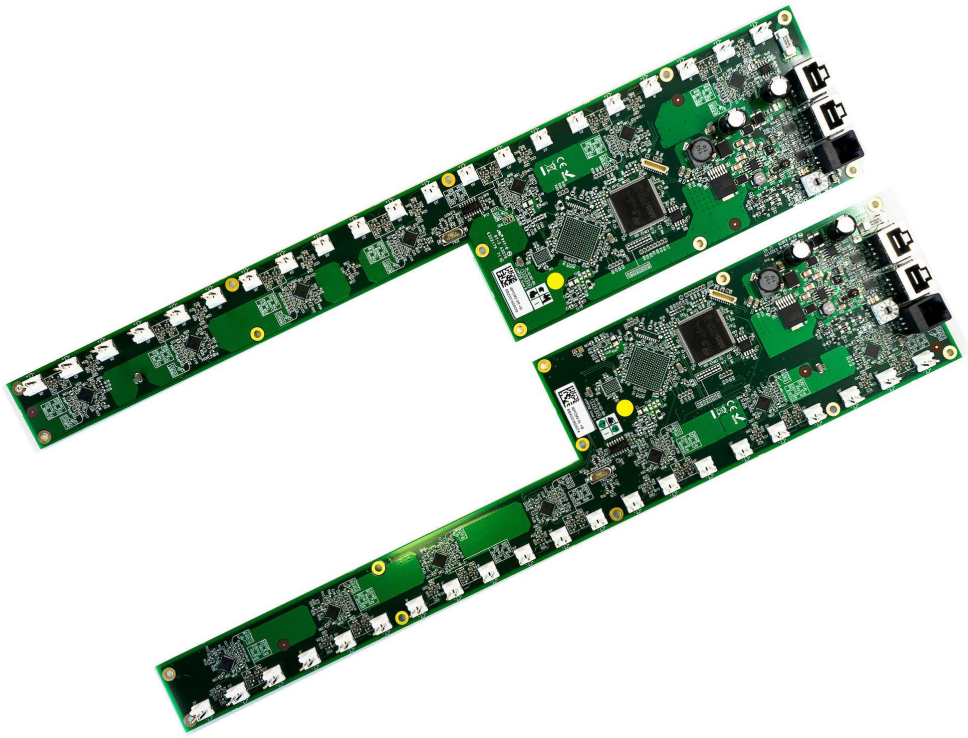
PowerLogic™ HDPM6000S

Installation Guide

Z208130-0F
06/2022



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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 an 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.

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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.
- This product must be installed inside a suitable fire and electrical enclosure.
- Follow safe electrical work practices. See NFPA 70E in the USA, or applicable local codes.
- Submetering equipment shall not be mounted within 50.8 mm (2 in) 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.
- 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.

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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 digital apparatus complies with CAN ICES-3 (A) /NMB-3(A).

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

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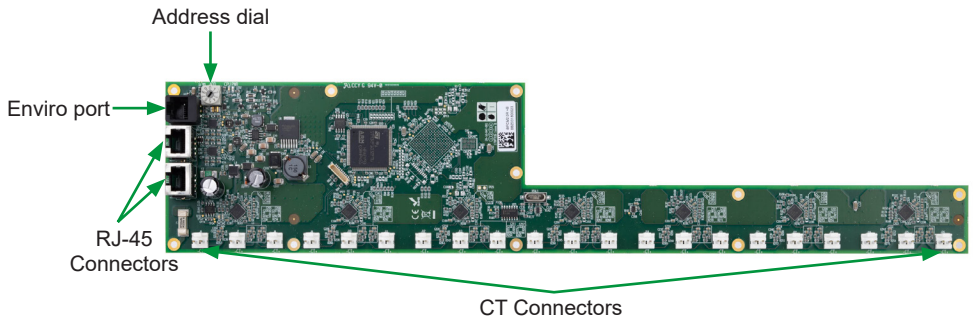
Overview

The HDPM6000S system consists of three components:

