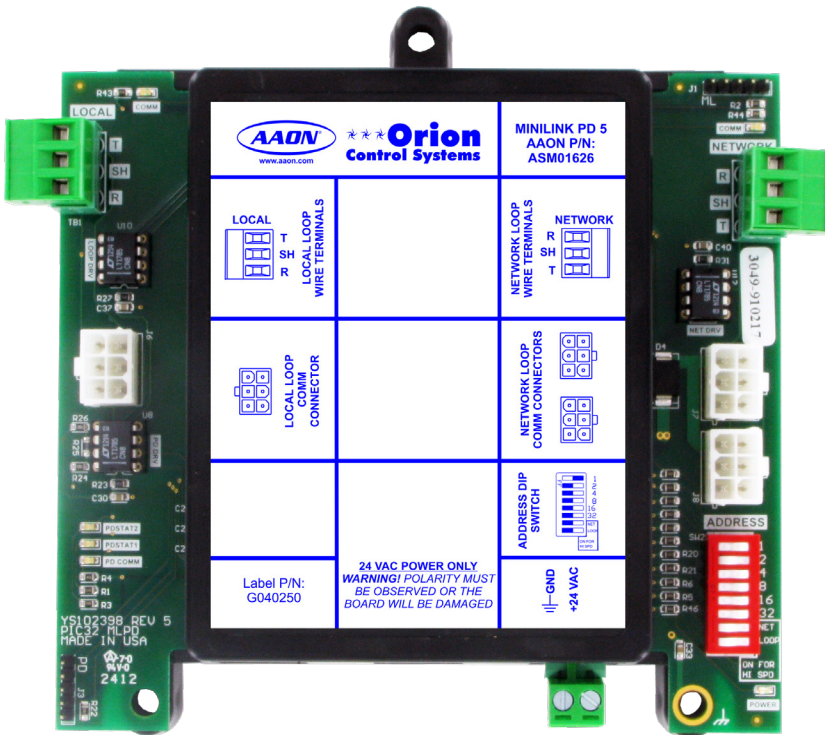




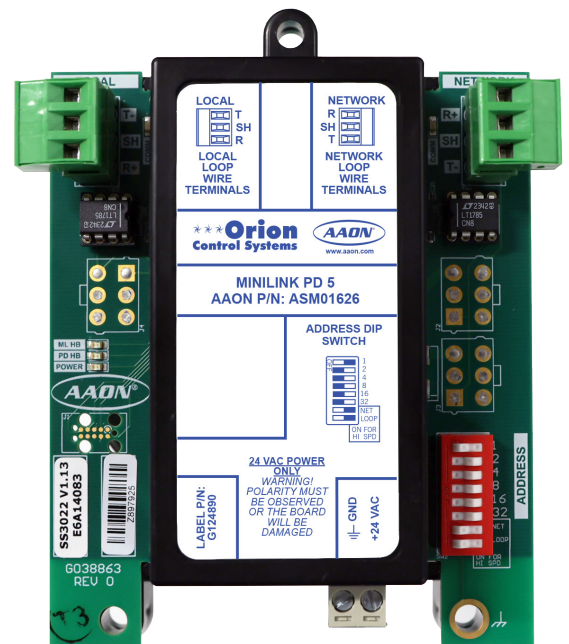
Compatible with
VCCX-454
Series

Compatible with
VCCX/VCCX-IP
Series

MiniLink PD 5 Technical Guide



August 2023 and earlier



August 2024 and on

PT-LINK II BACNET5 TECHNICAL GUIDE

REVISION AND DATE	CHANGE
Rev. C, October 2, 2020	
Rev. D, June 21, 2024	updated wiring, updated board, updated compatibility notes, updated format
Rev. E, October 10, 2024	updated dimensions, cosmetic updates

PRODUCT NAME PARTS REFERENCE

PART DESCRIPTION	PART NUMBER
MiniLink PD 5	ASM01626
AAON Unit Controllers	Varies
Pressure Dependent VAV/Zone BACnet® Controller	ASM02426
Pressure Independent VAV/Zone BACnet® Controller	ASM02427
Power/Comm Board	ASM02224
VAV/Zone Power/Comm Modular Adapter	ASM02188
For Previous Generation VAV/Zone Controllers w/ Power/Comm Connections	Contact Factory



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**This manual is available for download from
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Overview and Features

Overview

The MiniLink PD 5 is an RS-485 communications device that is used to integrate multiple local RS-485 communication loops into an RS-485 network communications system. See **Figure 1, page 6** for dimensions.

NOTE: Boards produced after 2024 will no longer have modular connections. Use either the terminal wiring diagram or the modular to terminal conversion wiring diagram for connecting these newer boards.

The MiniLink PD 5 is required on the Orion Control system to separate local loops. Up to 60 MiniLink loops can be on a system.

Local loop terminals of the MiniLink PD 5 are designed to connect to controllers that are daisy-chained together on its RS-485 local communications loop.

Network RS-485 loop terminals on the MiniLink PD 5 are used to daisy-chain multiple MiniLinks back to a CommLink 5 to form a network communications loop. This provides for a fully networked RS-485 communications system.

The MiniLink PD 5 is required for VAV systems to allow information to be shared between the HVAC Unit Controller and the VAV/Zone BACnet® Controllers (VAVZB). It is also required for zoning systems to facilitate voting of the zones to determine the HVAC units heating and cooling mode of operation. It also provides tenant-logging capabilities.

Features

The MiniLink PD 5 utilizes token passing communication architecture. The MiniLink PD 5 is designed to serve as the local communications loop master. This means that it is responsible for sending the token to all the controllers on the local communications loop.

