



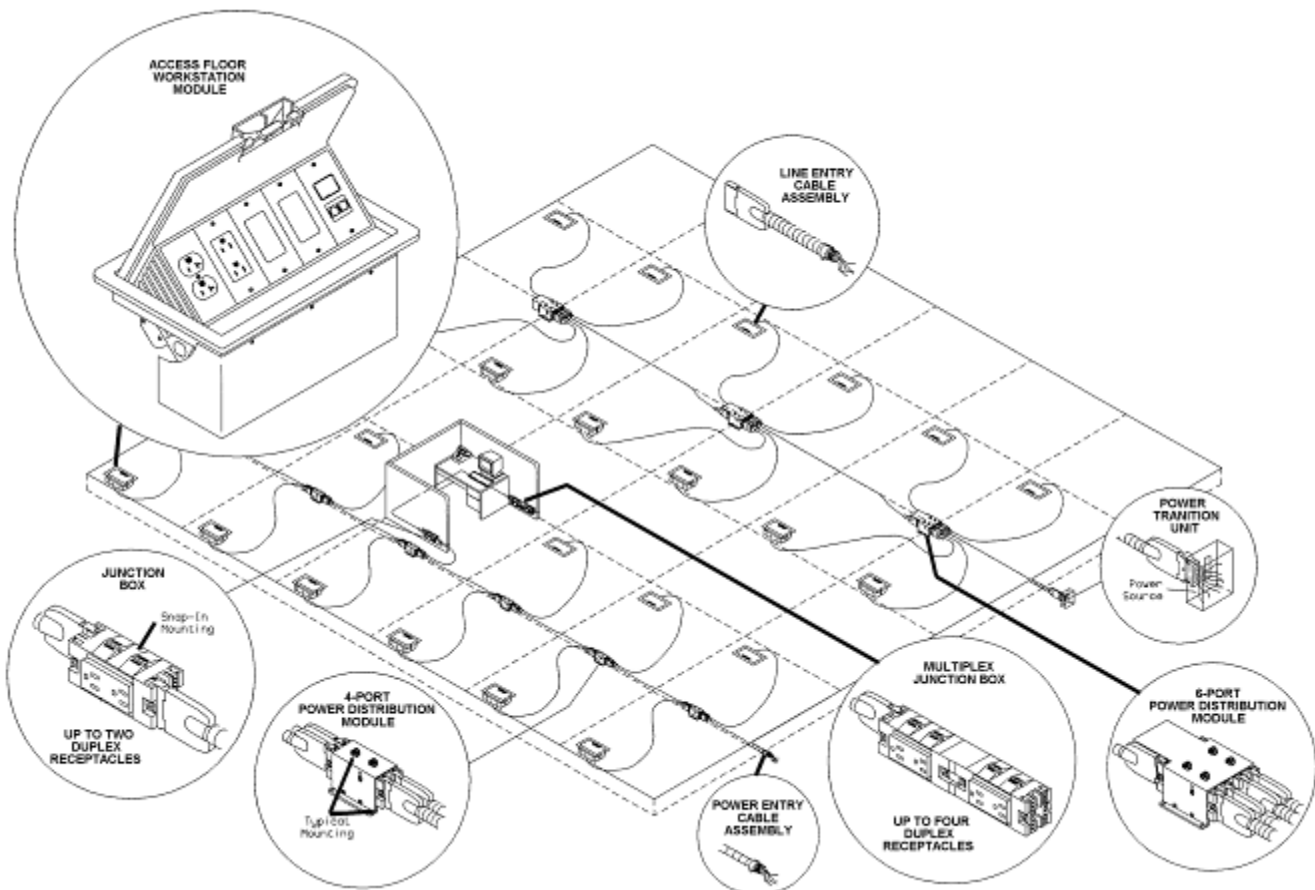
# AMPINERGY™

*Typical Q & A Regarding the Modular Power Distribution System*



# AMPINNERGY

## Typical Layout



AMPINNERGY Modular Power Distribution System  
Typical Layout

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## Common Questions with Answers

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- Which electrical Codes cover Manufactured Wiring and Office Furnishings system installations (and re-configuration) in the US markets?
  - *Article 604 – Manufactured Wiring Systems [2002, 2005 and 2008 NEC]*
  - *Article 605 – Office Furnishings [2002, 2005 and 2008 NEC]*
- Which electrical Codes cover Manufactured Wiring and Office Furnishings system installations (and re-configuration) in the Canadian markets?
  - *Rule 12-2500 – Manufactured Wiring Systems [2006 CEC]*
- Are there any markets where Manufactured Wiring is not approved for use?
  - *Unfortunately, yes. Manufactured Wiring is not approved for use inside the Chicago Loop, Chicago, IL. The restriction is on all manufactured wiring systems, not just AMPINNERGY.*
- Why is it that in certain Florida applications, Manufactured Wiring is only to be used in office furniture and not in retail stores?
  - *The AMPINNERGY Manufactured Wiring system can be used per both areas of the 2005 and 2008 NEC – Article 604 (Manufactured Wiring) and Article 605 (Office Furnishings). The Florida case is an example of a local inspector interpreting the Code differently. This inspector interpreted the application of power into display fixtures as being the same as power into office furnishings.*
- If UL183 is an approved ANSI standard, then why do we have certain markets that do not allow use of AMPINNERGY?
  - *Amendments to the NEC by local Code may limit or preclude the use of certain types of electrical equipment. Usually these can be talked through with a strong and politically attuned GC/EC and a request for variance where required.*
- Some electricians are unfamiliar with the AMPINNERGY product and are very slow when using the product for the first time. Is training available?
  - *The Product Information Center is available to lend assistance. Also, detailed Instruction Sheets are available. See “Additional Product Information and Resources” at the end of this document.*

