

PowerLogic™ HDPM6000R

Installation Guide

Z208129-0E
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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 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.)

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 HDPM6000R system consists of three components:

1. HDPM6000 Head Unit
2. PowerLogic HDPM6000R Retrofit Modules
 - Installed in the HDPM6000 enclosure and connected to the HDPM6000 head unit via a straight-through CAT6 cable.
 - 24-, 42- and 84-circuit modules are available. Modules can be daisy-chained to produce a 24-, 42-, 84-, 126-, 108-, 168- or 192-circuit metering solution.
3. Current Transformers (CTs)
 - The CTs provided with the system are split- or solid-core and are attached to the circuit after a wire has been connected to the circuit breaker.

Note: CT wires installed on the HDPM6000R should be cut with insulation flush to the end of the wire prior to installation (not stripped).

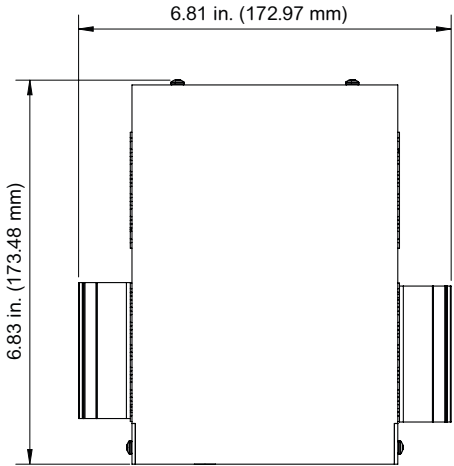
Figure 1. HDPM6000R



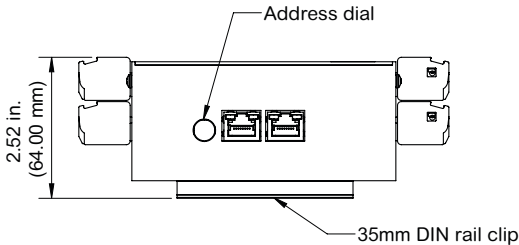
Dimensions

24-Circuit

Top View

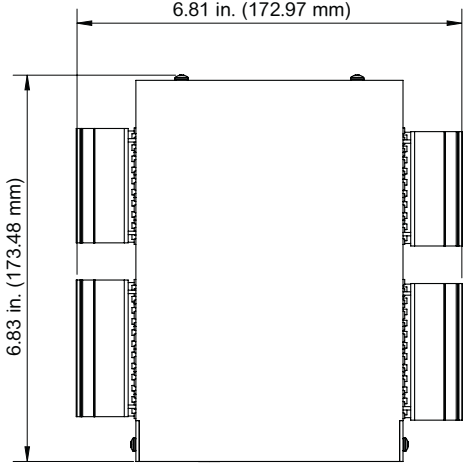


Side View

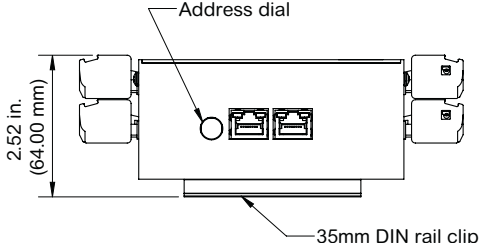


42-Circuit

Top View

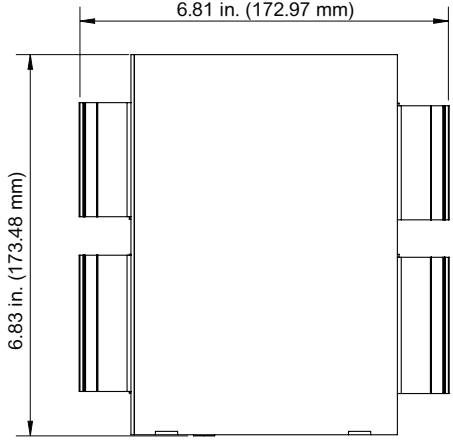


Side View

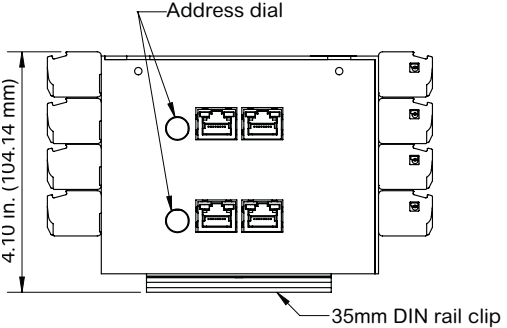


84-Circuit

Top View



Side View



Specifications

Electrical Characteristics	
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
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.

Note: For detailed electrical specifications on measurement voltage and power supply input voltage, refer to the HDPM6000 Technical Datasheet.

Mounting

The HDPM6000R should be mounted inside an enclosure or panel in close proximity to the HDPM6000 head unit. The HDPM6000R receives its power, voltage reference and communications via a straight-through CAT6 cable that is connected to one of the RJ-45 connectors on the HDPM6000R and the Bus port on the HDPM6000 head unit.

Note: Multiple HDPM6000R modules can be daisy chained together via RJ-45 connectors to allow monitoring of up to 192 circuits.

Current Transformers

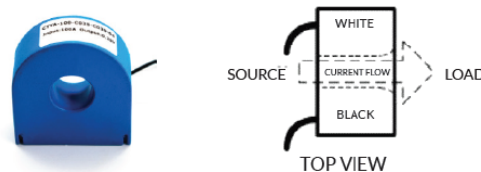
CT Orientation

⚠ ⚠ DANGER
<p>HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH</p> <ul style="list-style-type: none"> 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. <p>Failure to follow these instructions will result in death or serious injury.</p>

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

Solid-Core Models

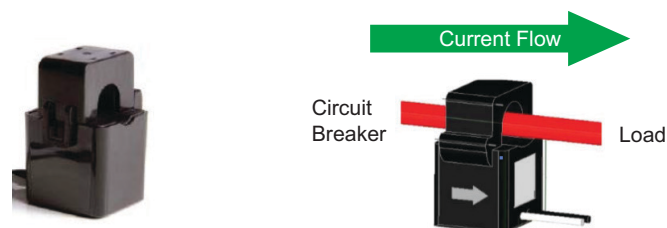
All solid-core CT models should be oriented such that the wire leads face the source.



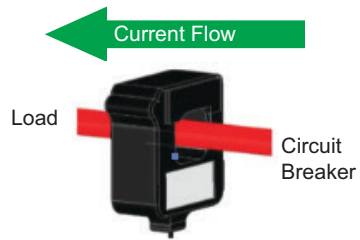
Split-Core Models

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.

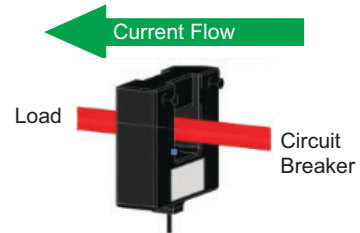
For this model CT, the arrow indicates the current flow (i.e., the label faces away from the circuit breaker).



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.

NOTICE

CT WIRE MISCONNECTION

- Connect white CT wire to the connector port closest to the RJ-45 connector.
- Connect black wire to second CT input.
- Paired lead wires must be kept together.

Failure to follow these instructions can result in loss of data and damage to equipment.

Each CT output has two wires. The white and black lead wires from each CT are associated with specific ports on the HDPM6000R. Note that the numbered positions on your circuit breaker panel correspond to the numbered positions on the HDPM6000R. Use the appropriate wiring drawing for your installation (ANSI or IEC). See the Wiring Diagrams section of this document for further information.