Network communications are RS-485 type operating at 19,200 or 115,200 baud. Local communications are also RS-485 type and operate at 9600 or 57,600 baud. See **Figure 2, page 7**.

The MiniLink PD 5 is factory default set to low speed. The baud rate is set with dipswitches 7 & 8. See **Figure 3, page 8**.

OVERVIEW

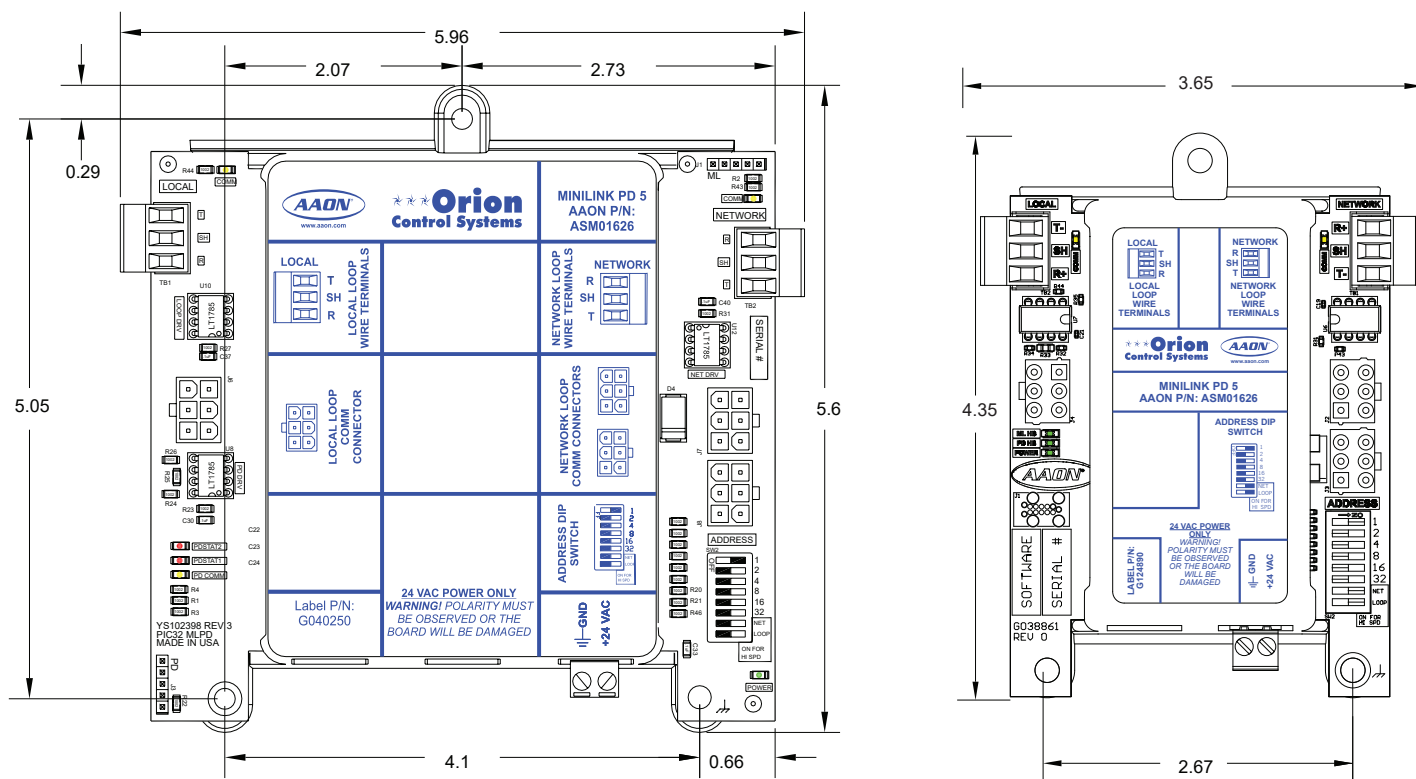
Dimensions and Mounting

Environmental Requirements

The MiniLink PD 5 needs to be installed in an environment that can maintain a temperature range between -30°F and 150°F and a humidity range between 0% and 95% RH (non-condensing).

Mounting

The MiniLink PD 5 is housed in a plastic enclosure. It is designed to be mounted by using the 3 mounting holes in the enclosure base. It is important to mount the device in a location that is free from extreme high or low temperatures, moisture, dust, and dirt. Be careful not to damage the electronic components when mounting the MiniLink PD 5. The printed circuit board plastic cover has a UL94V0 flame rating.



Note: All Dimensions are in inches.

Figure 1: MiniLink PD 5 Dimensions

CONFIGURATION

Address Dipswitch Setting

Note: The power to the Minilink must be removed and reconnected after changing the address switch settings in order for any changes to take effect.

