

Application Note

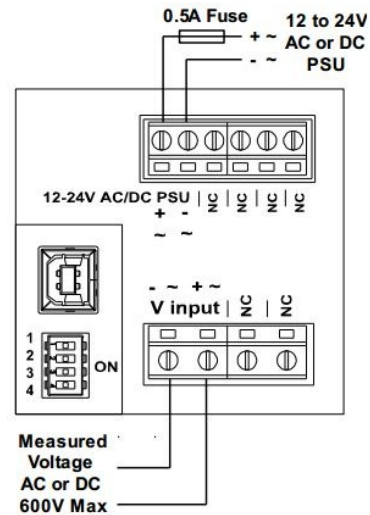
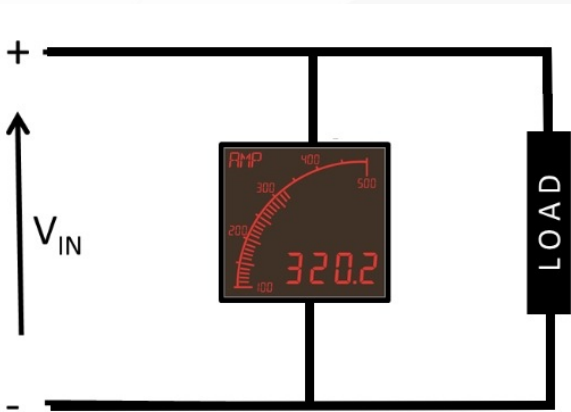
Title: Voltage measuring with an APM-VOLT meter
 Date: 22nd April 2016
 Revision: 2nd

1. Introduction:

The APM-VOLT meter can measure both AC and DC voltages. The APM-VOLT meter performs automatic AC/DC detection. All AC Voltages are automatically converted to true RMS. The following sections discuss each configuration in more detail.

2. AC & DC Measurement

The APM-VOLT meter is connected in parallel with the voltage to be measured as shown below.



