User Manual

Handheld HMI & Connection Box Startup Guide

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Chapter1. Overview

1.1. Specification

1.1.1. cMT3106XM

10.1" WVA Handheld HMI

Feature

- Mode selector key switch, emergency stop switch, and 3-position enable switch
- 10.1" 1024 × 600 Wide Viewing Angle LCD
- Resistive touch panel
- COM port × 1, Ethernet port × 1, SD/SDHC slot × 1, USB host port × 1
- Built- in 4GB Flash and 1GB RAM
- MPI 187.5K support
- Fan-less cooling system
- IP65-rated full enclosure protection
- Wall mounting bracket for secure installation

Display	Display	10.1” Wide Viewing Angle (WVA)
	Resolution	1024 x 600
	Brightness (cd/m^2)	350
	Contrast Ratio	1000:1
	Backlight Type	LED
	Backlight Life Time	>50,000 hrs.
	Colors	16.7M
	LCD Viewing Angle (T/B/L/R)	89/89/89/89
	Pixel Pitch (mm)	0.2175 (H) × 0.2088 (V)
Touch Panel	Type	4-wire Resistive Type
	Accuracy	Active Area Length(X)±2%, Width(Y)±2%
Memory	Flash	4 GB
	RAM	1 GB
Processor		Quad-core RISC
I/O Port	SD Card Slot	SD/SDHC
	USB Host	USB 2.0 x 1
	USB Client	N/A
	Ethernet	10/100 Base-T x 1
	COM Port	COM2 RS-485 2W/4W
	RS-485 Dual Isolation	N/A
	CAN Bus	N/A
	Audio Output	N/A
Key Switch	Contacts	Changeover Contact (Optional) x 1
	Rated Operating Voltage	24 VDC
	Rated Operating Current	500 mA
	Mechanical Life	>250,000 operations
Emergency Stop Switch	Contacts	Normally Closed (NC) Contacts x 2
	Rated Operating Voltage	30 VDC
	Rated Operating Current	500 mA
	Standards	IEC60947-5-1, EN60947-5-1, IEC60947-5-5, EN60947-5-5, UL508, UL991, NFPA79, CSA C22.2 No.14, GB14048.5
	Mechanical Life	>250,000 operations
3-Position Enable Switch	Contacts	Normally Open (NO) Contacts x 2
	Rated Operating Voltage	30 VDC
	Rated Operating Current	500 mA
	Standards	IEC/EN 60947-5-8, IEC/EN 60947-5-1, UL508, CSA C22.2 No.14, GS-ET-22
	Mechanical Life	Position 1→2→1: >1,000,000 operations Position 1→2→3→1: >100,000 operations
RTC		Built-in
Power	Input Power	24±20%VDC*
	Power Isolation	Built-in
	Power Consumption	480mA@24VDC
	Voltage Resistance	500VAC (1 min.)
	Isolation Resistance	Exceed 50MΩ at 500VDC
	PCB Coating	Yes

Specification	Enclosure	Plastic
	Dimensions WxHxD	302.7 x 240 x 116.8 mm
	Weight	Approx. 1.6 kg
	Mount	Wall Mounting Bracket
Environment	Protection Structure	IP65
	Max. Fall Height	1.2 m
	Storage Temperature	-20° ~ 60°C (-4° ~ 140°F)
	Operating Temperature	0° ~ 50°C (32° ~ 122°F)
	Relative Humidity	10% ~ 90% (non-condensing)
	Vibration Endurance	10 to 25Hz (X, Y, Z direction 2G 30 minutes)
Certificate	CE	CE marked
Software	EasyBuilder Pro	V6.10.01 or later versions
	Weincloud	EasyAccess 2.0 (Optional), Dashboard (Optional)

* The Handheld HMI must be powered solely through the connection box.

