IPM500 Series
QuickStart Manual

Manufacturer of Load Cells, Pressure Transducers, Torque Sensors, Signal Conditioners, and Digital Displays.
Futek Advanced Sensor Technology, Inc.

CONTENTS

For additional information on the IPM500 series of meters please visit our web site at
www.futek.com/d500.aspx

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Setup/Connections:

Correct setup is essential to the operation of your sensor and meter. The back of the IPM500 is shown in the drawings below. Locate the wiring code for your individual sensor and connect accordingly. For a four wire load cell it is necessary to jump the +/- Excitation and +/-Sense (pictured).

The pictures below show the connections for the power, a 4-wire sensor, a 6-wire sensor, the analog output and the alarm output. The center port (**J3**) is the serial communications port for those meters with RS232 output option. *Note: Not all meters will have all of these options. For example, meters without alarms will not have the J2 ports.* The power controls are found on the back left of the meter. The blue or green screw connector indicates that your meter requires AC voltage. If your screw connector is black or brown your meter requires DC voltage. IF YOU ARE USING DC VOLTAGE DO NOT PLUG THE METER INTO AN AC WALL SOCKET. EVEN IF YOUR METER COMES WITH A POWER CORD IT IS NOT TO BE USED.

J1	J2	J3	J4	J5
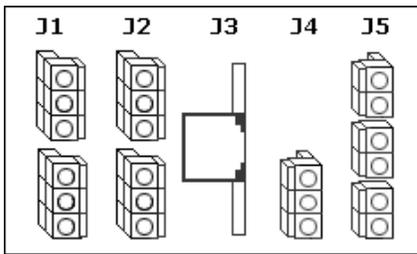
Connection Ports (Rear of Meter)

Power Source		Meter J1	
Black		1	AC HI (+DC HI)
White		2	AC LO (DC RET)
Green		3	Earth Gound
		4	Digital Input B
Tare Switch		5	Digital Input A
		6	Digital Ground
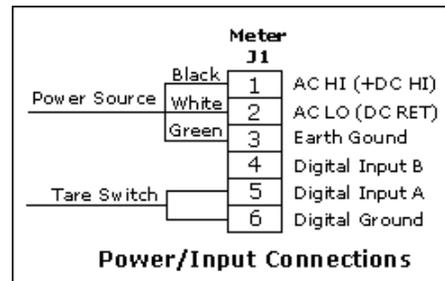
Power/Input Connections

Alarm Output for Serial # 0 - 227233
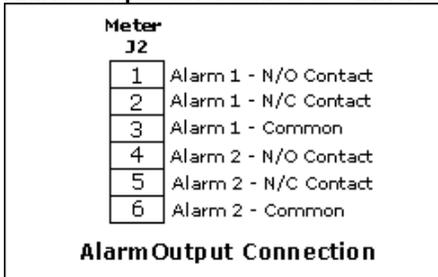
Meter J2	
1	Alarm 1 - N/O Contact
2	Alarm 1 - N/C Contact
3	Alarm 1 - Common
4	Alarm 2 - N/O Contact
5	Alarm 2 - N/C Contact
6	Alarm 2 - Common

Alarm Output Connection

Alarm Output for Serial # 227234 and Up

Meter J2	
1	Alarm 1 - N/O Contact
2	Alarm 1 - Common
3	Alarm 1 - N/C Contact
4	Alarm 2 - N/O Contact
5	Alarm 2 - Common
6	Alarm 2 - N/C Contact

Alarm Output Connection

Meter J4	
1	0-20 mA Output
2	0-10 VDC Output
3	Isolated Ground

Analog Output

	Meter J5		Sensor
-Excitation	1		Black (-E)
-Sense	2		
-Signal	3		White (-S)
+Signal	4		Grn/Ylw (+S)
+Excitation	5		Red (+E)
+Sense	6		