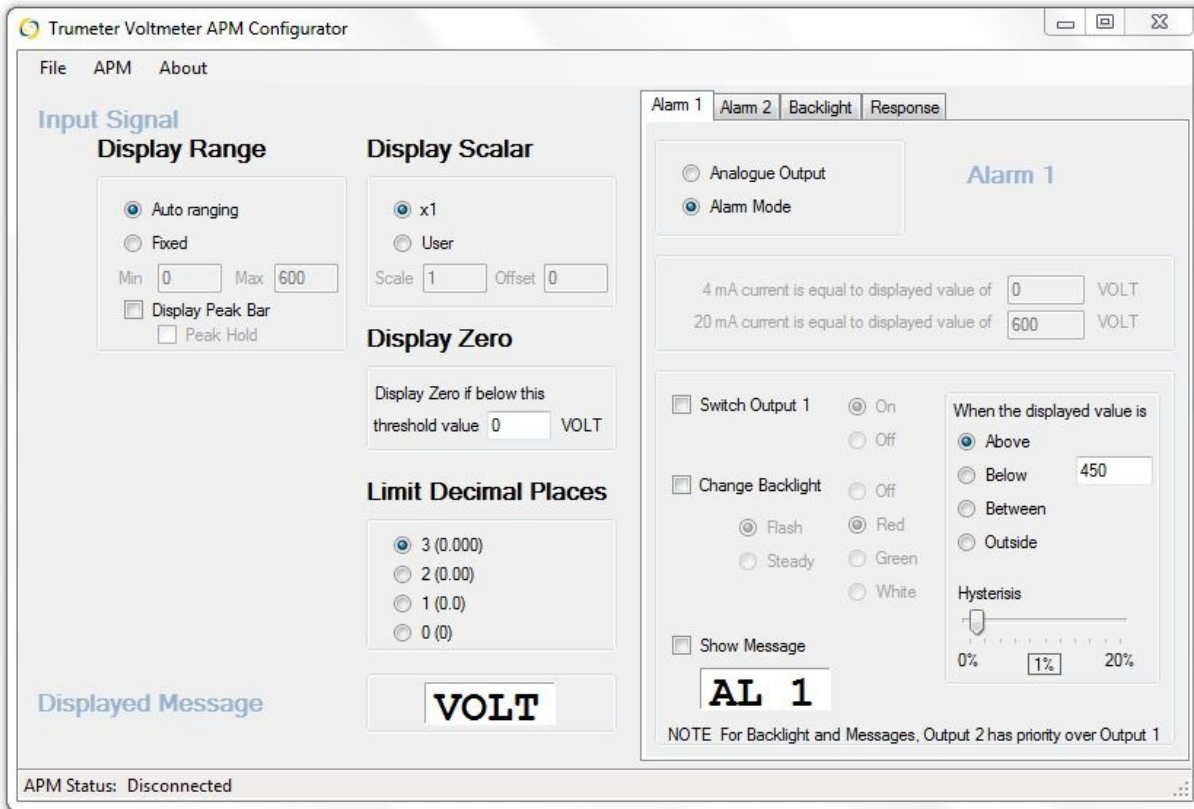
APM-VOLT connections

NOTE: The APM-VOLT meter is rated for a maximum input voltage of 600V AC/DC

Note. Exceeding the rated voltage will cause damage to the APM

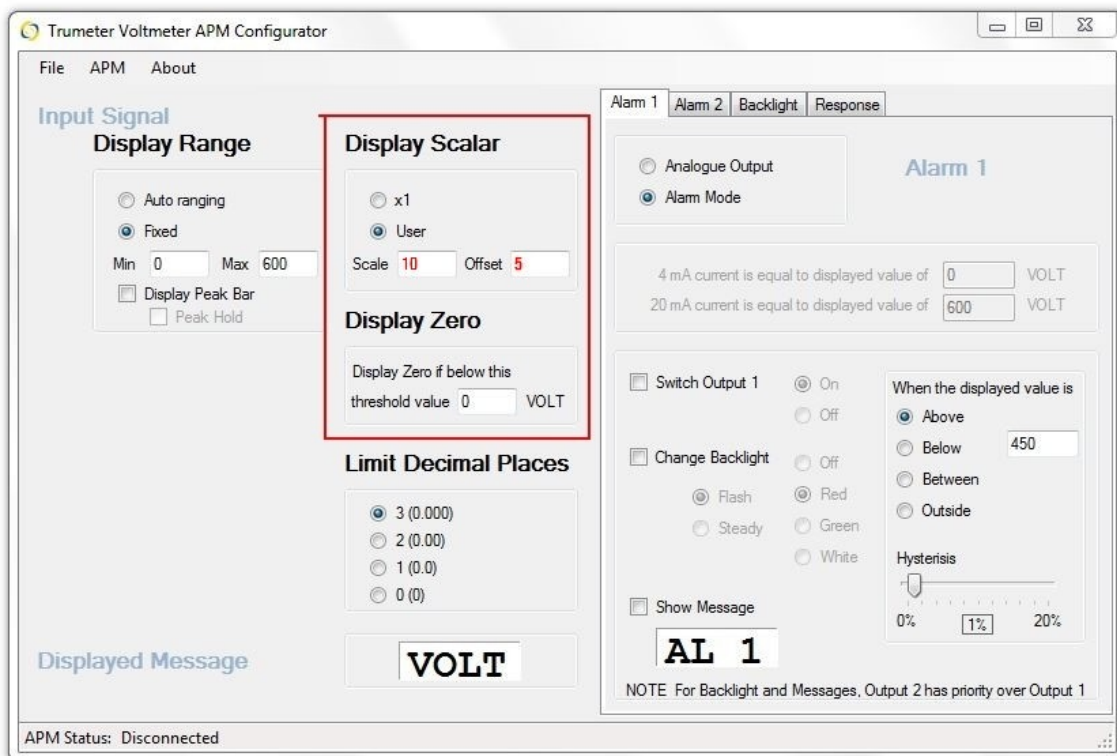
Make sure that the switches on the back of the APM-VOLT meter are all switched off (i.e. switched to the left)

The APM-VOLT can be set to auto range or to a user defined scale with the free APM Configurator software. You can also set the advanced features such as the backlight colour and the output alarms in this way also



3. Setup using the scalar function

The APM-VOLT has the ability to both scale the display and also to apply a voltage offset to the measured voltage.



