

PowerLogic™ HDPM6000S24

Installation Guide

Z208449-0D
11/2022



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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.
- 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.
- This equipment must only be installed and serviced by qualified electrical personnel.
- Do not use this device for 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, protective devices and protective bonding 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 electrostatic 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.

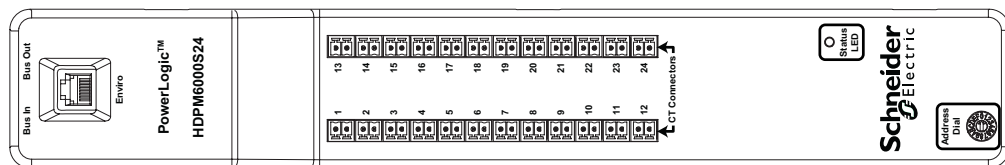
Overview

The HDPM6000S24 system consists of three components:

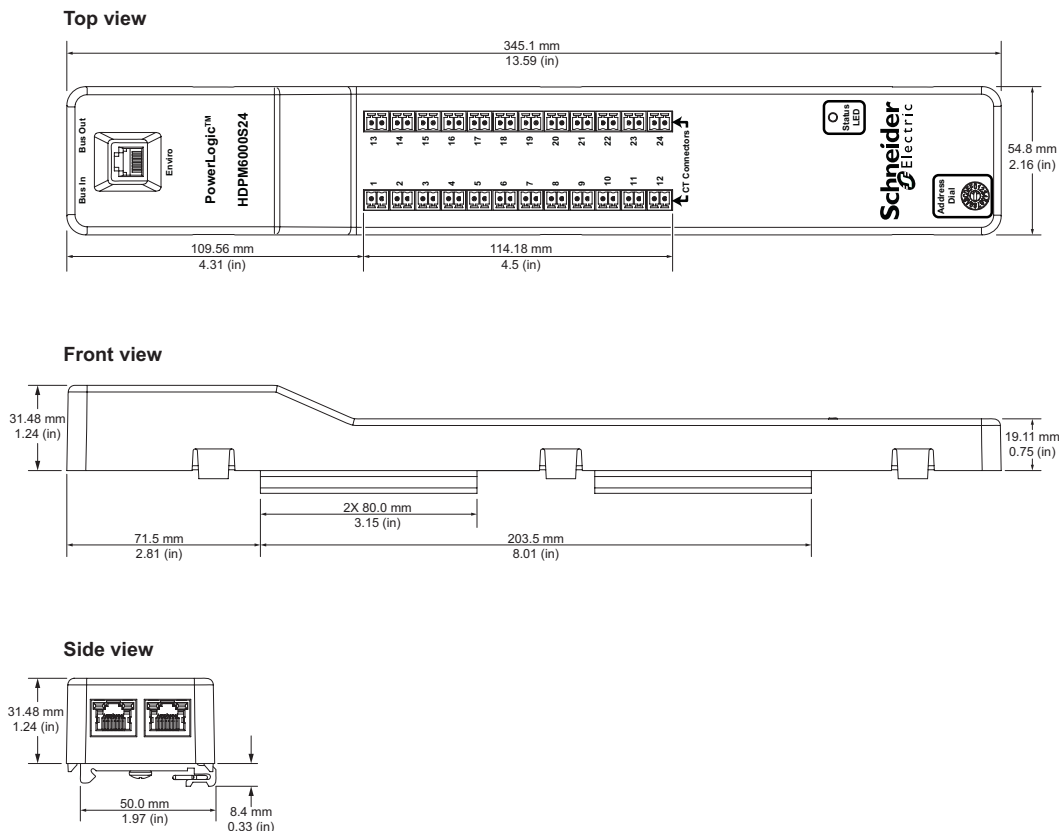
1. HDPM6000 Head Unit
2. HDPM6000S24 Strip Modules
 - Installed next to the circuit breakers in the panel being monitored by the system
 - Designed for panels with any circuit breaker spacing
 - Each strip module supports 24 current transformers
3. Current Transformers (CTs)
 - CTs plug into the HDPM6000S24 strip modules

Note: Multiple HDPM6000S24 strip modules can be daisy chained together via CAT 6 cables to allow monitoring of up to 192 circuits. See "Connecting to the HDPM6000 Bus" on page 4 for further information.

