

INSTALLATION GUIDE

ENVIROMUX MODELS:
ENVIROMUX-PT1M-208-0800
ENVIROMUX-PT3M-208-0800
ENVIROMUX-PT3L-208-1600
ENVIROMUX-PT3S-480-0100
ENVIROMUX-PT3S-480-0300

4-20mA Output kW Transducers



H8040 SERIES

Installer's Specifications

Input Voltage	208 to 480 VAC
Number of Phases Monitored	1 or 3
Frequency	50/60 Hz
Maximum Primary Current	2400 A continuous per phase
CT case isolation	600 VAC
Internal isolation	2000 VAC rms
Operating temp. range	0° to 60°C (32° to 122°F) (<95%RH, non-condensing)
Storage temp. range	-40° to 70°C (-40° to 158°F)
Accuracy	±1% of reading from 10% to 100% of the rated current*
Output Type	4-20mA
Supply Power (loop)	9-30VDC; 30mA max.
CT	100A to 2400A

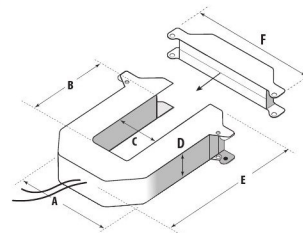
* Meter accuracy specified with conductors centered in the CT window.

QUICK INSTALL

Disconnect and lock out power before installation.

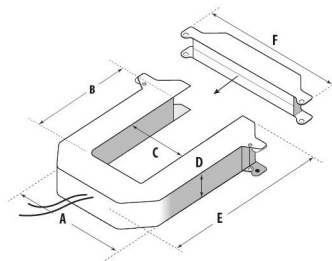
1. Connect the voltage leads to the phase conductors.
2. Snap the CT onto the conductor (observe color matching).
3. Connect the 4-20mA output wires (observe polarity).

DIMENSIONS



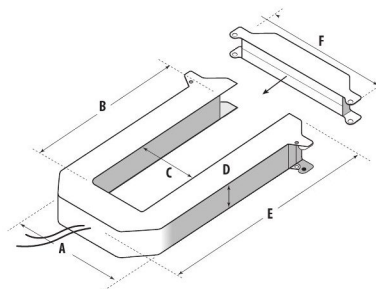
SMALL 100/300 Amp

A =	3.8"	(96 mm)
B =	1.2"	(30 mm)
C =	1.3"	(31 mm)
D =	1.2"	(30 mm)
E =	4.0"	(100 mm)
F =	4.8"	(121 mm)



MEDIUM 400/800 Amp

A =	4.9"	(125 mm)
B =	2.9"	(73 mm)
C =	2.5"	(62 mm)
D =	1.2"	(30 mm)
E =	5.2"	(132 mm)
F =	5.9"	(151 mm)



LARGE 800/1600/2400 Amp

A =	4.9"	(125 mm)
B =	5.5"	(139 mm)
C =	2.5"	(62 mm)
D =	1.2"	(30 mm)
E =	7.9"	(201 mm)
F =	6.0"	(151 mm)

DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

- Follow safe electrical work practices. See NFPA 70E in the USA, or applicable local codes.
- This equipment must only be installed and serviced by qualified electrical personnel.
- Read, understand and follow the instructions before installing this product.
- Turn off all power supplying equipment before working on or inside the equipment.
- Use a properly rated voltage sensing device to confirm power is off.
DO NOT DEPEND ON THIS PRODUCT FOR VOLTAGE INDICATION
- Only install this product on insulated conductors.

Failure to follow these instructions will result in death or serious injury.

NOTICE

- This product is not intended for life or safety applications.
- Do not install this product in hazardous or classified locations.
- The installer is responsible for conformance to all applicable codes.

FCC PART 15 INFORMATION

NOTE: This equipment has been tested by the manufacturer and found to comply with the limits for a class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense. Modifications to this product without the express authorization of Veris Industries nullify this statement.

