

American Zettler

American Zettler AZ2280-1A-120AF Miniature Power Relay

Instruction Manual

1. INTRODUCTION

This manual provides essential information for the safe and effective use of the American Zettler AZ2280-1A-120AF Miniature Power Relay. This device is designed for switching electrical circuits, featuring a 120VAC coil and a 30A SPST contact configuration. It is suitable for various industrial and general-purpose applications requiring reliable power switching.

Please read this manual thoroughly before installation and operation to ensure proper functionality and safety.

2. SAFETY INFORMATION

WARNING: Electrical Shock Hazard

- Always disconnect power to the circuit before installing, servicing, or removing the relay.
- Installation and wiring should only be performed by qualified personnel in accordance with all local and national electrical codes.
- Ensure proper insulation and secure connections to prevent short circuits and electrical hazards.
- Do not exceed the specified voltage and current ratings of the relay.
- This relay is designed for specific electrical parameters. Using it outside these parameters may result in damage to the relay, connected equipment, or personal injury.

3. SETUP AND INSTALLATION

The AZ2280-1A-120AF relay features quick-connect leads for both contacts and the coil, simplifying wiring. It is designed for DIN Rail Mount installation.

3.1. Wiring Connections

- Identify the coil terminals (typically marked) and connect them to your 120VAC control signal.
- Identify the contact terminals (Common, Normally Open (NO), Normally Closed (NC) if applicable). For this SPST (Single Pole, Single Throw) relay, you will typically have two contact terminals: one common

and one normally open.

- Connect the load circuit to the appropriate contact terminals. Ensure that the load's voltage and current do not exceed the relay's contact ratings.
- Use spade connectors of appropriate size for secure attachment to the terminals.



Figure 1: Front view of the AZ2280-1A-120AF relay, illustrating its compact design and terminal layout.

FEATURES

- Quick-connect leads for contacts and coil
- 1 Form A, B and C contacts available
- AC and DC coils available
- Epoxy sealed IP67 approved versions available
- UL Class F (155°C) standard
- UL, CUR file E44211
- VDE 40027037 (DC coil only)

Figure 2: Diagram highlighting key features such as quick-connect leads and available contact forms.

3.2. Mounting

The relay is designed for DIN Rail mounting. Securely attach the relay to a standard DIN rail within an appropriate enclosure, ensuring adequate ventilation and clearance from other components.

4. OPERATING PRINCIPLES

The AZ2280-1A-120AF is an electromechanical relay. When 120VAC is applied to the coil terminals, an electromagnetic field is generated, which pulls the armature, causing the internal contacts to switch state. For this SPST (Single Pole, Single Throw) relay, the normally open contact will close, completing the circuit to the connected load.

When the 120VAC power is removed from the coil, the electromagnetic field collapses, and a spring returns the contacts to their original (normally open) state, breaking the circuit to the load.

COIL	
Power	
At Pickup Voltage (typical)	DC: 500mW AC: 1.4VA
Max. Continuous Dissipation	DC: 1.7W at 20°C (68°F) AC: 2.7VA at 20°C (68°F)
Temperature Rise	38°C (68°F)
Temperature	Max. 155°C (311°F)

Figure 3: Coil specifications detailing power, dissipation, and temperature rise.

CONTACTS	
Arrangement	SPST (1 Form A, or B) SPDT (1 Form C)
Ratings	Resistive load: Max. switched power: 840W or 11,080VA Max. switched current: 40A (Form A), 15A (Form B), 20A (Form C) Max. switched voltage: 277VAC, 28VDC
UL, CUR	1 Form A 40A at 277VAC, General Use [1][2] 28A at 277VAC, General Use, 100k cycles [1] 2Hp at 250VAC [1][2] 1HP at 125VAC [1][2] 30A at 28VDC [1] 20/60 (FLA/LRA) at 277VAC 30k cycles [1] 1 Form B 15A at 277VAC, General Use [1] 10A at 28VDC [1] 0.5HP at 250VAC [1] 0.25HP at 125VAC [1] 10/33 (FLA/LRA) at 277VAC 30k cycles [1] 1 Form C 30/20A (N.O./N.C.) at 277VAC, General Use [1][2] 20/10A (N.O./N.C.) at 28VDC[1] 2/0.5HP (N.O./N.C.) at 250VAC[1][2] 1/0.25HP (N.O./N.C.) at 125VAC[1][2] 20/60 (FLA/LRA) at 277VAC 30k cycles N.O. [1] 10/33 (FLA/LRA) at 277VAC 30k cycles N.C. [1]
VDE	Contact factory for ratings
Material	Silver cadmium oxide [1], silver tin oxide [2]
Resistance	< 50 milliohms initially (24V, 1A voltage drop method)

Figure 4: Contact specifications outlining arrangement, ratings, material, and resistance.