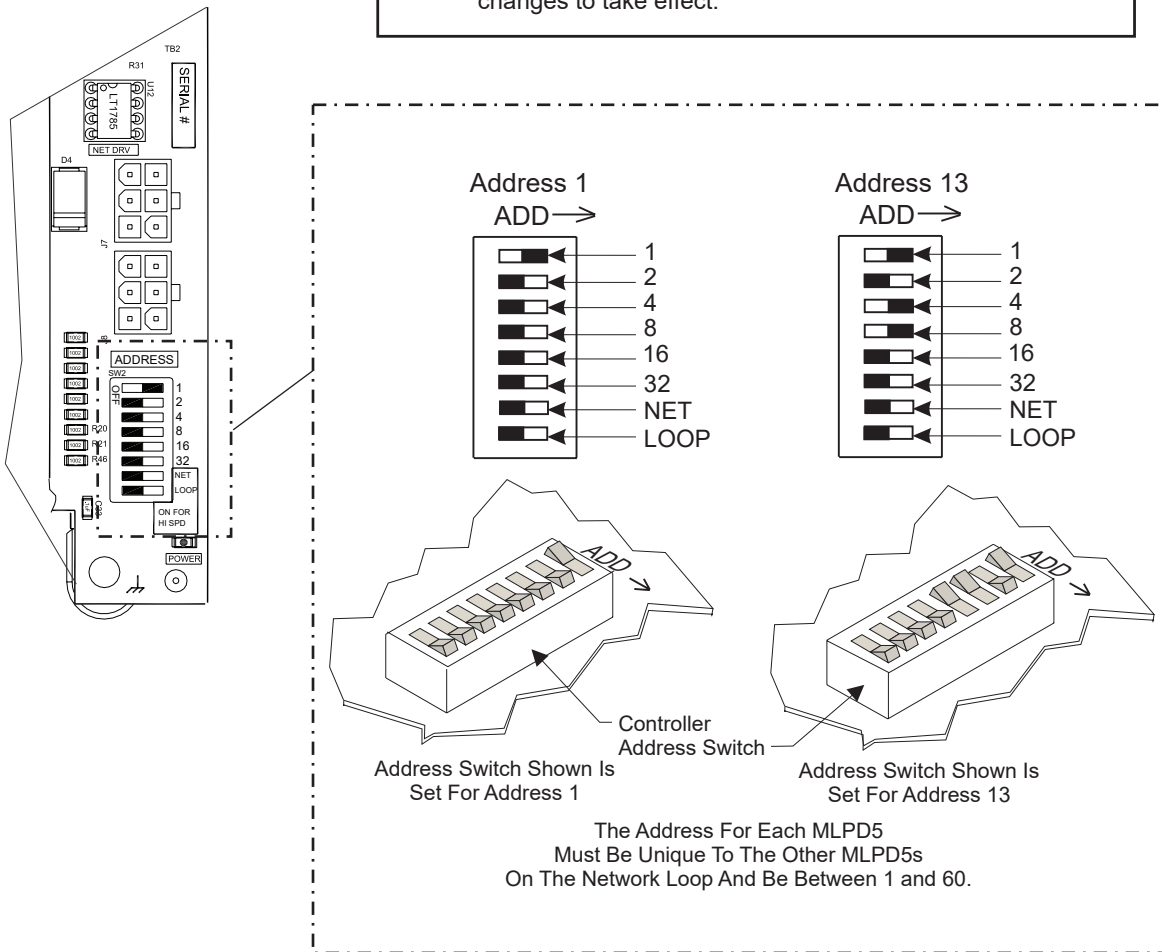


Figure 2: Address Dipswitch Setting

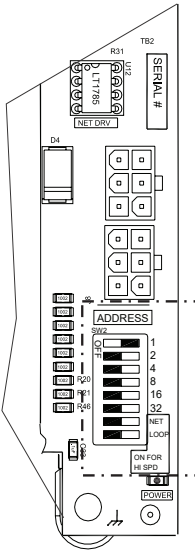
CONFIGURATION

Network and Local Loop Baud Rate Settings

Note: The MiniLink PD 5 is factory set to low speed.

Note: The power to the MiniLink must be removed and reconnected in order for a Baud Rate change to take effect.

BAUD	NETWORK LOOP SWITCH 7	SPEED
115,200	ON	HIGH*
19,200	OFF	LOW**
BAUD	LOCAL LOOP SWITCH 8	SPEED
57,600	ON	HIGH***
9600	OFF	LOW****



* The Network Loop (Switch 7) must be set to High Speed if it is connected to a loop that includes a CommLink 5 set to High Speed.

**The Network Loop (Switch 7) must be set to Low Speed if it is being used on a system that includes a CommLink 5 set to Low Speed.

*** The Local Loop (Switch 8) must be set to High Speed if it is connected to a loop that ONLY includes VCB-X or VCC-X Controllers and/or any current or future generation controllers set to high speed

****The Local Loop (Switch 8) must be set to Low Speed if it is being used on a system that includes the VCM-X Controller, older generation Orion Controllers, or any current controllers set to low speed.

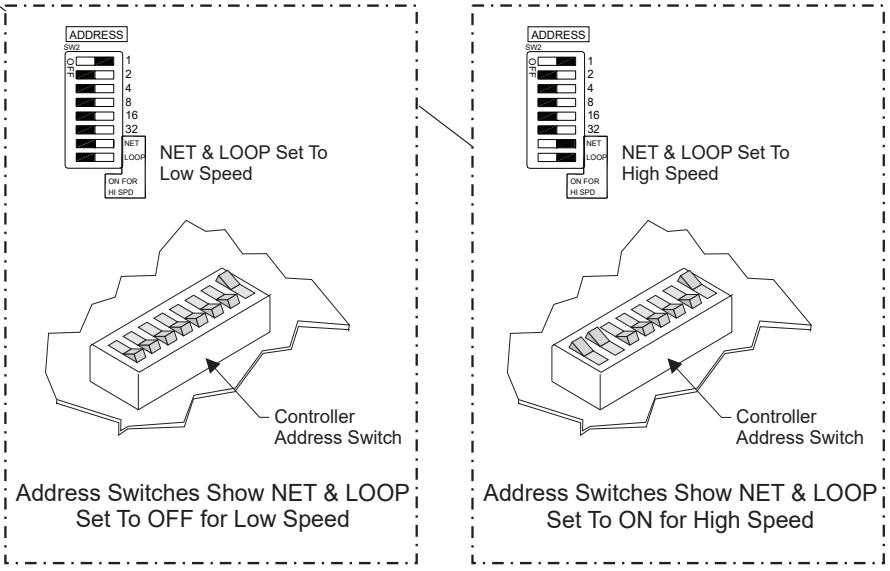


Figure 3: Network and Local Loop Baud Rate Settings

APPENDIX A: TERMINAL WIRING

Terminal Wiring

Note: For MiniLink modules produced on or after 2024, this is the only method for wiring local or network loops.

