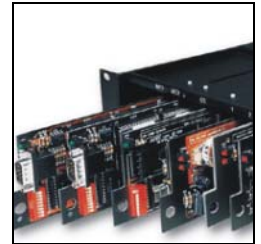




instruction manual

PLB-CF10

CardFrame



Landmark Products



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AMX Corporation warrants its products to be free of defects in material and workmanship under normal use for three (3) years from the date of purchase from AMX Corporation, with the following exceptions:

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- Unless otherwise specified, OEM and custom products are warranted for a period of one (1) year.
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Safety Instructions

<p>ATTENTION!</p> <p>Read and follow all safety and operating instructions before installing or operating this device. Adhere to all warnings listed on the device and in the operating instructions.</p>							
<table border="1" style="margin: auto; border-collapse: collapse;"> <tr> <td style="text-align: center; padding: 5px;"></td> <td style="text-align: center; padding: 5px;"> <p>CAUTION</p> <p>RISK OF ELECTRIC SHOCK DO NOT OPEN</p> </td> <td style="text-align: center; padding: 5px;"></td> </tr> <tr> <td colspan="3" style="text-align: center; padding: 5px;"> <p>CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER (OR BACK). NO USER-SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.</p> </td> </tr> </table>			<p>CAUTION</p> <p>RISK OF ELECTRIC SHOCK DO NOT OPEN</p>		<p>CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER (OR BACK). NO USER-SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.</p>		
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	<p>The lightning flash with arrowhead symbol within an equilateral triangle is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock.</p>		<p>The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.</p>				
<p>WARNING!</p> <p>TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE.</p>							

1. **Read Instructions** - Read all of the safety and operating instructions before operating the product.
2. **Retain Instructions** - Retain the safety and operating instructions for future reference.
3. **Heed Warnings** - Adhere to all warnings on the product and in the operating instructions.
4. **Follow Instructions** - Follow all operating and use instructions.
5. **Cleaning** - Unplug this product from the wall outlet or other power source before cleaning. Do not use liquid or aerosol cleaners. Use only a clean, damp cloth for cleaning.
6. **Attachments** - Do not use attachments or accessories that are not recommended by the manufacturer, as they may cause hazards.
7. **Water and Moisture** - Do not use this product near water, such as a bath tub, wash basin, kitchen sink, wet basement, swimming pool, or any other water or wet area.
8. **Accessories** - Do not place this product on an unstable cart, stand, tripod, bracket, table, or other surface or object. The product may fall, causing serious bodily injury to a child or adult. It may also cause equipment damage. Use this product only with a cart, stand, tripod, bracket, table, or other device that is recommended by the manufacturer or sold with the product. Mount this device only in accordance with the manufacturer's instructions, using only mounting accessories recommended by the manufacturer.
9. **Moving the Product** - A product and cart combination must be moved with care. Quick stops, excessive force, and uneven surfaces may cause the product and cart combination to tip or overturn.
10. **Ventilation** - Slots and openings in the cabinet are provided for ventilation and to ensure reliable operation of the product and to protect it from overheating. These openings must not

be blocked or covered. Never block these openings by placing the product on a bed, sofa, rug, or similar surface that may cover the openings. Do not install this product in a rack, built-in installation, such as a bookcase or other enclosure, unless adequate ventilation is provided or the manufacturer's instructions are adhered to.

- 11. Power Sources** - Operate this product only from the type of power source indicated by the product documentation or by a marking label on the product. If you are not sure if the power source in your home or building is correct for the product, consult your product dealer or local power company. For products intended for operation from battery power or other sources, refer to the operating instructions.
- 12. Grounding or Polarization** - This product is shipped with a three-wire grounding-type plug, a plug having a third (grounding) pin. This plug will only fit into a grounding-type power outlet that is designed for use with this plug. This is a safety feature. If you are unable to insert the plug into the outlet, contact an electrician to replace the obsolete or incorrect outlet. Do not defeat the safety purpose of the grounding-type plug.
- 13. Power Cord Protection** - Power supply cords should be routed so that they are not likely to be walked on or pinched by items placed on or against them. Pay particular attention to cords at plugs, convenience receptacles, and the point where they exit from the product.
- 14. Protective Attachment Plug** - If the product is equipped with an attachment plug with overload protection, refer to the manufacturer's instructions for replacement or resetting of this protective device. If replacement of the plug is required, make sure the service technician has used a replacement plug specified by the manufacturer that has the same overload protection as the original plug.



