















**Analog Output:**

For meter models with the analog output installed there is the option of sending out a signal from the meter as either voltage or current to an outside source. The strength of these signals is proportional to the input signal from the load on the sensor. With this analog output option it is necessary that the user enter the low input signal that will correspond to the low analog output and the high input signal that will correspond to the maximum analog output. The current range is from 0-20 mA and the voltage range is from 0-10 VDC. Below are the instructions for the setup and configuration of the analog output.

**Setup:**

Before beginning to program the meter for the analog output function it is necessary to setup the wires. Initially it must be decided which analog output will be utilized, the current or voltage. To use the voltage, connect one wire to pin 2, and a ground wire to pin 3.

Analog Output	
1	0-20mA Output
2	0-10VDC Output
3	Isolated Ground

**Configuration:**

1. Press the **Menu** button and enter the setup mode. Continue to press the **Menu** button until **An Set** appears. Press the **Peak** button.  
*NOTE: If **An Set** is not an option in your main menu: (1) make sure your meter has the analog output option, or (2) check the lock settings. The third digit ('1100') in **Loc 2** refers to the 'Analog Output Scaling'. Make sure this number is a zero. Exit the setup mode and then return. **An Set** will now appear as a main menu option.*
2. '**00**' will now appear on your display. Here you are to enter the type of output (current or voltage) and the analog output filtering. The first digit ('**0**0') refers to the type of output. If you would like a current output leave the value at '**0**'. If you would like a voltage output the first digit should be a '**1**'. The second digit ('**00**') refers to analog output filtering. For an unfiltered source choose '**0**'. For a filtered source change the value to '**1**'. When you are done press the **Menu** button.
3. **An Lo** will appear. Press the **Peak** button. Here you are to enter in the value that will correspond to the low analog output. For example, if you enter '00000' then when '00000' is on the display, 0 VDC/0 mA will be outputted. Once your value is entered press the **Menu** key to store your value.
4. **An Hi** will appear. Press the **Peak** button. Here you are to enter in the value that will correspond to the high analog output. For example if you enter in your sensor's max. capacity, then an output of 10 VDC/20 mA will be outputted when max capacity is reached. Once your value is entered press the **Menu** key to store your value. Continue pressing the **Menu** key until you return to the run mode.
5. Your analog output is now ready to be used.

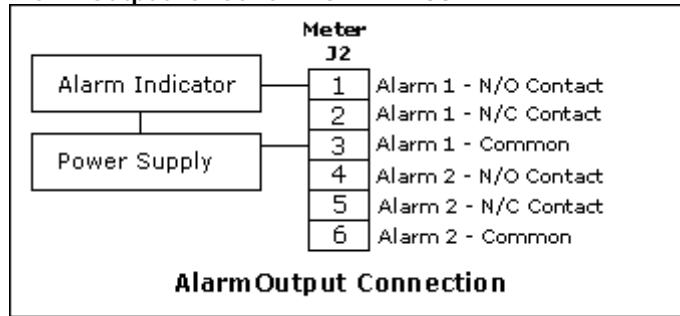
**Alarm Output:**

For meter models with alarm output installed it is possible to set alarms. There are two alarms that can be programmed to activate once the programmed set-points are surpassed. The alarms are active when the LEDs on the top corners of the display are illuminated. With this alarm option the user must enter the setpoint at which the alarm will be activated, the type of alarm it will be, as well as the characteristics of the alarm. The alarms can also be hooked up as an output in order to activate external devices. The setup for this function is below.