1. HDPM6000 Head Unit
2. HDPM6000S Strip Modules
   - Installed next to the circuit breakers in the panel being monitored by the system
   - Designed for panels with ¾-inch circuit breaker spacing
   - Each strip module supports 21 current transformers
3. Current Tranformers (CTs)
   - The CTs plug into the HDPM6000S strip modules

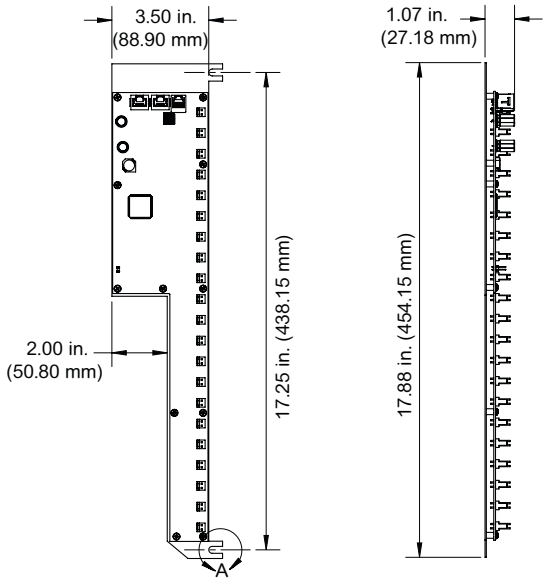
Note: Multiple HDPM6000S strip modules can be daisy chained together via CAT6 cables to allow monitoring of up to 168 circuits.

Figure 1. HDPM6000S Strip Module

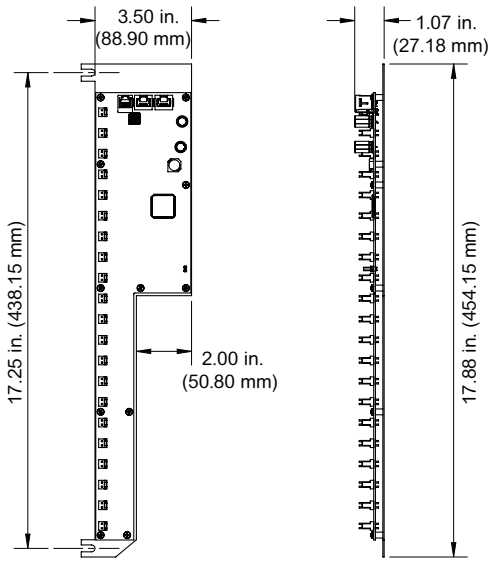


Dimensions

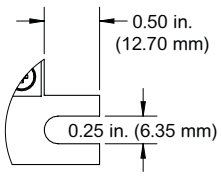
Left Strip, Top and Side Views



Right Strip, Top and Side Views



Detail A View, Same for All Lugs



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Specifications

Electrical Characteristics		
Supply voltage	24 VDC supplied from the HDPM6000 head unit via bus port CAT6 cable	
CT support	UL 2808, 20-4000 A with internal burdened resister 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.	
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	
Max. 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		
Conducted emissions, telecom port		
Electrostatic discharge		IEC/EN 61000-4-2
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

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Mounting

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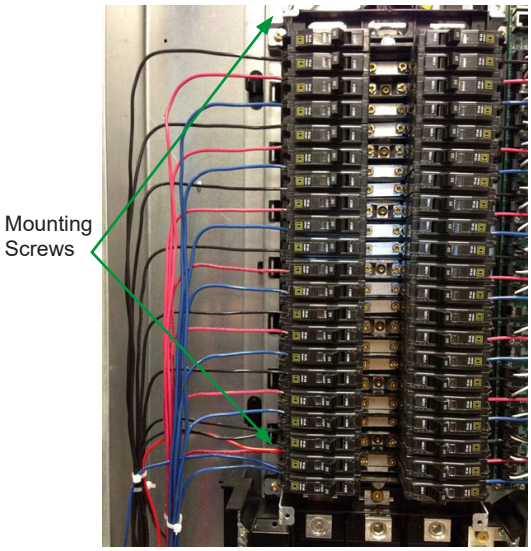
- Avoid touching exposed conductors and component leads with skin or clothing.

