Switching Power Supply Series
HE-X24-AS
HE-X24-AL

1 INTRODUCTION

The Switching Power Supply Series offers compact, lightweight, highly efficient and reliable units that are DIN Rail-mounted or mounted on the back of a panel. Short circuit and overload protection is provided as well as over-heat protection to stop output when the temperature reaches 275° [135°C]). Units also have soft-start functionality to limit peak current and voltage during startup. Two special functions are provided: Remote Control Switching (RPS) and Uninterruptible Power Supply (UPS).

The following models are included in the Switching Power Supply Series.

Table 1 – Switching Power Supply Series Models

Model Part Number	Simple Part Number*	Description
HE-X24-**AS**	AS	24 VDC / 1.5 A
HE-X24-**AL**	AL	24 VDC / 3 A
**** Part Numbers are simplified in this document for easier reading.***		

The AS / AL can be mounted on a DIN Rail or mounted on the back of a panel.

Note: For mounting on the back of a panel, use the two tabs that are shipped with the unit.

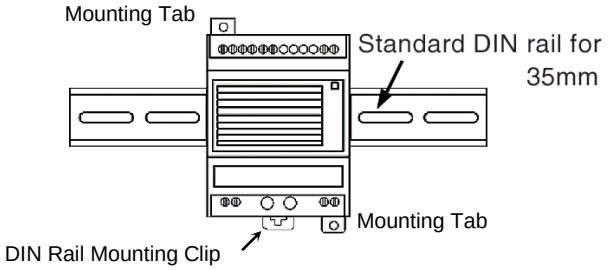


Figure 1 – Two Ways to Mount AS / AL

Table 2 – Specifications for AS / AL

Parameter	AS	AL	Parameter	AS	AL
Output Voltage	24 VDC		Operation Temperature	-13° to 158° (-25° to +70°C)	
Current	1.5 A	3.0 A	Efficiency	> 75%	
Input Voltage	100-240 VAC / 140-340 VDC		Insulation Voltage Endurance	> 1.5 kV	
Ripple Voltage Tolerance Range	85 –264 VAC / 120-370 VDC		Filter	EMI Filter Condenser	
Input Frequency	47 – 63 Hz		Output Voltage Fine Adjustment Range (Using Potentiometer V)	-5% to +10%	
Output Voltage Stability	± 0.5%		Overload Protection	105% to 135%	
Ripple	150 mV_{p-p}				

2 Dimensions

Dimensions vary according to how the AS or AL is mounted. The AS and AL share some common dimensions. Refer to Table 3 and the drawings shown in Figure 2 to determine correct dimensions.

Table 3 – Dimensions for AS / AL		
Parameter	**Drawing**	**Value**
Height	**AS / AL**	2.46 in (62.5 mm)
Width **(No mounting tabs and no DIN Rail Clip)**	**AS / AL** (Note: Shown only in AS drawing, but it applies to AS / AL units.)	3.54 in (90 mm)
Width **(Includes mounting tabs when mounting in back of a panel))**	**AS / AL**	4.17 in (106 mm)
Width **(Includes DIN Rail Mounting Clip)**	**AS / AL** (Note: Dimension not shown.)	3.86 in (98 mm)
Length	**AS**	2.80 in (71 mm)
Length	**AL**	4.96 in (126 mm)

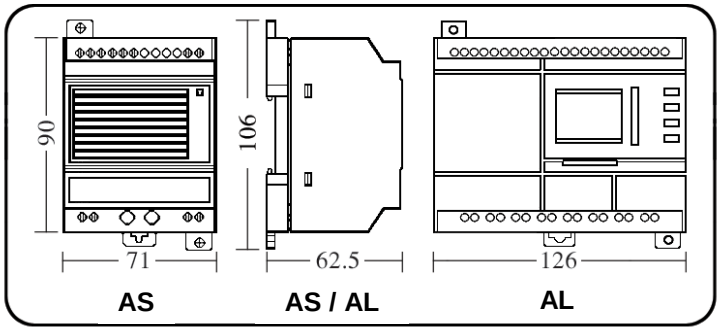
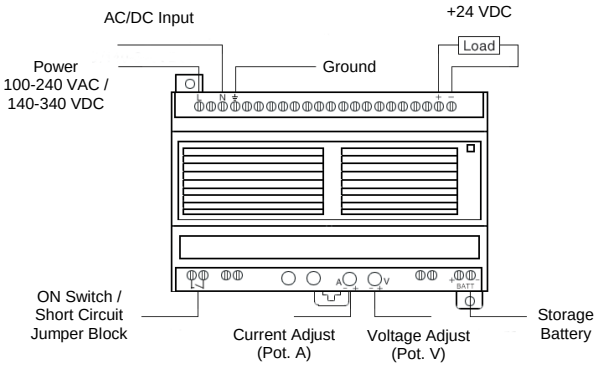