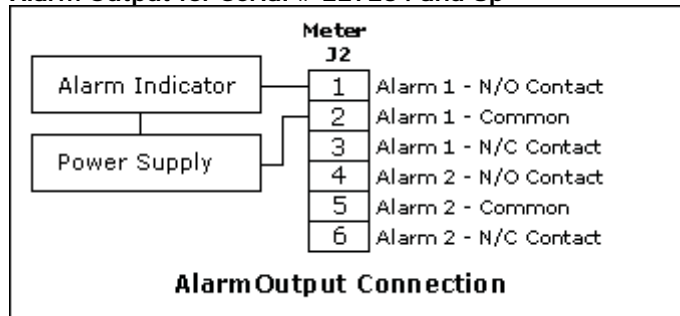
**Setup:**

The alarm output setup is shown to the right. An example of an alarm indicator is a noise alarm that will sound once the alarm is activated and the normally open relay is closed. If you are using alarm 1 it is only necessary to hook up alarm 1. There is no internal power source for the alarm relay so it is necessary to connect a power source in the connection. First, decide if you would like to use a normally open (N/O) switch or a normally closed (N/C) switch. Once you have made your decision use the corresponding pin, connect one wire to the N/O or the N/C switch and the alarm indicator (sound alarm). Connect the other wire from your alarm indicator to the external power source. Finally connect a wire from the alarm ground (Common) to the power source. You are now ready to configure the alarm.

**Alarm Output for Serial # 0 - 227233**



**Alarm Output for Serial # 227234 and Up**



**Configuration:**

1. Apply Power
2. Press the **MENU** button until **ALSet** appears. Press the **PEAK** button.
3. Here you are to enter the alarm operation setup. A five-digit number will appear on the display, '00000'. What each digit represents is listed below. Once you have made your decisions regarding the setup of the alarm enter those numbers in this menu and press **MENU**.
  - 00000 – Relay status when alarm is active,
    - 0 – Relay 1 on, Relay 2 on
    - 1 – Relay 1 off, Relay 2 on
    - 2 – Relay 1 on, Relay 2 off
    - 3 – Relay 1 off, Relay 2 off
  - 00000 – Alarm latching or non-latching status (weather or not the alarm will turn off when the displayed value returns to normal ranges)
    - 0 – AL1, AL2 non-latch
    - 1 – AL1 latch, AL2 non-latch
    - 2 – AL1 non-latch, AL2 latch
    - 3 – AL1, AL2 latch
  - 00000 – alarm status (this determines if the alarm will be activated once the displayed value is either higher (active high) or lower (active low) then the set setpoint)
    - 0 – AL1 active high
      - AL1 active high
    - 1 – AL1 – active low
      - AL2 – active high
    - 2 – AL1 – disabled
      - AL2 active high

- 3 – AL1 active high  
AL2 active low
- 4 – AL1 active low  
AL2 active low
- 5 – AL1 disabled  
AL2 active low
- 6 – AL1 Active high  
AL2 disabled
- 7 – AL1 active low  
AL2 disabled
- 8 – AL1 disabled  
AL2 disabled
- 0000 – Selects the Hysteresis mode or Band Deviation mode of alarms
  - 0 – AL1 BAND Deviation  
AL2 Band Deviation
  - 1 – AL1 Hysteresis  
AL2 Band Deviation
  - 2 – AL1 Band Deviation  
AL2 Hysteresis
  - 3 – AL1 Hysteresis  
AL2 - Hysteresis
  - 4 – No deviation or hysteresis in menu
- 0000 – Number of reading taken in the alarm zone before the alarm goes off
  - 0 – 1 reading
  - 1 – 2 readings
  - 2 – 4 readings
  - 3 – 8 readings
  - 4 – 16 readings
  - 5 – 32 readings
  - 6 – 64 readings
  - 7 – 128 readings
- 4. 'dEU1H' will appear on the display, enter the setpoint at which you would like 'alarm 1' to be activated. Press the **MENU** button.
- 5. 'dEU2b' will appear on the display, enter the setpoint at which you would like 'alarm 2' to be activated. Press the **MENU** button.  
Your alarm functions are now ready to use.

**Menu Locks:**

There are three locks in the main menu of the meter, **Loc 1**, **Loc 2**, and **Loc 3**. Each lock contains a series of numbers, each of these numbers 'lockout' a different part of the menu so that the settings cannot be changed. If the number in the lock is a 0 then the corresponding feature is unlocked, if it is a 1 then the corresponding feature is locked. Below is a list of the individual numbers in each lock and their corresponding function.