Sensor Connections, 4-Wire

	Meter J5	Sensor
-Excitation	1	Black (-E)
-Sense	2	Blue (-S)
-Signal	3	White (-S)
+Signal	4	Grn/Ylw (+S)
+Excitation	5	Red (+E)
+Sense	6	Orange (+S)
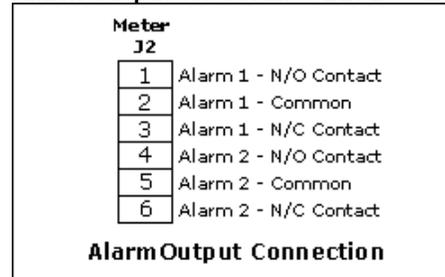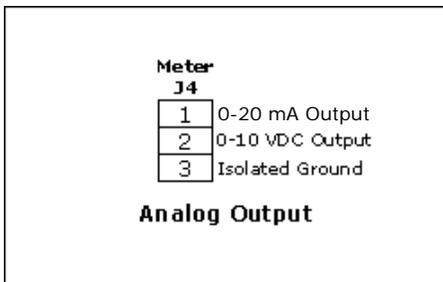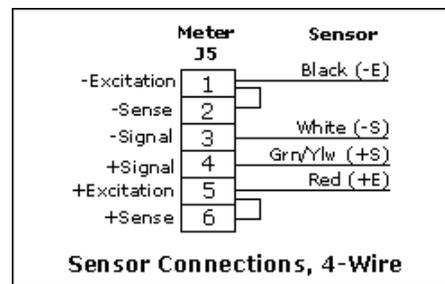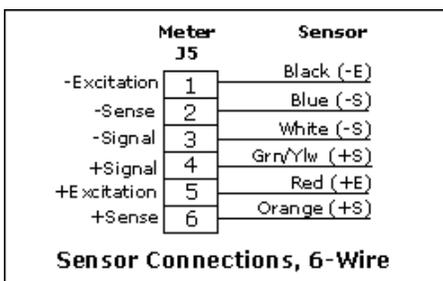
Sensor Connections, 6-Wire

Display Buttons:

*The **Menu** button is used to scroll through setting options and to save individual settings.

*The **Peak** button is used to select the displayed menu item. Pressing the **Peak** function on a menu item will enable the user to change the items setting.

*The **Reset** button is used to reset all display functions. Selecting the **Reset** function when inside the settings can also change the numerical value of the flashing digits that was selected by the **Peak** function.

*The **Alarms** button will allow the user to scroll backwards through the setting options.

Menu Functions:

1. **Lo In** – Enables the user to enter a low input signal from the source
2. **Hi In** – Enables the user to enter a high input signal from the source
3. **Lo rd** - Enables the user to enter a minimum display reading (corresponding to the **Lo In**)
4. **Hi rd** – Enables the user to enter a maximum display reading (corresponding to the **Hi In**)
5. **InPut** – Enables the user to enter desired input signal type
6. **SEtuP** – Enables the user to set the constraints for the meter, (display selection, line frequency, display of leading zeros, method of scaling meter, and rear connector inputs A and B, etc...)
7. **ConFG** – Enables the user to configure the meter (selection of scaling method, rate of change function, unlatched data, etc...)
8. **FiLtr** – Enables the user to select filtering options
9. **dEc.Pt** – Enables the user to select placement of decimal point
10. **SCALE** – Enables the user to enter a scale factor multiplier
11. **OFFSt** – Enables the user to select offset value

3 Methods for Configuration:

This meter can be configured by three different methods. The three methods are listed below as well as the necessary information about the sensors to utilize each method.

Method 1 (Futek's Recommendation):
This method requires that the Rated Output and the maximum capacity of the sensor be known. The sensor does not have to be attached to the meter in order to configure the meter. With this method the user enters in the low display input signal (typically at zero load), and the rated output and corresponding maximum capacity. The meter automatically calculates the scale factor.

Method 2:
This method requires that the scale factor and offset values be known. The sensor does not have to be connected to the meter in order to configure the meter. With this method the user will enter the scaling factor and offset value, and the meter will apply that scale factor to the input signals in order to determine the displayed values.