Figure 1. HDPM6000S24 Strip Module



Dimensions



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)	
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

Mounting



ATTENTION
OBSERVE PRECAUTIONS
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⚠ CAUTION

PRODUCT DAMAGE DUE TO ELECTROSTATIC DISCHARGE

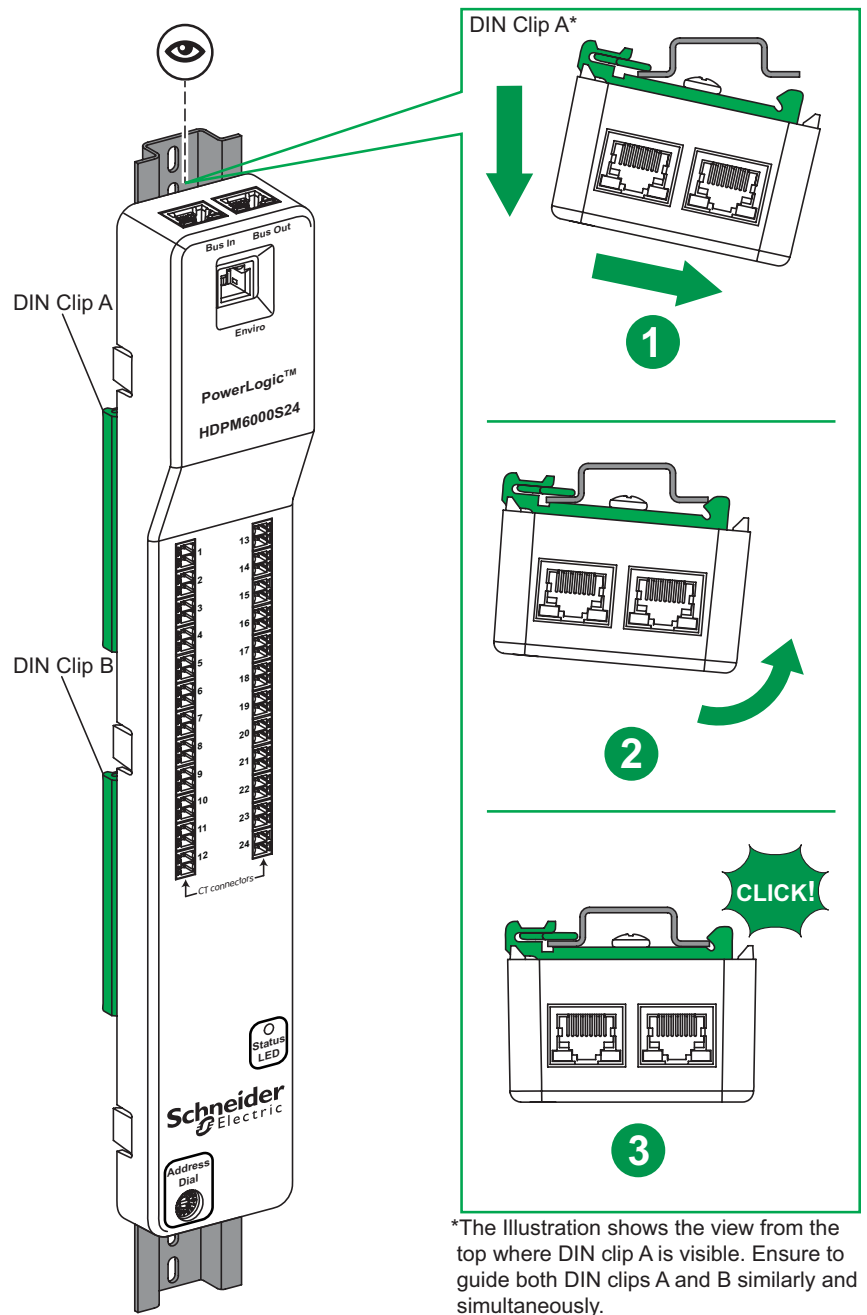
Circuit boards and components can be damaged by static electricity or electrostatic discharge (ESD). Observe the following electrostatic precautions when handling the product, and cables and components connected to the product:

- 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.

HDPM6000S24 strip modules are mounted inside the panel being monitored by the system. The modules are designed to be mounted inside of a panel near the output terminals of the breakers. The modules have two DIN rail clips compatible with standard TS35 DIN rail. To attach to the DIN rail, position the strip at an angle and slide the flange of the DIN rail under the retention springs of the DIN rail clips. Rotate the strip until it clicks into place.

Figure 2. Mounting Steps



HDPM6000S24 modules can be mounted with the bus RJ-45 connectors at the top or at the bottom. Refer to "Setting the Strip Orientation" on page 7 for information on adjusting the CT numbering to match the orientation in which the strip is installed.

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.

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.

The correct orientation of the CT in relation to the current carrying conductor is essential for correct metering values. Each CT is marked with an arrow to indicate the correct flow of current through the window. Install the CT around the current carrying conductor with the arrow pointing away from the circuit breaker and toward the load.

If fewer than 24 CTs are connected to the HDPM6000S24 module, it is recommended that the remaining channels are 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.