Connecting to the HDPM6000 Bus

NOTICE

ETHERNET CABLE USAGE

Use standard CAT6 straight-through Ethernet cables to connect HDPM6000R retrofit modules.

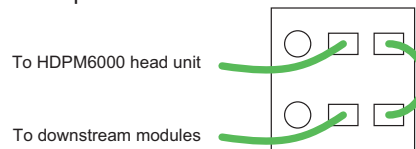
Failure to follow this instruction can result in damage to equipment.

The retrofit modules are connected in a daisy chain format using standard Ethernet cables (not provided). The first (or last) module in the daisy chain is connected to the Bus port on the HDPM6000 head unit. The order in which the retrofit 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 module.

The 84-channel module requires the Ethernet cable to connect the top level RJ-45 to the bottom level.

Example:

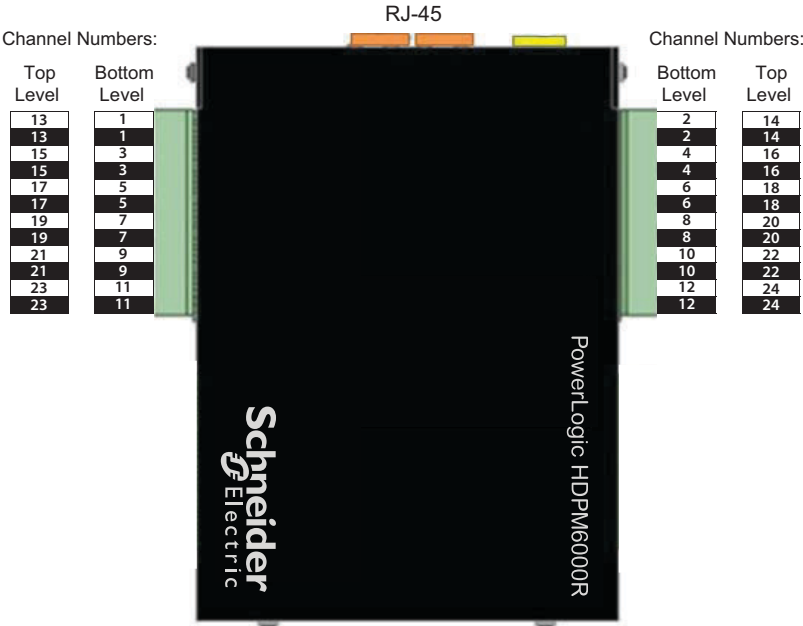


ANSI Wiring Diagrams

24-Circuit System in ANSI Mode

This system consists of a single 24-circuit retrofit module attached to the HDPM6000 bus. Set the address of the module to 1.

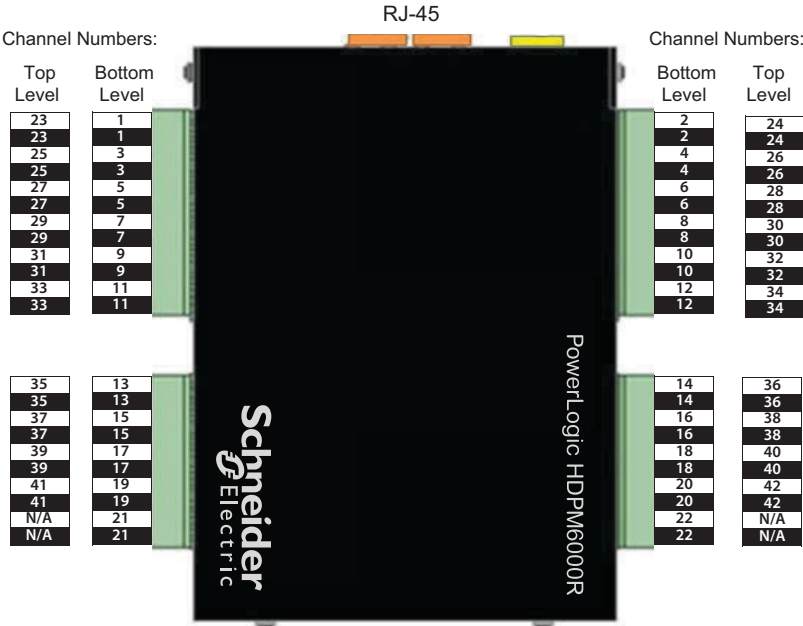
24-Circuit Module, Address 1



42-Circuit System in ANSI Mode

This system consists of a single 42-circuit retrofit module attached to the HDPM6000 bus. Set the address of the module to 1.

42-Circuit Module, Address 1



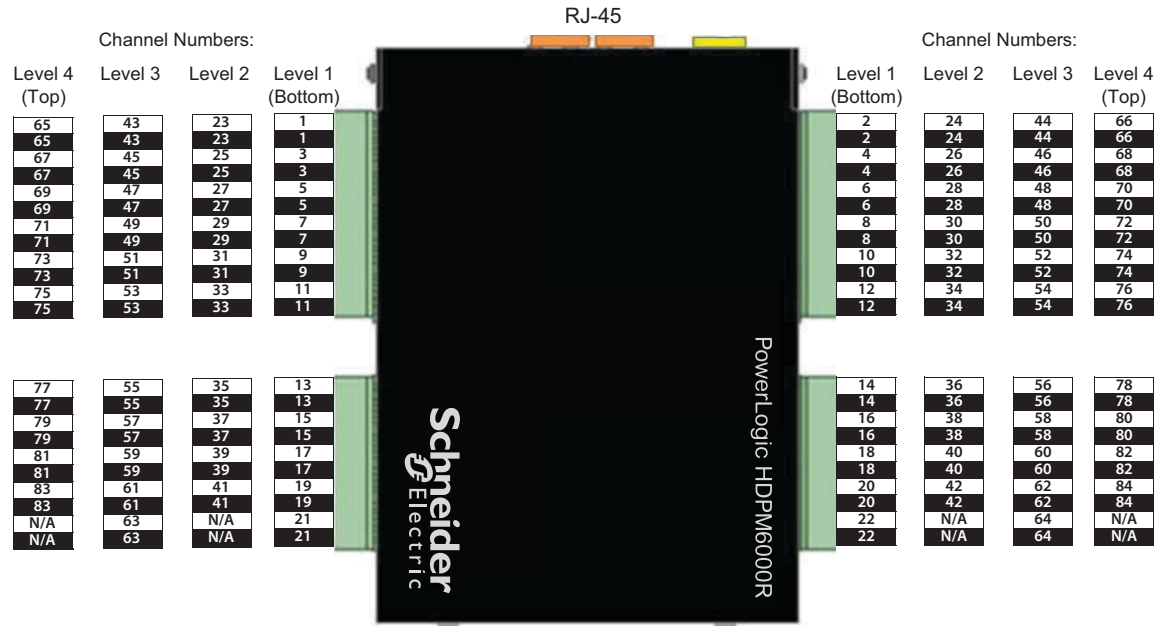
ANSI Wiring Diagrams (cont.)