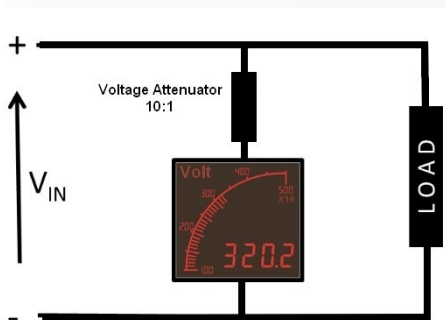
Example

In the setup above the Scale is multiplied by ten x10 and the offset is set at five 5V

Therefore if we applied 10v the display would read $100V - 5V = \text{Reading } 95V$

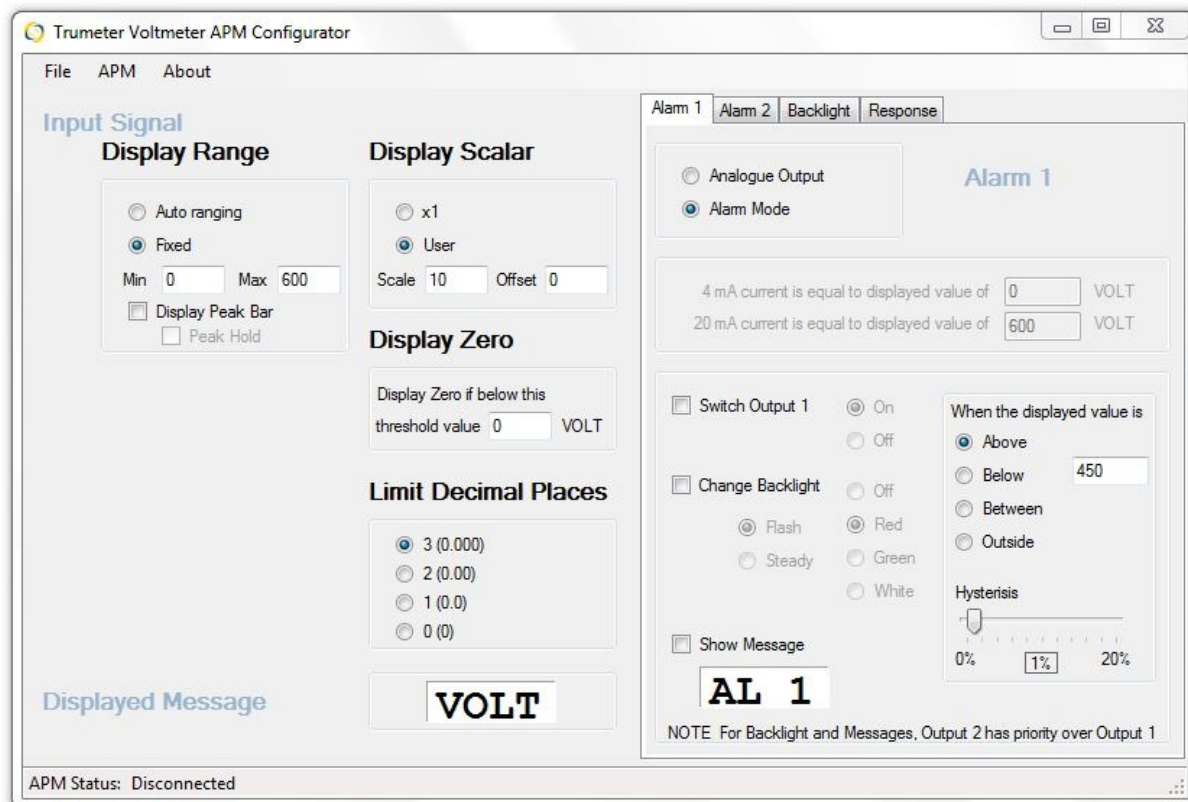
4. Using a voltage divider to read voltages greater than 600V

Wiring



Software Setup

Set Scale = 10 Offset = 0



Trumeter Voltmeter APM Configurator

File APM About

Input Signal

Display Range

Auto ranging
 Fixed
 Min 0 Max 600
 Display Peak Bar
 Peak Hold

Display Scalar

x1
 User
 Scale 10 Offset 0

Display Zero

Display Zero if below this threshold value 0 VOLT

Limit Decimal Places

3 (0.000)
 2 (0.00)
 1 (0.0)
 0 (0)

Displayed Message

VOLT

Alarm 1

Analogue Output
 Alarm Mode

4 mA current is equal to displayed value of 0 VOLT
 20 mA current is equal to displayed value of 600 VOLT

