

PowerLogic™ HDPM6000B

Installation Guide

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Electrical equipment should be installed, operated, serviced and maintained only by qualified personnel. No responsibility is assumed by Schneider Electric for any consequences arising out of the use of this material.

As standards, specifications and designs change from time to time, please ask for confirmation of the information given in this publication.

Safety Information

Important information

Read these instructions carefully and look at the equipment to become familiar with the device before trying to install, operate, service or maintain it. The following special messages may appear throughout this bulletin or on the equipment to warn of potential hazards or to call attention to information that clarifies or simplifies a procedure.



The addition of either symbol to a “Danger” or “Warning” safety label indicates that an electrical hazard exists which will result in personal injury if the instructions are not followed.

This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

⚠ DANGER

DANGER indicates a hazardous situation which, if not avoided, **will result in** death or serious injury.

⚠ WARNING

WARNING indicates a hazardous situation which, if not avoided, **could result in** death or serious injury.

⚠ CAUTION

CAUTION indicates a hazardous situation which, if not avoided, **could result in** minor or moderate injury.

NOTICE

Notice is used to address practices not related to physical injury.

Please note

Electrical equipment should be installed, operated, serviced and maintained only by qualified personnel. No responsibility is assumed by Schneider Electric for any consequences arising out of the use of this material.

A qualified person is one who has skills and knowledge related to the construction, installation, and operation of electrical equipment and has received safety training to recognize and avoid the hazards involved.

Safety Precautions

DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

- Submetering equipment shall not be mounted within 50.8 mm (2 in.) of any live parts including primary conductors, primary terminals, primary lugs. This requirement excludes insulated cables.
- Submeters attached to the enclosure shall not contact the panel interior insulation.
- Mounting provisions shall not be attached to any live part.
- Voltage sensing and power supply connections to the primary voltage shall have overcurrent protection.
- Do not install submetering equipment in any area where breaker arc venting exhaust gasses could be re-directed as a result of submetering equipment installation.
- 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.
- Do not use this device for critical control or protection applications where human or equipment safety relies on the operation of the control circuit.
- Do not install this product in hazardous or classified locations.
- Read, understand and follow the instructions before installing this product.
- Turn off all power supplying equipment before working on or inside the equipment.
- Product may use multiple voltage/power sources. Disconnect all sources before servicing.
- Use a properly rated voltage sensing device to confirm that power is off.
- Do not use data from this device to confirm power is off.
- Replace all doors, covers and protective devices before powering the equipment.
- Do not exceed the product's ratings or maximum limits.
- Treat communications and I/O wiring connected to multiple devices as hazardous live until determined otherwise.

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

If this product is used in a manner not specified by the manufacturer, the protection provided by the product may be impaired.

The installer is responsible for conformance to all applicable codes.

The safety of any system incorporating this equipment is the responsibility of the assembler of the system.

Note: See IEC 60950-1:2005, Annex W for more information on communications and I/O wiring connected to multiple devices.

Protective bonding: electrical connection of accessible conductive parts or protective screening to provide electrical continuity to the means for connection of an external protective conductor.

Safety Precautions (cont.)



ATTENTION
OBSERVE PRECAUTIONS
FOR HANDLING
ELECTROSTATIC
SENSITIVE
DEVICES

⚠ CAUTION

PRODUCT DAMAGE DUE TO ELECTROSTATIC DISCHARGE

Circuit boards and components can be damaged by static electricity or electro-static discharge (ESD). Observe the following electrostatic precautions when handling the product, and cables and components connected to the product:

- Keep static-producing material such as plastic, upholstery, carpeting, etc. out of the immediate work area.
- Store the product in ESD-protective packaging when it is not installed in the panel.
- When handling the product, or a conductive cable / an ESD-sensitive component connected to the product, wear a conductive wrist strap connected to the Ground through a minimum of 1 MΩ resistance.
- Avoid touching exposed conductors and component leads with skin or clothing.

Failure to follow these instructions can result in equipment damage.

FCC Notice

FCC PART 15 INFORMATION

This equipment has been tested 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.

The user is cautioned that any changes or modifications not expressly approved by Schneider Electric could void the user's authority to operate the equipment.

This Class A digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe [*] est conforme à la norme NMB-003 du Canada.