Failure to follow these instructions can result in equipment damage.

HDPM6000S strip modules are mounted inside the panel being monitored by the system. The CTs provided are equipped with 4-inch leads and an amp connector to be plugged into the strip modules. The strip module bracket is designed to mount next to the circuit breakers inside the panel. Mounting locations may be changed to support the installation.

1. Loosen the screws on the top and bottom of the panel as shown below. Two screws are located on each side of the panel, for a total of four screws on a standard 42-circuit panel board.

Figure 2. Mounting Screw Locations



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2. Place the strip module mounting bracket under the screw heads and re-tighten the screws.

Note: HDPM6000S strip modules can be placed in a top-feed or bottom-feed panel. The RJ-45 connectors can be located on the top or bottom of the panel to facilitate the installation. Designation of a top-feed or bottom-feed panel is indicated during the commissioning and setup of the system using the HDPM6000 web interface. See the HDPM6000 PQM Installation Guide for further information on the web interface.

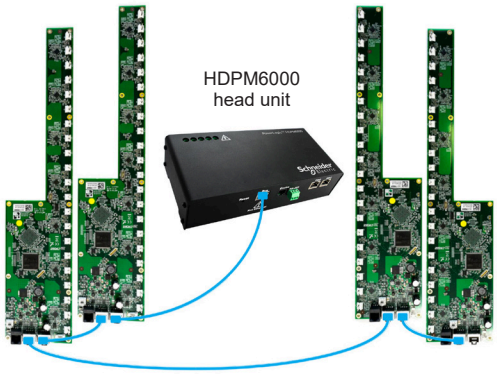
Connecting to the HDPM6000 Bus

NOTICE
ETHERNET CABLE USAGE Use standard CAT6 straight-through Ethernet cables to connect strip modules. **Failure to follow this instruction can result in damage to equipment.**

The strip modules are connected in a daisy chain format using standard Ethernet cables (not provided). The first (or last) strip module in the daisy chain is connected to the Bus port on the HDPM6000 head unit. The order in which HDPM6000S strip modules are attached to the HDPM6000 bus does not affect channel numbering and does not need to match the assigned address.

- Standard CAT6 straight-through Ethernet cables are used for the daisy chain.
- All eight wires of the daisy-chained Ethernet cables are used to provide communications, voltage reference and power for the strip module.

Figure 3. RJ-45 Cable Daisy Chain



Note: CAT6 cable must be 30 m (98 ft.) in length between the HDPM6000 head unit and the first module on the bus daisy chain.

Connecting HDPM6000 Temperature and Humidity Sensors

To monitor temperature and humidity near a HDPM6000S module, an HDPM6000 Temperature Sensor or HDPM6000 Temperature and Humidity Sensor can be connected to the HDPM6000S module. Insert the RJ11 plug at the end of the sensor cable into the “Enviro” port on the HDPM6000S module (refer to the Overview section on page 1).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).

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Setting the Address dial

Each HDPM6000S strip module requires the designation of an address on the bus. To address the module, use the 10-position selector dial on the strip module. Each strip module should be set to an address between 1 and 8.

Addressing must start at 1 and the lowest sequential numbers must be used (e.g. for four HDPM6000S strip modules, addresses 1 through 4 must be used. Using any higher numbers, such as 2 through 6, would be an incorrect configuration).

Addresses may also be set through the HDPM6000 web interface. When using the web interface, record the HDPM6000S serial number during installation for later use during commissioning. See the *HDPM6000 Installation Guide* for further information.

The address matrix below lists the ANSI and IEC channel numbers that correspond to each address. When channel numbering is set to IEC, the channels numbers assigned to the strip at each address depend on the total number of strip modules attached to the HDPM bus. Refer to the column in the table below that corresponds to the system size.

Example: With IEC channel numbering, for a system with 5 strips, strip 4 would have channel numbers 85-105 assigned to it. For a system with 8 strips, strip 4 would have channel numbers 106-126 assigned to it.