Switch Output 1 On Off
 Change Backlight Off
 Flash Red Green White
 Steady

Show Message

When the displayed value is
 Above
 Below 450
 Between
 Outside

Hysteresis
 0% 1% 20%

NOTE For Backlight and Messages, Output 2 has priority over Output 1

APM Status: Disconnected

Application Note

Title: Measurement of voltage and current in a DC load bank application

Date: 18th March 2015

Revision: 1st

1. Introduction

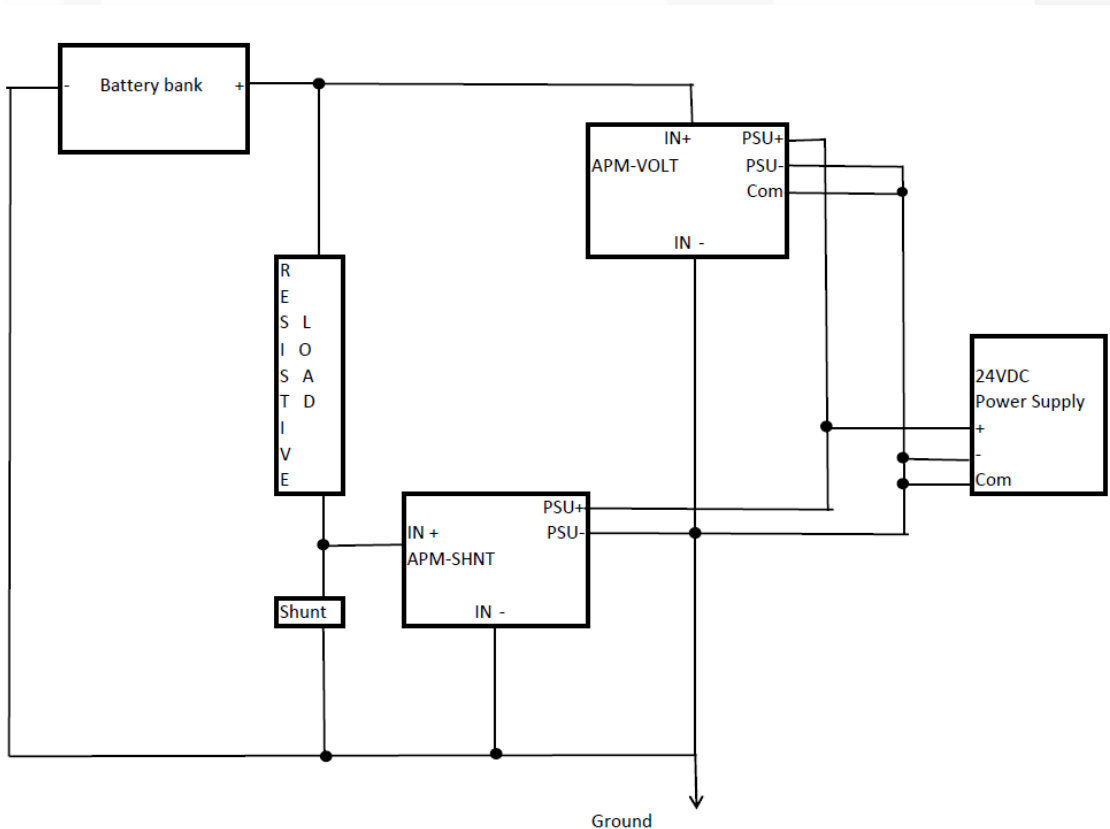
Most manufacturing facilities use battery powered equipment such as fork lifts and maintenance carts

These facilities will use load banks to test these batteries on a regular basis. Bad batteries can impact productivity and damage equipment.

Manufacturers of load bank equipment usually provide a volt meter and a current meter on each load bank. By monitoring current and voltage at specific resistive load will indicate whether a battery or bank of batteries is good.

The voltage is general measured across the load and the current is measured using a current shunt on the low side of the load. Shunts are typically 50mv or 100mv output