Overview

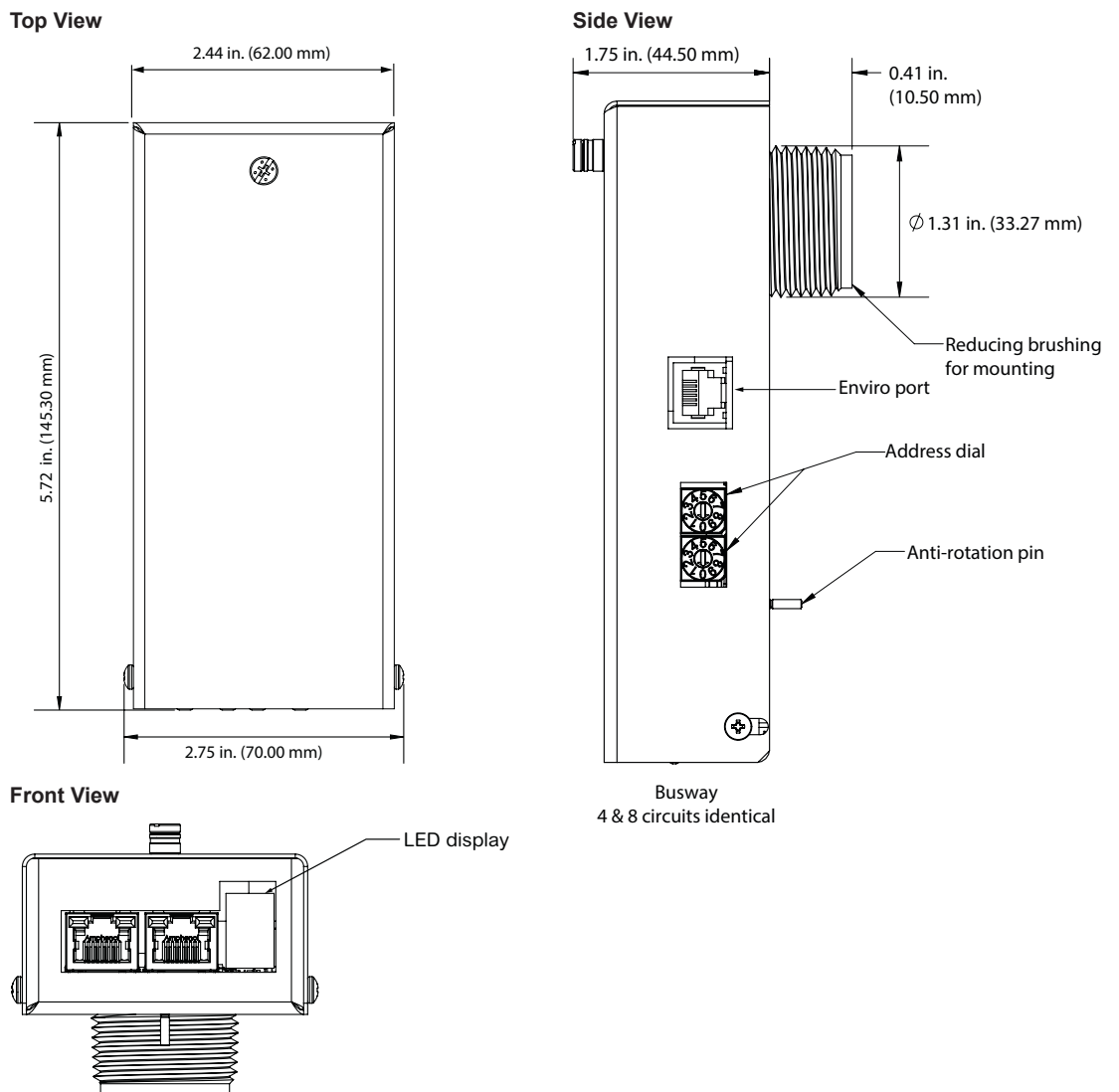
The HDPM6000B system consists of three components:

1. **HDPM6000 Head Unit** – The HDPM6000 head unit is mounted to a bus tap box for the busway system that is being fitted with the HDPM6000B.
2. **HDPM6000B Busway Meters** – HDPM6000B modules are mounted on each tap box and connected in a daisy chain format with CAT6 cabling leading back to the head unit. Modules are available that support either four or eight Current Transformers (CTs.)
3. **Current Transformers** – The CTs are placed inside each tap box. The CTs are split-core or solid-core and are designed to easily snap around the wires providing power.