NOTE

Use the same bonded-ground as the house. Refer to the FIG. 1 on page c for more information.

- 15. Outdoor Antenna Grounding** - If an outside antenna or cable system is connected to the product, make sure the antenna or cable system is grounded to provide some protection against voltage surges and built-up static charges (FIG. 1). Article 810 of the National Electrical Code, ANSI/NFPA 70, provides information regarding proper grounding of the mast and supporting structure, grounding of the lead-in wire to the antenna discharge unit, size of grounding conductors, location of antenna-discharge unit, connection to grounding electrodes, and requirements for the grounding electrode.

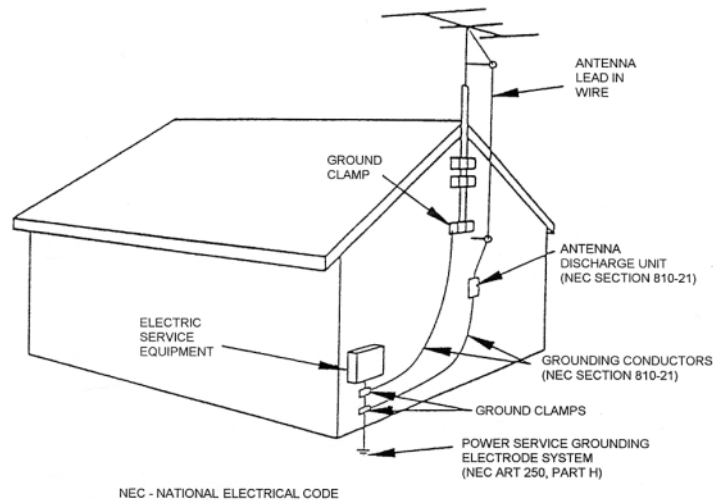


FIG. 1 Outdoor antenna grounding

- 16. Lightning** - For added protection for this product during lightning storms, or when the product is left unattended and unused for long periods of time, unplug it from the wall outlet or other power source and disconnect other wires, such as an antenna or cable system. This will prevent damage to the product due to lightning and power line surges.
- 17. Power Lines** - An outside antenna system should not be located in the vicinity of overhead power lines or other electrical light or power circuits, or where it can fall into such power lines or circuits. When installing an outside antenna system, extreme care must be taken to keep from touching such power lines or circuits, as contact with them might be fatal.
- 18. Overloading** - Do not overload wall outlets, extension cords, or integral convenience receptacles, as this can result in a risk of fire or electrical shock.
- 19. Object and Liquid Entry** - Never push objects of any kind into this product through openings, as they may contact dangerous voltage points or short out parts, resulting in a fire or electrical shock. Never spill any kind of liquid on this product.
- 20. Servicing** - Do not attempt to service this product yourself, as opening or removing covers may expose you to dangerous voltage or other hazards. Refer all servicing to qualified service personnel.
- 21. Damage Requiring Service** - Unplug this product from the wall outlet or other power source. Refer servicing to qualified service personnel under the following conditions:
- When the power supply cord or plug is damaged.
 - If liquid has been spilled on the product or if objects have fallen into the product.
 - If the product has been exposed to rain or water.
 - If the product does not operate normally by following the operating instructions, adjust only those controls that are covered by the operating instructions. An improper adjustment of other controls may result in damage and will often require extensive work by a qualified technician to restore the product to its normal operation.
 - If the product has been dropped or damaged in any way.

- f. When the product exhibits a distinct change in performance. This indicates a need for service.
- 22. Replacement Parts** - When replacement parts are required, make sure the service technician has used replacement parts that are specified by the manufacturer or have the same characteristics as the original parts. Unauthorized substitutions may result in fire, electrical shock, or other hazard.
- 23. Safety Check** - Upon completion of any service or repairs to this product, ask the service technician to perform safety checks to determine that the product is in proper operating condition.
- 24. Wall or Ceiling Mounting** - The product should be mounted to a wall or ceiling only as recommended by the manufacturer.
- 25. Heat** - The product should be situated away from heat sources, such as radiators, heat registers, stoves, or other products (including amplifiers) that produce heat.

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Product Information

The Landmark Cardframe (FIG. 1) serves as "mission control" for the entire Landmark system. Equipped with an MCU (Master Control Unit) card, the Cardframe supplies onboard processing and memory, controlling interactions between internal plug-in control cards and additional cardframes, hubs, keypads, touch panels, lighting, audio switches, and other devices connected to the PHASTLink network.