1.1.2. cMT-XMBS

Standard Connection Box

Feature

- Mounted outside the control cabinet or on a wall
- IP66-rated full enclosure protection

I/O Port	Cable Connector	1
	Wiring Terminal	2
Specification	Enclosure	Plastic
	Dimensions WxHxD	181.1 x 101.1 x 70 mm
	Weight	Approx. 0.4 kg
	Mount	Use four M4 or #8 panhead screws, mounting hole size is 4.6mm
Environment	Protection Structure	IP66
	Storage Temperature	-20° ~ 60°C (-4° ~ 140°F)
	Operating Temperature	0° ~ 55°C (32° ~ 131°F)
	Relative Humidity	10% ~ 90% (non-condensing)
	Vibration Endurance	10 to 25Hz (X, Y, Z direction 2G 30 minutes)
Certificate	CE	CE marked

1.1.3. cMT-XMBC

Compact Connection Box

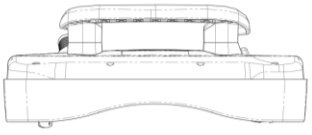
Features

- Mounted outside the control cabinet, with all terminal connections housed inside
- IP66-rated protection

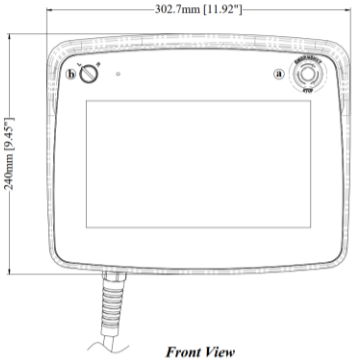
I/O Port	Cable Connector	1
	Wiring Terminal	2
Specification	Enclosure	Plastic
	Dimensions WxHxD	157.9x 75.9 x 55.2 mm
	Panel Cutout	119.4 x 29.95 mm
	Weight	Approx. 0.2 kg
	Mount	Use six M4 screws, mounting hole size is 4.6mm
Environment	Protection Structure	IP66 Compliant Front Side
	Storage Temperature	-20° ~ 60°C (-4° ~ 140°F)
	Operating Temperature	0° ~ 55°C (32° ~ 131°F)
	Relative Humidity	10% ~ 90% (non-condensing)
	Vibration Endurance	10 to 25Hz (X, Y, Z direction 2G 30 minutes)
Certificate	CE	CE marked

1.2. Dimensions

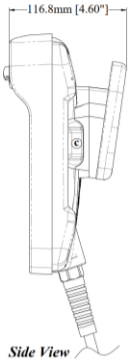
1.2.1. cMT3106XM



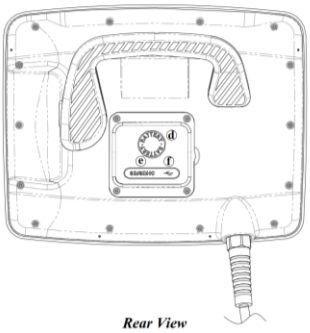
Top View



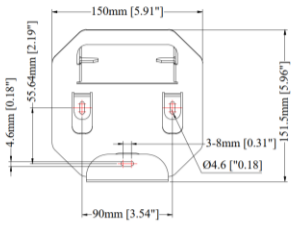
Front View



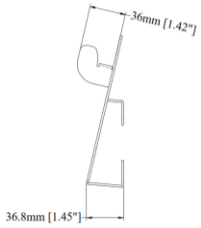
Side View



Rear View



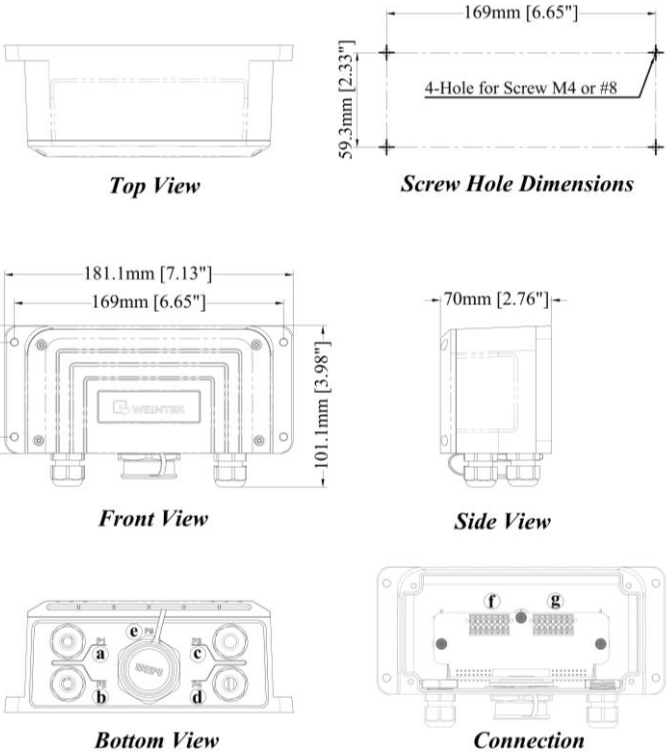
Mounting brackets



Side View

a	Emergency Stop Switch	***d***	Battery
b	Key Switch	***e***	SD Card Slot
c	3-Position Enable Switch	***f***	USB Host