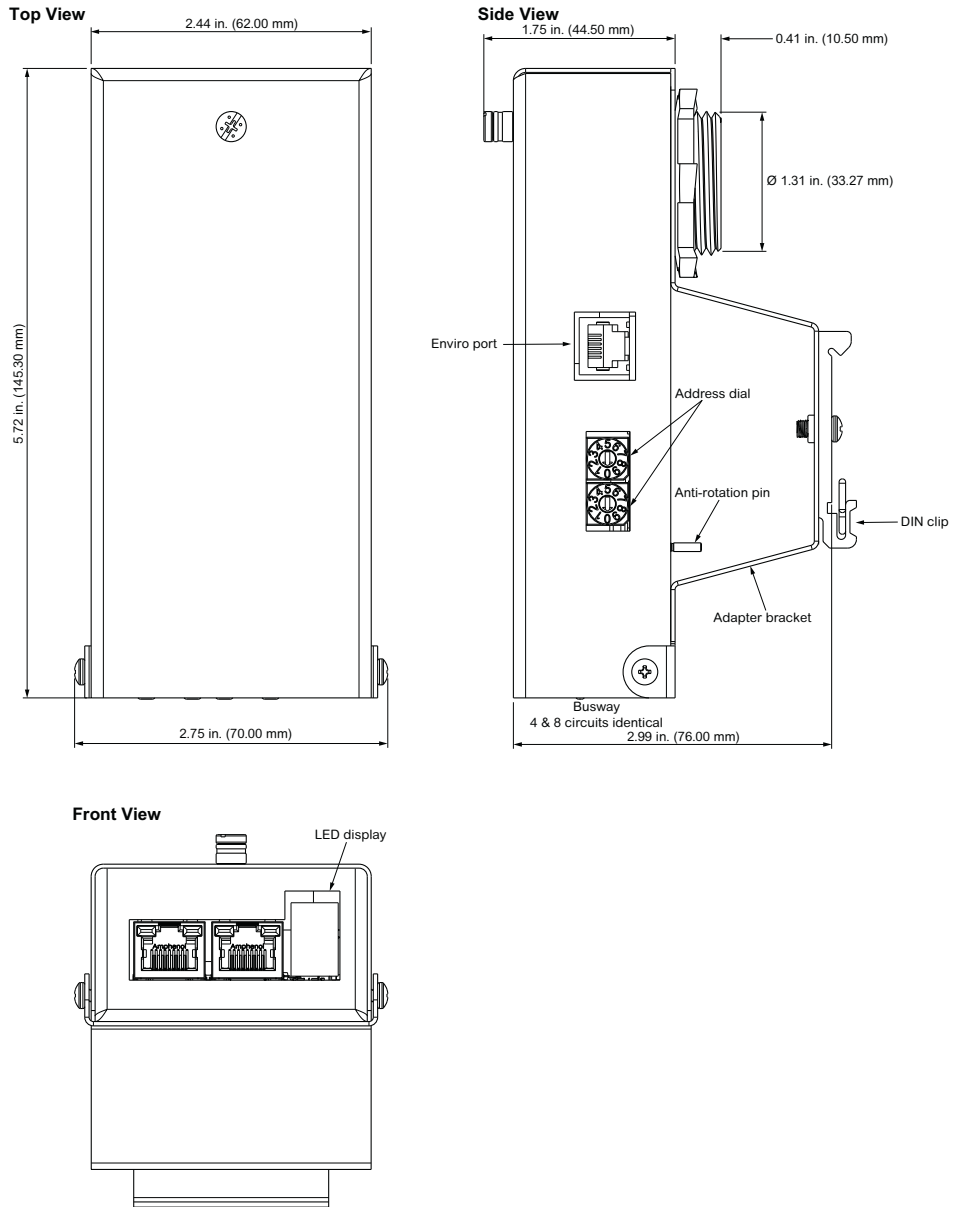
Note: This installation guide provides instructions for installing and configuring the 4-circuit busway model. An 8-circuit version that is installed and configured in the same manner is also available.