Caution: Disconnect all communication loop wiring from the MiniLink before removing power from the controller. Reconnect power and then reconnect the communication wiring loop.

Note: This network wiring is not required on single loop systems without a CommLink. When a CommLink is used on single loop systems, connect network loop wire terminals to the CommLink.

Connect local loop terminals to T, SH, and R local loop terminals on first controller on local loop. Be sure to wire T to T, SH to SH, and R to R.

All communication wiring must be plenum-rated, minimum 18-gauge, 2-conductor, twisted pair with shield wire. Belden #82760 or equivalent communications wire may also be used for network or local loop wiring.

Modular wiring is only available on MiniLink modules produced before 2024.

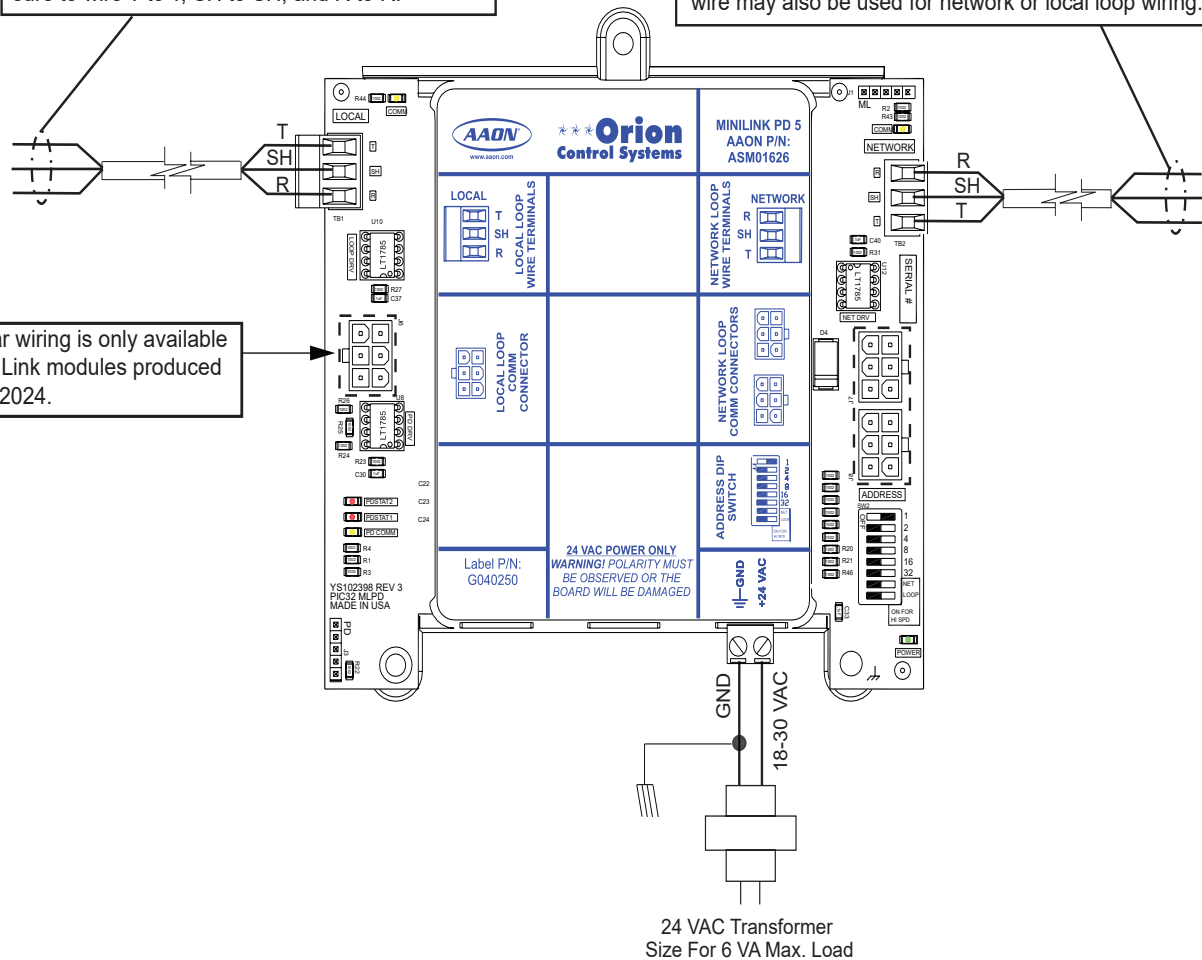


Figure 4: Terminal Wiring (Legacy MiniLink shown)

APPENDIX A - TERMINAL WIRING

Networked Multiple RS-485 Loop Wiring

Typical Multiple Loop Networked System With MiniLink Polling Device & VAV/Zone BACnet® (VAVZB) Controllers