Method 3:
This method requires that the user has a known load (at least 75% of max. capacity of the sensor), and that the sensor be connected to the meter. With this method the meter reads the input signal from two different loads, and the user enters the corresponding display values. The meter then calculates a scaling factor.

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Instructions for Configuration, Futek's Recommended Method:

This method requires that you know the Rated Output and the maximum capacity of your sensor.

1. Apply Power. Press the **Menu** button and the display will read **InPut.** Press the **Peak** button to input the signal type. Press the **Peak** button until the display reads **Strn**. Next, hit the **Reset** button; 20.0 should appear. If not, continue to press the **Reset** button until 20.0 appears. Press the **Menu** button to store the input. **SEtuP** should appear on the display.

2. Press the **Peak** button, four numbers should appear '00_05'. It is necessary to change the second to last number to a 1 by using the **Peak** button to select the digit (indicated by flashing), and the **Reset** button to increment the digit. The configuration should look like '00_15'. Press the **Menu** button to store the new setup.

Note: For older displays, enter the following configuration: 00015.

3. **ConFG** will appear. Begin to configure the meter by pressing the **Peak** button. Enter '020_0' by using the **Peak** button to scroll through the digits (the digit you are on will flash), and the **Reset** button to increment the flashing digit. Press the **Menu** button to save the meter configuration, **FiLtr** will appear.

Note: For older displays, enter the following configuration: 00000.

4. Press the **Peak** button in order to input your filtering options. Futek's default filter setting is '11100'. Enter the numbers by pressing **Peak** to select the position and **Reset** to select the numerical value. Press the **Menu** button to store filtering selections. **dEC.Pt** will appear.

5. **dEC.Pt** will allow the user to select the desired decimal point position. Press the **Peak** button and 'dddd.d' will appear. The **Reset** button will move the decimal point, once the decimal point position is selected press the **Menu** button to save the position.

6. Press the **Menu** button and **Lo In** will appear on the display. Using the **Peak** button to select the placement of the digit and the **Reset** button to increment the digit, enter your low input signal here as '00.000'. Press the **Menu** button.

7. **Lo rd** will appear on the display. It is necessary to enter a low display reading that corresponds to the **Lo In** value, '0000.0'. Use the **Peak** button to select the placement of the numbers and the **Reset** button to select the value of each number. Press the **Menu** button.

8. **Hi In** will appear on the display. Press the **Peak** button and enter in your Rated Output in mV (if your Rated Output is 2mV/V, and your sensor excitation is 10V, then enter in 20 since 2mV/V *10V= 20mV). Use the **Peak** key to select the digit to be changed and the **Reset** key to increment the digit. Press the **Menu** button.

9. **Hi rd** will appear on the display. Here you are to enter in the high reading that will correspond to your Rated Output, this number is the maximum capacity of the sensor. Use the **Peak** button to select the position of the number and the **Reset** button to select the value.

10. If you have any of the options installed, the corresponding option menus will appear now. For basic meter configuration skip the configuration of the optional functions at this time. Continue to press the **Menu** button until **Loc 1** appears.

11. Press the **Peak** button and '00000' should appear. If not change the values to '00000' by using the **Peak** and **Reset** buttons. Press the **Menu** button to store **Loc 1**. **Loc 2** will then appear. Repeat this step for **Loc 2** and **Loc 3**. If locks are desired refer to the 'Menu Lock' section in this manual for position of desired locks.

12. Press the **Menu** button until **rESEt** appears. The meter is now ready to use. The Tare button on the back of the meter has been configured. Simply press the Tare button in order to zero your meter at any time during use.

*It is possible to change any of the settings by pressing the **Menu** button, selecting the menu option by pressing the **Peak** button and varying the settings (described above). When you are done with the changes it is necessary to press the **Menu** button until **rESEt** appears.

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Instructions for Configuration, Method 2:

This method requires that you calculate the required scale and offset values and enter them into the meter.

