Akozon OP320-A

Akozon OP320-A HMI Text Display User Manual

Model: OP320-A

1. Introduction

1.1 Product Overview

The Akozon OP320-A HMI Text Display is a compact human-machine interface designed for interaction with various Programmable Logic Controllers (PLCs) or intelligent controllers equipped with communication ports. It enables users to monitor and modify internal register values and relay statuses of a PLC through text-based displays or indicators, facilitating control over automated equipment.

1.2 Key Features

- **Display:** 3.7-inch monochrome LCD screen with 192 x 64 pixel resolution and 60cd/m2 brightness.
- **Processor:** 8-bit processor for efficient operation.
- **Memory:** 64 KB Flash ROM.
- **Input:** Keyboard input with 20 user-definable function buttons.
- **Communication:** Supports COM1: PC RS232 and PLC S485/RS232 communication protocols.
- **Durability:** Constructed from ABS material with imported chips for shock resistance and stable performance.
- **Security:** Features password protection and an alarm list function for real-time display of current alarm information.
- **Configuration:** Allows direct input of characters and PLC addresses. Screen data can be downloaded via serial communication using the TP200CN editing software.

2. Setup

2.1 Package Contents

Verify that all items are present in the package:

- 1 x Akozon OP320-A Text Display
- 1 set x Installation Accessories

2.2 Physical Installation

The display is designed for panel mounting. Refer to the dimensions below for proper cutout and installation.