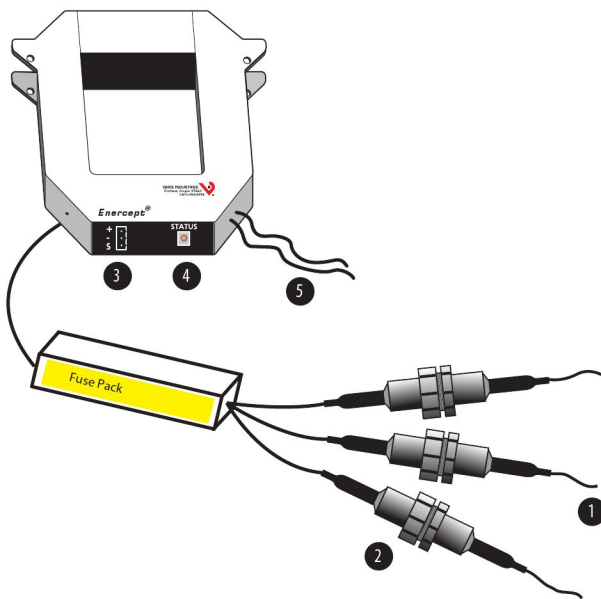
OPERATION

The H8040 Series devices combine microprocessor-based kW transducers and high-accuracy split-core instrument grade current transformers (CTs) in a single unit. Integration of electronics lowers hardware and installation costs. The sensors automatically detect phase reversal, so CT load orientation is not a concern. The CTs and meters are calibrated as a set, so it is necessary to color-match the CTs and voltage leads when installing.


The H8041 and H8042 are for single-phase or balanced-load applications at 208V and 480V, respectively. The H8043 and H8044 are the three-CT versions of the product for use on 208V and 480V with unbalanced loads.

These devices are used in chiller optimization, performance contracting, and energy management. The 1% total system accuracy conforms to ANSIC12.1 metering standards.



PRODUCT DIAGRAM



1. Voltage Leads: input range is 208 to 480V, 50/60Hz.
2. Fuses: maximum current draw 60mA. Fuses provided by the factory are rated 1/2A, 600VAC, 200 KAIC. Replace only with fuses of the same type and rating.
3. 4-20mA Output connector
4. Status LED: blink codes: slow green for normal operation; slow red for incorrect wiring or low power factor (less than 0.5); fast red for max. current exceedance.
5. External CTs (3-phase version only): permanently attached; do not disconnect or use with other power meters.

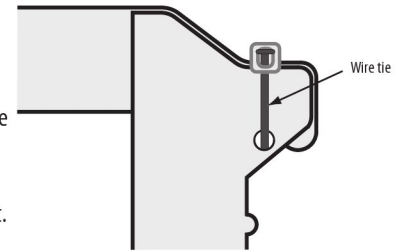
 *Color match CTs and voltage leads! Example: clamp the red labeled CT around the power conductor connected to the red voltage wire.*

INSTALLATION

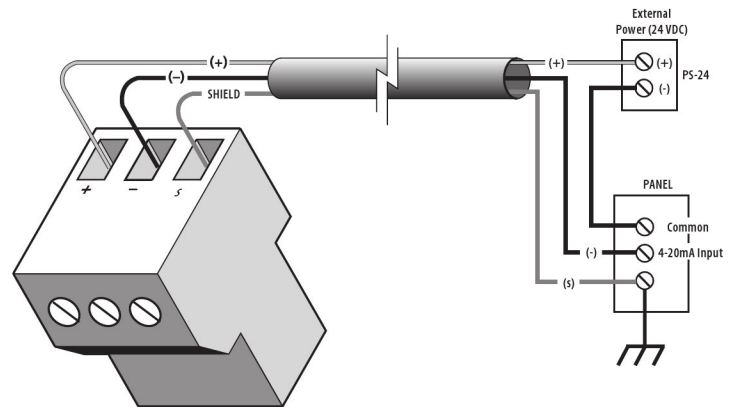
-  **Connecting H8040 Series meters to the load side of a variable frequency drive will permanently damage the electronics. Connect only to the line side of a VFD.**
-  **Disconnect and lock out power before installation.**

1. Connect the voltage leads to the 3 phase conductors, at a location that is not normally turned off. Connect voltage leads on the Line side of the conductor to ensure constant power to the meter. Connect the red lead first to the conductor most conveniently located to the output connector. See the Wiring section on the following page.

