**Marhynchus WS7020R**

# Marhynchus WS7020R 7-inch TFT HMI Touch Screen PLC Instruction Manual

Model: WS7020R | Brand: Marhynchus

## INTRODUCTION

This instruction manual provides essential information for the safe and efficient use of the Marhynchus WS7020R 7-inch TFT HMI Touch Screen PLC. Please read this manual thoroughly before installation and operation, and keep it for future reference. This device is designed for industrial control applications, offering a reliable human-machine interface with integrated PLC functionality.

## PRODUCT OVERVIEW

The Marhynchus WS7020R is a premium 7-inch TFT HMI (Human Machine Interface) touch screen display with integrated PLC capabilities. It features a 32-bit 240 MHz ARM9 processor and 128MB flash memory, ensuring high touch precision and fast operation. The device is equipped with a 7-inch TFT LCD screen offering an 800 x 480px resolution and 400cd/m² brightness for clear visibility.

Key features include:

- **High Performance:** 32-bit 240 MHz ARM9 CPU and 128MB Flash memory for efficient processing.
- **Clear Display:** 7-inch TFT LCD with 800 x 480px resolution and 400cd/m² brightness.
- **Robust Touch Screen:** Industrial-grade 4-wire touch screen with 4H surface hardness.
- **Integrated PLC:** Compatible with FX3U series PLCs, featuring 12 digital inputs and 8 relay outputs.
- **Versatile Connectivity:** Includes 1x RS232 serial port and 1x RS485 wiring terminal.
- **Enhanced Security:** Equipped with overvoltage protection.
- **Easy Programming:** Supports USB drive for program upload and data download.
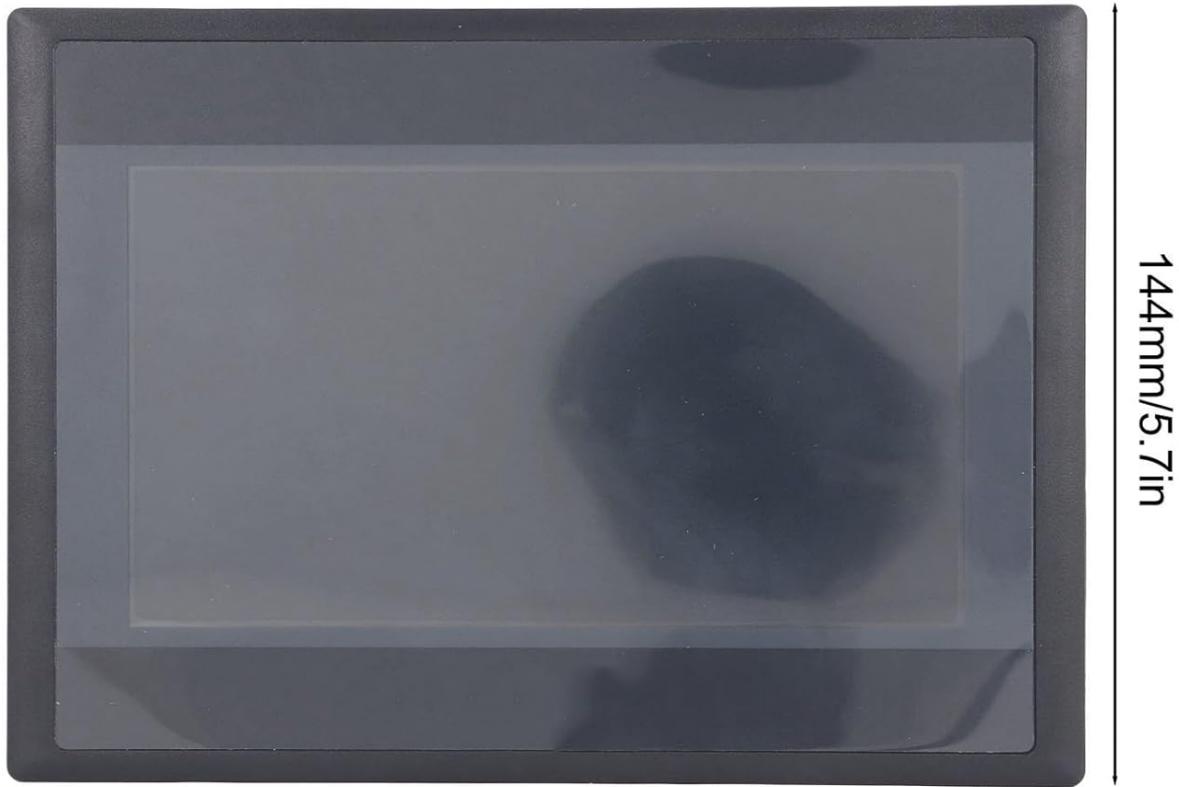
Figure 1: Front view of the Marhynchus WS7020R HMI Touch Screen PLC.