Only one MCU card is used in a Landmark system, but additional cardframes can be easily added to accommodate more plug-in control cards. This allows Landmark systems to control any size project and to grow with your changing automation needs.

Each Landmark Cardframe holds ten cards (1 MCU + 9 other cards in the first cardframe, 10 control cards in each additional cardframe).

A Landmark Cardframe with an MCU card can serve as a stand-alone system controller, or the system may be set up to be controlled by a PC running Landmark software, using the MCU as a backup in case of PC failure. The connection to a system PC is via a high-speed Ethernet cable.

A 15-port PHASTLink hub is built into the Landmark Cardframe. Additional PHASTLink hub boxes can be added to accommodate any size system. Housed in an elegant black enclosure that matches other Landmark large-chassis products, Landmark Cardframes can be rack or shelf mounted.

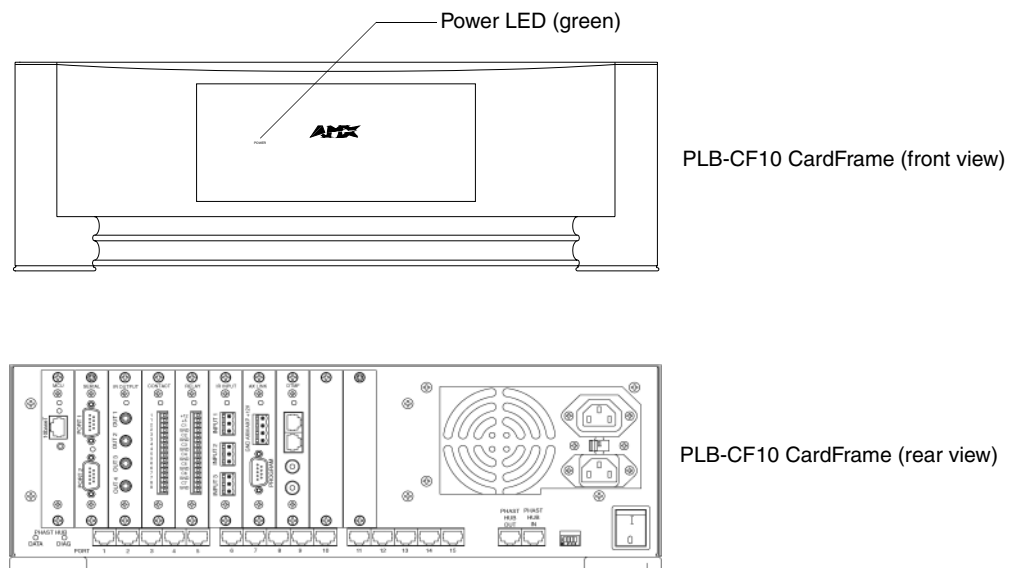


FIG. 1 PLB-CF10 CardFrame (front and rear views)

Product Specifications

PLB-CF10 Specifications	
Dimensions	5.56" x 17.13" x 15.25" (14.12 cm x 43.51 cm x 38.74 cm)
Power	<ul style="list-style-type: none"> • 115/230 VAC, 50/60 Hz, selectable via switch on rear chassis • 13 A @12 VDC (max) or 24 A @ +5 VDC
Card Slots	10 rear-access slots
PHASTHub IN/OUT	2 RJ-45 ports to hubs and cardframes
PHASTLink	15 RJ-45 PHASTLink ports
Device Address	Set via DIP switch
Weight	18.2 lbs (8.26 kg) without cards
Accessories:	PM-RAC Rack-Mount Kit, requires 3 rack spaces (5.25" / 133.3 mm).

Attached to the rear of the universal unit is a tag (FIG. 2) that alerts the user of the factory preset 230 VAC power rating. Removing the tag confirms that the user is aware of the preset power rating.

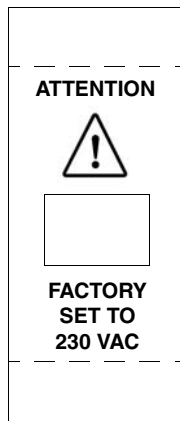


FIG. 2 Factory power default notification tag

Product Information

Voltage Selection Switch

The switch is located on the right side of the rear panel.



NOTE

Make sure that the voltage selection switch is set to the correct line voltage (115 VAC or 230 VAC).