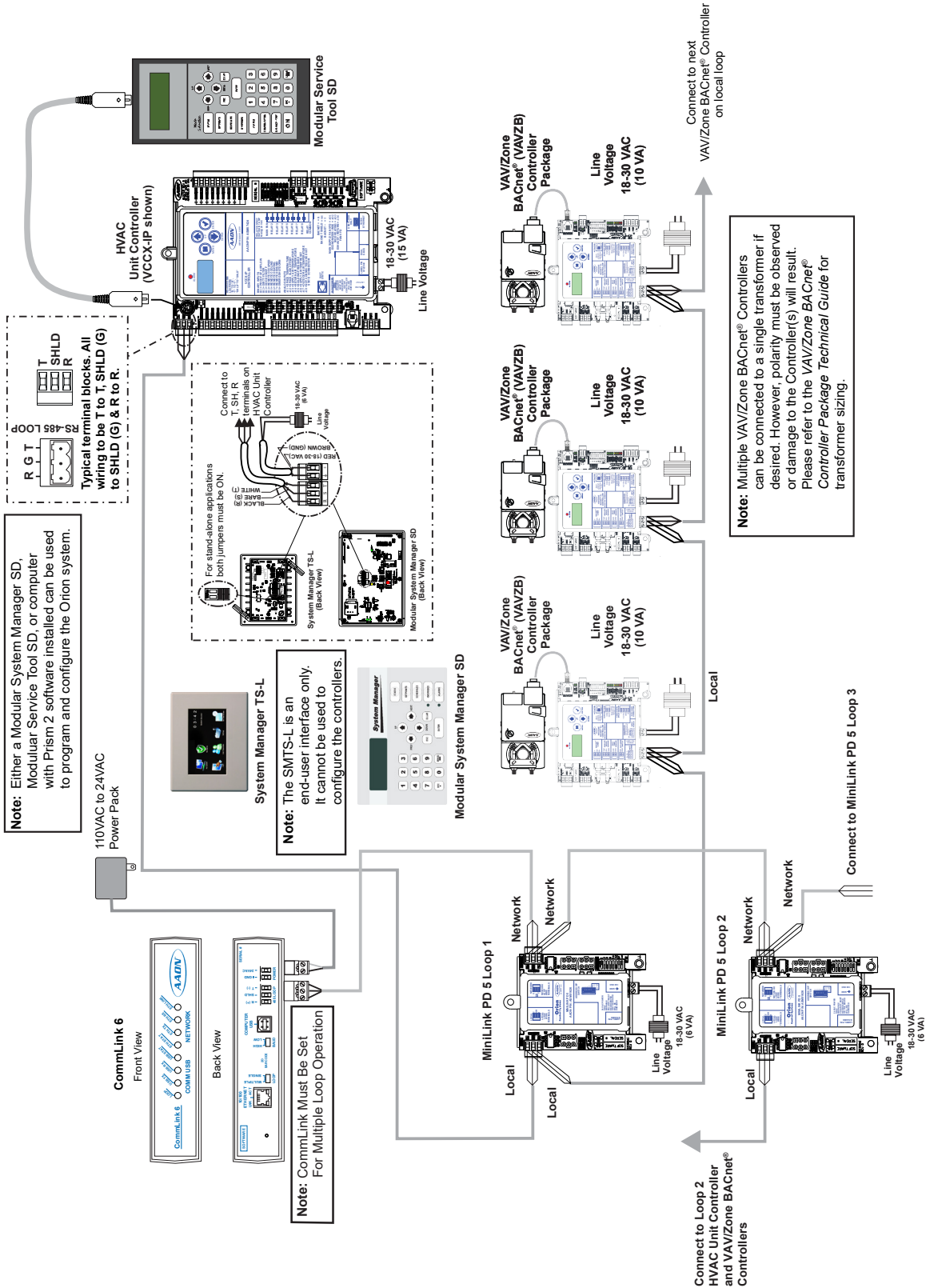


Figure 6: Network Multiple RS-485 Loop Wiring

APPENDIX B - MODULAR WIRING

Power/Comm Board Wiring

NOTE: The MiniLink PD 5 will connect to a Power/Comm Board Only If Power/Comm Cables are Used to Daisy-Chain Between VAV/Zone Controllers.

WARNING!
DO NOT GROUND THE 24V TRANSFORMER THAT IS TO BE USED WITH THE POWER/COMM BOARDS. GROUNDING OF THE TRANSFORMER WILL DAMAGE THE POWER/COMM BOARD AND ALL BOARDS CONNECTED TO IT. A SEPARATE TRANSFORMER MUST BE USED FOR EACH POWER/COMM BOARD. NO EXCEPTIONS. DO NOT CONNECT ANY OTHER DEVICES TO THE TRANSFORMER USED FOR THE POWER/COMM BOARD!

A Power/Comm Cable Can Be Used To Connect With The MiniLink PD 5's Local Loop Connection Instead Of Using 2-Conductor Twisted Pair With Shield Cable. You Can Also Use A Power/Comm Cable To Connect With Another Power/Comm Board, A System Manager Or A VAV/Zone Controller.

If Desired, Instead Of Using A Power/Comm Cable, You Can Use 2-Conductor Twisted Pair With Shield Cable To Connect To The Power/Comm Board From The Unit Controller, MiniLink PD 5's Local Loop Connection, Or Another Power/Comm Board.