84-Circuit System in ANSI Mode

This system consists of a single 84-circuit retrofit module attached to the HDPM6000 bus. Set the addresses to the following:

Address Selector	Setting
Lower Address Selector	1
Upper Address Selector	2

84-Circuit Module, Addresses 1 (lower selector) and 2 (upper selector)



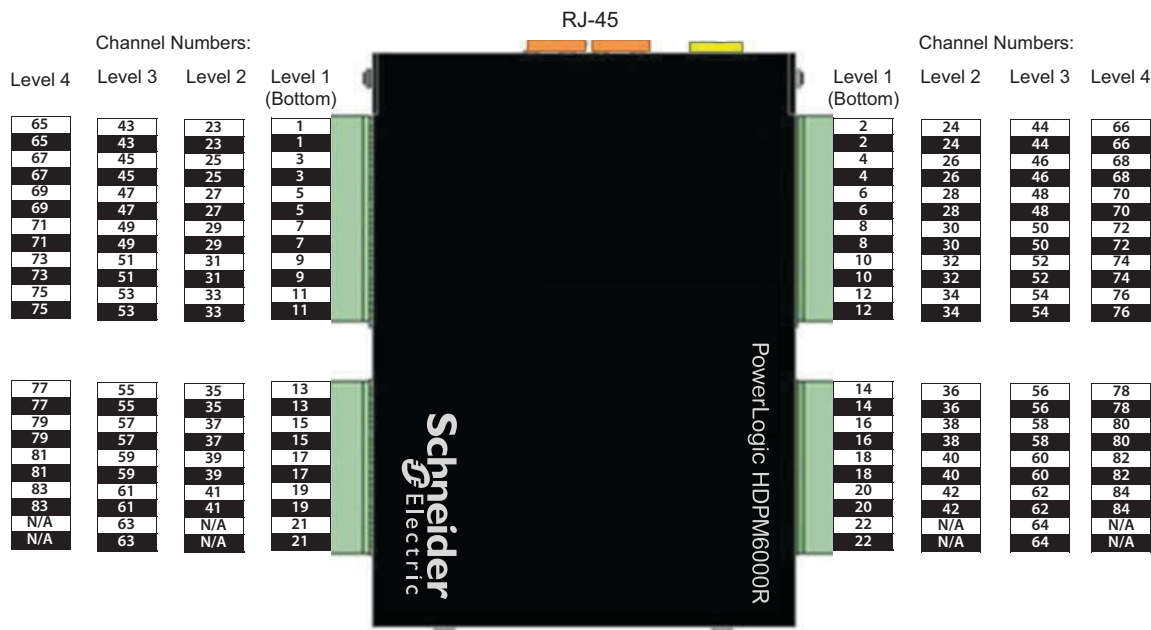
ANSI Wiring Diagrams (cont.)

126-Circuit System in ANSI Mode

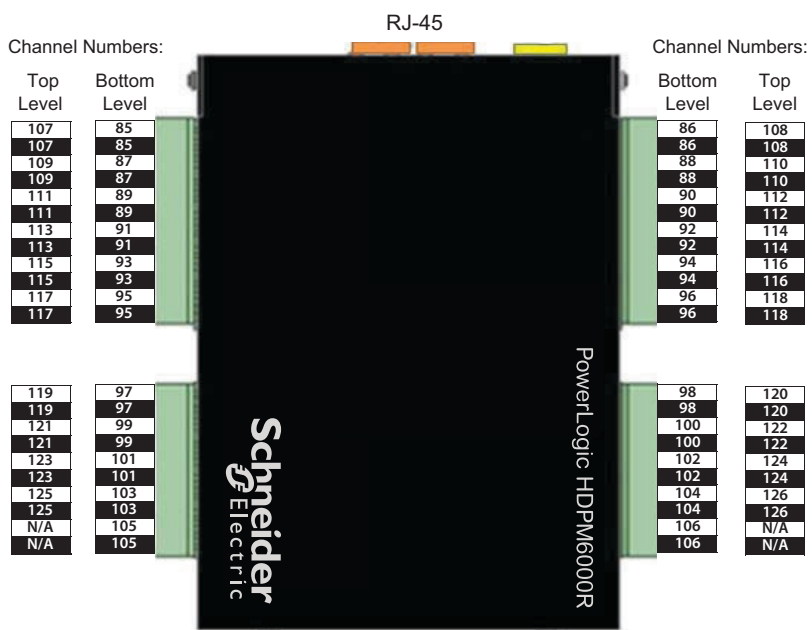
This system consists of an 84-circuit retrofit module and a 42-circuit module attached to the HDPM6000 bus. Set the addresses to the following:

Address Selector	Setting
84-Circuit Module, Lower Address Selector	1
84-Circuit Module, Upper Address Selector	2
42-Circuit Module	3

84-Circuit Module, Addresses 1 (lower selector) and 2 (upper selector)