Figure 2 – Dimensions

3 GENERAL OPERATION



Warning: Be sure to wire the load observing the proper polarity on the unit and ensure that the maximum working current is ≤ 3 A.

Figure 3 – General Operation

1. For output and short circuit protection, ensure that the Switch/Short Circuit jumper block is installed and properly seated.
2. Adjust the current (using Potentiometer A) for maximum load current protection by rotating fully clockwise.
3. Connect the power (100-240 VAC / 140-340 VDC).
4. Adjust the output voltage (using Potentiometer V) to 24 VDC.
5. Connect the load to the output terminal.

4 Remote Control Switching (RPS) Function

The RPS function allows the control of the output voltage using a remote control switch.

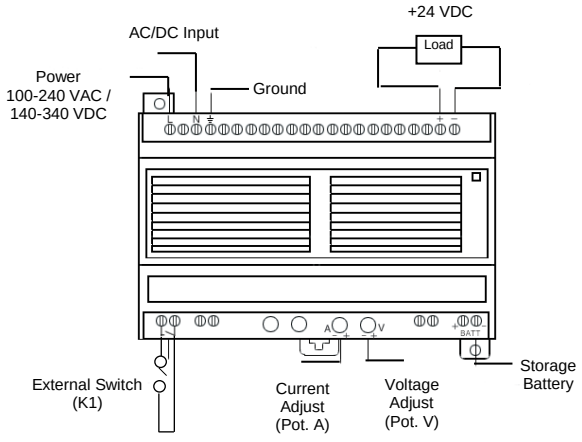


Figure 4 –RPS Function

1. Remove the Switch/Short Circuit jumper block. Wire an external switch (K1).
2. Adjust the current (using Potentiometer A) for maximum load current protection by rotating fully clockwise.

3. Connect the power (100-240 VAC / 140-340 VDC).
4. a. Close switch (K1) to turn power ON from the supply.
   b. Adjust the output voltage (using Potentiometer V) to 24 VDC.
   c. Open switch (K1) to turn power OFF from the supply.
5. Connect the load to the output terminal.

Warning: Be sure to wire the load observing the proper polarity on the unit and ensure that the maximum working current is ≤ 3 A.

7. Close switch k1 to turn power ON from the supply.

5 Uninterruptible Power Supply (UPS) Function

The UPS function uses an external battery to provide power in the event that the power source stops providing power or is interrupted.

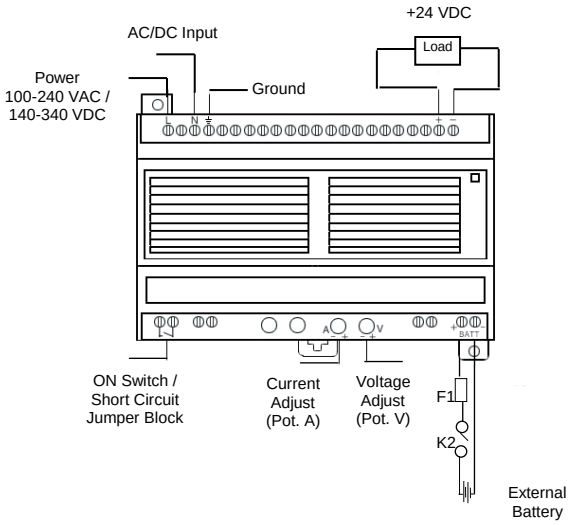


Figure 5 –UPS Function

1. For output and short circuit protection, ensure that the Switch/Short Circuit jumper block is installed and properly seated.
2. Adjust the current (using Potentiometer A) for maximum load current protection by rotating fully clockwise.
3. Connect the power (100-240 VAC / 140-340 VDC).
4. Adjust the output voltage (using Potentiometer V) to 24 VDC.
5. Disconnect the AC/DC power wire.
6. Wire switch K2 and fuse wire F1 and the External Battery

Warning: Be sure to wire switch K2 and fuse wire F1 and the External Battery observing the proper polarity on the unit.