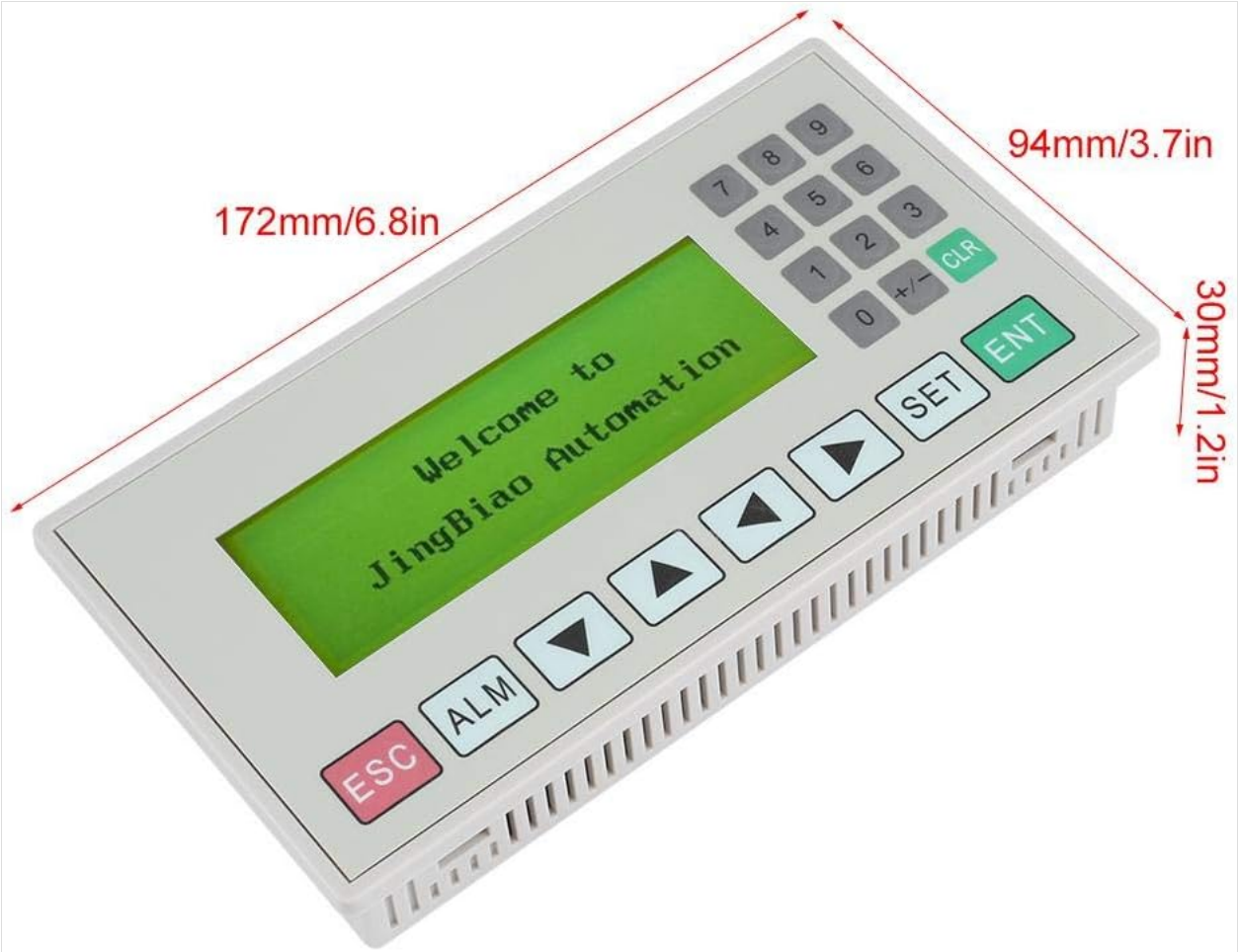

Figure 2.2.1: OP320-A HMI Text Display with dimensions. The device measures 172mm (6.8in) in length, 94mm (3.7in) in width, and 30mm (1.2in) in depth. The mounting hole size required is 165mm x 86mm.

Mounting Hole Size: 165mm x 86mm (6.5in x 3.4in)
Use the provided installation accessories to secure the display firmly into the panel cutout.

2.3 Electrical Connection

Connect the display to a stable power source within the specified voltage range.

- **Power Supply:** 12~24V (V) ±10%
- **Current Consumption:** <150mA

Ensure correct polarity when connecting the power supply to prevent damage to the device.

2.4 Communication Port Connection

The OP320-A supports RS232 and RS485 communication protocols for connecting to a PC or PLC.

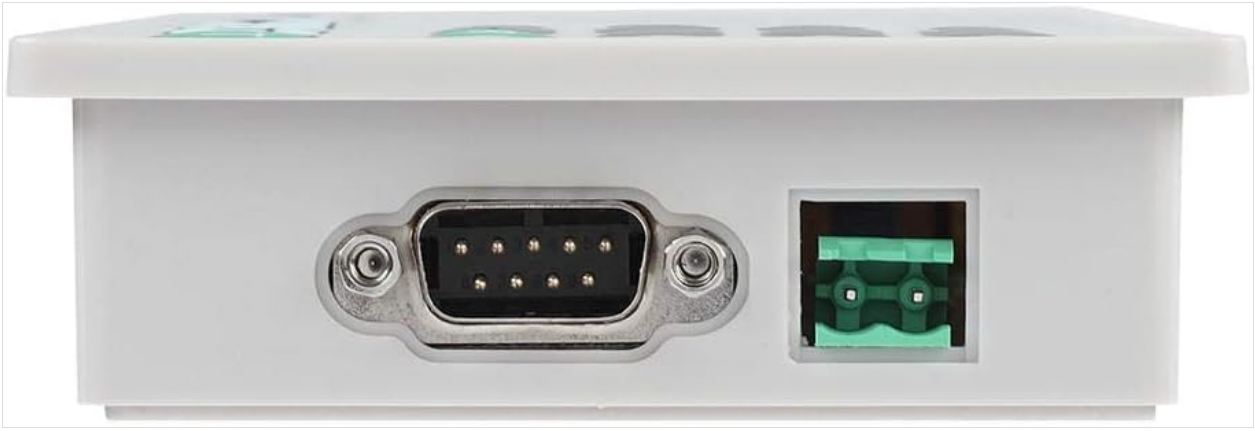

Figure 2.4.1: Rear view of the OP320-A HMI Text Display. This image highlights the DB9 RS232 serial port and the green terminal block for RS485/power connections.

- **COM1:** PC RS232, PLC S485/RS232

Use appropriate cables for connecting to your PC or PLC. Refer to your PLC's documentation for specific wiring diagrams for RS232 or RS485 communication.

3. Operation

3.1 Basic Functions

The OP320-A allows operators to monitor and modify PLC data. The display shows text or indicators representing PLC internal registers or relay statuses.