42-Circuit Module, Address 3

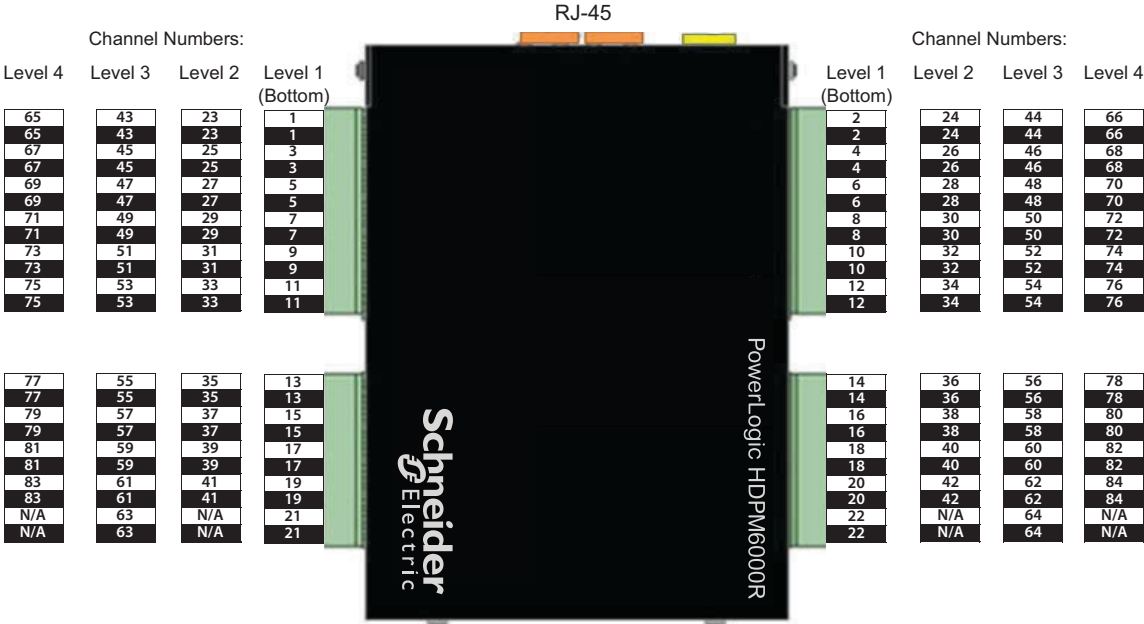


ANSI Wiring Diagrams (cont.)
168-Circuit System in ANSI Mode

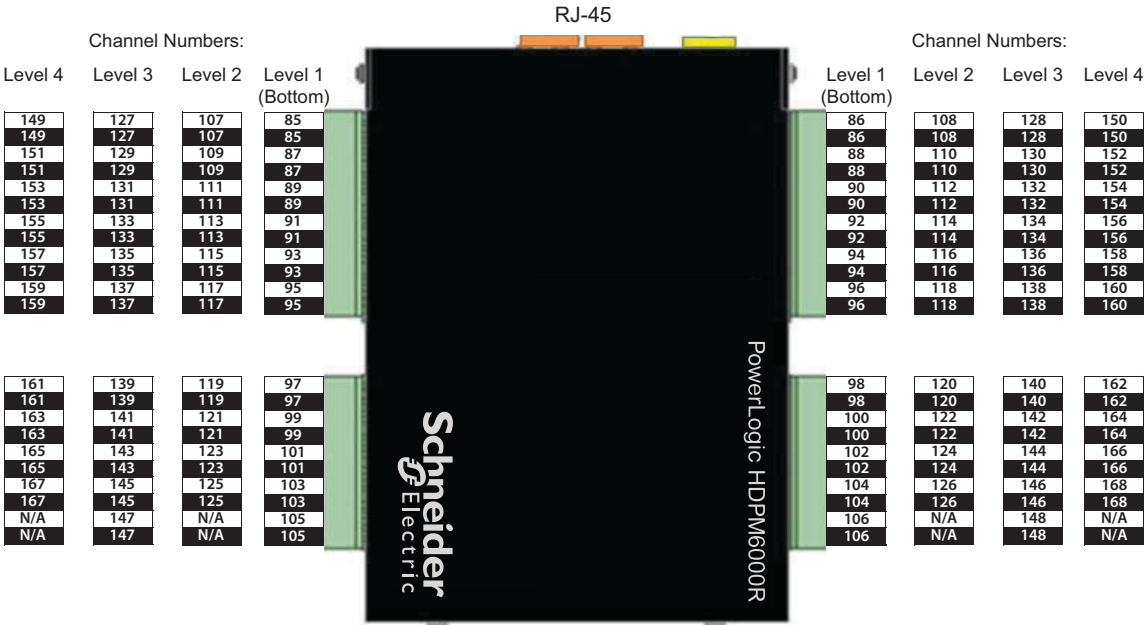
This system consists of two 84-circuit retrofit modules attached to the HDPM6000 bus. Set the addresses to the following:

Address Selector	Setting
First 84-Circuit Module, Lower Address Selector	1
First 84-Circuit Module, Upper Address Selector	2
Second 84-Circuit Module, Lower Address Selector	3
Second 84-Circuit Module, Upper Address Selector	4

First 84-Circuit Module, Addresses 1 (lower selector) and 2 (upper selector)



Second 84-Circuit Module, Addresses 3 (lower selector) and 4 (upper selector)



ANSI Wiring Diagrams (cont.)

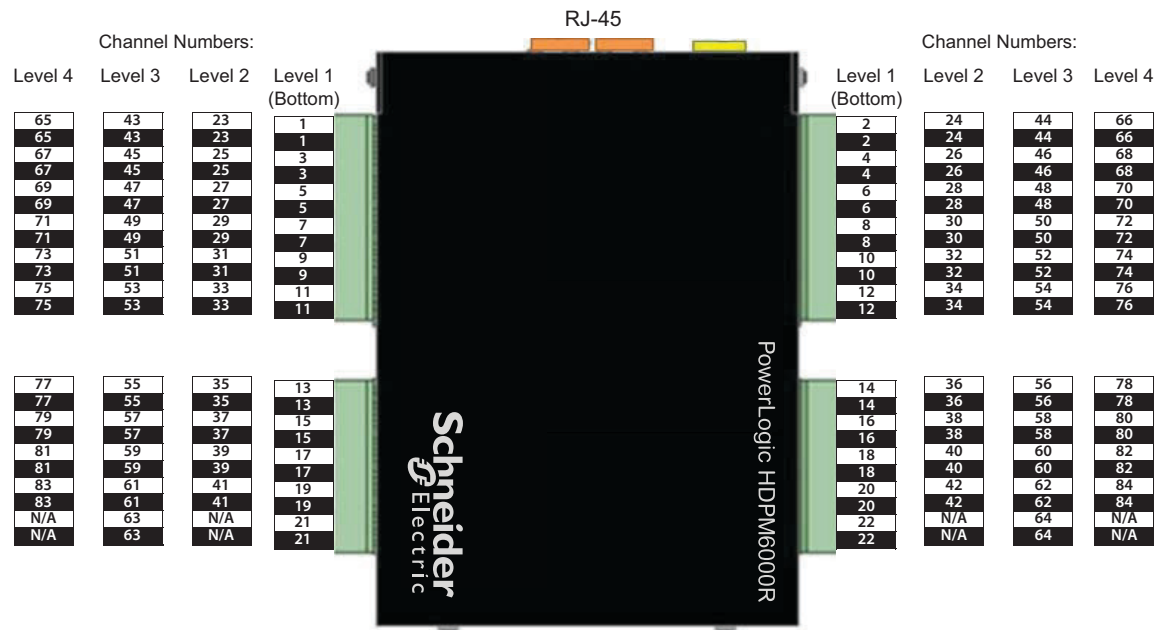
192-Circuit System in ANSI Mode

This system consists of two 84-circuit retrofit modules and one 24-circuit module attached to the HDPM6000 bus. Set the addresses to the following:

Address Selector	Setting
First 84-Circuit Module, Lower Address Selector	1
First 84-Circuit Module, Upper Address Selector	2
Second 84-Circuit Module, Lower Address Selector	3
Second 84-Circuit Module, Upper Address Selector	4
24-Circuit Module	0*

*If entering serial numbers on the web interface's TAPs tab to manually set order, enter the 24-circuit module's serial number into line 10 of the web page rather than line 0.

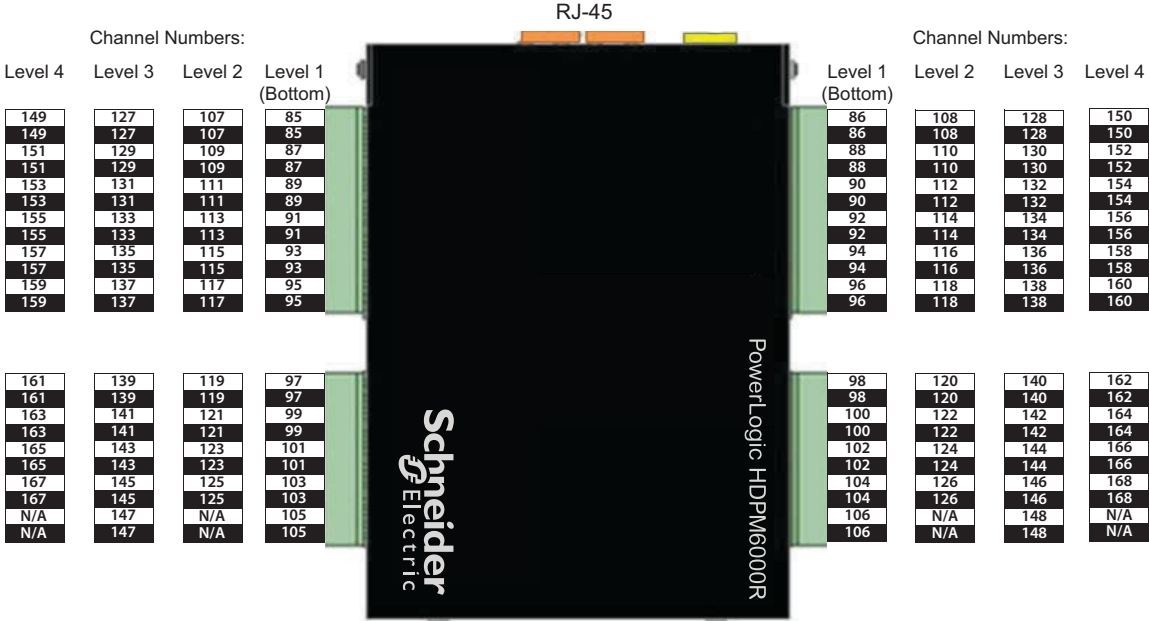
First 84-Circuit Module, Addresses 1 (lower selector) and 2 (upper selector)