1. Apply Power. Press the **Menu** button and the display will read **InPut**. Press the **Peak** button to input the signal type. Press the **Peak** button until the display reads **Strn**. Next, hit the **Reset** button, 20.0 should appear. If not, continue to press the **Reset** button until 20.0 appears. Press the **Menu** button to store the input. **SEtuP** should appear on the display.

2. Press the **Peak** button, four numbers should appear '00_05'. Enter this setting into the display (if not already showing) by selecting placement with the **Peak** button and numerical value with the **Reset** button. Press the **Menu** button to save the meter settings.

Note: For older displays, enter the following configuration: 00005.

3. **ConFG** will appear. Begin to configure the meter by pressing the **Peak** button. Enter '020_0 using the **Peak** button to scroll through the digits (the digit you are on will flash) and the **Reset** button to increment the flashing digit. Press the **Menu** button to save the meter configuration. **FiLtr** will appear.

Note: For older displays, enter the following configuration: 00000.

4. Press the **Peak** button in order to input your filtering options. Futek's default filter setting is '11100'. Enter the numbers by pressing **Peak** to select the position and **Reset** to select the numerical value. Press the **Menu** button to store filtering selections. **dEC.Pt** will appear.

5. **dEC.Pt** will allow the user to select the desired decimal point position. Press the **Peak** button and 'dddd.d' will appear. The **Reset** button will move the decimal point, once the decimal point position is selected press the **Menu** button to save the position. **SCALE** will appear. If it does not appear ,continue pressing the **Menu** button until it does.

6. Press the **Peak** button in order to enter the desired scale. The scale factor can be found on the label of the sensor or the certificate provided with the sensor. Select the numeral position by pressing the **Peak** button and the numerical value by pressing the **Reset** button. Press the **Menu** button to store the desired scale. **OFFSt** will appear. If there is no scale factor on the instrument, set the scale to 1. Continue with directions and also complete optional step 10 (below).

7. When **OFFSt** appears, press **Peak**. The default offset should be '00000', if an offset is desired enter it by selecting the numerical position with the **Peak** button and the numerical value with the **Reset** button. Press the **Menu** button to store the offset. **Loc 1** will appear.

8. Press the **Peak** button and '00000' should appear. If not, change the values to '00000' by using the **Peak** and **Reset** buttons. Press the **Menu** button to store **Loc 1**. **Loc 2** will then appear. Repeat this step for **Loc 2** and **Loc 3**. If locks are desired, refer to the 'Menu Lock' section for position of desired locks.

9. Press the **Menu** button until **rESEt** appears. The meter is now ready to use. The Tare button on the back of the meter has been configured. Simply press the Tare button in order to zero your meter at any time during use. This feature can be canceled/changed by changing the setup (refer to Owners Manual).

*It is possible to change any of the settings by pressing the **Menu** button and selecting the menu option by pressing the **Peak** button and varying the settings (described above). It is necessary to continue to press the **Menu** button until **rESEt** appears.

To be completed if there is no scale factor
10. To use the sensor and make sure that the scale factor is 1, place a known load on the sensor (at least 75% of max load). The display will read out a number in mV. Take your initial load and divide it by the number displayed. The load divided by the output number will become your scale factor. For every decimal place chosen (step 5), multiply your scale factor by 10. Once the scale factor is calculated, press the **Menu** button until **SCALE** appears on the display. Then press **Peak** and change the scale factor from 1 to the calculated value. Hit the **Menu** button in order to store the new scale factor. The meter is now ready for use.

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Instructions for Configuration, Method 3:

With this method the meter automatically calculates and stores the scale factor and offset from input signals.   For this method the sensor is connected to the meter as described in the Setup section.

1. Apply Power. Press the **Menu** button and the display will read **InPut**. Press the **Peak** button to input the signal type. Press the **Peak** button until the display reads **Strn**. Next, hit the **Reset** button, 20.0 should appear. If not, continue to press the **Reset** button until 20.0 appears. Press the **Menu** button to store the input. **SEtuP** should appear on the display.