2. Snap the CT onto the conductor. Observe color matching. If the application can exceed 20 times the rated CT current, use wire ties to secure the I-bar to the CT housing. This CT automatically detects phase reversal, so CT load orientation is not important.



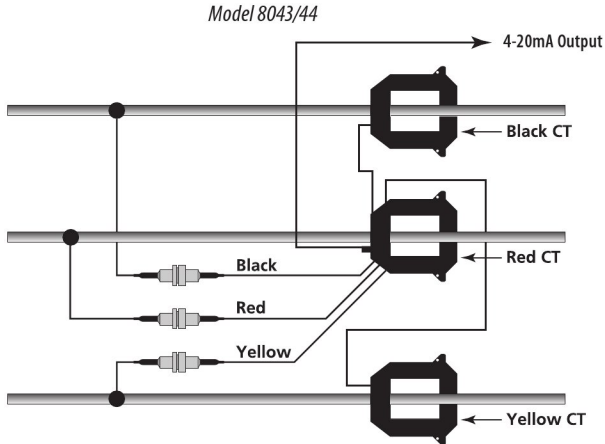
3. Attach the 4-20mA output wires as shown. Observe (+), (-), and Shield polarity. Insulate any exposed wiring.



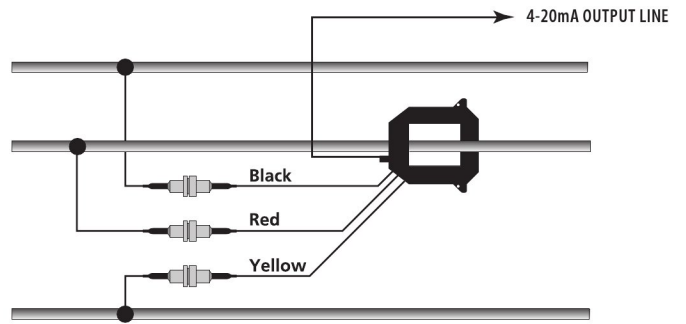
4. Check power reading (these calculations are approximations only).
 Expected power: $kW = \text{Volts} \times \text{Amps} \times 1.732 \times \text{PF} / 1000$
 $kW = \text{Horsepower} \times 0.746$
 4-20mA response: $kW \text{ demand} = kW \times (\text{mA out} - 4) / 16$

WIRING

Typical 208/480 VAC 3Ø, 3- or 4-Wire Installation

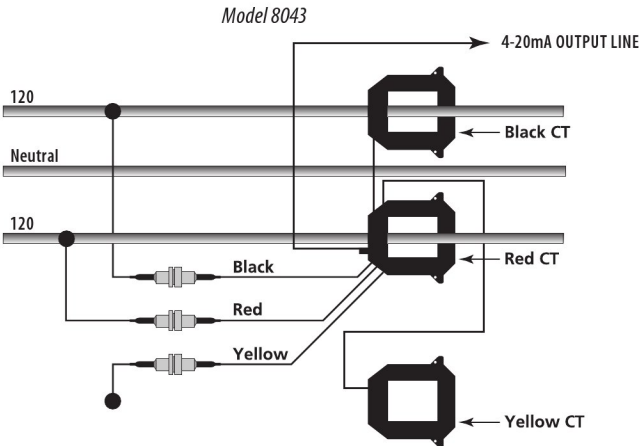


Model 8041/42 (Use on balanced loads only)