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## Common Questions with Answers

- On the pigtail (Line Entry or Power Entry Cable) what color connects to each wire from the J-box?
  - The answer depends on the wiring system employed. Components with **WHITE** connectors will follow the 5-Wire (3-1-1) convention; Components with **BLACK** connectors will follow the 8-Wire Shared Neutral (4-2-2) convention; Components with **GRAY** connectors will follow the 8-Wire Dedicated Neutral (3-3-2) convention. See below:

[WHITE] 5-Wire (3-1-1) System	Designation	/ Function	[BLACK] 8-Wire (4-2-2) System	Posn.	Wire Color
-----	G	/ Ground	-----	1	GREEN
-----	N	/ Shared Neutral: Lines 1, 2, 3	-----	2	WHITE
	N4	/ Dedicated Neutral: Line 4	-----	3	GRAY
	IG	/ Isolated Ground	-----	4	GREEN/YELLOW
	4	/ Line 4	-----	5	PINK
-----	1	/ Line 1	-----	6	BLACK
-----	2	/ Line 2	-----	7	RED
-----	3	/ Line 3	-----	8	BLUE

Designation	/ Function	[GRAY] 8-Wire (3-3-2) System	Posn.	Wire Color
G	/ Ground	-----	1	GREEN
N1	/ Dedicated Neutral: Line 1	-----	2	WHITE
N2	/ Dedicated Neutral: Line 2	-----	3	GRAY
N3	/ Dedicated Neutral: Line 3	-----	4	GRAY/WHITE
IG	/ Isolated Ground	-----	5	GREEN/YELLOW
1	/ Line 1	-----	6	BLACK
2	/ Line 2	-----	7	RED
3	/ Line 3	-----	8	BLUE

- At the “J-Box” or other transition point between “Building Wiring” and “Manufactured Wiring,” the Manufactured Wiring’s 12 AWG and 10 AWG Cu conductors should be attached to Building Wiring minimum 12 AWG Cu conductors. The conductors should run back to the panelboard to terminate directly to the appropriate Overcurrent Device, Neutral or Ground in the panelboard.

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## Common Questions with Answers

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- What do the numbers on the Receptacles stand for and how do they tie in to the circuits?
  - *The answer depends on the wiring system employed. Receptacles for use with the 5-Wire (3-1-1) and 8-Wire Shared Neutral (4-2-2) systems will be identified by standard numerals as follows:*

1 =	Line 1 /	N	/ Standard Ground
2 =	Line 2 /	N	/ Standard Ground
3 =	Line 3 /	N	/ Standard Ground
4 =	Line 4 /	N4	/ Standard Ground
1G =	Line 1 /	N	/ Isolated Ground
2G =	Line 2 /	N	/ Isolated Ground
3G =	Line 3 /	N	/ Isolated Ground
4G =	Line 4 /	N4	/ Isolated Ground
5G =	Line 3 /	N4	/ Isolated Ground

- *Receptacles for use with 8-Wire Dedicated Neutral (3-3-2) systems will be identified by roman numerals as follows:*

I =	Line 1 /	N1	/ Standard Ground
II =	Line 2 /	N2	/ Standard Ground
III =	Line 3 /	N3	/ Standard Ground
IG =	Line 1 /	N1	/ Isolated Ground
IIG =	Line 2 /	N2	/ Isolated Ground
IIIG =	Line 3 /	N3	/ Isolated Ground

- How many amps/load can each circuit take?
  - *Each Line or Circuit is rated at 20 Amperes. As with conventional wiring systems, circuits should be designed to the applicable requirements of the National Electrical Code, as well as any applicable local Codes. As a general guideline, it's always best to design to 16 amperes as most protective devices (Circuit Breakers) are rated at + or – 20% of rated amperage. Each Line or Circuit should be designed to stay within the 3% voltage drop rule for Branch Circuits inside the NEC. This may mean going to larger gauge conductors back to the panel board.*

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## Common Questions with Answers