Figure 4. Address dial

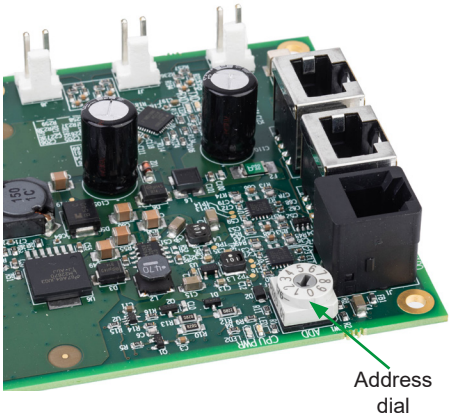

Figure 5. ANSI Channel Address Matrix

Address	ANSI Channel Numbers
1	1-41 (Odd)
3	2-42 (Even)
2	43-83 (Odd)
4	44-84 (Even)
5	85-125 (Odd)
7	86-126 (Even)
6	127-167 (Odd)
8	128-168 (Even)

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Figure 6. IEC Channel Address Matrix

Address	IEC Channel Numbers							
	1 Module System	2 Module System	3 Module System	4 Module System	5 Module System	6 Module System	7 Module System	8 Module System
1	1-21	1-21	1-21	1-21	1-21	1-21	1-21	1-21
2		22-42	22-42	22-42	22-42	22-42	22-42	22-42
3			43-63	43-63	64-84	85-105	85-105	85-105
4				64-84	85-105	106-126	106-126	106-126
5					43-63	43-63	43-63	43-63
6						64-84	64-84	64-84
7							127-147	127-147
8								148-168

Setting the Phase Selector

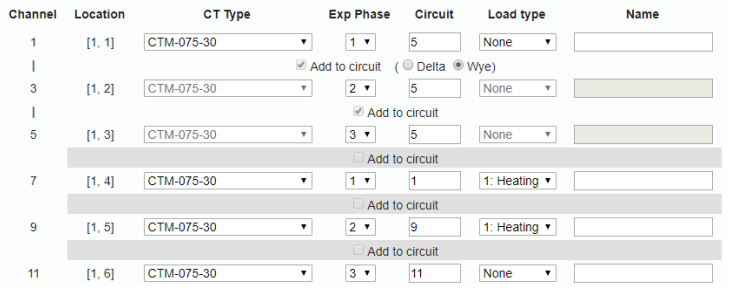
Each HDPM6000S strip module has a series of expected phases (labeled as "Exp Phase" in the screen shot below).

To set the phase selector:

1. Log in to the HDPM6000 web interface.
2. Under the **Channel Cfg** tab, select the proper phasing to match the placement of the CTs installed by setting the **Exp Phase** settings.

Correct CT placement ensures the strip modules are able to gather proper data. Figure 7 shows a screen shot of the Exp Phase settings in the web interface.

Figure 7. HDPM6000 Web Interface and Exp Phase Settings



Connecting Current Transformers

⚠ ⚠ 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.

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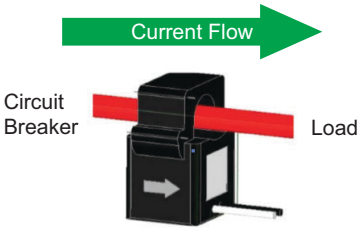
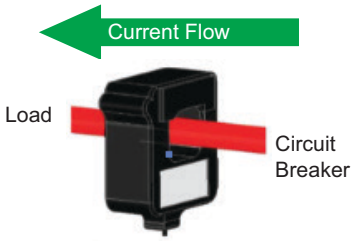
NOTICE
INCORRECT POLARITY Align CT arrow to point in the direction of the power flow. **Failure to follow this instruction can result in incorrect readings.**

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 HDPM6000 may be affected.

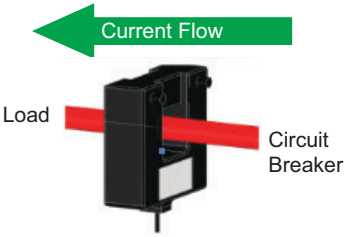
For this model CT, the arrow indicates the current flow (i.e., the label faces away from the circuit breaker).



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.

If fewer than 21 CTs are connected to a strip module, the remaining channels 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.

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