

Quick Start Guide AutoPatch Single Bus Controllers

Overview

Single Bus Controllers (SBCs) are control devices programmed to route any input (source) to one assigned output (destination). SBCs are available in 3-Key and 12-Key models and are compatible with any AMX AutoPatch Distribution Matrix with an XNNet compatible interface.



3-Key SBCs with bezel

FIG. 1 Single Bus Controllers (SBCs) front view

General Specifications

Specifications		
Cable for XNNet Communications	Two-conductor, 20 AWG, 7/28 strand cable with drain wire or shield (such as Alpha 2412C) Distance 1000 ft. (304.8 m) total, including linked SBCs	
Power	+9 VDC @ 120 mA Optional modular +9 VDC power supplies for up to three SBCs in close proximity	
Operational Temperature	32° - 110° F (0° - 43° C)	
Humidity	0 to 90% non-condensing	
Dimensions	2.25 in. x 4 in. (5.72 cm x 10.16 cm) Bezel dimensions: 3 in. x 4.75 in. (7.62 cm x 12.07 cm)	
Display	Two-digit or three-digit, seven-segment LED displays current input selected for routing to designated output	

Installation

ESD Warning: Avoid ESD (Electrostatic Discharge) damage to sensitive components; be sure you and the equipment are properly grounded before touching any internal materials.

This guide provides instructions for a typical installation using a single-gang box (customer supplied). For other installations, see Steps 9 through 11 before mounting the SBC.

Important: If installing multiple SBCs, see the section on linking (on reverse) before mounting SBCs in boxes.

Mounting & Wiring the SBC

Power Requirements

- +9 VDC @ 120 mA per SBC
- Always use a UL approved power source. Check the power source's documentation for information specific to that power source

Link Cable Requirements

- Two-conductor, 20 AWG, 7/28 strand cable with a drain wire or shield, such as Alpha 2412C (customer supplied)
- Maximum length of cable: 1,000 ft. (304.8 m) total, including linked SBCs

To mount in a single-gang box:

- Install a single-gang box in the desired location. 1.
- Attach link cable to enclosure's XNNet connector (on enclosure's CPU). For 2. exact CPU location and instructions for attaching a link cable, see router documentation
- Route the link cable from the enclosure through the holes in the single-gang box. 3.
- 4. Attach power cable wires to the power source.
- 5 Route power wires from power source through the holes in the single-gang box.



FIG. 2 Route wires through single-gang box & attach to SBC

- Snap the bezel on the SBC. 6.
- 7. Carefully pierce the two gray circles near the top and bottom of the SBC faceplate that indicate the mounting holes (if not ordered pierced).
- 8. Align faceplate with the single-gang box. (The unit may need to be tilted slightly to move the circuit board past the tabs.)
- Wire the SBC power connector P3. 9. For the 2-digit SBC, use Steps 9a and 9b. For the 3-digit SBC, use Steps 9c through 9e.

Wiring the Power Connector (P3)

2-digit SBC

- 9a. Loosen the left and center screws of the power connector P3 on the circuit board on the back of the SBC (see right).
- 9b. Insert power cables wires; positive lead on the left and ground in center. Tighten screws.



3-digit SBC

9e.

- 9c. Loosen the top and center screws of the power connector P3 on the circuit board on the back of the SBC (see right).
- Attach a chassis ground wire with a 9d female quick disconnect to the .250 x .032 tab. Connect the other end of the ground wire to a ground point.
 - Insert power cable wire; positive lead on top and ground in the



Wiring the Link Connector (P4 or P5)

Tighten screws.

center.

Wire the SBC Link connector, either P4 or P5. Steps 10 and 11 apply to both the 2-digit and 3-digit SBC.



FIG. 3 Attach XNNet link cable to P4 or P5

- Loosen the two outer screws of the link connector (P4 or P5) on the circuit board 10. on the rear of the SBC (FIG. 3 left for 2-digit SBC; FIG. 3 right for 3-digit SBC).
- 11. Insert XNNet link cable wires into link connector. Either wire goes into either outside slot.

Tighten screws.

12. Insert screws through mounting holes on SBC faceplate and holes on single-gang box (FIG. 2) and tighten.

Linking Multiple SBCs

Note: Each enclosure supports 32 SBCs (or a total of 32 XNNet compatible devices, such as remote control panels and status displays).

SBCs can be linked together in a daisy chain to create multiple control points for a single system. XNNet link cables can be attached to either Comm Link connector (P4 or P5). The total distance of the cable runs cannot exceed 1,000 ft. (304.8 m).