Connecting to the HDPM6000 Bus

NOTICE

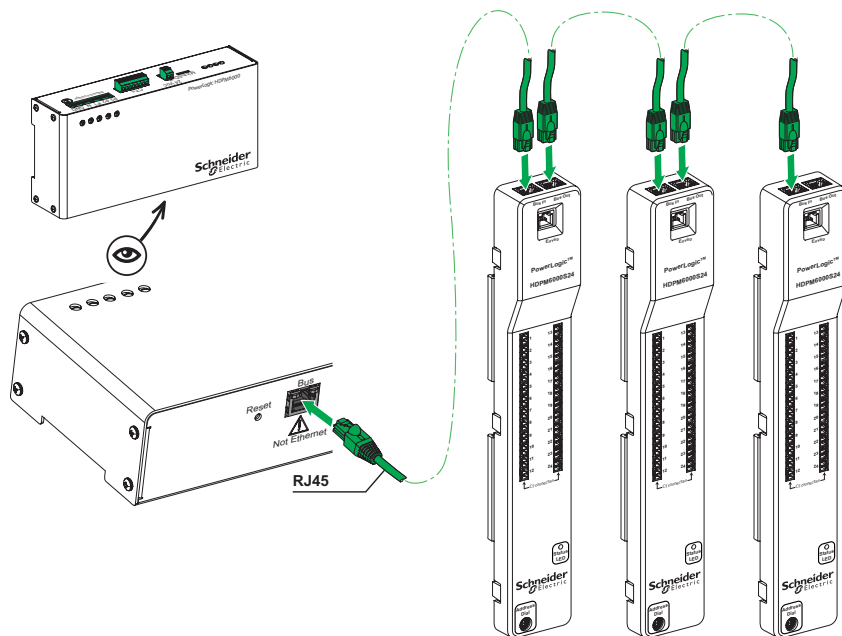
INCORRECT HDPM6000 BUS CABLE

Use standard CAT6 straight-through cables to connect strip modules.

Failure to follow this instruction can result in loss of meter functionality or damage to equipment.

The strip modules are connected in a daisy chain format using standard CAT6 straight-through cables (not provided). The first strip module in the daisy chain is connected to the Bus port on the HDPM6000 head unit. The order in which HDPM6000S24 strip modules are attached to the HDPM6000 bus does not affect channel numbering and does not need to match the assigned address.

Figure 3. CAT6 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 HDPM6000S24 module, an HDPM6000 Temperature Sensor or HDPM6000 Temperature and Humidity Sensor can be connected to the HDPM6000S24 module. Insert the RJ11 plug at the end of the sensor cable into the “Enviro” port on the HDPM6000S24 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).

CT Numbering

The numbering of the 24 CT inputs on a strip module is dependent on both the address assigned to the module and the Orientation setting.

Setting the Strip Module Address

Each HDPM6000S24 strip module requires the designation of an address on the bus, which will determine which branch channel numbers are assigned to it. 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 HDPM6000S24 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 HDPM6000S24 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 97-120 assigned to it. For a system with 8 strips, strip 4 would have channel numbers 121-144 assigned to it.

Figure 4. ANSI Channel Address Matrix

Address	ANSI Channel Numbers
1	1-47 (Odd)
3	2-48 (Even)
2	49-95 (Odd)
4	50-96 (Even)
5	97-143 (Odd)
7	98-144 (Even)
6	145-191 (Odd)
8	146-192 (Even)