Power-Up Procedure

1. Plug the power cord into a properly matching and grounded 115 VAC or 230 VAC outlet.
2. Turn the power On. The power switch is located at the right side of the rear panel.
3. An LED should be illuminated on the front panel. If there is a problem, contact your Landmark dealer or Landmark/AMX Technical Support.

PHASTHub Ports

There are two RJ-45 PHASTHub ports on the rear panel. These allow you to daisy-chain the cardframe to other cardframes or hubs to expand the system size and capabilities. Always connect the OUT port on this device to the IN port on the next PHASTHub device down the chain. Do not reverse this connection.



NOTE

*The OUT connector cable must feed into an IN connector on another device.
The IN connector cable must feed into an OUT connector on another device.*

PHASTLink Ports

There are 15 PHASTLink ports on the lower part of the rear panel. These are used to connect PHASTLink devices to the cardframe. If more ports are required, an additional cardframe or hub box will be necessary. It does not matter which PHASTLink port you use; they are all functionally identical.

MCU-to-PC Connection

If a PHAST MCU card is installed, a 10Base-T Ethernet port on the MCU card is used to connect the to an ethernet board in the PC. Refer to the *PLC-MCU Master Control Unit Card Reference Guide* for more information on connecting and using the MCU card.

Device Address

A DIP switch (FIG. 3) on the rear panel allows you to set the cardframe address to match its address in the Landmark software. The following illustration shows the address settings (factory default is 0):

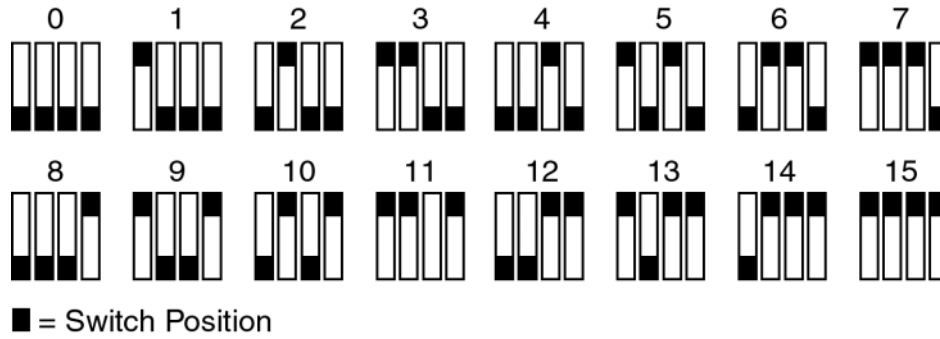


FIG. 3 PLB-CF10 DIP switch settings



DANGEROUS VOLTAGE!
TO AVOID SERIOUS INJURY OR DEATH, DO NOT OPEN THE CARDFRAME.

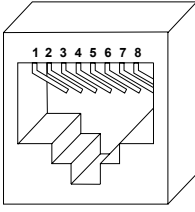
PHASTLink Cable Information

This section contains information that you will need to make PHASTLink cables, plus general information on connecting PHASTLink devices.

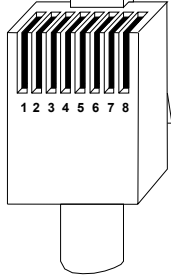
PHASTLink cables are used to connect all PHASTLink-compatible devices, including keypads, dimmers, J-box IR devices, amplifiers, audio switches, etc. PHASTLink uses a standard 10BaseT connection (i.e. Cat 5 wire and RJ-45 connectors), and the wire should be connected in the standard manner illustrated in the following table. If the standard EIA/TIA 568A color code is followed, wiring problems will be minimized.

PHASTLink Cable Information			
Pin #	Wire Color	Polarity	Function
1	White/Green	+	Transmit
2	Green	-	Transmit
3	White/Orange	-	Mic
4	Blue	-	Ground
5	White/Blue	+	12VDC
6	Orange	+	Mic
7	White/Brown	+	Receive
8	Brown	-	Receive

RJ-45 Socket



RJ-45 Plug





It is important that the correct pairing is observed. Transmit, Receive, and Mic need to be on twisted pairs. Splitting pairs (e.g., using a white/green wire with a blue/white wire for transmit) will result in increased crosstalk, and may result in bus failure or noise on the intercom.

The system comes with a 15-port hub built into the PLB-CF10 cardframe. The maximum length of PHASTLink wire per port is 1,000 feet.