**Loc 1**

- 00000** – This digit controls the input type selection
  - 0** – Input type unlocked
  - 1** – Input type locked
- 00000** – This digit controls the meter setup
  - 0** – Meter setup and decimal point selection unlocked
  - 1** – Meter setup and decimal point selection locked
- 00000** – This digit controls the filter selection
  - 0** – Filter unlocked
  - 1** – Filter locked
- 00000** – This digit controls the scale or lo, hi input
  - 0** – Scale or lo, hi input unlocked
  - 1** – Scale or lo, hi input locked
- 00000** – This digit controls the offset or lo, hi reading
  - 0** – Offset or lo, hi reading unlocked
  - 1** – Offset or lo, hi reading locked

If one of these options should be locked simply change the digit to a one.

**Loc 2**

- 0000** – This digit controls the alarm setup
  - 0** – Alarm is unlocked
  - 1** – Alarm is locked
- 0000** – This digit controls the alarm set-point values
  - 0** – Set-point values are unlocked
  - 1** – Set-point values are locked
- 0000** – This digit controls the analog output
  - 0** – Analog output unlocked
  - 1** – Analog output locked
- 0000** – This digit controls the serial interface setup
  - 0** – Serial interface setup unlocked
  - 1** – Serial interface setup locked

*NOTE: if you are **not** using a model with an analog output or serial interface it is not necessary to set the value at zero. The meter will automatically change the setting to one.*

**Loc 3**

- 0000** – This digit controls the view peak value
  - 0** – Peak value unlocked
  - 1** – Peak value locked
- 0000** – This digit controls the viewing of the alarm setpoints
  - 0** – View alarm setpoints unlocked
  - 1** – View alarm setpoints locked
- 0000** – This digit controls the reset (peak and latched alarms)
  - 0** – The reset is unlocked
  - 1** – The reset is locked
- 0000** – This digit controls the reset (meter)
  - 0** – The reset is unlocked
  - 1** – The reset is locked

In order to lock out the menu, set all of the numbers in the locks to 1. If you are having trouble setting up the menu or menu items are missing it could be because specific settings are locked.

Remember to completely unlock your meter before you re-calibrate it.

To change the locks follow the instructions below.

1. Press the **Menu** button until **Loc 1** appears
2. Press the **Peak** button
3. Using the **Peak** button to select the digit and the **Reset** button to increment the digit set the lock to either locked '11111' or unlocked '00000'.
4. Press the **Menu** button when you are done
5. Continue to change **Loc 2** and **Loc 3** as you did **Loc 1**.
6. Press the **Menu** button until **rESet** appears

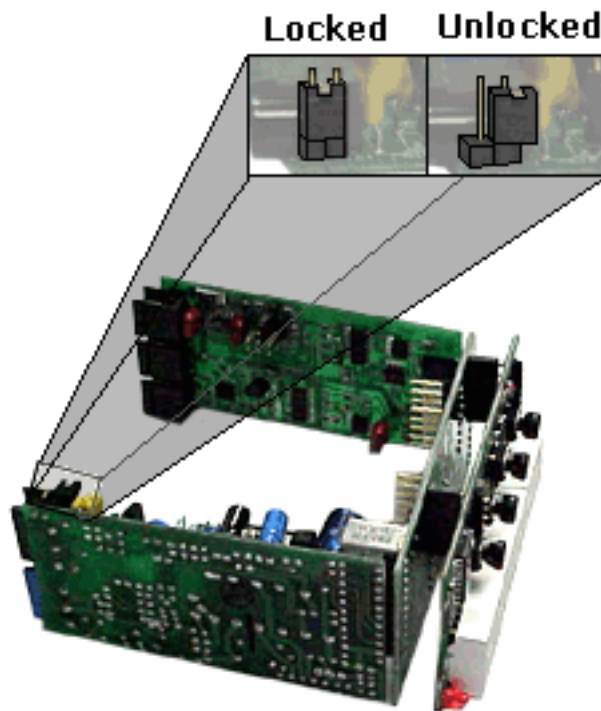
**Internal Jumpers:**

There are three internal jumpers in the IPM500 series meters. These three jumpers control the menu lockout, the excitation voltage, and the input range.

**Lockout Jumper**

It is also possible to completely lock out the menu by using an internal jumper in the meter. The picture below shows the location of the lock jumper inside the meter and the position for a 'locked' meter.

