

## Smart Meter Module

### Installation Manual

*This manual covers the following Trimm part numbers-  
7600210001, 767XX1XXXX*

#### **General Description**

Trimm, Inc.'s Smart Meter Module (SMM) fits into the High Current Power Distribution Units that begin with the numbers 767. The Smart Meter Module monitors individual bus voltage and current readings and has the ability to record 2 remote temperature measurements through optional sensors. Measurements are displayed locally on a 4 line backlit LCD screen for quick identification. Measurements can also be viewed remotely on a web page via the meter modules internal web server or it can act as an SNMP agent to send traps and respond to SNMP get and SNMP set requests from the manager. This unit also allows a current threshold to be set to indicate an increased current demand in the devices being fed by the distribution unit.

#### **Inspection**

Inspect the product for any noticeable defects, missing parts (See "What's Included" below), or shipping damage. Please notify Trimm, Inc. if any problems are found at 1-800-298-7466. No products may be returned to Trimm, Inc. without the proper Return Material Authorization (RMA) number.

#### **WARNING**

This product should be installed in a restricted access area by qualified service personnel only. All connections/methods should meet all national/local electrical codes as well as company specific methods or procedures. Failure to do so may result in damage to the equipment, and or personal injury.

#### **ESD WARNING**

This product may be affected by electrostatic discharge. Please follow your company's procedures for ESD mitigation when handling and installing this unit. This might include the use of grounded wrist straps or other grounding devices.

#### **WARNING**

The LAN (local area network) port of the meter module is suitable for connection to intrabuilding cabling only. The LAN port of the meter module **MUST NOT** be metallically connected to interfaces that connect to the OSP or its wiring. These interfaces are designed for use as intra-building interfaces only (Type 2 or Type 4 ports as described in GR-1089-CORE) and require isolation from the exposed OSP cabling. The addition of Primary Protectors is not sufficient protection in order to connect these interfaces metallically to OSP wiring.

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 **WARNING**

Before installation, verify that the input power disconnect device to the power distribution unit is turned "OFF"

**Required Equipment**

- Trimm, Inc. Smart Meter Module (part number 7600210001)
- Digital multimeter (for DC voltage measurement)
- DC Clamp on ammeter (0 to 600A scale minimum)

**Accessing the Menus Locally**

There are two buttons on the front of the SMM that control all of the functions locally, "< MENU" and "> SELECT". There are three ways to use the buttons and the LCD display shows what buttons should be pressed to perform different functions.

- 1) Individually: When scrolling through the different menus, press the button that corresponds to the symbol action you would like to take. For example, press the "< Menu" button to decrease the current reading to 0 while calibrating the amperage settings. The display will show "<dec". If you press and hold an individual button it will increase or decrease the values quickly, typically in increments of ten.
- 2) Press and Hold Two Buttons: To enter the main configuration menu, press and hold both buttons (< and >) for approximately 2 seconds. If you press and hold both buttons while in a sub menu, it will bring you back to the default display of the bus voltage and amperage.
- 3) Quick Press Two Buttons: When the display shows "<xxx>" press both buttons at the same time but do not hold them down. Use this to drill down into a sub menu or to edit a value.

**Power Verification Test**

This is to be done before any other tests or outputs are connected to the unit. The power distribution unit should be installed according to the provided installation instructions. Refer to document INS767xxxxxx for instructions.

- 1) Turn on the overcurrent protection/disconnect device supplying power to the A/B side bus.
- 2) Use a multimeter to verify that voltage and polarity are correct at the input connection. Verify that the correct voltage is displayed on the meter module LCD display screen. If not calibrate the voltage using the Voltage Calibration Procedure.
- 3) If possible install a failed fuse in one of the power distribution unit's positions and verify that the SMM is receiving fuse failure alarms. When a fuse failure occurs, the line below the voltage display line will change to read (A/B BUS EXT. ALARM).

**Voltage Calibration Procedure**

This procedure is done to calibrate the voltage displayed by the SMM. The following steps will allow you to adjust that value.

- 1) Press and hold both buttons on the SMM (< and >) to enter the configuration mode.
- 2) Use the left or right arrow buttons (< or >) to navigate to the "Calibration" section.
- 3) Quick press both buttons to enter the calibration mode.
- 4) Use the left or right arrow buttons to navigate to the proper variable below
  - a. For A bus negative voltage go to "A Voltage Neg Hi"

- b. For A bus positive voltage go to "A Voltage Pos Hi"
  - c. For B bus negative voltage go to "B Voltage Neg Hi"
  - d. For B bus positive voltage go to "B Voltage Pos Hi"
- 5) Quick press both buttons to enter edit mode.
- 6) Use either the "<" or ">" buttons to increase or decrease the reading to match your digital multimeter measurement.
- 7) Press and hold both buttons again to set the values and return to the main screen.
- 8) Repeat steps 1-7 above if the voltage on the other bus also needs to be calibrated. Otherwise continue to the Current Sensor Calibration Procedure.