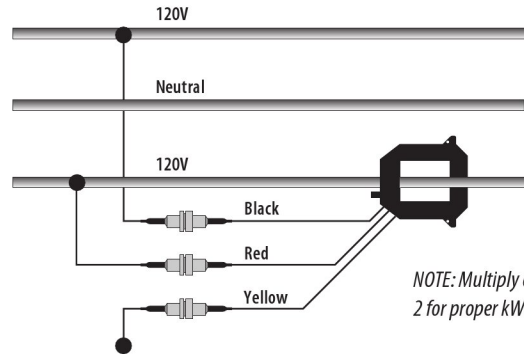


NOTE: Multiply output by 3 for proper kW indication

Typical 240/120 VAC 1Ø, 3-Wire Installation

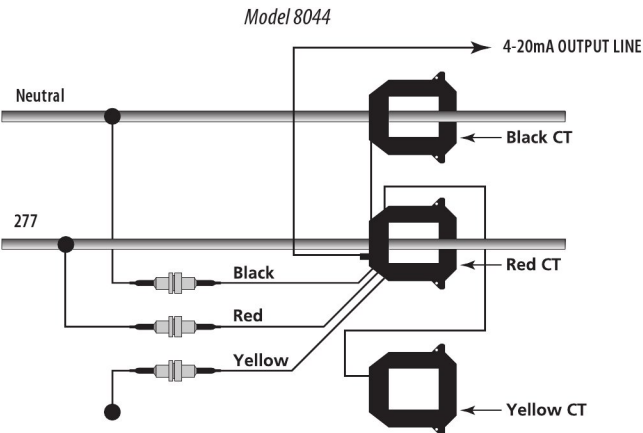


Model 8041

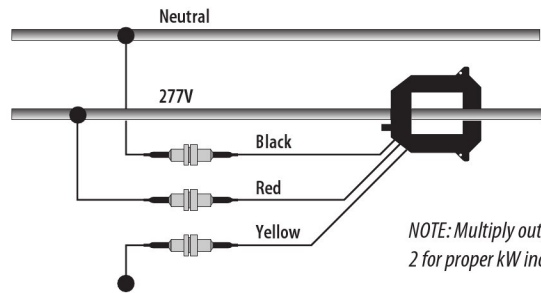


NOTE: Multiply output by 2 for proper kW indication

Typical 277 VAC 1Ø, 2-Wire Installation

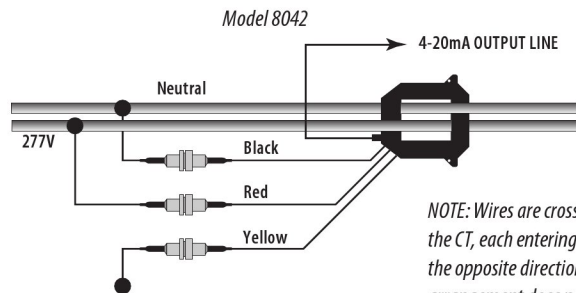


Model 8042



NOTE: Multiply output by 2 for proper kW indication

Alternative 277 VAC 1Ø, 2-Wire Installation



NOTE: Wires are crossed through the CT, each entering from the opposite direction. This arrangement does not require multiplying the output data.

TROUBLESHOOTING

Problem	Solution
Status LED does not blink	Check fuses and voltage connections. Status LED should blink regardless of CTs or output connections.
Readings seem highly inaccurate.	<ul style="list-style-type: none"> • Check that each CT is installed on the conductor with the corresponding color voltage input lead attached. In most cases, incorrect wiring will cause the STATUS LED to blink RED (slowly). However, a power factor lower than 0.5 could cause the LED to blink this way, even if the unit is installed properly. • It does not matter which side of the CT faces towards the load. • If current is below 7% of full scale maximum for the CT, use a smaller CT or wrap each wire through the CT multiple times • If using the single-phase H8042, use an amp-clamp to ensure that all three phases are passing the same approximate current. If phases are unbalanced, try the H8043/H8044 models.
Meter goes offline when load is switched off.	Voltage leads must be connected on the Line side of the conductor. The power meter cannot communicate without voltage.
Status LED blinks red.	<ul style="list-style-type: none"> • If the LED blinks quickly (i.e., about 5 blinks in two seconds), then use a higher rated CT. • If the LED blinks slowly (i.e., about 1 blink in two seconds) the CTs are not installed on the correct conductors, or the power factor is less than 0.5. The meter can accurately measure these low PFs, but few loads operate normally at such a low power factor.