## SPECIFICATIONS

| Feature | Specification |
| --- | --- |
| Model | WS7020R |
| Output Type | Relay |
| Switching Points | 12 Inputs, 8 Outputs |
| Power Supply | DC 24V (±15% working range) |
| Output Current | 5A |
| Display Screen | 7-inch TFT LCD |

| Feature | Specification |
| --- | --- |
| Resolution | 800 x 480px |
| Color Depth | 260,000 colors |
| Brightness | 400cd/m² |
| LED Lifespan | 20,000 hours |
| Touch Screen | Industrial 4-wire, 4H surface hardness |
| CPU | 32-bit 240 MHz ARM9 |
| Memory | 128MB Flash |
| Programming Software | For Winsun HMI_SETUP_V2.0 |
| Analog Input | 3AD 0-10V and 3AD 4-20mA |
| Analog Output | 0-10V |
| High-Speed Counting | 6 channels 3K, can switch to 6 channels 60K, supports 3-way AB phase |
| Communication Ports | 1x RS232 serial port, 1x RS485 wiring terminal |
| Real-Time Clock | Supported |
| Memory Capacity (PLC) | 8,000 steps |
| Download Speed | 38.4kb |
| PLC Series Compatibility | Compatible with FX3U series |
| PLC Programming Software | Compatible with GX Device (lower) or GX Works 2 |
| Program Download Method | USB |
| USB Drive Support | Supports USB drive upload/download for programs and data |
| Serial Communication Port | COM1 supports RS232 or RS422 (9-pin male connector) |
| Protection | Overvoltage protection |
| Opening Size | Approx. 190 x 136 mm (7.48 x 5.35 inches) |
| Overall Size | Approx. 199 x 144 x 59 mm (7.83 x 5.67 x 2.32 inches) |

Figure 2: Dimensions of the Marhynchus WS7020R HMI Touch Screen PLC.

## PACKAGE CONTENTS

Upon unpacking, please verify that all items listed below are present and undamaged:

- 1 x HMI Touch Screen Unit (Model WS7020R)
- 4 x Installation Screws
- 4 x Fixing Brackets
- 1 x Terminal Block
- 3 x Connection Cables

Figure 3: Marhynchus WS7020R HMI Touch Screen PLC with included installation accessories.

## SETUP AND INSTALLATION

The Marhynchus WS7020R HMI is designed for straightforward installation. Follow these steps for proper setup:

1. **Panel Preparation:** Ensure the installation panel has an opening of approximately 190 mm x 136 mm (7.48 x 5.35 inches). The front panel of the HMI conforms to LP65 flat panel installation standards, and the rear cover to IP20.

2. **Mounting:** Insert the HMI unit into the prepared panel opening. Secure it using the provided installation screws and fixing brackets. Tighten the screws evenly to ensure a snug fit without over-tightening.

3. **Power Connection:** Connect the DC 24V power supply to the designated power input terminal. Ensure the voltage is within the working range of ±15%. The device is equipped with overvoltage protection.

4. **PLC and Communication Wiring:**

   - Connect the PLC (compatible with FX3U series) to the HMI using the appropriate communication cables.
   - Utilize the 1x RS232 serial port or the 1x RS485 wiring terminal for communication as required by your

industrial setup. The COM1 port supports both RS232 and RS422 communication.

- ○ Connect the 12 digital inputs and 8 relay outputs as per your application's control logic.