To link SBCs:



FIG. 4 Linking SBCs in a daisy-chain

- 1. Connect the first SBC to the router using one of the Comm Links (P4 or P5; see Step 10 previous page).
- Attach an XNNet link cable to the SBC's other Comm Link, following the same 2 procedure used when connecting to the router.
- Attach the other end of the XNNet cable to a Comm Link on the second SBC. 3.
- Repeat Steps 2 and 3 for any additional SBCs. 4 If required* terminate the final SBC. Loosen the two outer screws, insert a 5. 120 ohm resistor (customer supplied) in the outer contacts, and tighten the
- screws (FIG 3). *On large control networks, termination may be required on the last linked SBC.

Operation

If the SBC was not ordered with factory programing or if the settings need to be changed, use the following procedures to set the destination ID and to change the virtual matrix.

Setting the Destination ID

The destination ID specifies which output the SBC is controlling. SBCs are assigned to a virtual output (e.g., RGB), not a physical output (e.g., R).

To set the destination ID:

3-Key SBC

- Hold down the x10 key for five seconds until the display screen starts flashing. Scroll to the correct destination ID using the "+" or "-" key. 1
- 2
- If necessary, change the virtual matrix (see "Changing the Virtual Matrix" 3.
- section below, starting with Step 2).
- Wait until the flashing stops (approx. five seconds) before operating. 4.

12-Key SBC

- Hold down the "0" key for five seconds until the display screen starts flashing. 1.
- Enter the destination ID or scroll to correct destination using the "+" or "-" key. 2. 3. If necessary, change the virtual matrix (see "Changing the Virtual Matrix" section below, starting with Step 2).
- Wait until the flashing stops (approx. five seconds) before operating. 4.

Changing the Virtual Matrix

The virtual matrix determines which signals switch together, e.g., audio follow video (often the default), video only, or audio only. See system documentation for more information on virtual matrices.

To change the virtual matrix:

3-Key SBC

- Hold down x10 key for five seconds until screen starts flashing; then release. 1 Hold down x10 key for five more seconds until screen starts flaring 2.
- (i.e., characters briefly brighten, then repetitively dim to normal. Display never goes blank). The screen displays current virtual matrix number. Scroll to desired virtual matrix number using "+" or "-" key.
- 3
- Wait until the flaring stops (approx. five seconds) before setting destination ID. 4.

12-Key SBC

- Hold down "0" key for five seconds until screen starts flashing; then release. 1.
- Hold down "0" key for five more seconds until screen starts flaring 2 (e.g., characters briefly brighten, then repetitively dim to normal. Display never goes blank). The screen displays the current virtual matrix number. Enter desired virtual matrix number or scroll to it using the "+" or "-" key.
- 3. 4 Wait until flaring stops (approx. five seconds) before setting destination ID.

Executing Switches & LED Display

The scrolling range for valid source numbers is from 1 to the maximum number of inputs configured in the virtual matrix. If you hold down the "+" key on the 3-Key SBC, the display will scroll all numbers in sequence up to 99 even if those numbers are not associated with a source. After the "+" key is released the LED will briefly display the last number scrolled. If the number is invalid (e.g., number 52 on a system with 32 sources), the SBC will revert to the last valid source number in the sequence. For the 12-Key SBC, entering an invalid number will result in the LED displaying an error code (see table at bottom of this column).

When the system is powered up, the LED on the SBC briefly flashes the assigned destination number.

To operate the 3-Key SBC:

Press the keys according to their function as indicated.

Keys	Function	
+	Increases source signal selection by one	
-	Decreases source signal selection by one	
x10	Changes source signal selection in increments of 10 (hold down while pressing "+" or "-")	



Scroll to "00" to disconnect all source signals from the destination device.

To operate the 12-Key SBC:

Kevs

Number

+

Press the keys according to their function as indicated. To enter a two or three digit number, press the next number within two (2) seconds of pressing the previous number.

Function

Allows direct switching to a different source

1 (4) (7) (5)	 2 5 8 0 • 	3 6 9 +

Enter "00" to disconnect all source signals from the destination device.

Error Codes / Troubleshooting

signal without scrolling

Increases source signal by one Decreases source signal by one

Code	Causes	Actions
E1 Request Timed Out	Control Overrun – commands sent too quickly	Re-enter commands
	Problem with physical connection to system	Check cable connections
		Ensure virtual matrix number setting is valid
E2 Virtual Matrix Error	Configuration problem	Ensure destination number is valid
E3 Display Error	Valid source number cannot be displayed because it is higher than 99 on a 2-digit display, or 999 on a 3-digit display	Enter valid source number
E4 Fragmented	A breakaway switch caused status mismatch between one or more components in a grouping	Check status on different levels using another control method to find status mismatch; reroute switch

Cleaning

SBCs require only topical cleaning. Use a dry cloth and mild glass cleaner to clean the surface of the SBC. Do not use abrasive cleaners to clean the faceplate.

For full warranty information, refer to www.amx.com

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