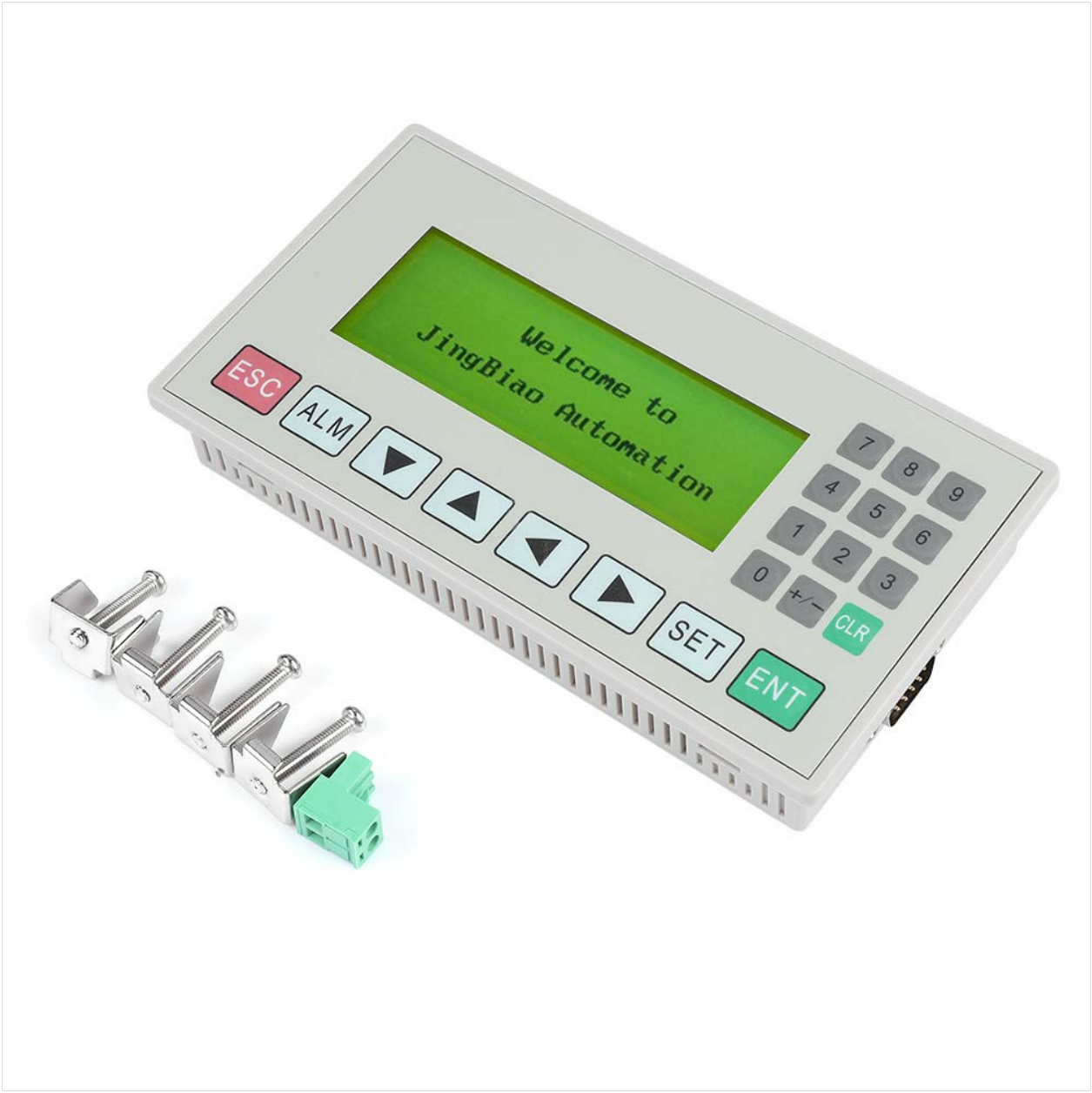

Figure 3.1.1: Front view of the OP320-A HMI Text Display. The screen displays 'Welcome to JingBiao Automation'. The keypad includes numeric buttons (0-9), +/-/CLR, ESC, ALM, arrow keys, SET, and ENT buttons.

3.2 Keyboard Input

The display features a numeric keypad and function buttons for data entry and navigation.