1.2.2. cMT-XMBS



a~d	Cable Glands (cable diameter: 4 ~ 8 mm)
e	Cable Connector
f	Wiring Terminal
g	Wiring Terminal

Wiring Terminal Pin Assignment

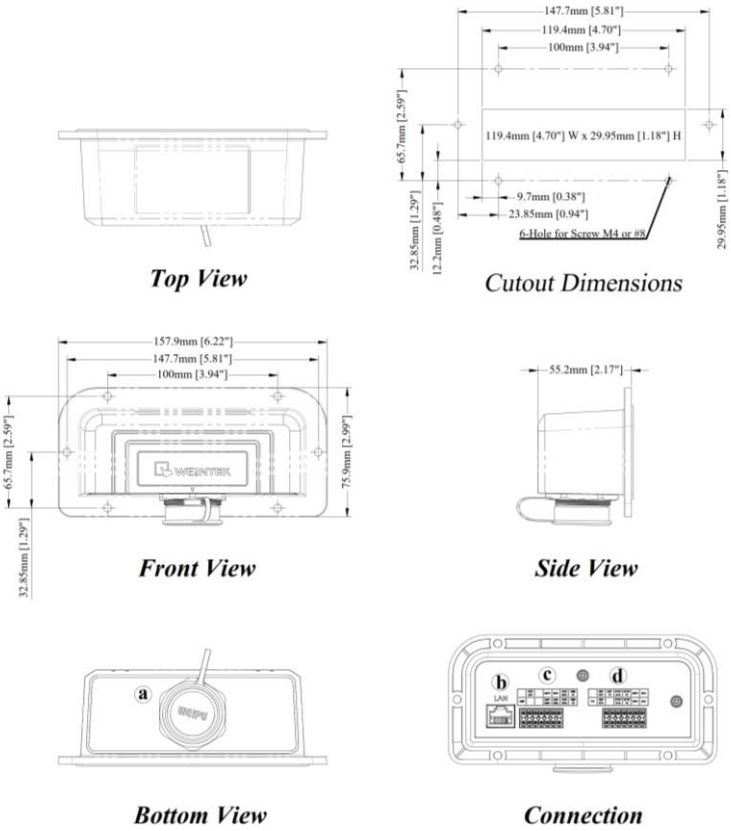
f Wiring Terminal

24V Power		Emergency Stop Switch		Key Switch		Ground
24V+	24V+	STOP NC_1	STOP COM_1	KEY NO_1	KEY COM_1	
24V-	24V-	STOP NC_2	STOP COM_2	KEY NC_1		FG

g Wiring Terminal

3-Position Enable Switch		RS-485		LAN		Detect / GND
ENABLE NO_1	ENABLE COM_1	4W_TX+	4W_TX-	LAN_TX+	LAN_TX-	DET_24V
ENABLE NO_2	ENABLE COM_2	2W_DATA+ 4W_RX+	2W_DATA- 4W_RX-	LAN_RX+	LAN_RX-	GND

1.2.3. cMT-XMBC



a	Cable Connector
b	LAN
c	Wiring Terminal
d	Wiring Terminal

Wiring Terminal Pin Assignment

c Wiring Terminal

GND	Detect		RS-485		3-Position Enable Switch	
	DET_24V		4W_TX+	4W_TX-	ENABLE NO_1	ENABLE COM_1
GND			2W_DATA+ 4W_RX+	2W_DATA- 4W_RX-	ENABLE NO_2	ENABLE COM_2

d Wiring Terminal

Ground	Key Switch		Emergency Stop Switch		24V Power	
	KEY NO_1	KEY COM_1	STOP NC_1	STOP COM_1	24V+	24V-
FG	KEY NC_1		STOP NC_2	STOP COM_2	24V+	24V-

1.3. USB, Memory Card, and Battery

1.3.1. USB Host Port

The Handheld HMI features a USB 2.0 port for connecting barcode scanners and USB drives. When using an external hard drive, supply it with an external power source to ensure adequate voltage. Do not use this port to charge external devices.