Dimensions

HDPM6000 Busway Module with Busway Tap Box mount



HDPM6000 Busway Module with DIN mount

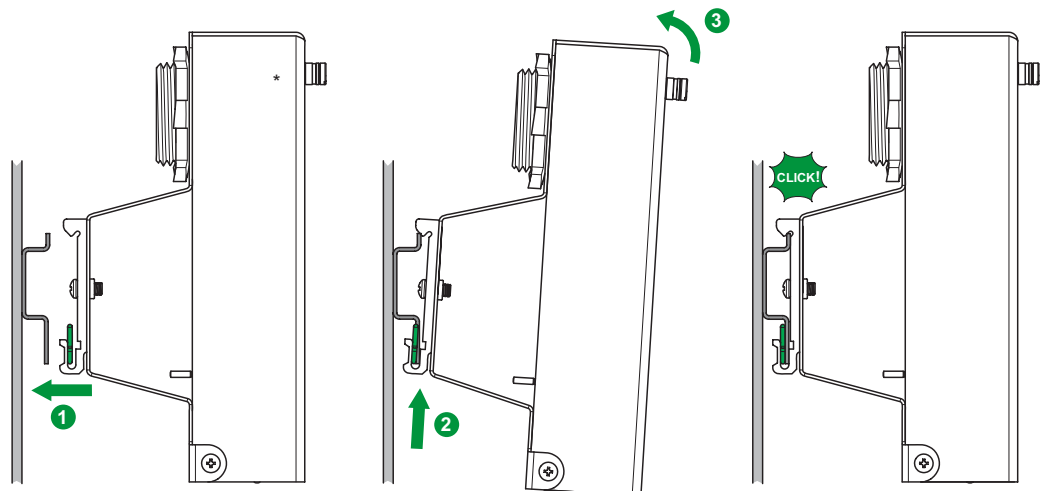


Specifications

Electrical Characteristics		
Supply voltage	24 VDC supplied from the HDPM6000 via bus port CAT6 cable	
CT support	UL 2808, 20-4000 A with internal burdened resistor and 250 mV signal (no shorting blocks required)	
CT options	Solid-core or split-core type current transformers with a maximum voltage of 480 V	
Bus cabling	CAT6, maximum of 51.2 m (168 ft.) total cable length	
Environmental Characteristics		
Operating temperature	-20 to 60 °C (-68 to 140 °F)	
Storage temperature	-40 to 85 °C (-40 to 185 °F)	
Relative humidity	5 to 90% non-condensing	
Maximum operating altitude	2,000 m (6562 ft.)	
Non-operating altitude	15,000 m (49213 ft.)	
Noise level	< 65 dba at six ft. (72 in.) from the HDPM6000	
Mounting location	Not suitable for wet locations. For indoor use only.	
Standards		
Description	General Standard	Reference Standard
Radiated emissions	IEC/EN 61326-1 :2020 (Industrial Electromagnetic Environment)	CISPR 11 AC port inc A1
Conducted emissions, AC port (1)		
Conducted emissions, telecom port		
Radiated RF immunity		IEC/EN 61000-4-3
Fast transient bursts		IEC/EN 61000-4-4*
Conducted immunity		IEC/EN 61000-4-6
Power frequency magnetic field		IEC/EN 61000-4-8
Voltage dips and interruptions		IEC/EN 61000-4-11

*The device may experience measurement accuracy deviation. Contact Schneider Electric technical support for more information.

DIN Mount Installation



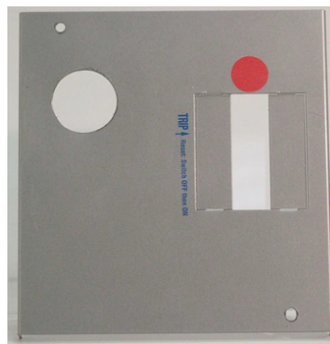
Installation on Busway Tap Box

Installation should be performed by a licensed electrician in accordance with all local, state, and federal regulations regarding electrical work and safety standards.

Note: The location of the HDPM6000B modules is dependent on the desired configuration and system layout. Modules can be mounted on the front, sides, bottom or top of the tap box. The examples in this installation guide show modules mounted on the front cover of the tap box.

1. Prepare the “knock-out” on the tap box to mount the HDPM6000B module. The module is fitted with a 1-inch standard electrical feed-through. The 1-inch feed-through connector requires a 1-¼-inch “knock-out” to be made on the tap box.

Figure 1. Tap box with hole for HDPM6000B



2. Place the module on the tap box and tighten the retention collar provided onto the feed-through.
1. Loosen the thumb screw and open the hinged cover on the HDPM6000B enclosure to facilitate connection of the CTs.
2. Connect the CTs to the circuits to be monitored by the system. Ensure that CTs are installed facing the correct direction. See the CT Orientation section of this installation guide for details.

