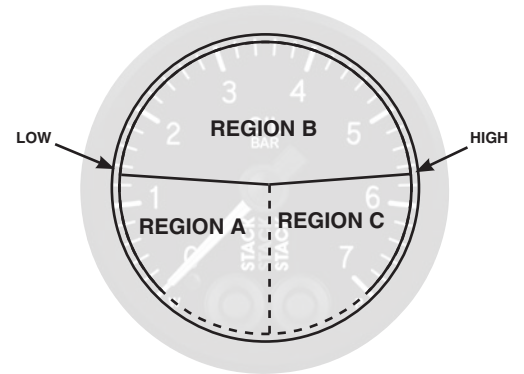| Pointer Region	Pro Control Output #1	Normally Open Contact	Normally Closed Contact	Dial Color
A	OFF	OPEN (OFF)	CLOSED (ON)	Low Warn Color
B	Active (ON)	CLOSED (ON)	OPEN (OFF)	Backlight Color
C	Active (ON)	CLOSED (ON)	OPEN (OFF)	High Warn Color

High Set Point - ACTIVE STATE HIGH (BLUE WIRE)

Pointer Region	Pro Control Output #2	Normally Open Contact	Normally Closed Contact	Dial Color
A	OFF	OPEN (OFF)	CLOSED (ON)	Low Warn Color
B	OFF	OPEN (OFF)	CLOSED (ON)	Backlight Color
C	Active (ON)	CLOSED (ON)	OPEN (OFF)	High Warn Color

High Set Point - ACTIVE STATE LOW (BLUE WIRE)

Pointer Region	Pro Control Output #2	Normally Open Contact	Normally Closed Contact	Dial Color
A	Active (ON)	CLOSED (ON)	OPEN (OFF)	Low Warn Color
B	Active (ON)	CLOSED (ON)	OPEN (OFF)	Backlight Color
C	OFF	OPEN (OFF)	CLOSED (ON)	High Warn Color

EXAMPLE

Warning: Pro Control outputs shall not exceed 2.0 amps at 12 volts