1.3.2. SD/SDHC Card

The Handheld HMI includes an SD/SDHC card slot for system upgrades and for storing/backing up data logs, event logs, and operation logs.

SD Card: up to 2 GB

SDHC Card: up to 32 GB

1.3.3. CR2032 Battery

The Handheld HMI requires a coin-type lithium battery to keep the RTC running.

Battery Specification: CR2032 3V lithium battery

Chapter2. System Wiring

2.1. Overview

The handheld HMI does not connect directly to a PLC, power supply, or other equipment. All communication is managed centrally through the connection box. This architecture offers the following advantages:

- **Improved system safety:** The HMI can be removed or replaced at any time without affecting communication stability.
- **Simplified wiring and maintenance:** Only the connection box needs to be installed on-site, and the HMI can be plugged or unplugged using a single cable.
- **Enhanced waterproof and dustproof protection:** Reduced external wiring during operation helps protect equipment.

2.2. Connection Box

The connection box is the external wiring module of the handheld HMI, handling all power and communication interfaces. Whether for PLC communication, power supply, or safety circuits (such as emergency stop switch or 3-position enable switch), all connections are centralized in the connection box.

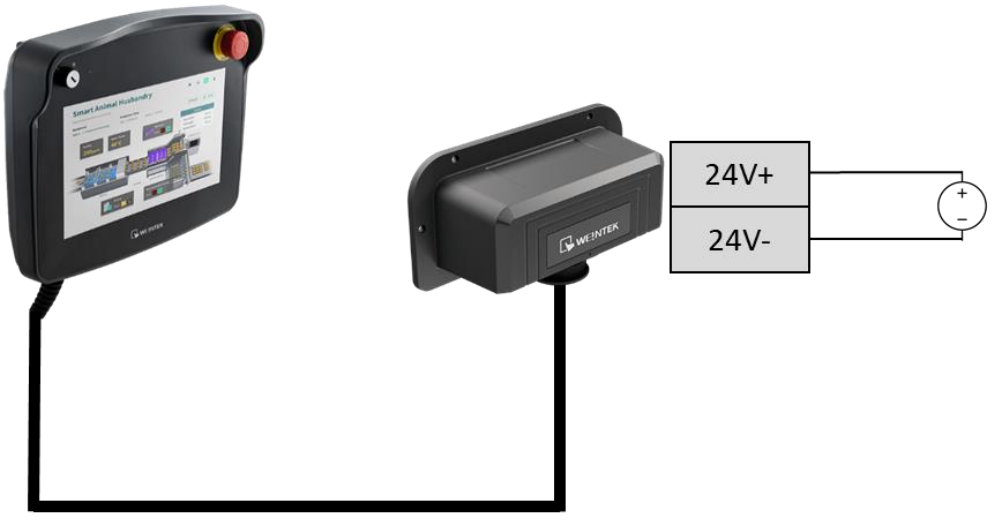
Two designs are available:

- **Standard Connection Box:** Mounts outside control cabinets or on walls, with clear wiring and easy maintenance.
- **Compact Connection Box:** Houses all terminals and wiring within the control cabinet for a clean, organized setup.

2.3. Power Connection

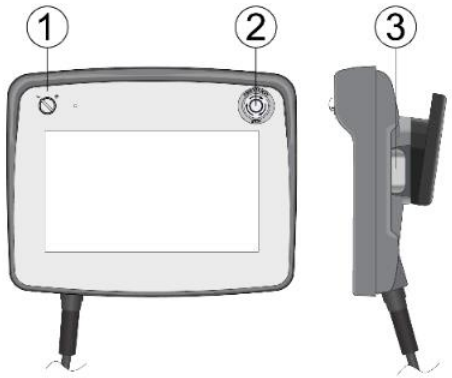
The Handheld HMI can only be powered by DC power. The specified DC voltage range is 24±20%, ensuring compatibility with most controller DC power systems. The power conditioning circuitry inside the unit is managed by a switching power supply, and the peak starting current can reach up to 2A.