2. Diagram



3. Example

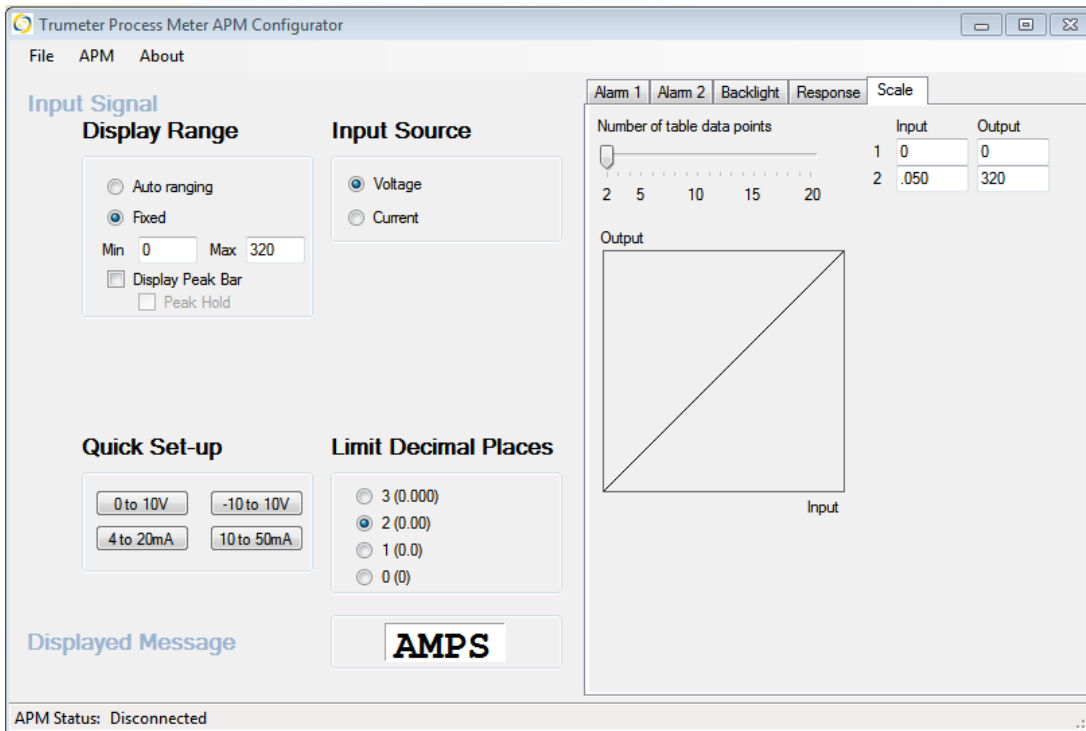
The Load Bank tests six 12 volt batteries in series. 72 volts total. Under load, a voltage below 70 volts indicates an issue. The load is sized to draw 300 amps from the batteries. A current below 290 amps indicates an issue. The system uses a 300 amp to 50mv shunt.

APM-VOLT

The screenshot shows the 'Trumeter Voltmeter APM Configurator' software interface. The main window is titled 'Trumeter Voltmeter APM Configurator' and has a menu bar with 'File', 'APM', and 'About'. The interface is divided into several sections:

- Input Signal:**
 - Display Range:** Radio buttons for 'Auto ranging' and 'Fixed'. The 'Fixed' option is selected, with 'Min' set to 0 and 'Max' set to 80. There are checkboxes for 'Display Peak Bar' and 'Peak Hold'.
 - Display Scalar:** Radio buttons for 'x1' and 'User'. 'x1' is selected. There are input fields for 'Scale' (set to 1) and 'Offset' (set to 0).
 - Display Zero:** A section with the text 'Display Zero if below this threshold value' and an input field set to 0 VOLT.
 - Limit Decimal Places:** Radio buttons for 3 (0.000), 2 (0.00), 1 (0.0), and 0 (0). The '2 (0.00)' option is selected.
 - Displayed Message:** A large text box containing the word 'VOLT'.
- Alarm 1 (Active Tab):**
 - Radio buttons for 'Analogue Output' and 'Alarm Mode'. 'Alarm Mode' is selected.
 - Configuration for current-to-voltage conversion: '4 mA current is equal to displayed value of 0 VOLT' and '20 mA current is equal to displayed value of 600 VOLT'.
 - Switch Output 1: Radio buttons for 'On' and 'Off'. 'On' is selected.
 - Change Backlight: Checked checkbox. Radio buttons for 'Flash', 'Steady', 'Red', 'Green', and 'White'. 'Flash' and 'Red' are selected.
 - Show Message: Checked checkbox. A message box displays 'LOW'.
 - When the displayed value is: Radio buttons for 'Above', 'Below', 'Between', and 'Outside'. 'Below' is selected, with an input field set to 70.
 - Hysteresis: A slider control ranging from 0% to 20%, with the slider positioned at 1%.
 - NOTE: For Backlight and Messages, Output 2 has priority over Output 1.
- Status Bar:** Shows 'APM Status: Disconnected'.