2. Press the **Peak** button, four numbers should appear '00_05'. It is necessary to change the second to last number to a 2 by using the **Peak** button to select the digit (indicated by flashing) and the **Reset** button to increment the digit. The configuration should look like '00_25'. Press the **Menu** button to store the new setup.

Note: For older displays, enter the following configuration: 00005 or 00015.

3. **ConFG** will appear. Begin to configure the meter by pressing the **Peak** button. Enter '020_0 using the **Peak** button to scroll through the digits (the digit you are on will flash) and the **Reset** button to increment the flashing digit. Press the **Menu** button to save the meter configuration, **FiLtr** will appear.

Note: For older displays, enter the following configuration: 01000. The value of the second digit will activate the live calibration.

4. Press the **Peak** button in order to input your filtering options. Futek's default filter setting is '11100'. Enter the numbers by pressing **Peak** to select the position and **Reset** to select the numerical value. Press the **Menu** button to store filtering selections. **dEC.Pt** will appear.

5. **dEC.Pt** will allow the user to select the desired decimal point position. Press the **Peak** button and 'dddd.d' will appear. The **Reset** button will move the decimal point. Once the decimal point position is selected, press the **Menu** button to save the position.

6. **Lo In** will appear on the display. With the minimum load (including nothing) on the sensor, press the **Peak** button. The meter will begin to take readings and display the low signal values. Then press **Reset** to store the low value.

7. Press the **Menu** button and **Lo rd** will appear on the display. It is necessary to enter a low reading value. Use the **Peak** button to select the placement of the numbers and the **Reset** button to select the value of each number. The decimal place is fixed by the **dEC.Pt**.

8. Press the **Menu** button and **Hi In** will appear on the display. Load the sensor with a maximum load and press the **Peak** button. The meter will begin to take readings from the high signal values. Press **Reset** to store the high values.

9. Press the **Menu** button and **Hi rd** will appear on the display. Set the high reading to the number that you would like your maximum load (step 8) to display. Use the **Peak** button to select the position of the number and the **Reset** button to select the value. Then hit the **Menu** button.

10. If you have any of the options (RS232, Analog, Alarm) installed, the options' corresponding menu will appear now. For basic meter configuration, skip the configuration of the optional functions at this time. Continue to press the **Menu** button until **Loc 1** appears.

11. Press the **Peak** button and '00000' should appear. If not, change the values to '00000' by using the **Peak** and **Reset** buttons. Press the **Menu** button to store **Loc 1**. **Loc 2** will then appear. Repeat this step for **Loc 2** and **Loc 3**. If locks are desired refer to the 'Menu Lock' section for position of desired locks.

12. Press the **Menu** button until **rESEt** appears. The meter is now ready to use. The Tare button on the back of the meter has been configured. Simply press the Tare button in order to zero your meter at any time during use.

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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 ('11<u>0</u>0') 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. **'OO'** 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 ('<u>O</u>O') refers to the type of output. If you would like a current output leave the value at **'O'**. If you would like a voltage output the first digit should be a **'1'**. The second digit ('O<u>O</u>') refers to analog output filtering. For an unfiltered source choose **'O'**. 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.

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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

Meter J2	
1	Alarm 1 - N/O Contact
2	Alarm 1 - N/C Contact
3	Alarm 1 - Common
4	Alarm 2 - N/O Contact
5	Alarm 2 - N/C Contact
6	Alarm 2 - Common

Alarm Output Connection

Alarm Output for Serial # 227234 and Up

Meter J2	
1	Alarm 1 - N/O Contact
2	Alarm 1 - Common
3	Alarm 1 - N/C Contact
4	Alarm 2 - N/O Contact
5	Alarm 2 - Common
6	Alarm 2 - N/C Contact