### **Current Sensor Calibration Procedure**

The current sensing feature should be checked twice when installing the panel. When the unit is initially powered up, before any loads are attached, make sure the unit displays "0 Amps". If the unit is not, proceed to the "0 Amp Setting" procedure. If the unit displays "0 Amps", continue to install all of the outputs. Once the unit is powered up and is under load, proceed to the "Load Calibration" procedure to ensure the most accurate readings.

**"0 Amp" Setting:** If the Smart Meter Module is not displaying "0" for the current reading with no loads attached, use the following steps to set the reading to "0 Amps".

- 1) Press and hold both buttons to enter the configuration mode.
- 2) Use the left or right arrow buttons to navigate to the "Calibration" section.
- 3) Quick press both buttons to enter calibration mode.
- 4) Use the left or right arrow buttons to navigate to the proper variable below.
  - a. For A bus 0 Amp setting go to "A Bus Current Lo"
  - b. For B bus 0 Amp setting go to "B Bus Current Lo"
- 5) Quick press both buttons to enter the edit mode
- 6) Use the "<" button to decrease the reading to 0 Amps.
- 7) Press and hold both buttons to set the reading and return to the main screen.
- 8) Repeat steps 1-7 above if the amperage needs to be calibrated on the other side. Otherwise, continue to install the panel.

**Load Calibration:** Use the DC clamp on ammeter to verify/record the current reading by clamping the meter around the battery input wire as close to the panel as possible.

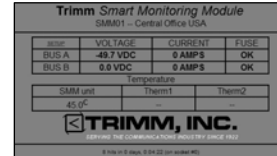
- 1) Press and hold both arrows to enter the configuration mode.
- 2) Use the left or right arrow buttons to navigate to the "Calibration" section.
- 3) Quick press both buttons to enter calibration mode.
- 4) Use the left or right arrow buttons to navigate to the proper variable below.
  - a. For A bus current setting go to "A Bus Current Hi"
  - b. For B bus current setting go to "B Bus Current Hi"
- 5) Quick press both buttons to enter the edit mode.
- 6) Use either the "<" or ">" buttons to increase or decrease the reading to match your DC ammeter reading.
- 7) Press and hold both buttons to set the reading and return to the main screen.
- 8) Repeat steps 1-7 above if the amperage needs to be calibrated on the other side.

### **Network Setup (Quick Setup – DHCP enabled)**

This meter module can be hooked up to a network to display information via the integrated web server (displayed on a web page) or it can act as an agent to communicate with your SNMP system.

The meter module is factory configured for having your DHCP server automatically assign an IP address to the unit. If your system does not use DHCP proceed to the manually setup section later in this document. To hookup the meter module to your network attach a straight through (standard) Ethernet cable to the LAN connection on the back of the meter module ("Link UP" will quickly flash on the LCD screen). Your server should have automatically assigned an IP address to the unit. To view the meter modules IP address hold down both buttons at the same time (menu/select) for approximately 2 seconds or until the screen changes to the configuration section. With the display reading "IP Addresses", press (do not hold) both buttons again to enter the IP configuration screen. From there you should be able to view the units IP address and it should read "DHCP enabled" below. Holding down both buttons will return you to the main display screen or the unit will automatically return to the main display screen after approx. 20 seconds if no other buttons are pressed.

Once you know the units IP address you can access the web page to change other information. Go to a computer located on the same network. In an internet browser program type the IP address into the address bar to view the web page. The web page (as shown in the picture to the right) should be shown. Settings may be modified in 3 ways, via the meter modules buttons, via the web page administration section, and via SNMP management software.



Unit	VOLTAGE	CURRENT	FUSE
BUS A	49.7 VDC	6 AMP'S	OK
BUS B	6.0 VDC	6 AMP'S	OK

SMM unit: 45.0°C    Temperature: Therm1    Therm2

**TRIMM, INC.**  
Central Office USA

## Network Setup without a DHCP Server

To setup the unit on a network without a DHCP server please reference the "Configuration Changes via the Meter Module Keypad Buttons" section below. DHCP mode should be disabled prior to hooking up the LAN (Ethernet) connection. You will need to disable DHCP mode and then manually enter an IP address for the meter module.

## Configuration Changes via the Web Page

This section may be used to make changes to the meter modules configuration via the web page for this device. Typically, this is the easiest method to make changes to the units IP configuration and current threshold settings. To access the administration section click on the "SETUP" button located in the upper right corner of the web page display table (above BUS A). The meter module is factory configured with the following username and password.

User name: SMM

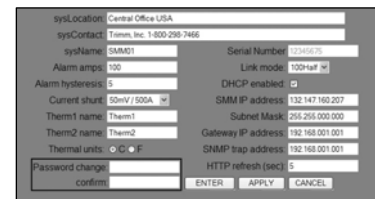
Password: admin

(case sensitive)

The password and user name may be changed in the admin section.