Note: Connect the DC positive lead to the terminal labeled “24V+” on the connection box, and the DC negative lead to the terminal labeled “24V-”.



2.4. Switches on the Handheld HMI

The handheld HMI is equipped with three switches. Their positions, functions, wiring, and output states are described in this section.



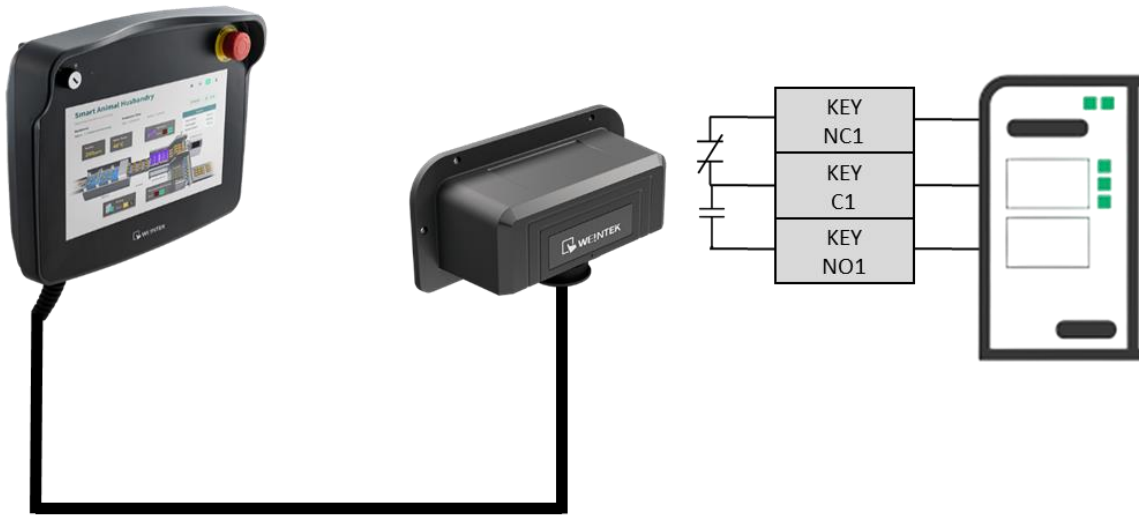
① Key Switch
② Emergency Stop Switch
③ 3-Position Enable Switch

2.4.1. Key Switch

Function: Switches the HMI or system between operation modes (e.g., Manual / Auto).

Two positions are available: L and R**.** The key can only be removed in the L position.

- Wiring (L position):



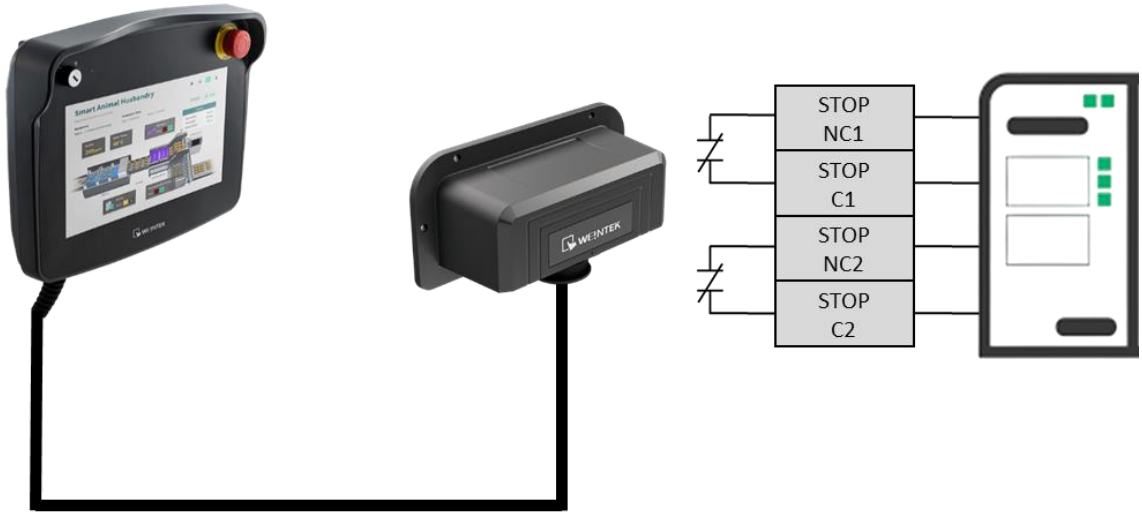
- Output Signals:

Signal	L	R
KEY NO_1	0 (OFF)	1 (ON)
KEY NC_1	1 (ON)	0 (OFF)

2.4.2. Emergency Stop Switch

Function: A safety mechanism that immediately stops the equipment in hazardous situations. When pressed, the contacts open to cut off the control circuit or power. To reset the switch after pressing, pull it upward or turn it fully in the direction of the arrows.

- Wiring:

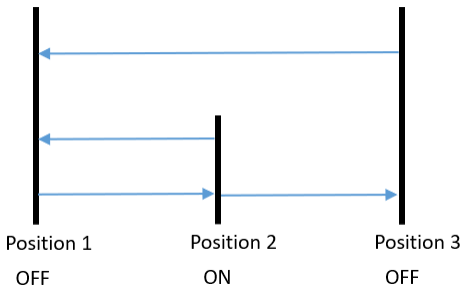


- Output Signals:

Signal	Not Pressed	Pressed
STOP NC_1	1 (ON)	0 (OFF)
STOP NC_2	1 (ON)	0 (OFF)

2.4.3. 3-Position Enable Switch

This switch has three positions and two contacts. In the middle position (2), the contacts close (ON), allowing the equipment to operate. In both the not-pressed (1) and fully pressed (3) positions, the contacts open (OFF); returning from 3 back to 1 keeps it OFF.

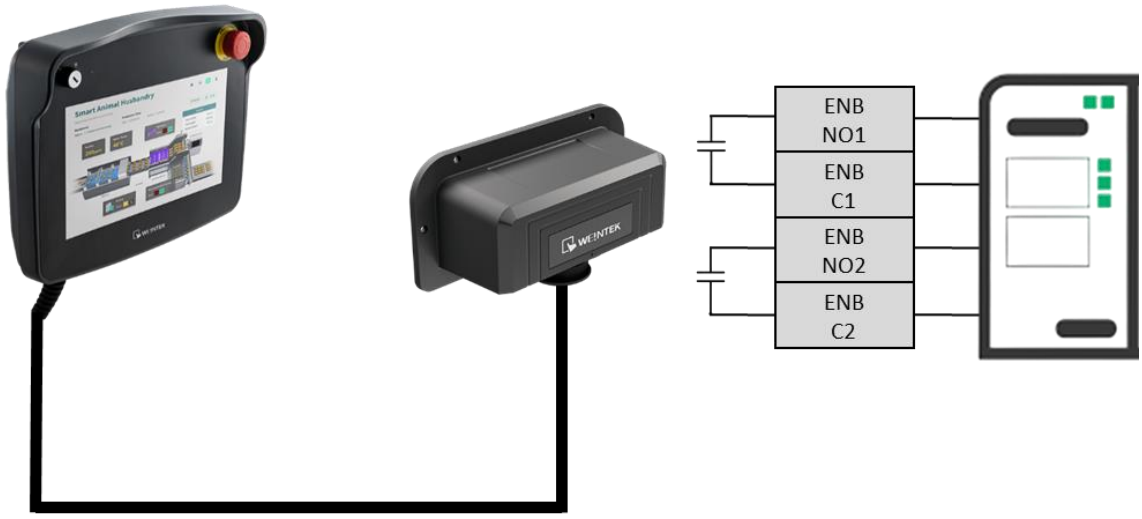


Position 1: Not pressed (contacts normally open)

Position 2: Held in the middle position (contacts closed, operable)

Position 3: Fully pressed (contacts open)

- Wiring:



- Output Signals:

Signal	Position 1	Position 2	Position 3
ENABLE NO_1	0 (OFF)	1 (ON)	0 (OFF)
ENABLE NO_2	0 (OFF)	1 (ON)	0 (OFF)