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- How should the circuits be alternated to balance loads?
  - *As with conventional wiring systems, circuits should be designed to the applicable requirements of the National Electrical Code, as well as any applicable local Codes. As a general guideline for balancing loads after installation, determine the operating amperage on the particular overloaded circuit using an ammeter clamp inside the panelboard or J-box. Change out duplex receptacles from an overloaded circuit to another Line/Circuit that is not carrying as much current.*
  - *Pull and install new circuits if balance cannot be obtained or application calls for extra power such as for Plasma TV's in a retail environment.*
- Is there a better way to connect the numbered Receptacles to the Junction Boxes/Power Strips? They are very difficult to and change out.
  - *Yes. Use thumb and forefinger to indent the duplex Receptacle locking tabs and pull straight out. If the thumb and forefinger are not strong enough to do this, then use two screwdrivers to gently indent the locking tabs and, with a gentle prying motion, pull the Receptacle straight out.*
  - *To install the receptacle, align the Receptacle with the Junction Box or Power Strip so that the Line number shown on the face of the Receptacle is next to the "CSA" logo on the Junction Box, and gently but firmly press the Receptacle into the Junction Box until it "clicks." If the "CSA" logo is hidden behind the Power Strip's cover, or if you cannot find it, then find the "keyway" on the side of the Receptacle and find the "key" in opening of the Power Strip and place the Receptacle in the Power Strip so that the key and keyway match, and then gently but firmly press the Receptacle into the Junction Box until it "clicks." On the BLACK Junction Boxes, the key is located next to the "MO" and "YR" symbols. On the GRAY Junction Boxes, the key is located near the "CSA" logo.*
- What happens if we do not hook up all of the wires on the Line Entry cable?
  - *Current and voltage will not be available to all Receptacles or other outlets used with the system.*
- Why can't AMPINNERGY Manufactured Wiring be run in the same conduit as the electrical power?
  - *It can be since it is separately enclosed. However, more information must be gathered about the application to properly advise regarding Code.*

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## Common Questions with Answers

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- Why is AMPINNERGY Manufactured Wiring considered *flexible*?
  - AMPINNERGY uses “Flexible Conduit” or “Flexible Cable Assemblies” as part of its construction and it can be easily and quickly reconfigured by disconnecting and reconnecting (without power “on”) the cable assemblies and system components.
- How do we support the cable? At what end? What type of fasteners?
  - AMPINNERGY uses flexible metal conduit inherent in its design. As such, 2005 and 2008 NEC Article 348 applies – the Flexible Metal Conduit “shall” be securely fastened in place by an approved means within 300 mm (12 in.) of each box, cabinet, conduit body, or other conduit termination shall be supported and secured at intervals not to exceed 1.4 m (4-1/2 ft). Nylon tie wraps and ½” conduit clamps are approved means.
  - Note: No support is needed where the conduit is fished. This exception is noted in Article 348.40(A) of the 2005 and 2008 NEC.
- Is there a website containing more information on the AMPINNERGY product?
  - Yes. The AMPINNERGY Power Products are now on the website!
  - Start at <http://www.ampnetconnect.com> and click on Systems, then Power Distribution Systems, or click directly on AMPINNERGY.
  - Here are some pointers:
    - Approval Letters are under EVALUATE - Testing
    - Cost Comparisons are under LEARN - Technical Articles & Article Reprints
    - The Planning Guides are under INSTALL - Manuals
    - The CAD Drawings are under SPECIFY - CAD Drawings

# AMPINNERGY

## Codes & Agency Specifications

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- AMPINNERGY meets the following:
  - Voltage Rating:
    - 125/250 volts AC
  - Current Rating:
    - 20 amps
    - 15 amps (standard for Canada installations)
  - Complies with 2005 and 2008 National Electrical Code
    - Article 604 and Article 605
  - UL Listed
    - Manufactured Wiring Systems (UL File E132626)
  - Complies with CSA C22.1-06, “Canadian Electrical Code, Part I”
    - Section 12, Rule 12-2500
  - Certified by Canadian Standards Association
    - Manufactured Wiring Systems (File 7189)
    - Modular Wiring Systems and Accessories (File 7189)
    - 15 amp receptacles are standard for Canada installations

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## Warranty Information

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- *AMP NETCONNECT AMPINNERGY Power Distribution System **warranty conditions** are:*
  - ***90-days** for AMPINNERGY Power Distribution System components, providing they are installed per the applicable Instruction Sheet and the overall system is installed in accordance with the AMP NETCONNECT AMPINNERGY Layout and Planning Manual.*
  - *Tyco Electronics provides warranty coverage **directly to the end-user**, rather than to the installer.*
  - *AMPINNERGY Power Distribution System Products do NOT qualify for the AMP NETCONNECT 25-year Component or System Performance Warranty.*

# AMPINNERGY –

## Additional Information

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- Conforms to **2005 and 2008 National Electrical Code** (NFPA 70), Article 604 and Article 605.
- **UL Listed:**
  - File Number E132626 – Manufactured Wiring Systems
- Conforms to **2006 Canadian Electrical Code, Part I** (CSA C22.1-06), Section 12, Rule 12-2500.
- **CSA Certified:**
  - File Number 7189 – Manufactured Wiring Systems, and Modular Wiring Systems and Accessories.
- **Product Information Center: (800) 522-6752.**
- Customer Service (Pricing Inquiries): (800) 553-0938.
- AMPINNERGY Layout and Planning Manual, #124235.
- On the Web: <http://www.ampnetconnect.com>