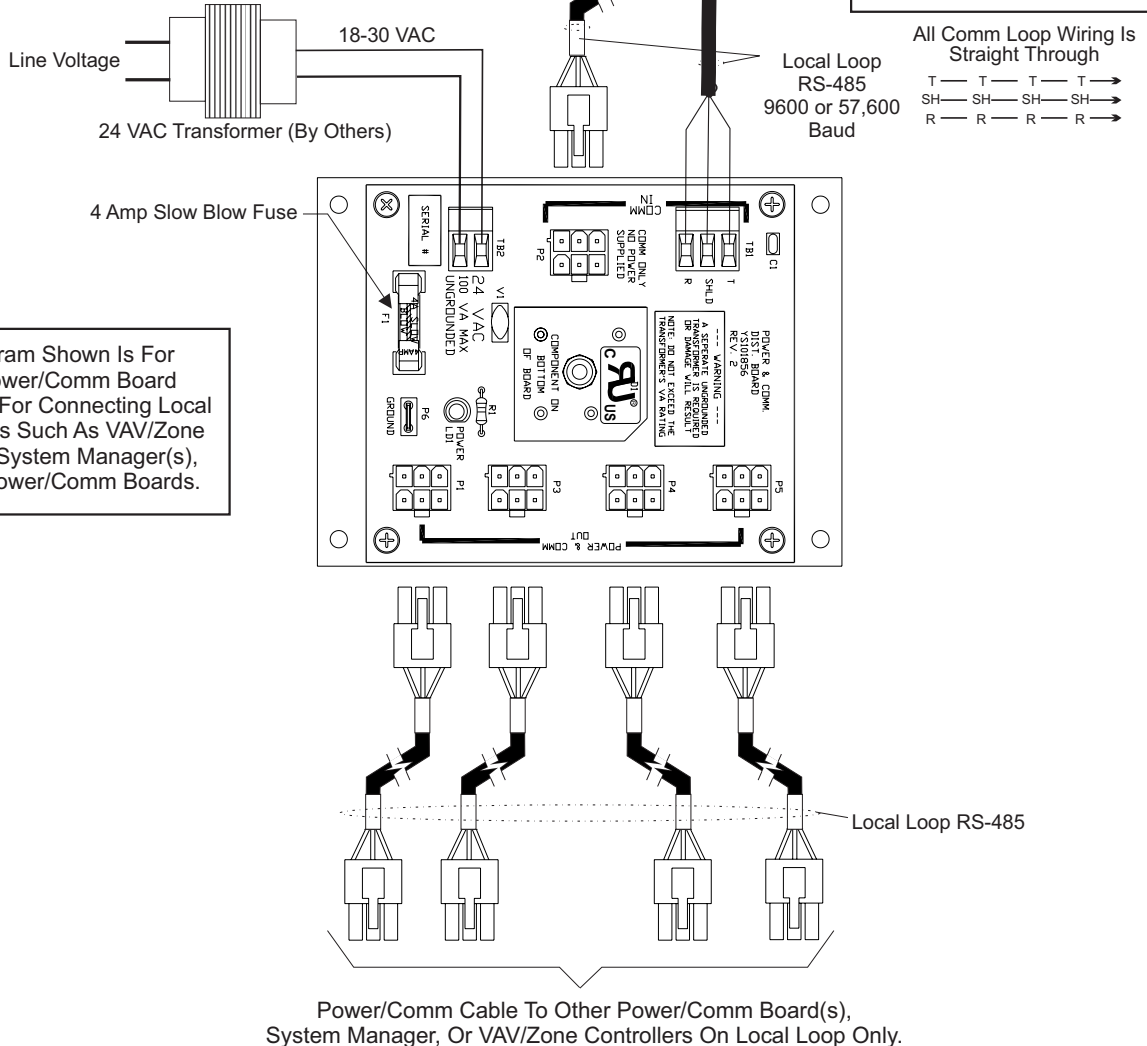


Figure 7: Power Comm Board Wiring

APPENDIX B - MODULAR WIRING

Modular Wiring - Legacy MiniLink PD 5

Caution: Disconnect all communication loop wiring from the MiniLink before removing power from the controller. Reconnect power and then reconnect the communication wiring loop.