Figure 2. CT connected to circuit for a busway tap box installation



3. Bring the CT wires through the feed-through and connect to the prelabeled connector on the HDPM6000B module. See the CT Wiring section of this document for CT and connector order.
4. Close the cover on the module and tighten the thumb screw.

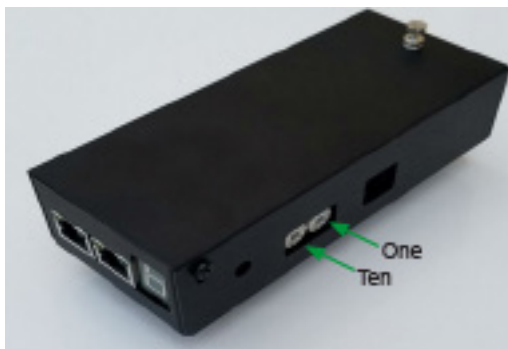
Connecting Current Transformers

Note: Ensure the thumb screw and side screws are tightened after assembly, installation, and servicing that involves opening and closing the cover on the module.

Setting Module Address

When all CT connections have been made, the HDPM6000B address must be set. Use the 10-position selector dial to set the applicable address. Addressing can also be handled through the HDPM6000 web interface. If using the web interface for addressing, record the HDPM6000B serial numbers during installation for later use during commissioning (see the "TAPs Tab" section of the *HDPM6000 Installation Guide* for details).

Figure 3. HDPM6000B address dials



Note: The HDPM6000B should be set to an address between 1 and 48. The address matrix below provides address selection information with respect to circuit numbers for 4- and 8-circuit modules.

Table 1. Address Matrix

Address	4-Circuit Module Channel Numbers	8-Circuit Module Channel Numbers
1	1-4	1-8
2	5-8	Not Used
3	9-12	9-16
4	13-16	Not Used
5	17-20	17-24
6	21-24	Not Used
7	25-28	25-32
8	29-32	Not Used
9	33-36	33-40
10	37-40	Not Used
11	41-44	41-48
12	45-48	Not Used
13	49-52	49-56
14	53-56	Not Used
15	57-60	57-64
16	61-64	Not Used
17	65-68	65-72
18	69-72	Not Used
19	73-76	73-80
20	77-80	Not Used
21	81-84	81-88
22	85-88	Not Used
23	89-92	89-96

Address	4-Circuit Module Channel Numbers	8-Circuit Module Channel Numbers
24	93-96	Not Used
25	97-100	97-104
26	101-104	Not Used
27	105-108	105-112
28	109-112	Not Used
29	113-116	113-120
30	117-120	Not Used
31	121-124	121-128
32	125-128	Not Used
33	129-132	129-136
34	133-136	Not Used
35	137-140	137-144
36	141-144	Not Used
37	145-148	145-152
38	149-152	Not Used
39	153-156	153-160
40	157-160	Not Used
41	161-164	161-168
42	165-168	Not Used
42	169-172	169-176
44	173-176	Not Used
45	177-180	177-184
46	181-184	Not Used
47	184-188	185-192
48	189-192	Not Used

Note: An 8-circuit module is seen as two 4-circuit modules and therefore utilizes two addressing positions. For example, an 8-circuit module addressed at Address 1 uses both address positions 1 and 2. The next module in the system is Address 3. This setup allows both 4- and 8-circuit modules to be used in the same system.

HDPM6000 Bus Connection

The modules are connected via a CAT6 straight-through Ethernet cable as shown below. The system uses all eight wires on the Ethernet cable. Connect the modules in a daisy chain format and link back to the HDPM6000 Bus port, as shown in Figure 4. The length of CAT6 cable between the HDPM6000 head unit and the first module on the CAT6 daisy chain must be <30 m (98 ft.).

If more than 14 modules are connected on one HDPM6000 bus or the total bus cable length exceeds 30 meters (98 ft.), the bus cable must be installed in a ring, as shown in Figure 5. The bus output of the HDPM6000 head unit must be split into two RJ-45 jacks with a bridging Y adapter such as the Hubbell BR851B. Use a CAT6 cable to connect one jack of the splitter to the first module and a longer CAT6 cable to connect the second jack to a bus port on the last module in the chain. The cable length between the head unit and the last module (through module 1, 2, etc, not including the cable from the last module back to the head unit) should not exceed 51.2 m (168 ft.).