7. Re-connect the power (100-240 VAC / 140-340 VDC).

Note: If the battery voltage is over +24 VDC, adjust Potentiometer V to the applicable voltage.

Note: When using the UPS function, the output is normally powered by the line voltage. When the line and battery are connected, the battery will be charged. If the line voltage is removed, the output is supplied by the battery. Switch K2 allows the battery to be disconnected, and fuse F1 protects the battery side of the circuit. The battery current is ≤ 3 A.

6 Using RPS and UPS Functions Simultaneously

To use both the RPS and UPS functions simultaneously, follow the steps described in the RPS section (page 3) and the UPS section (page 4) in this document.

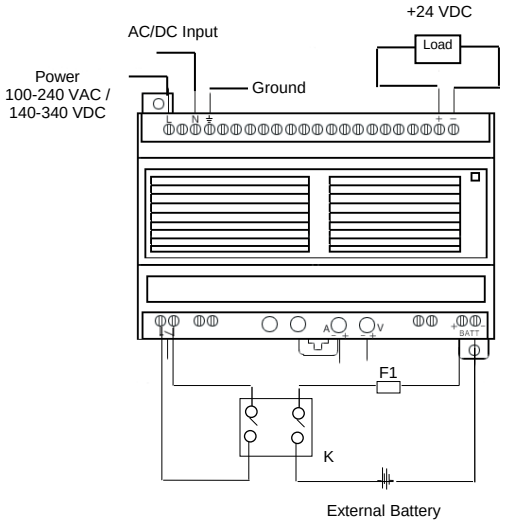


Figure 6 – Using RPS and UPS Function

7 SAFETY

When found on the product, the following symbols specify:

Warning: Consult user documentation.

Warning: Electrical Shock Hazard.

WARNING: To avoid the risk of electric shock or burns, always connect the safety (or earth) ground before making any other connections.

WARNING: To reduce the risk of fire, electrical shock, or physical injury it is strongly recommended to fuse the power. Be sure to locate fuses as close to the source as possible.

WARNING: Replace fuse with the same type and rating to provide protection against risk of fire and shock hazards.

WARNING: In the event of repeated failure, do <u>not</u> replace the fuse again as a repeated failure indicates a defective condition that will <u>not</u> clear by replacing the fuse.

WARNING: Only qualified electrical personnel familiar with the construction and operation of this equipment and the hazards involved should install, adjust, operate, or service this equipment. Read and understand this manual and other applicable manuals in their entirety before proceeding. Failure to observe this precaution could result in severe bodily injury or loss of life.

- All applicable codes and standards need to be followed in the installation of this product.
- For I/O wiring (discrete), use the following wire type or equivalent: Belden 9918, 18 AWG or larger.

Adhere to the following safety precautions whenever any type of connection is made to the module.

- Connect the green safety (earth) ground first before making any other connections.
- When connecting to electric circuits or pulse-initiating equipment, open their related breakers. Do not make connections to live power lines.
- Make connections to the module first; then connect to the circuit to be monitored.
- Route power wires in a safe manner in accordance with good practice and local codes.
- Wear proper personal protective equipment including safety glasses and insulated gloves when making connections to power circuits.
- Ensure hands, shoes, and floor are dry before making any connection to a power line.
- Make sure the unit is turned OFF before making connection to terminals. Make sure all circuits are de-energized before making connections.
- Before each use, inspect all cables for breaks or cracks in the insulation. Replace immediately if defective.

8 TECHNICAL SUPPORT

For assistance and manual updates, contact Technical Support at the following locations:

North America:
(317) 916-4274
https://hornerautomation.com
email: techsppt@heapg.com

Europe:
(+) 353-21-4321-266
http://www.horner-apg.com
email: technical.support@horner-apg.com