5. **Analog Connections:** If using analog signals, connect 3AD 0-10V and 3AD 4-20mA inputs, and 0-10V analog outputs to their respective terminals.

6. **Programming (Initial):** If a program needs to be loaded, connect a USB drive to the HMI's USB port. The device supports USB drive upload and download for programs and data.



Figure 4: Rear view of the HMI showing various connection ports and terminals.

## OPERATING INSTRUCTIONS

Once the HMI is installed and powered on, it is ready for operation. The device functions as a Human Machine Interface and an integrated PLC.

1. **Power On:** Apply DC 24V power. The TFT LCD screen will illuminate, displaying the configured interface.

2. **Touch Screen Interaction:** Use the industrial 4-wire touch screen to navigate through the HMI interface. The screen is designed for high precision and durability.

3. **PLC Program Execution:** The integrated PLC will execute the loaded program, controlling connected industrial equipment via its 12 inputs and 8 relay outputs.

4. **Monitoring and Control:** Monitor system status, input/output states, and other parameters through the HMI display. Use the touch interface to send commands and adjust settings as programmed.

5. **Data Logging and Management:** If configured, the HMI can log operational data. Use a USB drive to download logged data or upload new programs as needed.

6. **Programming Software:** For advanced programming and configuration of the HMI and PLC, use the "Winsun HMI_SETUP_V2.0" software for the HMI part and "GX Device" or "GX Works 2" for the PLC part.



Figure 5: The HMI touch screen displaying an operational interface.

## MAINTENANCE

Regular maintenance ensures the longevity and reliable operation of your Marhynchus WS7020R HMI Touch Screen PLC.

- **Cleaning:** Gently wipe the screen and exterior surfaces with a soft, dry, lint-free cloth. For stubborn marks, use a slightly damp cloth with a mild, non-abrasive cleaner. Avoid excessive moisture and harsh chemicals.
- **Environmental Conditions:** Ensure the operating environment is within the specified temperature and humidity ranges. Avoid exposure to direct sunlight, extreme temperatures, and high humidity.
- **Connections Check:** Periodically inspect all wiring connections (power, communication, I/O) to ensure they are secure and free from corrosion or damage.
- **Software Updates:** Check the manufacturer's website for any available firmware or software updates for the HMI or PLC programming tools. Apply updates as recommended.
- **Backup Programs:** Regularly back up your HMI and PLC programs to an external storage device (e.g., USB drive) to prevent data loss.

## TROUBLESHOOTING

This section provides solutions to common issues you might encounter with your HMI Touch Screen PLC.

| Problem | Possible Cause | Solution |
|---|---|---|
| Device does not power on. | No power supply or incorrect voltage. | Verify DC 24V power connection and ensure voltage is within ±15% range. Check power cables for damage. |
| Touch screen unresponsive. | Screen calibration issue or physical damage. | Attempt to recalibrate the touch screen if the option is available in system settings. Inspect for physical damage. If unresponsive, contact support. |
| Communication with PLC fails. | Incorrect wiring, wrong communication settings, or incompatible PLC. | Check communication cable connections (RS232/RS485). Verify communication parameters (baud rate, parity, data bits) in both HMI and PLC. Ensure PLC is FX3U series compatible. |
| Display is dim or flickering. | Brightness settings, power issue, or LED backlight degradation. | Adjust brightness settings in the HMI menu. Check power supply stability. If the issue persists, it may indicate hardware failure. |
| Program upload/download via USB fails. | Faulty USB drive, incorrect file format, or software issue. | Ensure the USB drive is formatted correctly and contains the appropriate program files. Try a different USB drive. Verify the programming software settings. |

If you encounter problems not listed here or if the suggested solutions do not resolve the issue, please contact Marhynchus customer support for further assistance.

## WARRANTY AND SUPPORT

Marhynchus products are manufactured to high-quality standards. This product comes with a standard manufacturer's warranty against defects in materials and workmanship. Please refer to your purchase documentation or contact Marhynchus customer service for specific warranty terms and conditions.

For technical support, troubleshooting assistance, or warranty claims, please contact Marhynchus customer service through their official website or the contact information provided with your purchase. When contacting support, please have your product model (WS7020R) and purchase details readily available.