Alarm Output Connection
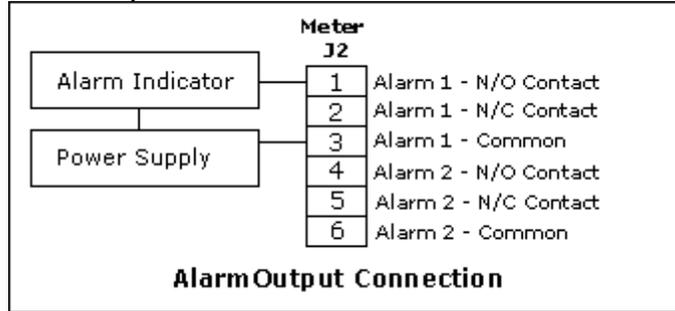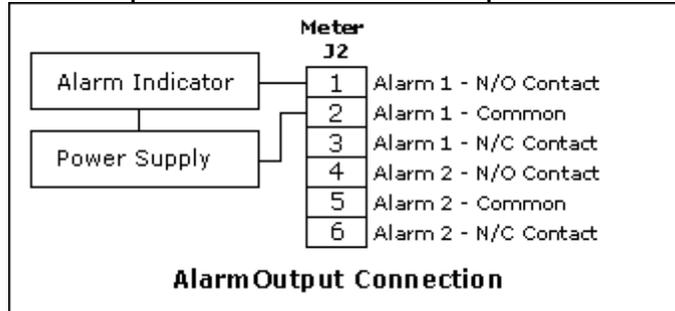
Configuration:
1. Apply Power
2. Press the **MENU** button until **ALSEt** appears. Press the **PEAK** button.
3. Here you are to enter the alarm operation setup. A five-digit number will appear on the display, '00000'. What each digit represents is listed below. Once you have made your decisions regarding the setup of the alarm enter those numbers in this menu and press **MENU**.

   O0000 – 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

   0**O**000 – 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

   00**O**00 – 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

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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

000**O**0 – 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**O** – 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.

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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

O0000 – This digit controls the input type selection
        0 – Input type unlocked
        1 – Input type locked
0**O**000 – This digit controls the meter setup
        0 – Meter setup and decimal point selection unlocked
        1 – Meter setup and decimal point selection locked
00**O**00 – This digit controls the filter selection
        0 – Filter unlocked
        1 – Filter locked
000**O**0 – This digit controls the scale or lo, hi input
        0 – Scale or lo, hi input unlocked
        1 – Scale or lo, hi input locked
0000**O** – 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

O000 – This digit controls the alarm setup
        0 – Alarm is unlocked
        1 – Alarm is locked
0**O**00 – This digit controls the alarm set-point values
        0 – Set-point values are unlocked
        1 – Set-point values are locked
00**O**0 – This digit controls the analog output
        0 – Analog output unlocked
        1 – Analog output locked
000**O** – 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

O000 – This digit controls the view peak value
        0 – Peak value unlocked
        1 – Peak value locked
0**O**00 – This digit controls the viewing of the alarm setpoints
        0 – View alarm setpoints unlocked
        1 – View alarm setpoints locked
00**O**0 – This digit controls the reset (peak and latched alarms)
        0 – The reset is unlocked
        1 – The reset is locked
000**O** – 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

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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
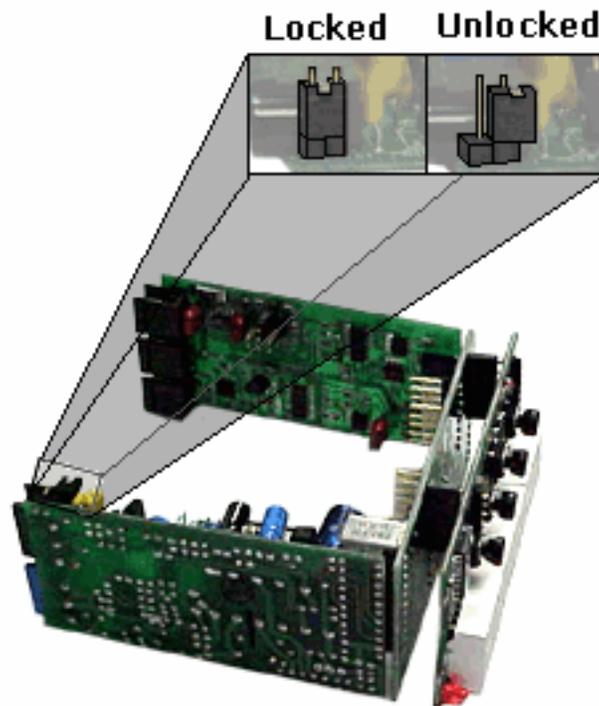
Menu Lockout Jumper