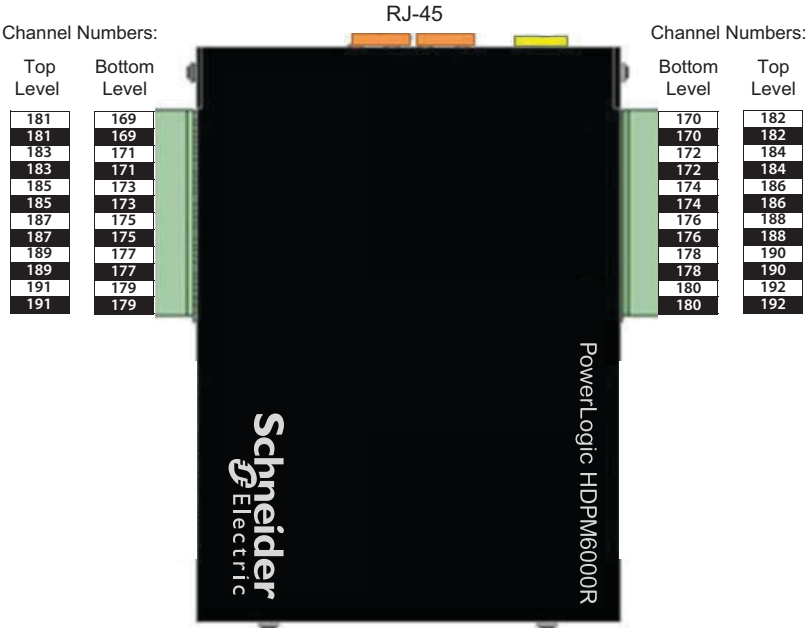
ANSI Wiring Diagrams (cont.)

192-Circuit System in ANSI Mode (cont.)

Second 84-Circuit Module, Addresses 3 (lower selector) and 4 (upper selector)



24-Circuit Module, Address 0

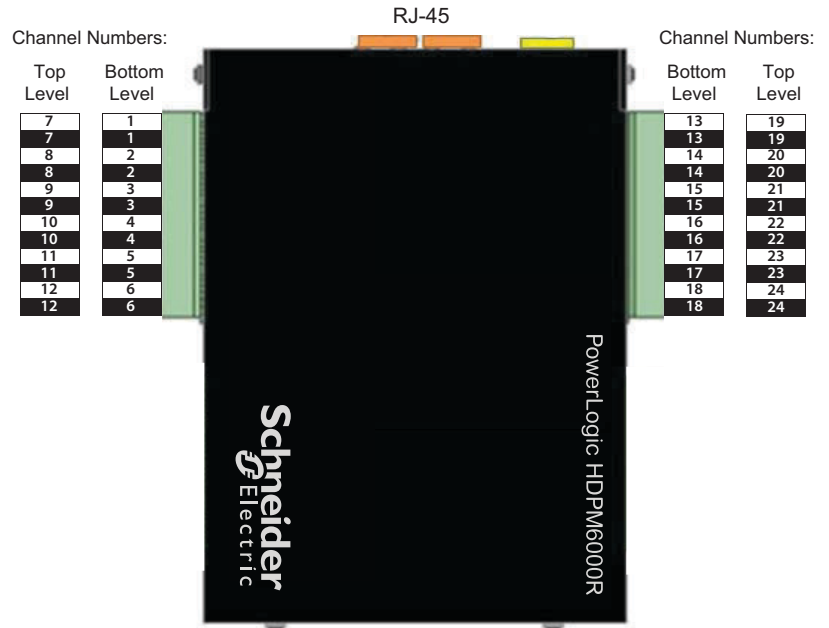


IEC Wiring Diagrams

24-Circuit System in IEC Mode

This system consists of a single 24-circuit retrofit module attached to the HDPM6000 bus. Set the address of the module to 1.

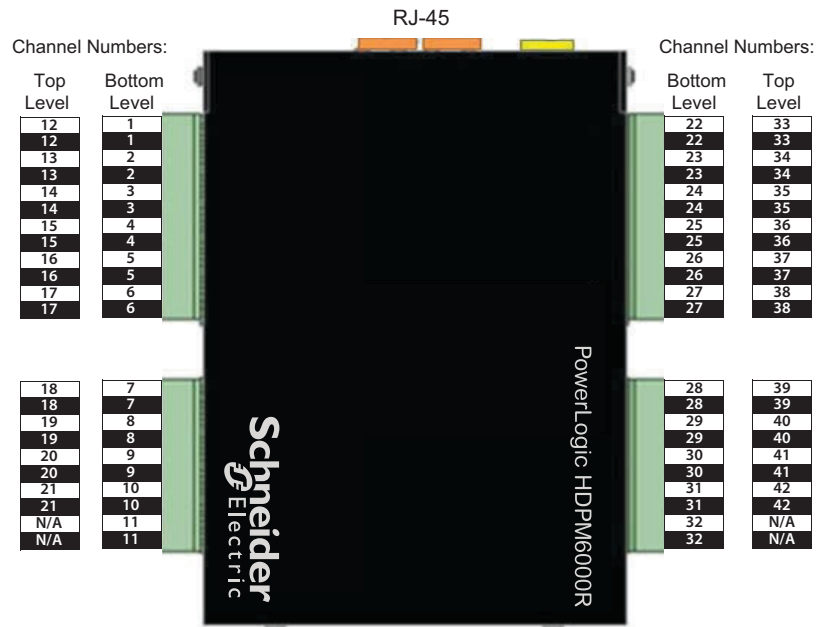
24-Circuit Module, Address 1



42-Circuit System in IEC Mode

This system consists of a single 42-circuit retrofit module attached to the HDPM6000 bus. Set the address of the module to 1.

42-Circuit Module, Address 1



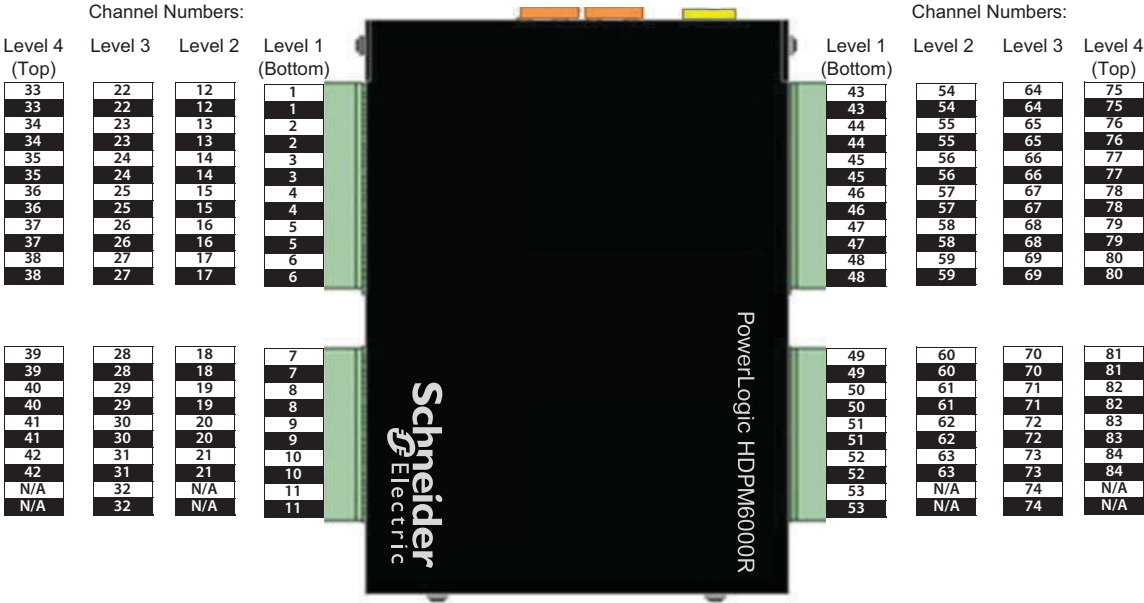
IEC Wiring Diagrams (cont.)