Cross Reference

ENVIROMUX Model	H804x
ENVIROMUX-PT1M-208-0800	H8041-0800-4
ENVIROMUX-PT3M-208-0800	H8043-0800-3
ENVIROMUX-PT3L-208-1600	H8043-1600-4
ENVIROMUX-PT3S-480-0100	H8044-0100-2
ENVIROMUX-PT3S-480-0300	H8044-0300-2

NOTES

1. DO NOT GROUND THE SHIELD INSIDE THE ELECTRICAL PANEL. All wires, including the shield should be insulated to prevent accidental contact to high voltage conductors.
2. The cable should be mechanically secured where it enters the electrical panel.
3. The cable should be shielded twisted pair wire BELDEN 1120A or similar.



WARNING: After wiring the cable, remove all scraps of wire or foil shield from the electrical panel. This could be DANGEROUS if wire scraps come into contact with high voltage wires!

MAXIMUM READINGS

Model	3Ø Power (kW)	1Ø Power (kW)
H8041-0100-2	36.03	24.00
H8041-0300-2	108.1	72.00
H8041-0400-3	144.1	96.00
H8041-0800-3	288.2	192.0
H8041-0800-4	288.2	192.0
H8041-1600-4	576.4	384.0
H8041-2400-4	864.6	576.0
H8042-0100-2	83.14	55.43
H8042-0300-2	249.4	166.3
H8042-0400-3	332.6	221.7
H8042-0800-3	665.1	443.4
H8042-0800-4	665.1	443.4
H8042-1600-4	1330	886.7
H8042-2400-4	1995	1330
H8043-0100-2	36.03	36.03
H8043-0300-2	108.1	108.1
H8043-0400-3	144.1	144.1
H8043-0800-3	288.2	288.2
H8043-0800-4	288.2	288.2
H8043-1600-4	576.4	576.4
H8043-2400-4	864.6	864.6
H8044-0100-2	83.14	83.14
H8044-0300-2	249.4	249.4
H8044-0400-3	332.6	332.6
H8044-0800-3	665.1	665.1
H8044-0800-4	665.1	665.1
H8044-1600-4	1330	1330
H8044-2400-4	1995	1995