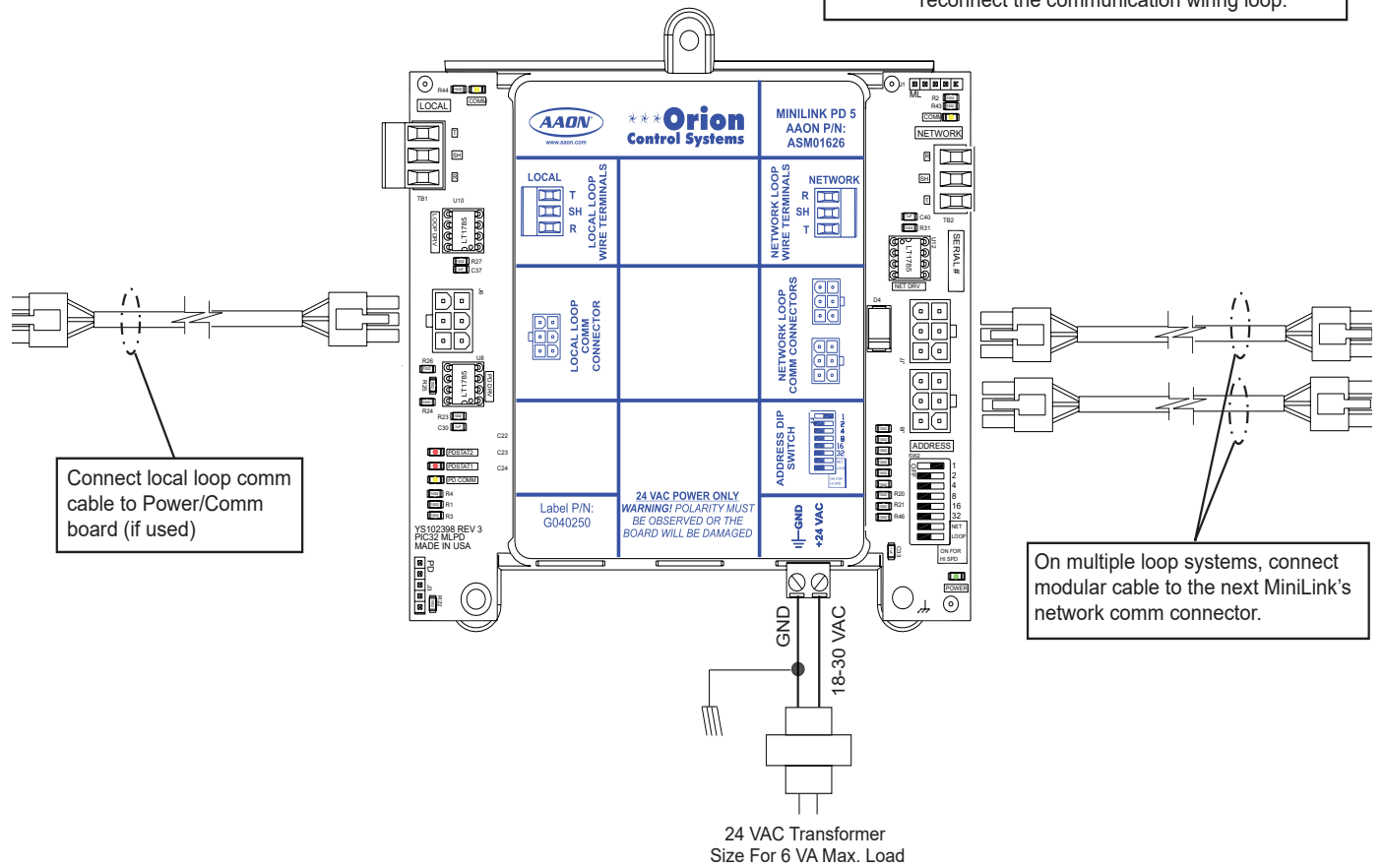


Figure 8: Modular Wiring - Legacy MiniLink PD 5

APPENDIX B - MODULAR WIRING

Networked Multiple RS-485 Loop Modular System Wiring

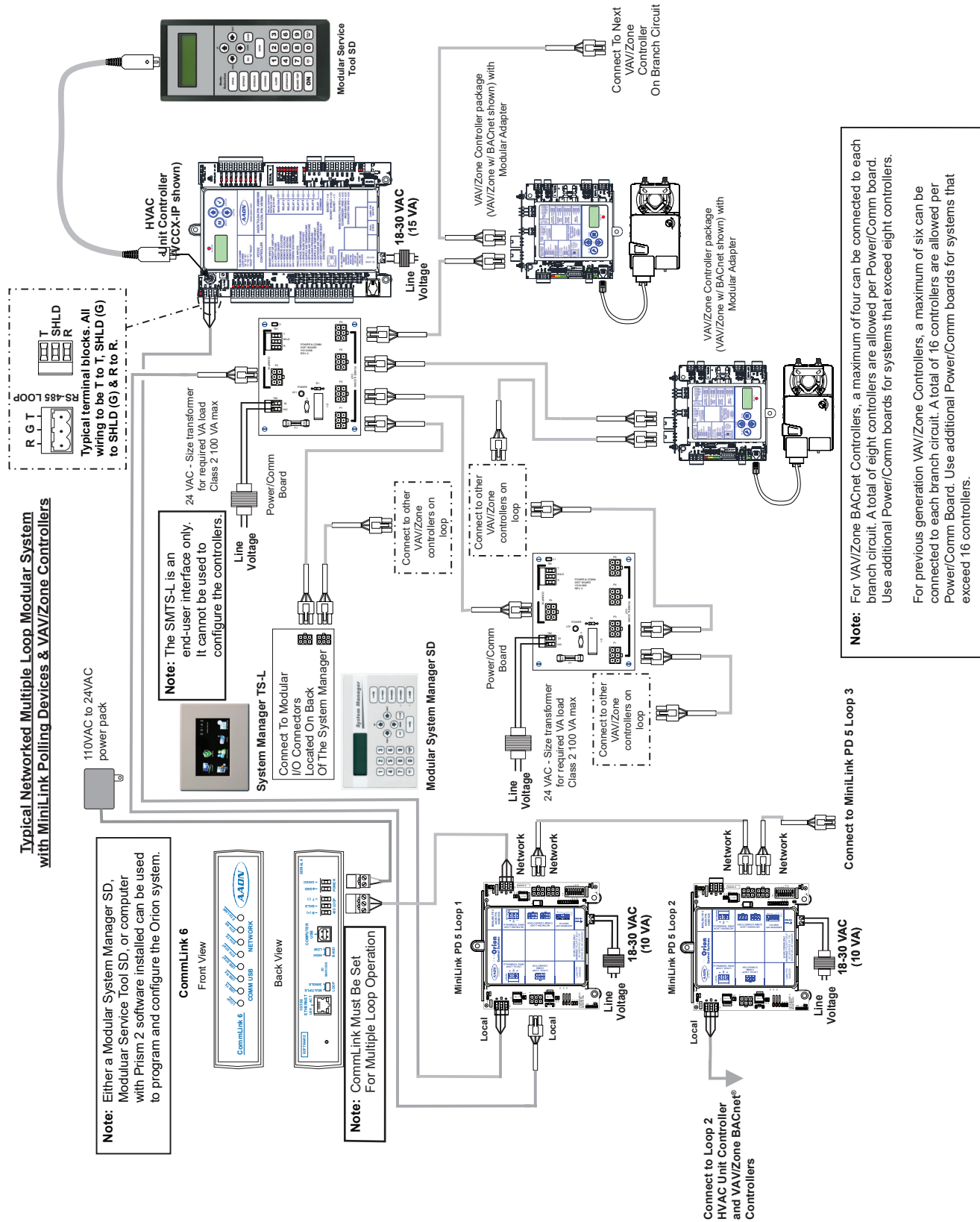


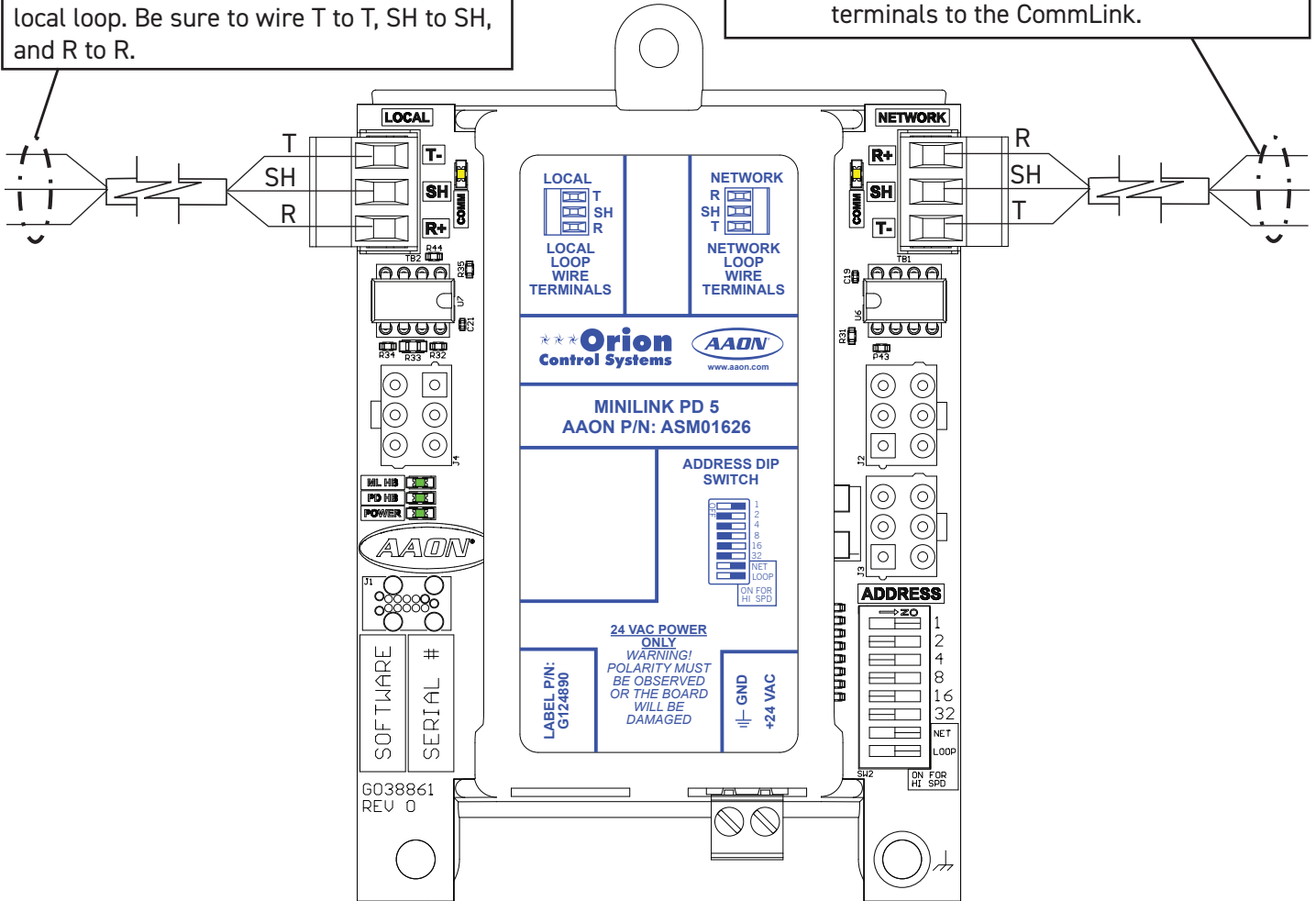
Figure 9: RS-485 Networked Multiple Loop Modular System Wiring (Legacy MiniLink Module)

APPENDIX C - CONVERSION WIRING

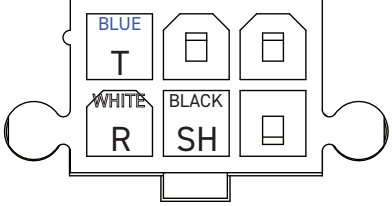
Modular to Terminal Wiring Conversion

Connect local loop terminals to T, SH, and R local loop terminals on first controller on local loop. Be sure to wire T to T, SH to SH, and R to R.

NOTE: This network wiring is not required on single loop systems without a CommLink. When a CommLink is used on single loop systems, connect network loop wire terminals to the CommLink.



NOTE: Models manufactured on/after 2024 are not configured for modular wiring. Refer to the following diagram to convert modular wiring to terminal wiring.



WARNING: Disconnect power and communications at both ends. Cutting a live cable could lead to injury or damage to the equipment.

Figure 10: RS-485 Networked Multiple Loop Modular System Wiring (Legacy MiniLink Module)

MiniLink PD 5 Technical Guide

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AAON Controls Support:

866-918-1100

Monday through Friday, 7:00 AM to 5:00 PM Central Time

Controls Support website:

www.aaon.com/aaon-controls-technical-support

AAON Factory Technical Support:

918-382-6450 | techsupport@aaon.com

NOTE: Before calling Technical Support, please have the model and serial number of the unit available.

PARTS: For replacement parts, please contact your local AAON Representative.



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Rev. E

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