84-Circuit System in IEC Mode

This system consists of a single 84-circuit retrofit module attached to the HDPM6000 bus. Set the addresses to the following:

Address Selector	Setting
Lower Address Selector	1
Upper Address Selector	2

84-Circuit Module, Addresses 1 (lower selector) and 2 (upper selector)



IEC Wiring Diagrams (cont.)

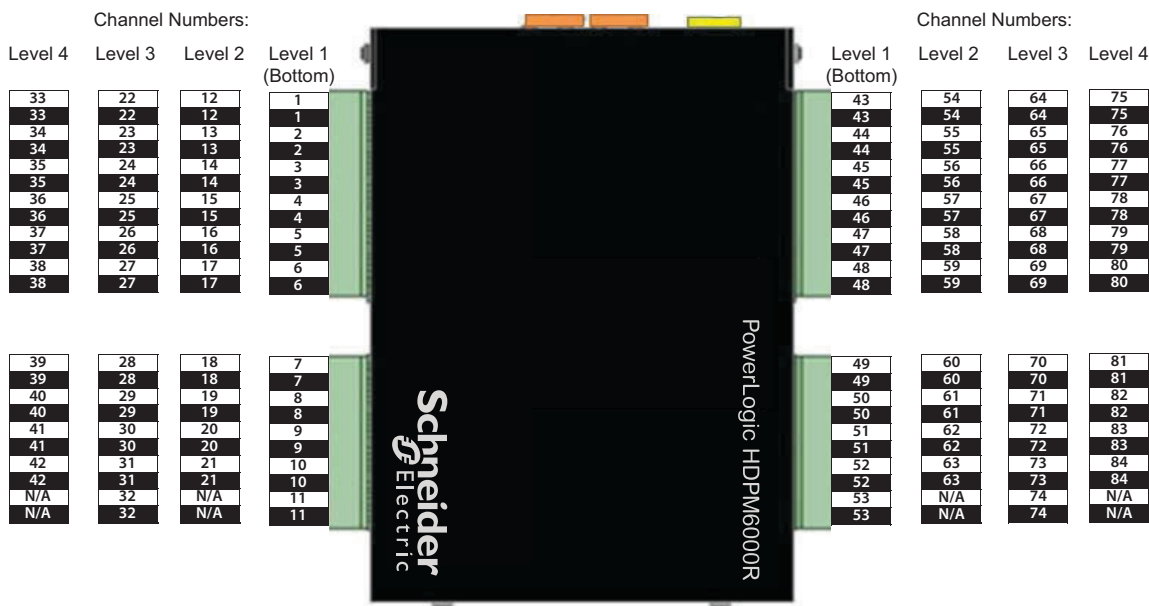
108-Circuit System in IEC Mode

This system consists of an 84-circuit retrofit module and a 24-circuit module attached to the HDPM6000 bus. Set the addresses to the following:

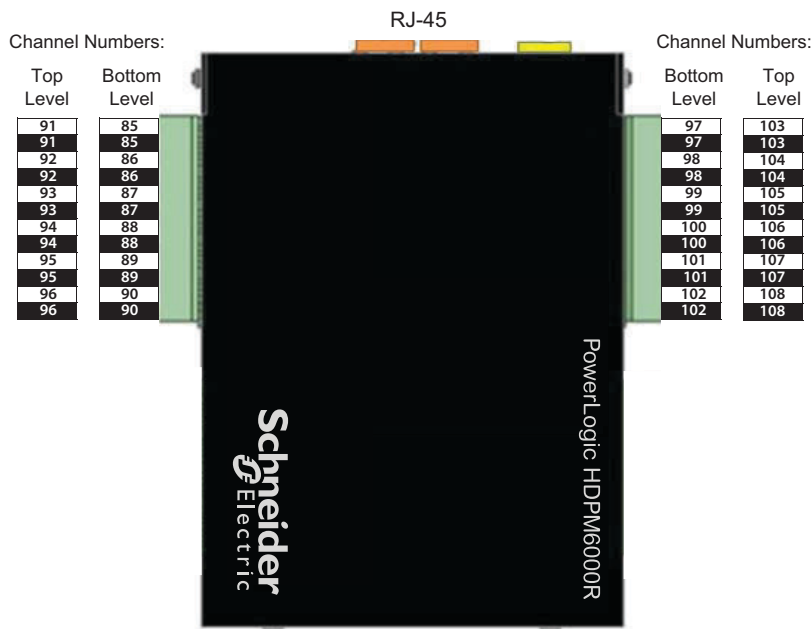
Address Selector	Setting
84-Circuit Module, Lower Address Selector	1
84-Circuit Module, Upper Address Selector	2
24-Circuit Module	9*

*If entering serial numbers on the web interface's TAPs tab to manually set order, enter the 24-circuit module's serial number into line 22 of the web page rather than line 9.

84-Circuit Module, Addresses 1 (lower selector) and 2 (upper selector)



24-Circuit Module, Address 9



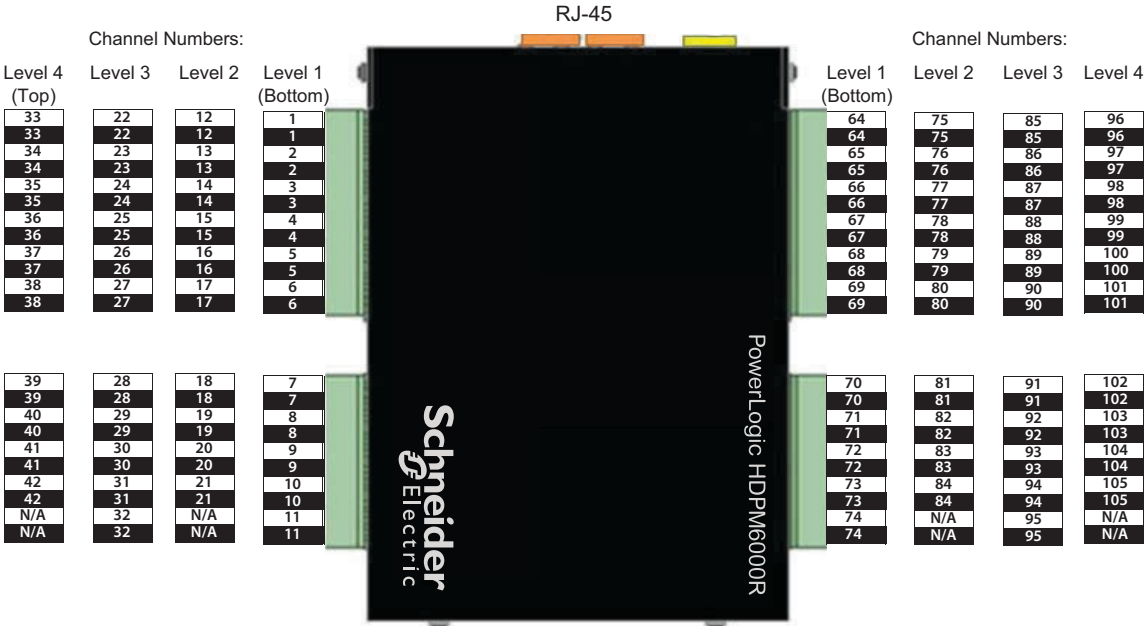
IEC Wiring Diagrams (cont.)