Connections to ENVIROMUX-SEMS-16(LX)/-2D/-LXO

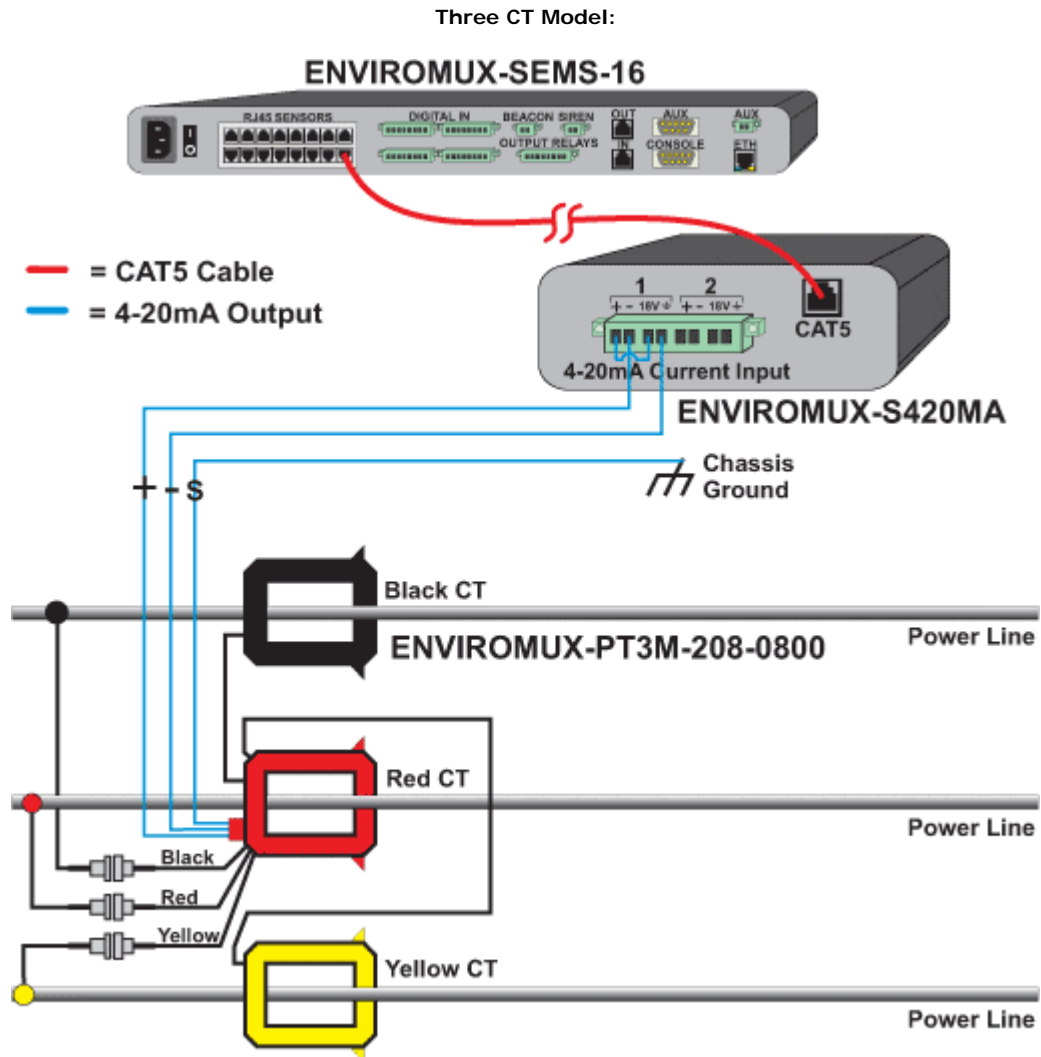
3-Phase Power Transducer Application

Connect the 4-20mA output lead to the ENVIROMUX-S420MA-24V 4-20mA Sensor Converter with the ISA Type 2 connection method.

ISA Type 2 Connection:

- Connect the Positive (+) lead from the Power Transducer to the Negative (-) terminal of either group 1 or group 2 of the terminal block on the Sensor Converter.
- Connect the Negative (-) lead to the Earth Ground terminal in the same group.
- Connect the Shield (S) lead to the chassis ground.
- Connect one end of a short wire to the Positive (+) terminal, and connect the other end of the wire to the 18V terminal.

Note: Diagrams for various installation configurations can be found on page 3.



On the Summary page for the ENVIROMUX-SEMS-16(LX), you will see Sensors listed.

Sensors					
Conn.	Description	Type	Value	Status	Action
1	Temperature 1	Temperature Combo	84.5°F	Normal	View Edit Delete
1	Humidity 1	Humidity Combo	39%	Normal	View Edit Delete
1	Dew Point Sensor 1	Dew Point	56.7°F	Normal	View Edit Delete
2	Light Sensor 2	Light	44.9lx	Normal	View Edit Delete
3	Temperature 3	Temperature	82.5°F	Normal	View Edit Delete
4	Humidity 4	Humidity	37%	Normal	View Edit Delete
5	Temperature 5	Temperature Combo	28.5°C	Normal	View Edit Delete
5	Humidity 5	Humidity Combo	39%	Normal	View Edit Delete
6	ACLMV 6 Main	ACLM-V AC Voltage	114.9V	Normal	View Edit Delete
6	ACLMV 6 UPS	ACLM-V AC Voltage	118.4V	Normal	View Edit Delete
7	S60VDC 7-1	Voltage	12.1V	Normal	View Edit Delete
7	S60VDC 7-2	Voltage	0.1V	Normal	View Edit Delete
8	Water Sensor 8	Water	Open	Normal	View Edit Delete
9	ACLM-P Power 9	ACLM-P Power	Out of range	Normal	View Edit Delete
9	ACLM-P Voltage 9	ACLM-P AC Voltage	115.6V	Normal	View Edit Delete
10	RTD Sensor 10	Temperature	79.5F	Normal	View Edit Delete
10	Sensor 10-2 RTD	Temperature	84.6F	Normal	View Edit Delete
11	Sensor #11.1	Current	0.0mA	Alarm	View Edit Delete
11	Sensor #11.2	Current	0.0mA	Alarm	View Edit Delete
15	Key Pad 15	Keypad	Open	Normal	View Edit Delete
16	Motion Detector 16	Motion Detector	Closed	Normal	View Edit Delete