Each PHASTLink device has two RJ-45 jacks to allow multiple devices to be daisy-chained on one PHASTLink port. Remember to always terminate the unused RJ-45 jack of the last device (or the only device) in a chain of PHASTLink devices (see *Building a Double 120-ohm Terminator* for details).

- The limit for each home run is 500 mA or 10 PHASTLink devices, whichever comes first (FIG. 4). Extra hubs can be added to provide additional ports.
- Only one Landmark LCD keypad (i.e. DMS or IMS) can be used per port, so always home-run each keypad.
- Some PHASTLink devices (particularly those devices that require two-way communication to the Master) have relatively high bandwidth requirements. These devices (including SAM modules, the PMB-TCC Remote Television Control Center, and ITI Printer/Automation Module) should also not be daisy-chained.

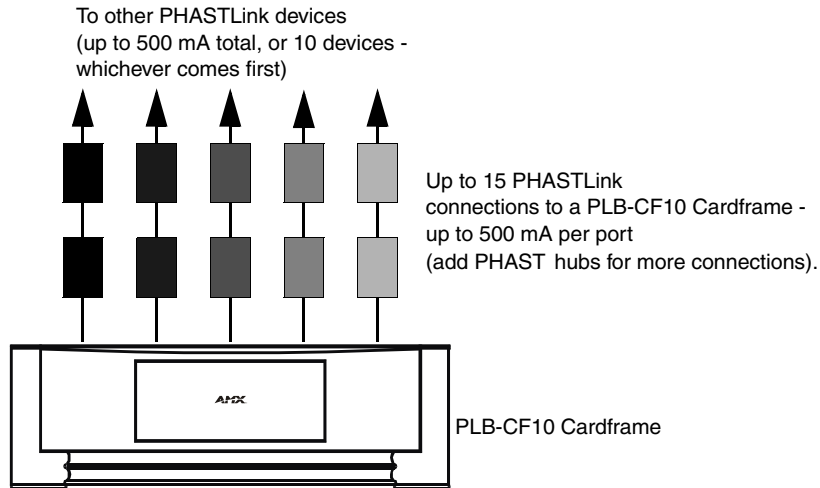


FIG. 4 500 mA or 10 devices (whichever comes first) max per port.

Building a Double 120-ohm Terminator

For optimum performance, you must install a double 120-ohm terminator in the unused RJ-45 jack of the last device (or the only device) in a chain of PHASTLink devices.

To build a double 120-ohm terminator:

1. Install a 120-ohm resistor (1/4-watt or larger) between pins 1 and 2 of an RJ-45 connector.
2. Install a 120-ohm resistor (1/4-watt or larger) between pins 7 and 8 of the same RJ-45 connector.

When connecting Landmark keypads that will be used as intercoms, the Microphone Hub taps off the intercom audio signal carried on the PHASTLink cable from that keypad.

Landmark LCD keypads must connect directly to a Landmark Hub (or Microphone Hub). Due to power requirements and/or the need for a separate microphone line for each keypad, they cannot be daisy-chained to other LCD keypads. For maximum performance and reliability, a Landmark keypad should be the only device on a home run to a port. PHASTLink devices cannot be wired in a star configuration (see FIG. 5).

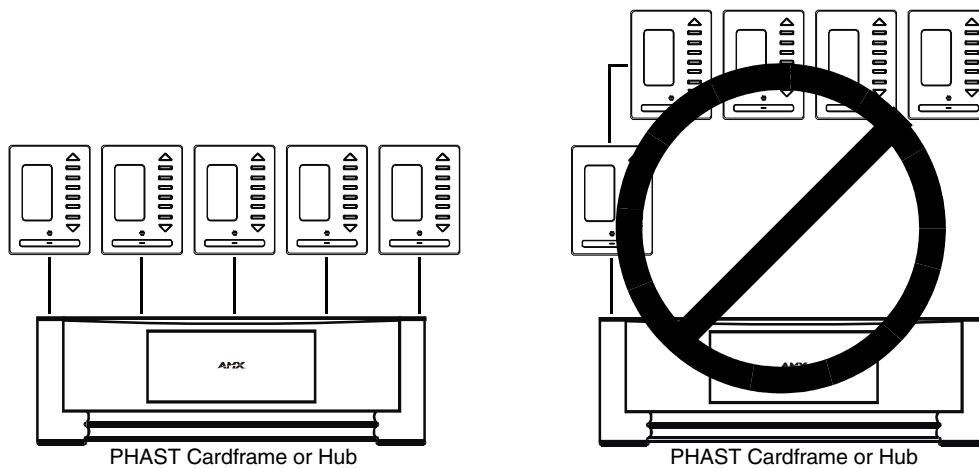


FIG. 5 Home-run each Landmark LCD keypad.