126-Circuit System in IEC Mode

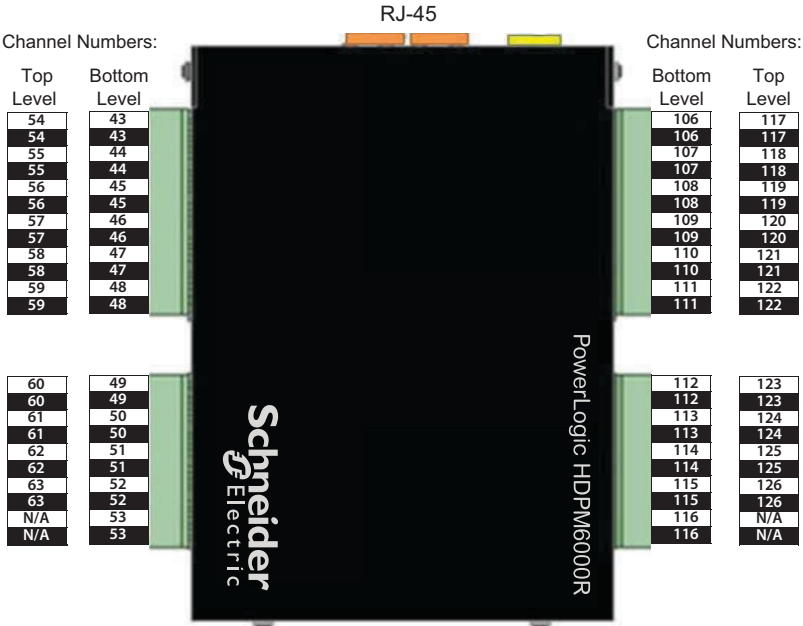
This system consists of an 84-circuit retrofit module and a 42-circuit module attached to the HDPM6000 bus. Set the addresses to the following:

Address Selector	Setting
84-Circuit Module, Lower Address Selector	1
84-Circuit Module, Upper Address Selector	2
42-Circuit Module	3

84-Circuit Module, Addresses 1 (lower selector) and 2 (upper selector)



42-Circuit Module, Address 3

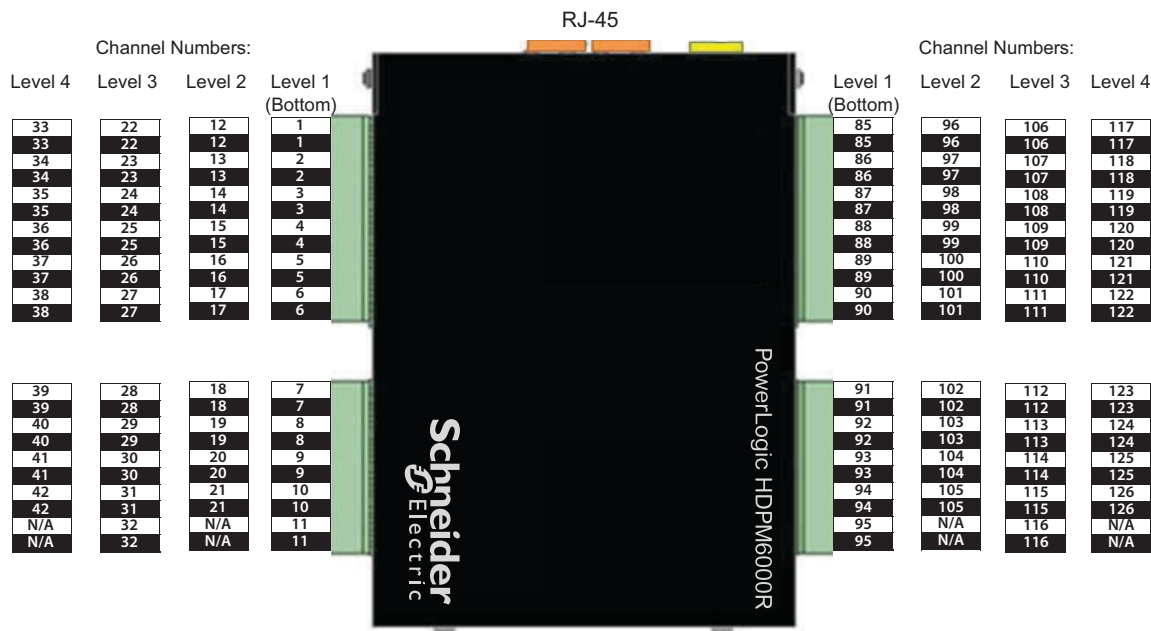


IEC Wiring Diagrams (cont.) 168-Circuit System in IEC Mode

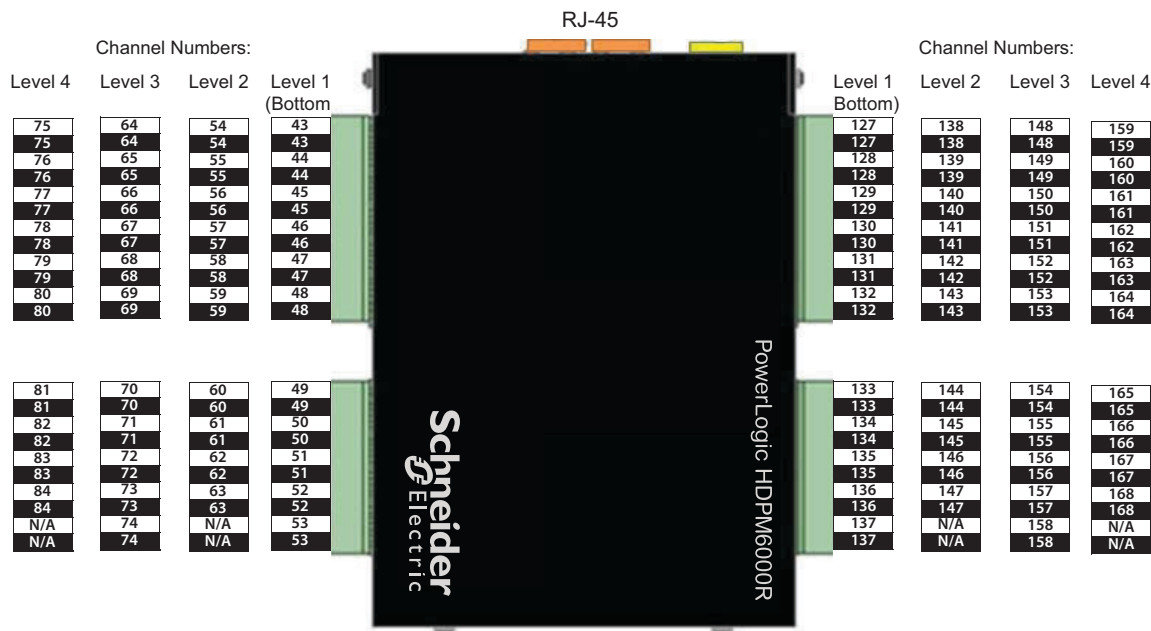
This system consists of two 84-circuit retrofit modules attached to the HDPM6000 bus. Set the addresses to the following:

Address Selector	Setting
First 84-Circuit Module, Lower Address Selector	1
First 84-Circuit Module, Upper Address Selector	2
Second 84-Circuit Module, Lower Address Selector	3
Second 84-Circuit Module, Upper Address Selector	4

First 84-Circuit Module, Addresses 1 (lower selector) and 2 (upper selector)



Second 84-Circuit Module, Addresses 3 (lower selector) and 4 (upper selector)



IEC Wiring Diagrams (cont.)