*Note: It is necessary to first set 'Loc 1' to '11111' and then to connect the jumper for the meter to lock correctly*



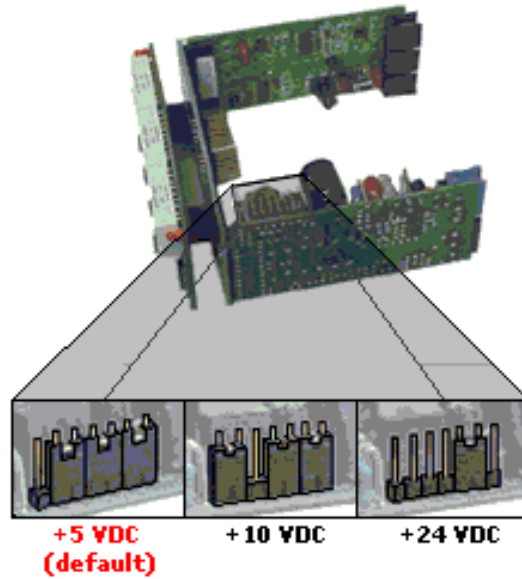
**Menu Lockout Jumper**

**\*In order to lock the setup menu it is necessary to set 'loc 1' to '11111' and then to connect the jumper (shown above).**

**Excitation Voltage**

It is possible to change the excitation voltage of the meter to correspond with your sensor by moving the excitation jumper. The jumper is pictured below.

**Selection of Excitation Voltage**

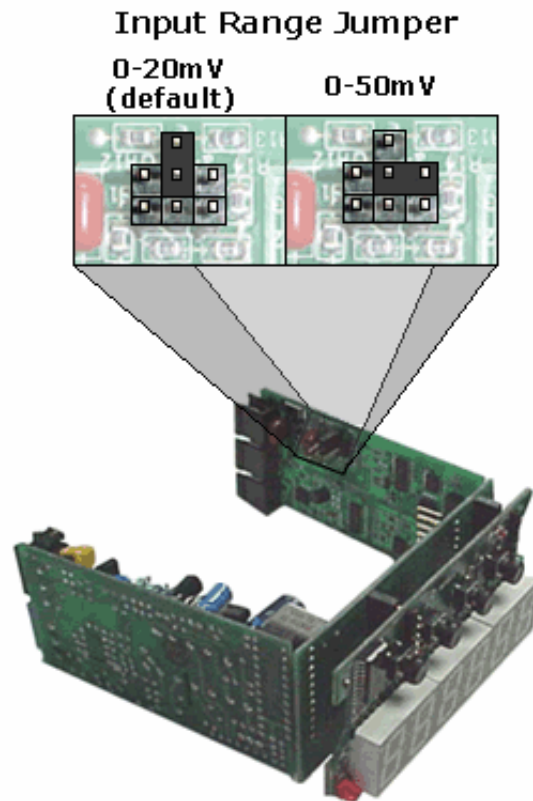


**\*Changing the location of the jumpers will change the excitation voltage. The variation of jumper locations and excitation voltages are shown above.**

### Internal Input Range Jumper

\*If the sensor in use has a Rated Output greater than 2.5 mV/V then it is necessary to change the input range on the meter. For sensors with a Rated Output from 2.5mV/V to 5.5mV/V it is necessary to use the 0-50mV range.

\*If you are using the 0-50mV range then it is also necessary to enter that into the meter. Enter the **InPut** menu and select **Strn** as your input type and '50' as your range.

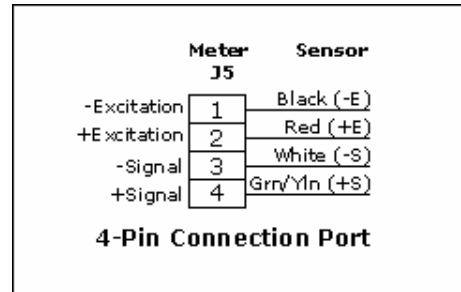
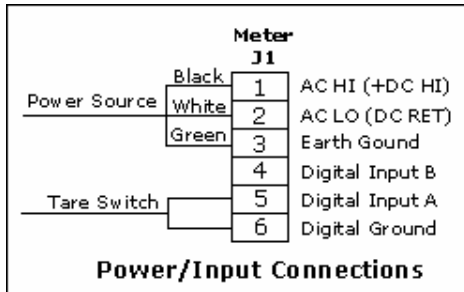


**4-Pin Connection Port (SG Models):**

Older models of the IPM500 Series (MROHHH**SG**, MROJR2**SG**) differ from the newer models in two ways. One, the connection port on the rear of the meter and two, the type of input required for the setup of the meter.