Figure 5. IEC Channel Address Matrix

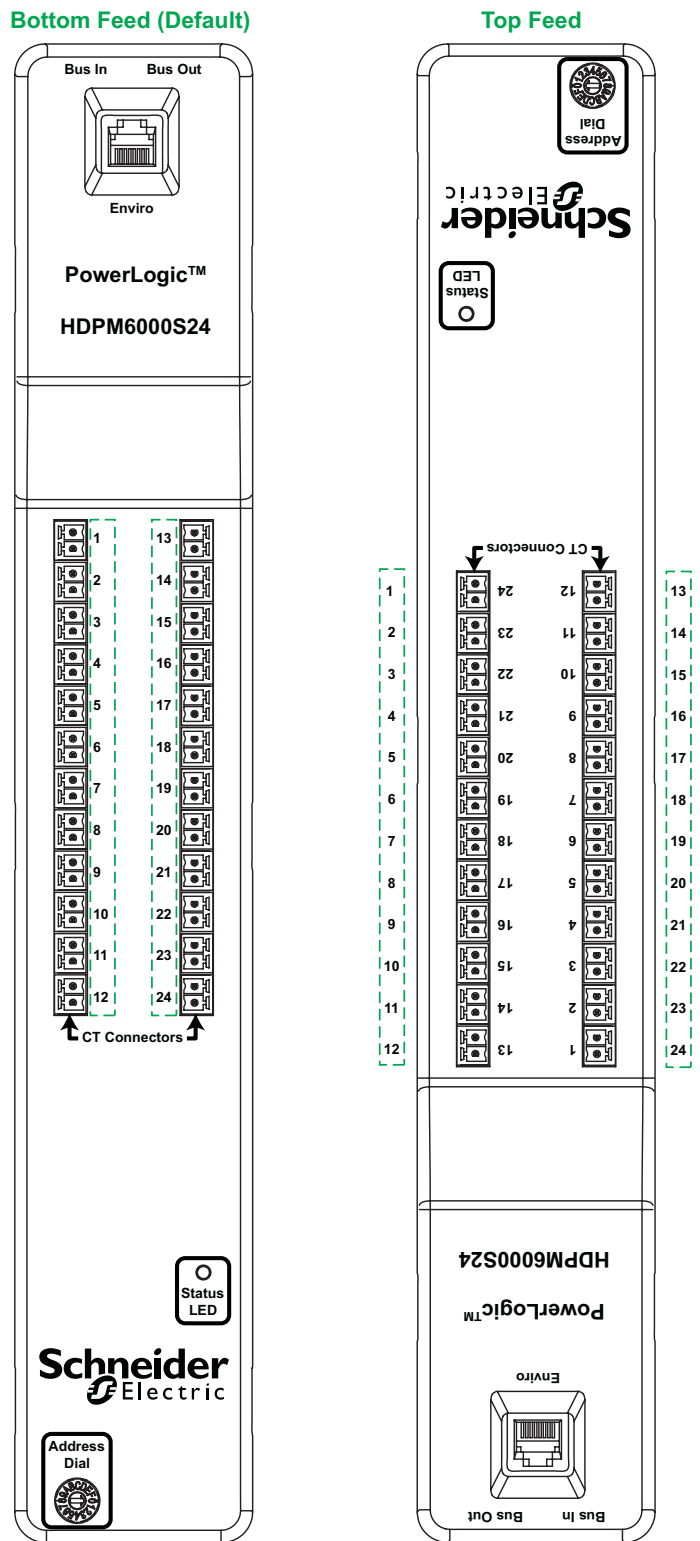
Address	IEC Channel Numbers							
	1 Module System	2 Module System	3 Module System	4 Module System	5 Module System	6 Module System	7 Module System	8 Module System
1	1-24	1-24	1-24	1-24	1-24	1-24	1-24	1-24
2		25-48	25-48	25-48	25-48	25-48	25-48	25-48
3			49-72	49-72	73-96	97-120	97-120	97-120
4			73-96	97-120	121-144	121-144	121-144	
5			49-72	49-72	49-72	49-72	49-72	49-72
6			73-96	73-96	73-96	73-96	73-96	
7			145-168	145-168	145-168	145-168	145-168	145-168
8			168-192	168-192	168-192	168-192	168-192	

Setting the Strip Orientation

While the strip address determines which range of channel numbers are assigned to a strip module, the Orientation setting determines the mapping of these channels to physical CT connectors. Orientation can either be Top Feed or Bottom Feed. One or the other may be more convenient for CT lead wire routing based on the orientation in which the strip is mounted in the panel. See the diagrams below for the numbering in both Top Feed and Bottom Feed modes. Note that this numbering indicates the order in which the connectors are numbered, not necessarily the actual channel numbering since that is a combination of strip module address and orientation.

For example, strip 3 in ANSI mode would have odd numbered channels in the range of 49-95 assigned. The connector marked as '1' on the diagram is the first channel in the range, so it is assigned channel 49 in this case. The connector marked as '2' in the diagram will correspond to the second number in the range of odd numbers, so 51 in this case. The connector marked 24 would be the last in the range, 95 in this case.

Figure 6. Channel Numbering Order



Note: The product ships in a Bottom Feed configuration by default. CT Connector numbers marked on the product enclosure are for the Bottom Feed. The Top Feed CT Connector numbering differs from the actual product marking. The numbers shown in the green dotted rectangles above are the CT numbers that apply to the respective configuration.

Setting the Strip Module Address

Each HDPM6000S24 strip module has a series of expected phases (labeled as "Exp Phase" in the screenshot below).

To set the phase selector:

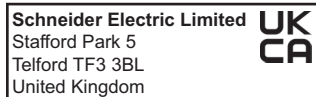
1. Log in to the HDPM6000 web interface.
2. Under the **Channel Cfg** tab, select the proper phasing to match the placement of the CTs installed by setting the **Exp Phase** settings.

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

Figure 7. HDPM6000 Web Interface and Exp Phase Settings

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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