*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

+5 VDC (default)   +10 VDC   +24 VDC
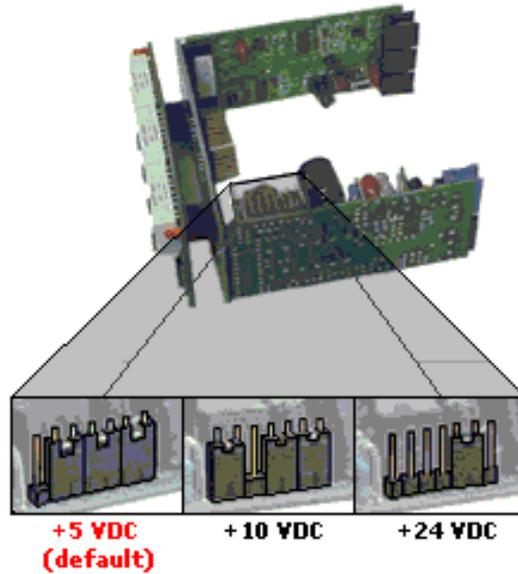
*Changing the location of the jumpers will change the excitation voltage. The variation of jumper locations and excitation voltages are shown above.

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.

Input Range Jumper

0-20mV (default)   0-50mV

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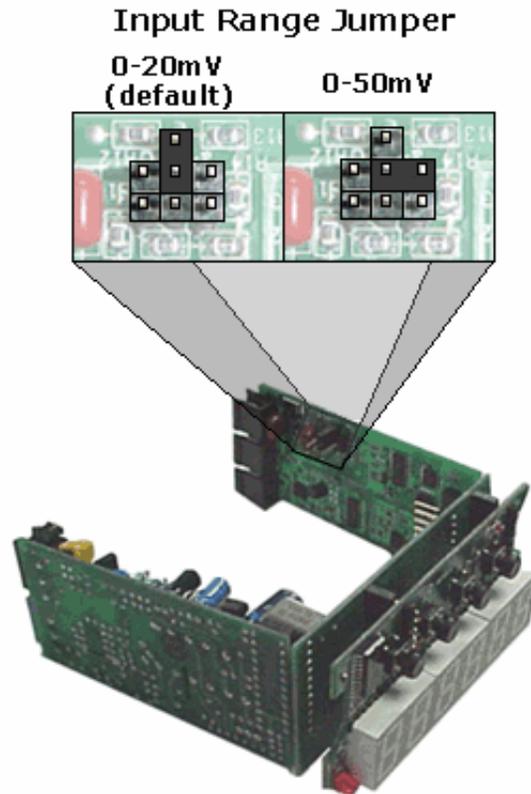
4-Pin Connection Port (SG Models):

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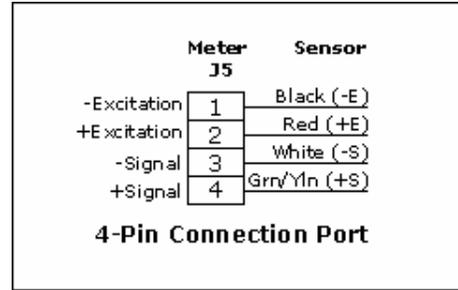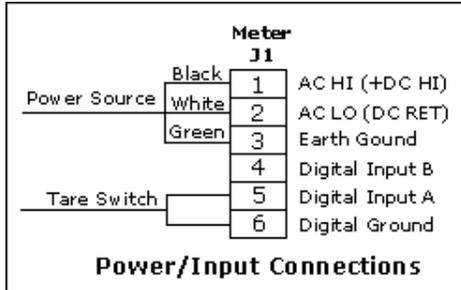
Input Requirements
When using a 4-pin connection meter model it is important to remember that your input type will be different than meters with the 6-pin connection ports. The input configuration type and range are listed below, along with brief directions.

