Fatek FBs-20MNR2-AC (FBs-20MN)

Fatek PLC Controller FBs-20MNR2-AC User Manual

Model: FBs-20MNR2-AC (FBs-20MN)

1. Introduction

This manual provides essential information for the proper installation, operation, and maintenance of the Fatek FBs-20MNR2-AC Programmable Logic Controller (PLC). The FBs-20MNR2-AC is a compact and powerful controller designed for industrial automation applications, offering a robust set of features for various control tasks.
Please read this manual thoroughly before attempting to install or operate the device to ensure safe and efficient use.

2. Key Features

- 2 points digital differential input + 2 points digital differential output (920KHz 5VDC)
- 10 points 24VDC digital input (4 points with 200KHz)
- 6 Points relay digital output
- 1 built-in RS-232 communication port (expandable up to 5 ports)
- Built-in real-time calendar function
- Wide power supply range: 100~240VAC
- UL certified for safety and quality assurance

3. Safety Information

Observe the following safety precautions to prevent personal injury and damage to the equipment:

- **Electrical Safety:** Ensure all power is disconnected before wiring or performing any maintenance. Only qualified personnel should perform electrical installations.
- **Grounding:** Properly ground the PLC to prevent electrical shock and ensure stable operation.
- **Environment:** Install the PLC in an environment free from excessive dust, moisture, corrosive gases, and extreme temperatures.
- **Ventilation:** Ensure adequate ventilation around the PLC to prevent overheating.
- **Wiring:** Use appropriate wire gauges and terminal connections. Do not exceed specified current ratings for inputs and outputs.
- **Emergency Stop:** Always incorporate an independent emergency stop circuit in your system design.

4. Setup and Installation

4.1 Physical Installation

The FBs-20MNR2-AC PLC is designed for DIN rail mounting within an industrial control panel. Ensure sufficient clearance for wiring and heat dissipation.

4.2 Wiring Connections

Refer to the diagram below for terminal identification and wiring connections. Ensure all connections are secure and correct before applying power.

Figure 1: Front view of the Fatek FBs-20MNR2-AC PLC, illustrating the various input (X), output (Y), power (AC100-240V, L, N, GND), and communication (TX, RX, PORTO) terminals. The status indicators (POW, RUN, ERR) are also visible.

4.2.1 Power Supply Wiring

- Connect the AC power supply (100-240VAC) to the **L** (Line) and **N** (Neutral) terminals.
- Connect the protective earth ground to the ⊕ (Ground) terminal.

4.2.2 Digital Input Wiring (X0-X13)

- The PLC features 10 points of 24VDC digital input (X0-X9), with X0-X3 supporting high-speed 200KHz operation.
- Additionally, there are 2 points of digital differential input (X0-X1, X2-X3) for high-speed applications up to 920KHz.

- Connect input devices (e.g., sensors, switches) to the respective X terminals.

4.2.3 Digital Output Wiring (Y0-Y9)

- The PLC provides 6 points of relay digital output (Y0-Y5).
- There are also 2 points of digital differential output (Y0-Y1, Y2-Y3) for high-speed applications up to 920KHz.
- Connect output devices (e.g., relays, contactors, indicator lights) to the Y terminals. Observe the maximum current rating for each output.

4.2.4 Communication Port (PORTO, RS-232)

- The built-in RS-232 port (PORTO) is used for programming the PLC and communicating with other devices.
- Connect a programming cable from your computer to this port.

5. Operating Instructions

5.1 Powering On

After completing all wiring and ensuring safety, apply power to the PLC. The **POW** indicator LED should illuminate, indicating that the unit is receiving power.

5.2 Programming the PLC

The Fatek FBs-20MNR2-AC is programmed using specific PLC programming software (e.g., WinProladder). Connect the PLC to your computer via the RS-232 port and use the software to develop, download, and monitor your control programs.

5.3 Status Indicators

- **POW (Power):** Illuminates when power is supplied to the PLC.
- **RUN (Run Mode):** Illuminates when the PLC is executing the user program.
- **ERR (Error):** Illuminates or flashes to indicate a system error or fault. Refer to the troubleshooting section for details.
- **TX (Transmit):** Flashes when data is being transmitted via the communication port.
- **RX (Receive):** Flashes when data is being received via the communication port.

6. Maintenance

Regular maintenance ensures the longevity and reliable operation of your PLC.