When the circuit breaker is switched to the ON position, the HDPM6000B system can be configured via the Ethernet ports (Eth0 or Eth1) on the HDPM6000 head unit using the HDPM6000 web interface. The data generated by the HDPM6000B is available via Modbus TCP/IP, SNMP and BACnet. See the *HDPM6000 Installation Guide* for details.

Figure 4. Bus topology for 14 or fewer modules and bus cable length less than 100 feet

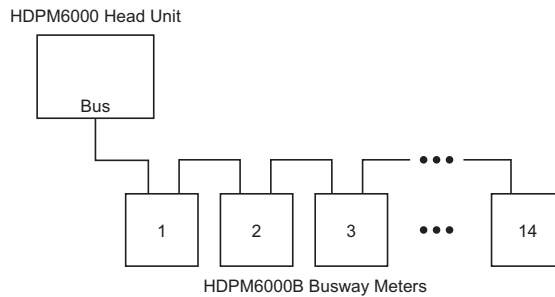
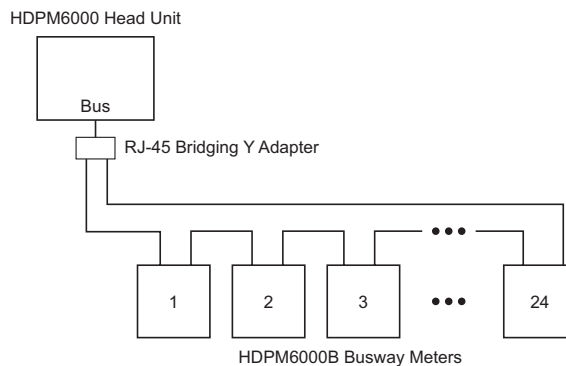


Figure 5. Bus topology for more than 14 modules and bus cable length greater than 100 feet



Connecting HDPM6000 Temperature and Humidity Sensors

To monitor temperature and humidity near a Busway Module, an HDPM6000 Temperature Sensor or HDPM6000 Temperature and Humidity Sensor can be connected to the busway module. Insert the RJ11 plug at the end of the sensor cable into the “Enviro” port on the Busway Module (refer to the Side View of the Dimensions section on pages 1 and 2). For more information regarding the HDPM Temperature and Humidity sensors, including how to mount the sensor, see the HDPM6000 Temperature and Humidity Sensor Installation Guide (Z208479).

Current Transformers

CT Orientation

⚠️ ⚠️ DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

- Use only appropriately specified current sensors which provide reinforced insulation rated for the nominal voltage of the system to be measured and measurement category CAT III or CAT IV.

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

NOTICE

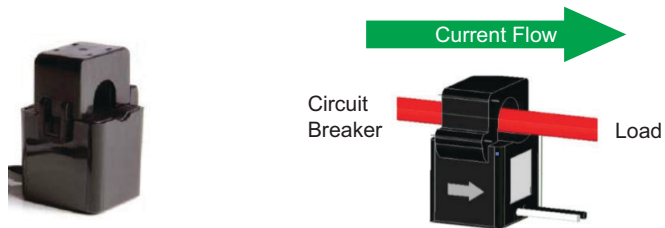
INCORRECT POLARITY

Align CT arrow to point in the direction of the power flow.

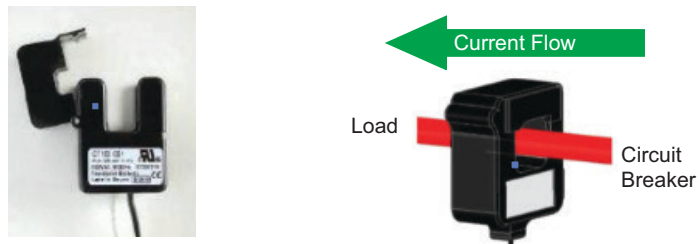
Failure to follow this instruction can result in incorrect readings.

Each CT can be connected to a circuit by opening or removing the top of the CT and snapping it onto the wire that connects the power source to the load. The CT label must face the power source. Ensure that the CT is closed tightly or readings provided by the HDP6000 head unit may be affected.