**Connection Port**

Shown below is the back of the older D500 series. The difference being that the newer connection ports are 6-pin while this port is a 4-pin connection. The power/input connections are shown in the left picture below. These connections are constant for the entire series of meters (old/new).



**Input Requirements**

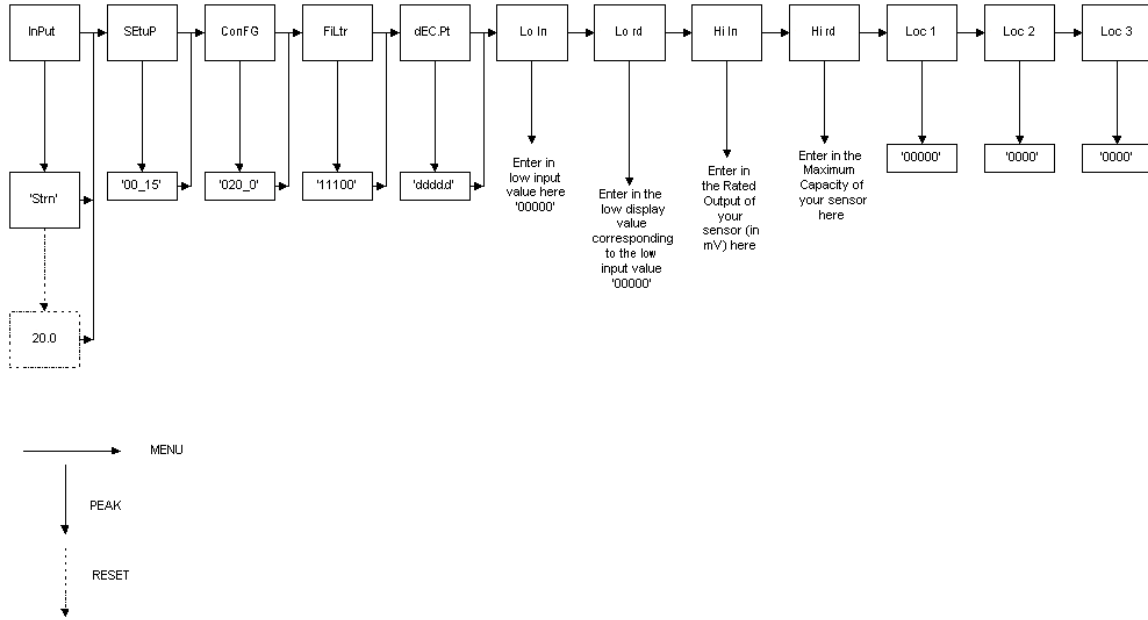
When using a 4-pin connection meter model it is important to remember that your input type will be different than meters with the 6-pin connection ports. The input configuration type and range are listed below, along with brief directions.

1. Press the left **Menu** button until **InPut** appears on the display
2. Press the **Peak** button until the display reads **rAtIo**
3. Press **Reset** until **0.20U** appears
4. Press the left **Menu** button to store your selections, **SEtuP** will appear.

This is the only difference in configuration of the two types of meters. It is also important to remember that the directions/pictures on the web ([www.futek.com](http://www.futek.com)) are written for the 6-pin connection port meters. While the directions are correct for both types of meters (with the exception of the variation of input, above), the internal jumpers may be located in different places for the 4-pin connection port. Please refer to your Owner's Manual for additional information.

**FlowChart:**

**FLOWCHART OF BASIC SETUP USING METHOD 1**



\*In the flow chart above the sideways arrow refers to the MENU button, the downward arrow refers to the PEAK button and the downward dashed arrow refers to the RESET button