APM-SHNT



Trumeter Process Meter APM Configurator

File APM About

Input Signal

Display Range

Auto ranging
 Fixed
 Min 0 Max 320
 Display Peak Bar
 Peak Hold

Input Source

Voltage
 Current

Quick Set-up

0 to 10V -10 to 10V
 4 to 20mA 10 to 50mA

Limit Decimal Places

3 (0.000)
 2 (0.00)
 1 (0.0)
 0 (0)

Displayed Message

AMPS

Alarm 1 Alarm 2 Backlight Response **Scale**

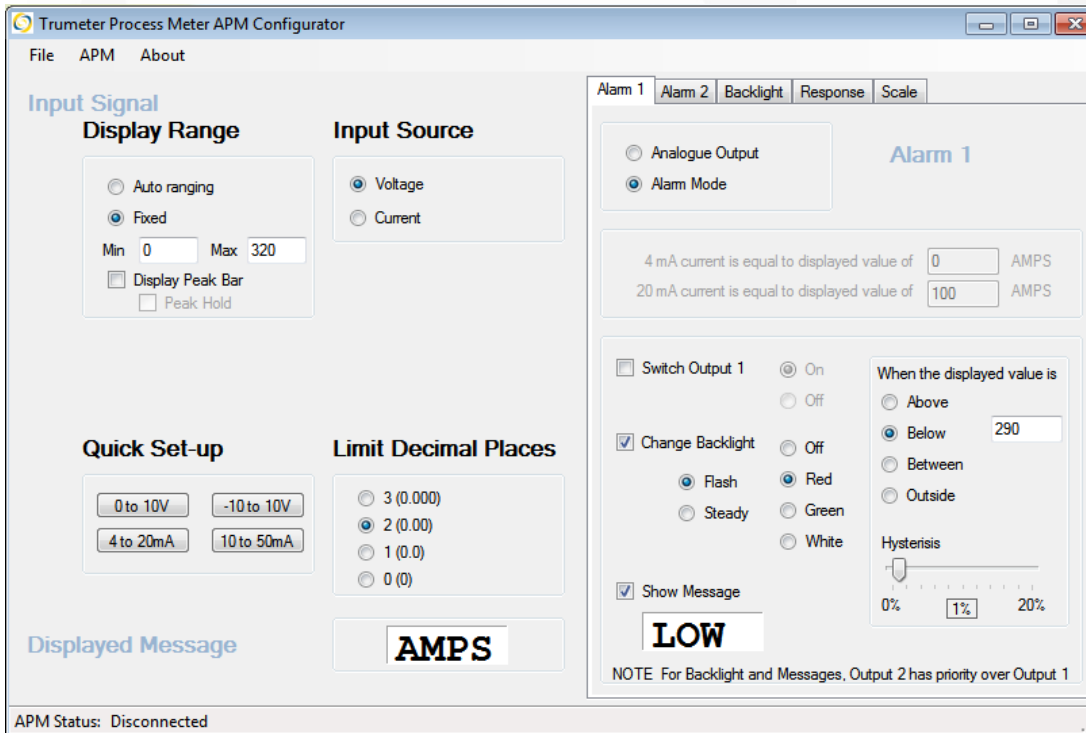
Number of table data points

	Input	Output
1	0	0
2	.050	320

Output

Input

APM Status: Disconnected



Trumeter Process Meter APM Configurator

File APM About

Input Signal

Display Range

Auto ranging
 Fixed
 Min 0 Max 320
 Display Peak Bar
 Peak Hold

Input Source

Voltage
 Current

Quick Set-up

0 to 10V -10 to 10V
 4 to 20mA 10 to 50mA

Limit Decimal Places

3 (0.000)
 2 (0.00)
 1 (0.0)
 0 (0)

Displayed Message

AMPS

Alarm 1 Alarm 2 Backlight Response Scale

Analogue Output
 Alarm Mode

Alarm 1

4 mA current is equal to displayed value of 0 AMPS
 20 mA current is equal to displayed value of 100 AMPS

Switch Output 1 On Off

Change Backlight Off

Flash Red
 Steady Green White

Show Message

LOW

When the displayed value is

Above
 Below 290
 Between
 Outside

Hysteresis

0% 1% 20%

NOTE For Backlight and Messages, Output 2 has priority over Output 1

APM Status: Disconnected