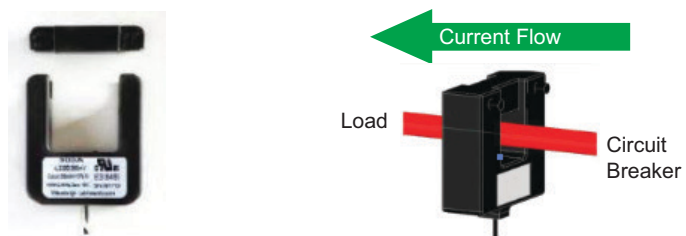
For this model CT, the arrow indicates the current flow (i.e., the label faces away from the circuit breaker).



For this model CT, the label must face the source (i.e., the label faces the circuit breaker).



For this model CT, the label must face the source (i.e., the label faces the circuit breaker).



CTs may be simply hung on the wire which they snap around. An alternative is the use of VELCRO® strips on the bottom or hinged side of the unit, to allow for ease of mounting and removal as necessary. VELCRO is non-conductive.

CT Wiring and Phase Selector Placement

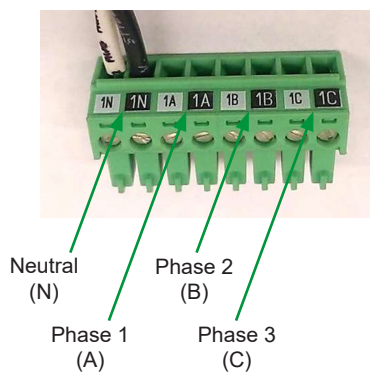
NOTICE

CT MISWIRING
 Follow CT connector color coding to ensure CT wires are placed correctly.
Failure to follow this instruction can lead to incorrect readings.

To avoid mis-wiring and to simplify the installation process, use the following guidelines when wiring CTs to 4- or 8-circuit HDPM6000B modules.

Wiring Connectors

The connectors come pre-labeled for a 4-CT setup (N-A-B-C) and are color-coded to ensure CT wires are placed correctly. The figure below shows phases N, 1, 2 and 3 in order from left to right.



Phase assignment does not need to follow this convention, however, and may be set differently that marked (see next section).

The CT channel number is based on the assigned module address and increments in the following order: 1N, 1A, 1B, 1C, 2N, 2A, 2B, 2C. For example, for a module set at address 3, the CTs would be assigned the following channel numbers. Any CT inputs that are unused (no CT attached) should be disabled. Channels can be disabled by setting their CT type to 'Unused' on the Channel Cfg tab of the HDPM6000 web interface. See the HDPM6000 Installation Guide for further information on the Channel Cfg tab.

Table 2. Example channel numbering for bus module set at address 3

Connector Label	Channel Number
1N	9
1A	10
1B	11
1C	12
2N	13
2A	14
2B	15
2C	16

Setting the Phase Selector

NOTICE

PHASE SELECTOR SETTINGS
 Select proper phasing to match the placement of installed CTs.
Failure to follow this instruction can lead to incorrect readings.

Each 4- or 8-circuit HDPM6000B module has a series of expected phases. To place the Phase Selector:

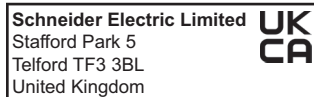
1. Log in to the HDPM6000 web interface (see *HDPM6000 Installation Guide* for more information).
2. Under the **Circuit Cfg** tab, select the phasing that matches the placement of the CTs installed using the “Exp Phase” settings. These settings must be correct in order for the modules to gather proper data.

The figure below shows a screenshot of the Exp Phase settings in the web interface.

Figure 6. HDPM6000 Web Interface, Exp Phase Settings for HDPM6000B

Channel	Location	CT Type	Exp Phase	Circuit	Load type	Name
1	[1, 1]	CTM-075-30	1	5	None	
			<input checked="" type="checkbox"/> Add to circuit (<input type="radio"/> Delta <input checked="" type="radio"/> Wye)			
3	[1, 2]	CTM-075-30	2	5	None	
			<input checked="" type="checkbox"/> Add to circuit			
5	[1, 3]	CTM-075-30	3	5	None	
			<input type="checkbox"/> Add to circuit			
7	[1, 4]	CTM-075-30	1	1	1: Heating	
			<input type="checkbox"/> Add to circuit			
9	[1, 5]	CTM-075-30	2	9	1: Heating	
			<input type="checkbox"/> Add to circuit			
11	[1, 6]	CTM-075-30	3	11	None	

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