PhastLink Connections

FIG. 6 shows how PHASTLink and HubLink ports are connected in a Landmark system.

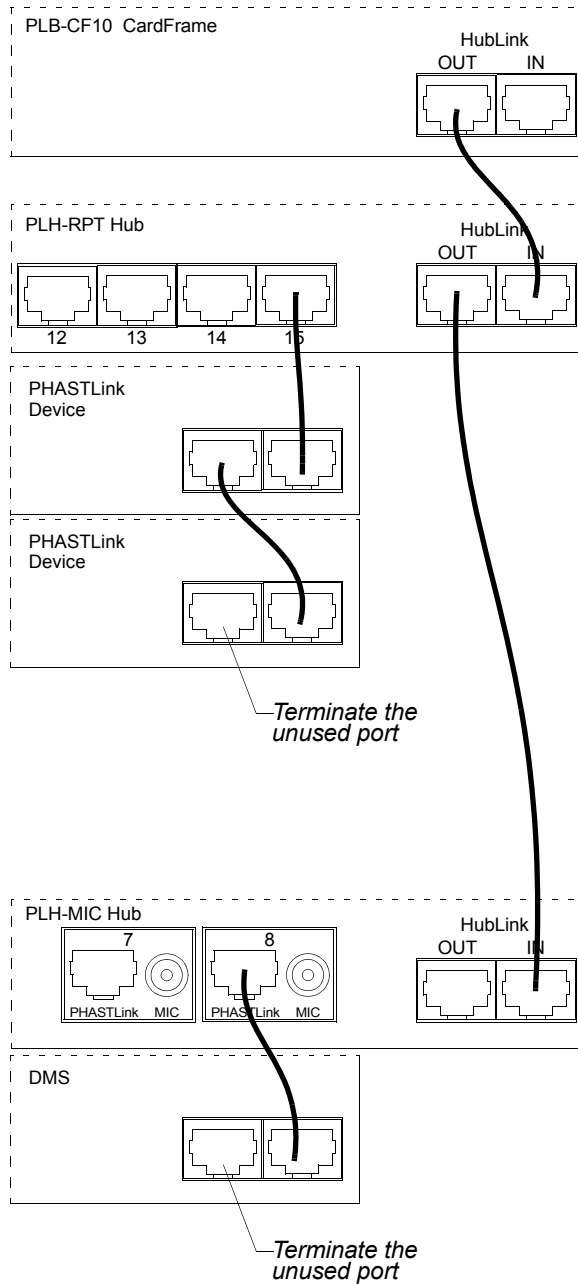


FIG. 6 PHASTLink ports connected in a typical Landmark system

Troubleshooting

Front Device Features

- **Power LED** - If the power LED is not on, check the power cord and power switch (PLB-CF10) or check the external power supply (PLB-CF2).
- **Diag LED** - This LED indicates the state of all cards in the PLB-CF2 or PLB-CF10. The Diag light will flash on briefly when a card is first plugged in or powered up. If a card causes an error, the Diag LED will either flash on and off continually or it will remain on continually. Remove the cards one by one until you locate the faulty card.

Rear Device Features

- **Data LED** - This LED is a 'window' into the network, flashing on briefly whenever a packet is sent over the network by the MCU card or by any device on the PHASTLink network.

In normal operation, the Data LED should be off for a larger percentage of time than it is On.

If the Data LED is on continually, there may be a problem with a hub-to-hub connection (e.g., Hub In connected to Hub In, or a bad cable). A looped cable connecting two PHASTLink ports or a faulty cable can also cause the Data LED to remain on continually. Remove each cable one by one, then each card one by one until the faulty cable or card is located. If all PHASTLink cables, hub-to-hub cables, and cards are removed and the Data LED remains on, the PLB-CF2 or PLB-CF10 may be at fault - contact PHAST Tech Support.

If the Data LED is not on continually but is on for a larger percentage of time than it is off, it may indicate a faulty device or card, and the condition may slow down network response.

- **Link LED** - The Link LED on each card indicates when it sends a message over the network. If a card's Link LED is on continually, that card may be causing the problem. For example, this could be caused by a contact card with an intermittent short or by a faulty contact sensor. If no cards are at fault, unplug each PHASTLink cable run until the suspect cable is located



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