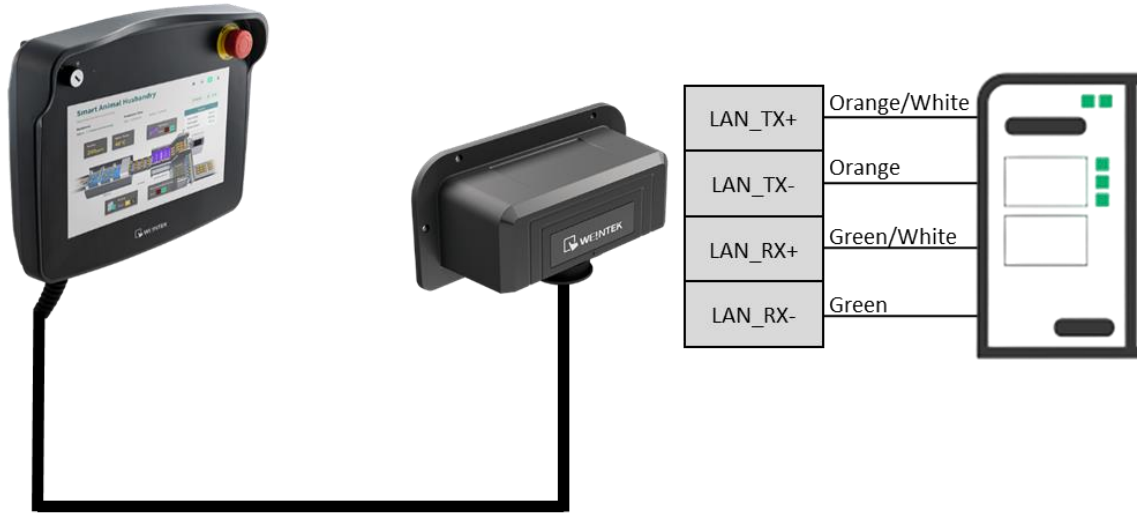
2.5. LAN Port Communication

The compact connection box cMT-XMBC provides a 10/100 Mbps Ethernet port for HMI communication with PLCs or upper-level systems (SCADA, MES, Weincloud).

- Wiring:

Use an RJ-45 Ethernet cable (CAT-5e or higher recommended).

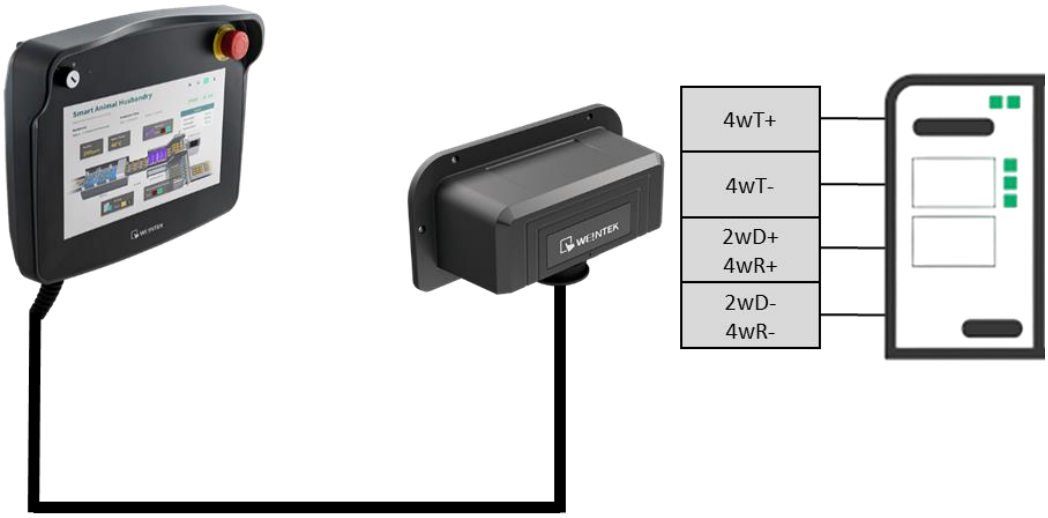
The connection box Ethernet port is wired directly to an external RJ-45 connector.



2.6. Serial Port Communication

The handheld HMI supports RS-485 serial communication in both 2-wire (2W) and 4-wire (4W) modes for connecting to PLCs, inverters, sensors, or other devices supporting the Modbus RTU protocol.