- **Cleaning:** Periodically clean the exterior of the PLC with a soft, dry cloth. Do not use solvents or abrasive cleaners. Ensure power is off before cleaning.
- **Terminal Inspection:** Regularly check all wiring terminals for tightness and corrosion. Loose connections can lead to intermittent operation or damage.
- **Environmental Check:** Verify that the operating environment remains within specified conditions (temperature, humidity, dust).
- **Firmware Updates:** Check the manufacturer's website for any available firmware updates that may improve performance or address issues. Follow update instructions carefully.

7. Troubleshooting

This section provides solutions to common issues you may encounter.

Problem	Possible Cause	Solution

Problem	Possible Cause	Solution
PLC does not power on (POW LED off).	No power supply, incorrect wiring, or internal fault.	Check AC power connections (L, N, Ground). Verify power source. Ensure wiring is correct. If problem persists, contact support.
RUN LED is off, but POW LED is on.	No program loaded, program error, or PLC in STOP mode.	Download a valid program to the PLC. Check for program errors in the software. Ensure the PLC is set to RUN mode via software.
ERR LED is illuminated or flashing.	System error, hardware fault, or critical program error.	Connect to the PLC with programming software to read the error code. Consult the software manual for specific error meanings and solutions.
Inputs (X) are not responding.	Incorrect wiring, faulty sensor, or input device not supplying correct voltage.	Verify input device wiring and functionality. Check input voltage levels. Ensure input addresses in the program match physical connections.
Outputs (Y) are not activating.	Incorrect wiring, faulty output device, or program logic error.	Verify output device wiring and functionality. Check program logic for output activation conditions. Ensure output addresses in the program match physical connections.
Communication issues (e.g., cannot connect to PLC).	Incorrect cable, wrong port settings, or driver issues.	Ensure correct RS-232 cable is used. Verify COM port settings (baud rate, parity, data bits, stop bits) in software match PLC settings. Install or update USB-to-serial drivers if applicable.

8. Technical Specifications

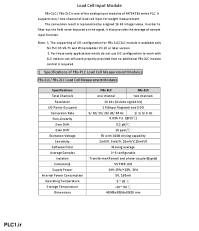
Specification	Value
Model Number	FBs-20MNR2-AC (FBs-20MN)
Digital Inputs	10 points 24VDC (4 points 200KHz), 2 points differential (920KHz 5VDC)
Digital Outputs	6 points relay output, 2 points differential (920KHz 5VDC)
Communication Ports	1 built-in RS-232 (expandable up to 5)
Power Supply	100~240VAC
Built-in Features	Real-time calendar
Certifications	UL certified
Package Dimensions	4.5 x 4 x 4 inches
Item Weight	1.01 Pounds
Manufacturer	Fatek
Date First Available	September 27, 2015

9. Warranty and Support

For specific warranty terms and conditions, please refer to the documentation provided with your purchase or contact Fatek

directly. Technical support can be obtained through your authorized Fatek distributor or by visiting the official Fatek website for contact information and resources.
Always provide your product model number (FBs-20MNR2-AC) and serial number when seeking support.

Related Documents

	FATEK FBs-Series PLC: Advanced Programmable Logic Controllers for Industrial Automation Explore the FATEK FBs-Series Programmable Logic Controllers (PLCs), featuring cutting-edge SoC technology, extensive communication options, high-speed processing, and integrated PLC & NC control for robust industrial automation solutions. Discover detailed specifications, features, and model information.
	FATEK FBs-1LC/FBs-2LC Load Cell Input Module: Specifications & Configuration Guide Comprehensive guide to FATEK FBs-1LC and FBs-2LC analog input modules for PLCs. Covers specifications, installation, configuration, register mapping, and wiring for accurate weight measurement.
	FATEK FBs-W2C Wi-Fi Communication Module User Manual This manual provides detailed information on the FATEK FBs-W2C Wi-Fi communication module for PLCs, covering its features, specifications, installation, network setup using PLC interface or Smart Config, firmware updates via OTA, network time synchronization (SNTP), and the W2C Configurator software. It includes appendices with register configurations, timezone information, and access point compatibility.
	FATEK M-PLC Instruction User Manual: Comprehensive Guide to Programmable Controllers Explore the FATEK M-PLC Instruction User Manual for detailed guidance on programmable controller operations, ladder diagram programming, and automation solutions. Learn about M Series PLC features and functionalities.