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) 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.

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FlowChart:

FLOWCHART OF BASIC SETUP USING METHOD 1

```
InPut  →  SEtuP  →  ConFG  →  FiLtr  →  dEC.Pt  →  Lo In  →  Lo rd  →  Hi In  →  Hi rd  →  Loc 1  →  Loc 2  →  Loc 3
  ↓          ↓         ↓         ↓         ↓          ↓         ↓         ↓         ↓         ↓         ↓         ↓
'Strn'    '00_15'   '020_0'   '11100'   'ddddd.d'  Enter in  Enter in  Enter in  Enter in  '00000'   '0000'    '0000'
  ¦                                                 low input the low  the Rated Maximum
  ¦                                                 value here display  Output of Capacity of
  ¦                                                 '00000'   value     your      your sensor
  ¦                                                           corresp.  sensor (in here
  ¦                                                           to the low mV) here
20.0                                                          input value
                                                              '00000'
```

```
————→ MENU
  ↓
  ¦     PEAK
  ¦
  ¦     RESET
  ↓
```
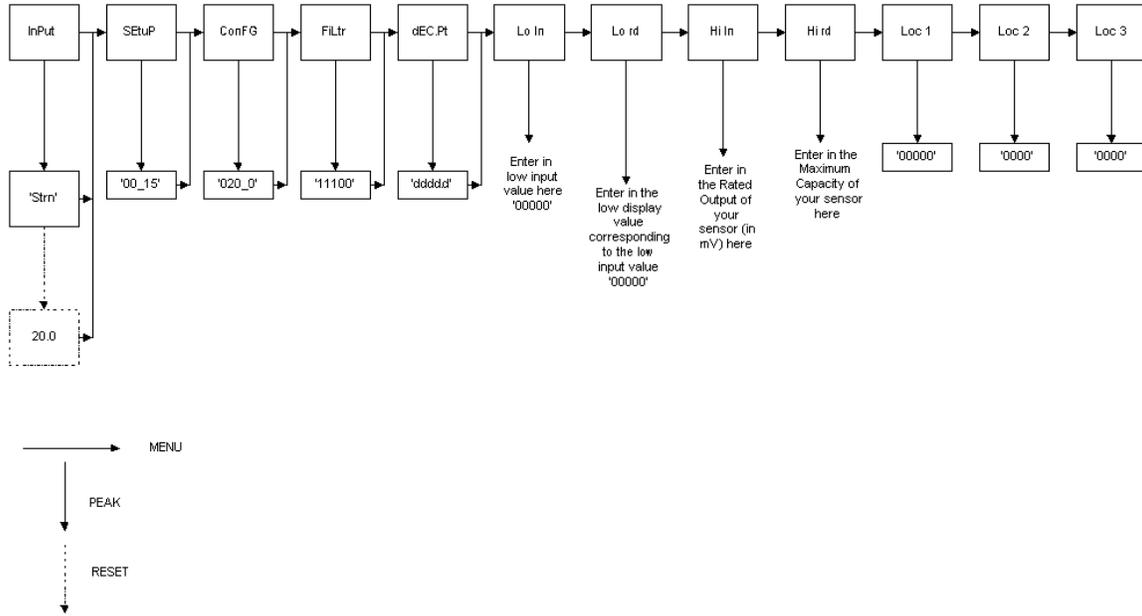
*In the flow chart above the sideways arrow refers to the MENU button, the downward arrow reffers to the PEAK button and the downward dashed arrow refers to the RESET button