- RS-485 2W:
  Uses two signal lines (D+ / D-) for bidirectional data transfer.
  Ideal for multi-station networks such as Modbus RTU.
- RS-485 4W:
  Uses four signal lines (TX+ / TX- / RX+ / RX-) for simultaneous transmit and receive.
  Ideal for full-duplex use, including high-speed data exchange scenarios.



Notes:

- **Termination resistor:** Install a 120 Ω resistor at both ends of the RS-485 bus for improved stability.
- **Wiring type:** Use shielded twisted-pair (STP) cable to reduce noise interference.
- **Grounding:** All serial devices should share the same ground reference (GND).

Chapter3. System Settings

Upon the first power-up, the default screen will appear. Tapping the Start Button allows access to the system settings login screen. The default password is 111111.

3.1. System Properties

In the System Properties settings page, it is possible to configure information related to the handheld HMI, including system information, display settings, diagnostics, and more.

Setting	Description
Model	The HMI model.
HMI Name	Edit the HMI name.
OS Version	View the current OS version.
Date / Time	Tap to change the date and time.
Brightness	Adjust the screen backlight brightness.
Audio	Enable or disable system sound.
Touch Feedback	When enabled, the touchscreen emits sound effects.
Language	Select the HMI system language.
Input Method	Language of the keyboard popup when typing; supports multiple languages.
Show Start Button	Enable to display the system settings access button.
Show Download Popup Window	Enable to show the download popup window when a USB drive or SD card is inserted.
Show Mouse Cursor	Enable to display the mouse cursor.
Direction	Adjust the display orientation of the HMI screen.
System Metrics	View current system resource usage.
Reset HMI to Default	Restore factory defaults after confirmation.
OS Upgrade	Update the OS using files stored on a USB drive or SD card.
Third-Party Licenses	View the license information of the third-party software.

3.2. Project

Setting	Description
Clear History	Clear recipes, recipe database, event logs, data logs, operation logs, and PRW addresses.
Restart EB Project	Restart the project immediately after confirmation.

3.3. Network

Network-related settings can be configured here.

Setting	Description
Ethernet LAN 1	Configure the IP parameters for LAN 1. Usually used for external network connections, requiring the setup of IP address, subnet mask, gateway, and domain name system.

3.4. Security

Setting	Description
Admin	Change the administrator password.
Update Project	Change the project update password.
History	Change the password for backing up historical data.
User	Change the cMT Viewer/diagnostic tool password.

3.5. EasyAccess 2.0

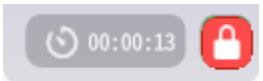
EasyAccess 2.0 information page.

3.6. VNC

VNC Setting

Setting	Description
Enable	When enabled, VNC clients are allowed to connect and interact with the screen.
Multi Connection	When enabled, up to 3 VNC clients can connect simultaneously.
Require Password	When enabled, a password must be used to log in to the VNC function.
VNC Password	Configure and modify the VNC login password.

VNC Interlock

Setting	Description
Enable	Enable the screen lock function. VNC users will not be affected by each other.
Timeout (seconds)	Set the timeout duration. After this period, control will be released, allowing the next client in line to gain control.
Status Bar Style	Regular  Minimal 

Chapter4. OS Update

The OS version on the Handheld HMI can be updated via Ethernet, USB drive, or SD card.

4.1. Updating the OS

Please note that OS update failures can render the Handheld HMI unusable, so care must be taken during the update. Ensure a stable power supply throughout the process.

4.1.1. Updating via EasyWeb 2.0

Step 1. Open a web browser (Windows Edge, Chrome, Firefox) and enter the IP address of the Handheld HMI (e.g., 192.168.2.121). Enter the password on the login page to access the settings.

Step 2. Under the Administrator tab, find and open the OS Update tab.

Step 3. Click [Update], select the OS file, and then click [Update] to start the process.

4.1.2. Updating via USB Drive / SD Card

Step 1. Place the OS file (.bin) onto a USB drive / SD card and insert it into the Handheld HMI.

Step 2. Enter the password on the login page to access the settings.

Step 3. Under the Administrator tab, find and open the OS Update tab.

Step 4. Tap [Update], select the OS file in the USB drive / SD card and then tap [Update] to start the process.