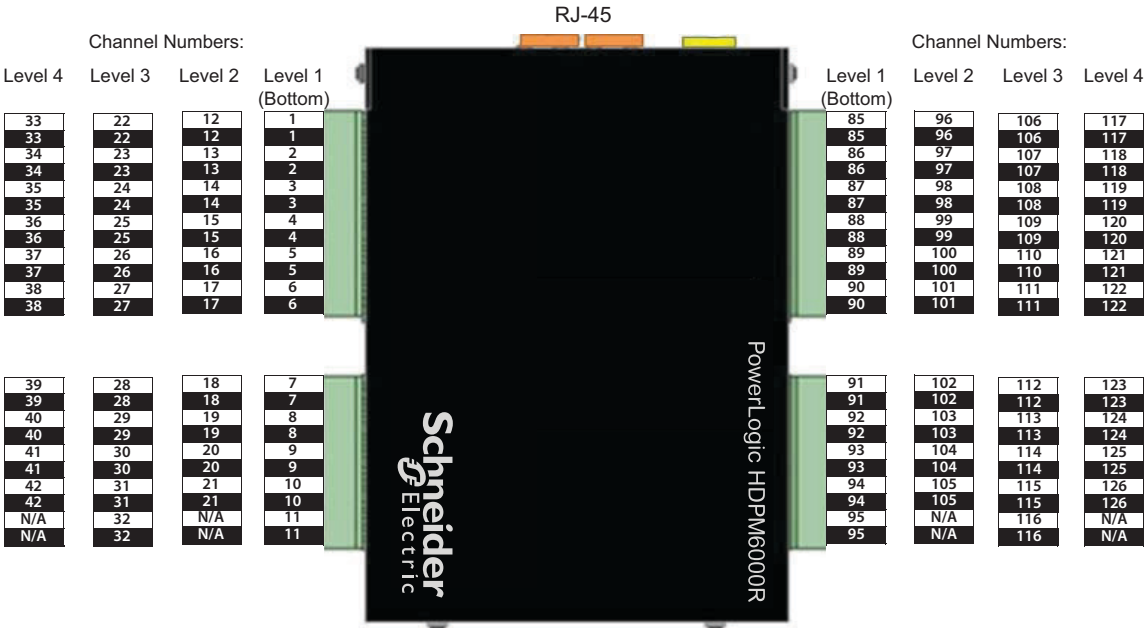
192-Circuit System in IEC Mode

This system consists of two 84-circuit retrofit modules and one 24-circuit module attached to the HDPM6000 bus. Set the addresses to the following:

Address Selector	Setting
First 84-Circuit Module, Lower Address Selector	1
First 84-Circuit Module, Upper Address Selector	2
Second 84-Circuit Module, Lower Address Selector	3
Second 84-Circuit Module, Upper Address Selector	4
24-Circuit Module	0*

*If entering serial numbers on the web interface's TAPs tab to manually set order, enter the 24-circuit module's serial number into line 10 of the web page rather than line 0.

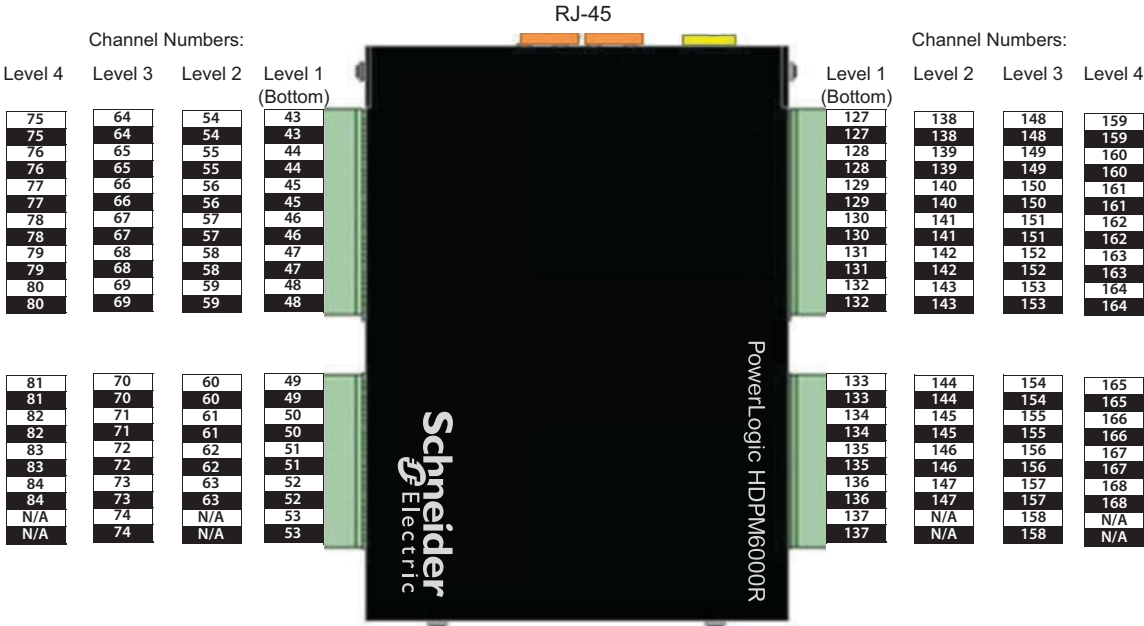
First 84-Circuit Module, Addresses 1 (lower selector) and 2 (upper selector)



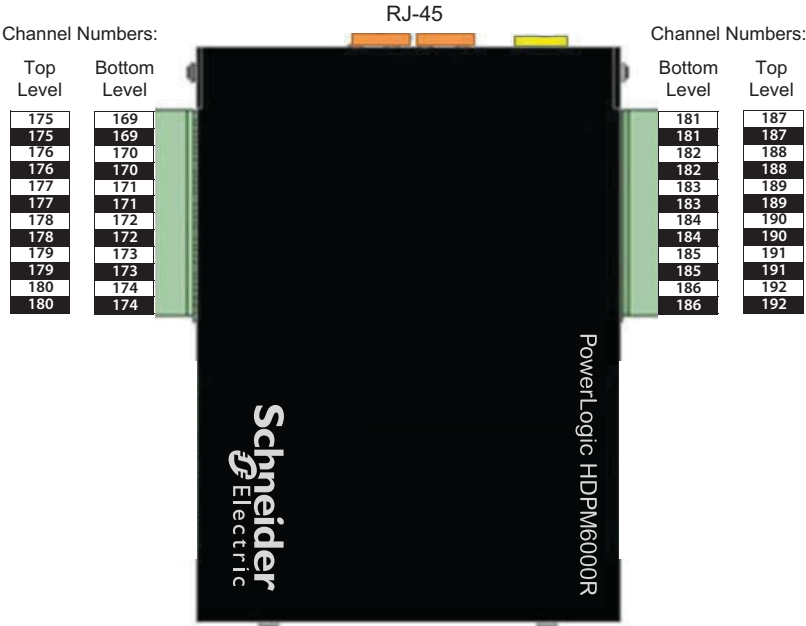
IEC Wiring Diagrams (cont.)

192-Circuit System in IEC Mode (cont.)

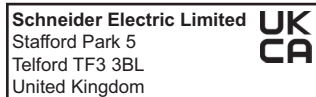
Second 84-Circuit Module, Addresses 3 (lower selector) and 4 (upper selector)



24-Circuit Module, Address 0



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