- **Numeric Keypad (0-9):** For entering numerical values.
- **+/-/CLR:** Used for sign changes or clearing input.
- **ESC:** Escape or cancel function.
- **ALM:** Access alarm information.
- **Arrow Keys (Up, Down, Left, Right):** For navigation within menus or data fields.
- **SET:** Enter setup or configuration modes.
- **ENT:** Confirm or enter selection.

The 20 self-defined function buttons can be programmed for specific tasks within your application.

3.3 Software Configuration

The OP320-A is configured using the TP200CN editing software on a computer. This software allows you to:

- Create and edit display screens.
- Define PLC addresses for monitoring and control.
- Download screen data and communication protocols to the display via serial communication.

No PLC communication program is required for the display to function once configured.

3.4 Alarm Function

The display includes an alarm list function. When an alarm condition is met in the PLC, the display can show real-time alarm information by line. Access to certain functions or configurations may be protected by a password.

4. Maintenance

4.1 Cleaning

To clean the display, use a soft, dry cloth. For stubborn dirt, a slightly damp cloth with a mild, non-abrasive cleaner can be used. Avoid using harsh chemicals, solvents, or abrasive materials, as these can damage the screen or casing.

4.2 Environmental Conditions

Ensure the display operates within the specified environmental conditions to maintain optimal performance and longevity.

- **Working Temperature:** 0 ~ 50 ℃ (32 ~ 122 ℉)
- **Working Environment Humidity:** 20 ~ 90%RH (non-condensing)
- **Storage Temperature:** -20 ~ 70 ℃ (-4 ~ 158 ℉)

The device has an IP65 grade, indicating protection against dust and low-pressure water jets from any direction. However, avoid prolonged exposure to extreme conditions.

5. Troubleshooting

5.1 Common Issues

- **Display Not Powering On:**
  - Check the power supply connection and ensure it is within the 12-24V range.
  - Verify that the power source is active.
- **No Communication with PLC:**
  - Ensure the communication cable is correctly connected to both the HMI and the PLC.
  - Verify that the communication settings (baud rate, data bits, parity, stop bits) in the HMI and PLC match.
  - Check the wiring for RS232 or RS485 for proper pin assignments.
  - Confirm that the PLC is powered on and functioning correctly.
- **Incorrect Data Displayed:**
  - Review the PLC address settings in the HMI configuration software (TP200CN) to ensure they

correspond to the actual PLC registers.
    - Verify the data format and scaling settings.

- **Screen Unresponsive:**
    - Restart the HMI by cycling its power.
    - If the issue persists, re-download the HMI configuration using TP200CN.

6. Technical Specifications

Parameter	Specification
Model	OP320-A
Display Size	3.7 inches
Display Type	Monochrome LCD (STN LCD with backlight)
Resolution	192 x 64 pixels (24 English characters x 4 lines / 12 Chinese characters x 4 lines)
Brightness	60cd/m2
Processor	8-bit processor
Memory	64 KB Flash ROM
Input Method	Keyboard input (20 self-defined function buttons)
Communication Port	COM1: PC RS232, PLC S485/RS232
Power Supply	12~24V ±10%
Current Consumption	<150mA
Power Off Allowed	20ms
Anti-interference Test	Voltage 1500v, p-p pulse cycle 1us, continuous 1S
Pressure Test	500vAC 1 min
Insulation Resistance	>10MΩ
Shockproof Test	10~25Hz
Protection Grade	IP65
Working Temperature	0 ~ 50 ℃
Working Humidity	20 ~ 90%RH
Storage Temperature	-20 ~ 70 ℃
Shell Material	Engineering plastics
Display Area Size	101 x 36mm (4 x 1.4in)
Mounting Hole Size	165 x 86mm (6.5 x 3.4in)
Overall Size	172 x 94 x 30mm (6.8 x 3.7 x 1.2in)

Weight	Approx. 338g (11.9oz)

7. Warranty Information

This product is covered by the manufacturer's standard warranty. Please refer to the warranty documentation provided with your purchase for details regarding coverage, terms, and conditions. Keep your proof of purchase for any warranty claims.

8. Support

For technical assistance, troubleshooting, or further inquiries regarding the Akozon OP320-A HMI Text Display, please contact your vendor or refer to the official Akozon support channels. You may also visit the Akozon Store on Amazon for additional product information.