Once in the admin section you can change the following information

- SysLocation: Used to assign a unique description for the meter modules physical location. Example: "Butner NC central office rack 2A"
- SysContact: Used for SNMP to identify the person involved in the management of this product. Typically this value might be used by the SNMP manager to inform an installer or other person about alarms or trap's sent from the meter module.
- SysName: Used to assign a unique name to the meter module.



sysLocation: Central Office USA  
 sysContact: Trimm, Inc. 1-800-298-7466  
 sysName: SMM01    Serial Number: 12345678  
 Alarm amp's: 150    Link mode: 150Hz  
 Alarm hysteresis: 5    DHCP enabled:   
 Current shunt: 50mV/500A    SMM IP address: 132.147.169.207  
 Therm1 name: Therm1    Subnet Mask: 255.255.000.000  
 Therm2 name: Therm2    Gateway IP address: 132.168.001.001  
 Thermal units:  C  F    SNMP trap address: 132.168.001.001  
 Password change:     HTP refresh (sec): 5  
 confirm:     ENTER    APPLY    CANCEL

- Alarm Amps: Sets a threshold alarm for current draw per bus. If this value is reached, the display will show "THA Alarm" indicating that the associated busses current draw has exceeded the set limit. A SNMP trap is also sent to the manager (if required).
- Alarm hysteresis: Sets a tolerance for the threshold alarm. Example: If the Threshold Alarm is set to 100 Amps and the hysteresis is set to 5, the alarm will stay active until the current draw drops below 95 Amps.
- Current Shunt: Used to set the type/value of the current shunt. Used only when current shunts are used to measure the current. Hall Effect sensors do not use this field.
- Therm1/Therm2 name: Used to assign a unique name to each of the 2 optional temperature sensors. Example Therm1 could be "Rack Inlet" and Therm2 could be "Rack Exhaust". This is very helpful in determining the overall effectiveness of the rack's cooling methods and its ambient temperature.
- Thermal Units: Sets the temperature display units to either "Celsius" or "Fahrenheit".
- Link Mode: Used to set the Ethernet port link speed.
- DHCP Enabled: Used to enable or disable DHCP.
- SMM IP address: The IP address of the meter module.
- Subnet Mask: The subnet address assigned to this network.
- Gateway IP address: The address of the device used to access outside the network.
- SNMP trap address: The address of the device where SNMP traps from the meter module will be sent. (Typically the address of the SNMP manager)
- HTTP refresh (sec): Sets the time in seconds that the web page will refresh its values. The lower the number the faster the web page is updated.
- Password change/confirm: Used to change the current password required to access the administration section.

### **Configuration Changes via an SNMP Manager**

You can also make changes to the meter module via your companies SNMP manager by using "get" and "set" requests. Refer to your SNMP manager instructions for detailed information on making changes to this device. You can download the MIB file for this device by visiting [www.trimminc.com/smm/mib.htm](http://www.trimminc.com/smm/mib.htm)

### **Configuration Changes via the Meter Module Keypad Buttons**

You can also make changes to the meter module manually by using the keypad on the front of the unit. The buttons on the unit can be pressed individually, pressed and held together, or quick pressed together to perform different functions. The LCD display screen shows what buttons should be pressed to perform different actions. The MENU button includes the (<) symbol; the SELECT button includes the (>) symbol. When the display shows "<xxx>" that means both buttons should be quick pressed at the same time.

The configuration section of the meter module is setup into 3 different main categories as defined below. Each category is set up into different sub categories. Each sub category typically has a display screen and an edit screen.

1. IP Addresses: Lets you setup the required IP addresses, disable/enable DHCP, and to adjust the Ethernet speed modes.
2. Calibration: Lets you calibrate the current measurements and temperature measurements in the event that they are out of range.
3. Miscellaneous: Lets you change the LCD screen contrast ratio, set the hysteresis for the current threshold alarm, view firmware date, and reset all default parameters.

To enter into the configuration section press and hold both buttons for approximately 2 seconds. From there you can scroll through the 3 main categories using either of the buttons individually. To enter into a category to change settings quick press (do not hold) both buttons again. This will take you into each category. From there you can scroll through the sub categories to change individual settings. Quick pressing both buttons again lets you manually edit the settings. By holding down either button while in the edit mode you can change the number faster (typically holding the button down the number changes by a factor of 10). Pressing and holding both buttons again takes you back to the main display screen.

**Example #1:**

To turn off DHCP press the buttons in the following sequence.

1. Press and hold down both buttons for approximately 2 seconds. (This should take you to the main configuration screen. The first choice is the IP addresses so that will show.)
2. Quick press (do not hold) both buttons. (This should take you to the SMM IP address display screen).
3. Use either button to scroll through the sub-menu's until you see "DHCP Mode"
4. Quick press both buttons to edit the DHCP mode.
5. Use the "<MENU" button to disable DHCP mode. (">SELECT" button will enable it again)
6. Press and hold both buttons to save the setting and return to the main display screen.

**Example #2:**

To change the LCD screen contrast ratio press the buttons in the following sequence.

1. Press and hold both buttons for approximately 2 seconds. (This should take you to the IP addresses main configuration screen).
2. Press either button to scroll through the main categories until you get to Miscellaneous.
3. Quick press both buttons to enter into the miscellaneous sub categories. (LCD Contrast should be shown)
4. Quick press both buttons to enter the edit mode for the LCD contrast.
5. Use either button to increase or decrease the LCD contrast.
6. Press and hold both buttons to save the setting and return to the main display screen.