ENVIROMUX-S420MA

On the sensor configuration page for each sensor connected to the ENVIROMUX-S420MA, you will find fields for **Min. Associated level** and **Max. Associated Level** (see next page).

- In the **“Min. Associated Level”**, enter a kilowatt value that would be associated with a 4mA reading, in this case a value of "0" (kW).
- In the **“Max. Associated Level”**, enter the maximum kW rating for the CT you have purchased. This kilowatt value will then be associated with a 20mA (the maximum) reading.

The maximum kW rating for the CT can be found on the table on page 4 of the manual. Select the correct value for the model and configuration being installed (1 phase or 3 phase).

- Change the **“Associated Sensor Unit”** to "kW". This will cause the ENVIROMUX-SEMS-16 to display the sensor measurement in kilowatts.
- For the **“Associated Sensor Type”**, enter what you would identify this as in an alert message ("Power Sensor" for example)

Enter the minimum and maximum non-critical and/or critical threshold settings if you want to received alerts as a sensor reaches specific levels in the kilowatt range (between 0 and your maximum value). For more on sensor settings and alerts, see the ENVIROMUX Server Environment Monitor manual.

Be sure to click **“Save”** when finished with your configuration.

Sensor Settings	
Description	<input type="text" value="Power Sensor"/> <small>Descriptive name for the sensor</small>
Group	<input type="text" value="1"/> <small>▼</small> <small>Select which group the sensor belongs to</small>
Min. Level	<input type="text" value="4.0"/> <small>Min. supported value for the sensor</small>
Max. Level	<input type="text" value="20.0"/> <small>Max. supported value for the sensor</small>
Associate Sensor	<input checked="" type="checkbox"/> <small>Associate sensor to a customized sensor type</small>
Associated Sensor Type	<input type="text" value="Power Sensor"/> <small>Type of the associated sensor</small>
Associated Sensor Unit	<input type="text" value="KW"/> <small>Measurement unit for the associated sensor</small>
SNMP Associated Type ID	<input type="text" value="32767"/> <small>ID value for SNMP type of associated sensor</small>
Min. Associated Level	<input type="text" value="0.000000"/> <small>Sensor expected value corresponding to 4mA</small>
Max. Associated Level	<input type="text" value="192.000000"/> <small>Sensor expected value corresponding to 20mA</small>
Min. Non-Critical Threshold	<input type="text" value="50.0"/> <small>Min. threshold below which indicates a non-critical alert condition</small>
Max. Non-Critical Threshold	<input type="text" value="100.0"/> <small>Max. threshold above which indicates a non-critical alert condition</small>
Min. Critical Threshold	<input type="text" value="40.0"/> <small>Min. threshold below which indicates an alert condition</small>
Max. Critical Threshold	<input type="text" value="120.0"/> <small>Max. threshold above which indicates an alert condition</small>
Refresh Rate	<input type="text" value="10"/> <input type="text" value="Sec"/> <small>▼</small> <small>The refresh rate at which the sensor view is updated</small>
Non-Critical Alert Settings	
Critical Alert Settings	
Data Logging	
<input type="button" value="Save"/>	
Alert Simulation	
<input type="button" value="Simulate Alert"/> <input type="button" value="Clear Alert"/>	

Current Sensor Configuration Page