5. MAINTENANCE

The American Zettler AZ2280-1A-120AF relay is a sealed unit and contains no user-serviceable parts. Regular maintenance is generally not required beyond ensuring proper operating conditions.

- **Inspection:** Periodically inspect the relay and its connections for any signs of damage, corrosion, or loose wiring.
- **Cleaning:** Keep the relay free from dust, dirt, and moisture. Use a dry, soft cloth for cleaning. Do not use solvents or abrasive cleaners.
- **Environmental Conditions:** Ensure the relay operates within its specified ambient temperature and humidity ranges to maximize its lifespan.

6. TROUBLESHOOTING

If the relay is not functioning as expected, consider the following troubleshooting steps:

- **No Operation:**

- Verify that the correct 120VAC control voltage is being applied to the coil terminals.
- Check all wiring connections for looseness or damage.
- Ensure the power supply to the coil is active.

- **Intermittent Operation:**

- Check for unstable control voltage to the coil.
- Inspect for loose or corroded connections.
- Ensure the relay is not operating in an environment with excessive vibration or temperature fluctuations outside its specified range.

- **Load Not Switching:**

- Confirm that the relay coil is energizing and the contacts are audibly clicking.
- Verify the load circuit wiring is correct and the load itself is functional.
- Ensure the load current and voltage do not exceed the relay's contact ratings, which could lead to contact welding or damage.

If issues persist after performing these checks, it is recommended to consult a qualified electrician or contact American Zettler technical support.

7. SPECIFICATIONS

The following table details the key specifications of the American Zettler AZ2280-1A-120AF relay:

GENERAL DATA	
Life Expectancy Mechanical Electrical	Minimum operations 1 x 10 ⁷ 1 x 10 ⁶ at 28A, 277VAC Res. [N.O.]
Operate Time (max.)	15ms at nominal coil voltage
Release Time (max.)	10ms at nominal coil voltage (with no coil suppression)
Dielectric Strength (at sea level for 1 min.)	1500 Vrms contact to contact 2500 Vrms contact to coil
Insulation Resistance	1000 megohms min. at 500 VDC, 20°C 50% RH
Dropout	DC: Greater than 10% of nominal coil voltage AC: Greater than 20% of nominal coil voltage
Ambient Temperature Operating Storage	At nominal coil voltage -55°C (-67°F) to 85°C (185°F), [DC] -55°C (-67°F) to 60°C (140°F), [AC] -55°C (-67°F) to 155°C (311°F)
Vibration	0.062" DA at 10–55 Hz
Shock	10 g
Enclosure	P.B.T. polyester
Terminals	Tinned copper alloy, Quick Connects Note: Allow suitable slack on leads when wiring, and do not subject the terminals to excessive force.
Max. Solder Temp.	270°C (518°F)
Max. Solder Time	5 seconds
Max. Solvent Temp.	80°C (176°F)
Max. Immersion Time	30 seconds
Weight (approx.)	36 grams

Figure 5: General data and physical characteristics of the relay.

NOTES

1. All values at 20°C (68°F).
2. Relay may pull in with less than "Must Operate" value.
3. Specifications subject to change without notice.

Figure 6: Important notes on specifications and testing conditions.

Specification	Value
Model Number	AZ2280-1A-120AF
Coil Voltage	120VAC
Contact Arrangement	SPST (1 Form A)
Current Rating	30 Amps
Contact Material	Silver Alloy
Mounting Type	DIN Rail Mount
Connector Type	Screw (Quick Connect)
Product Dimensions	6 x 2 x 3 inches
Weight (approx.)	1.12 ounces (36 grams)
Max. Solder Temp.	270°C (518°F)
Max. Solder Time	5 seconds
Ambient Operating Temp.	-55°C (-67°F) to 85°C (185°F) [DC] / -55°C (-67°F) to 60°C (140°F) [AC]
Life Expectancy (Mechanical)	1 x 10 ⁷ operations
Life Expectancy (Electrical)	1 x 10 ⁵ at 28A, 277VAC Res. [N.O.]

8. WARRANTY AND SUPPORT

For specific warranty information regarding the American Zettler AZ2280-1A-120AF relay, please refer to the documentation provided at the time of purchase or contact the seller/manufacturer directly. Warranty terms typically cover defects in materials and workmanship under normal use.

For technical support, product inquiries, or assistance with troubleshooting beyond the scope of this manual, please contact American Zettler customer service or your authorized distributor.