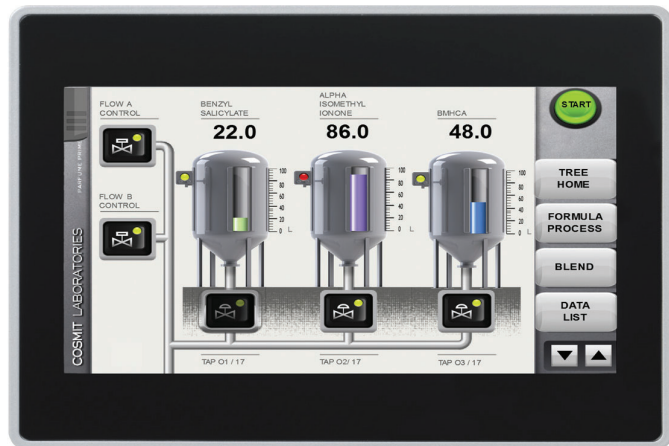


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Touch Terminals

HM500 Series Instruction Manual



ACGM0194V3EN Version 3.0

2023.01

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1. Introduction

This instruction manual contains information about the installation, transportation, storage, assembly, use and maintenance of touch terminals of the HM500 series.

The following models are available:

HM504 Touch terminal with 4.3" TFT color widescreen display touchscreen

HM507 Touch terminal with 7" TFT color widescreen display touchscreen

HM510 Touch terminal with 10.4" TFT color display touchscreen

2. Important symbols

One or more of the following symbols may be used in this documentation to indicate the type of hazard.

DANGER

Indicates a hazardous situation which, if not avoided, will result in death or serious injury.

WARNING

Indicates a hazardous situation which, if not avoided, could result in death or serious injury.

CAUTION

Indicates a hazardous situation which, if not avoided, could result in serious or moderate injury.

Notice

Indicates a property damage message.

3. Special instructions for use

- Install the product according to the accompanying installation instructions.
- Ground the product according to the accompanying installation instructions.
- Only qualified personnel may install or repair the product.
- The product must be cleaned only with a soft cloth and neutral soap product. Do not use solvents.
- This product should not be used for purposes and methods other than indicated in this document and in the documentation accompanying the product.

4. Standards and approvals

The products have been designed for use in an industrial environment in compliance with the 2014/30/EU EMC Directive.

The products have been designed in compliance with:

EN 61000-6-4	EN 55011 Class A
EN 61000-6-2	EN 61000-4-2
	EN 61000-4-3
	EN 61000-4-4
	EN 61000-4-5
	EN 61000-4-6

The installation of these products in residential, commercial and light-industrial environments is allowed only in the case that special measures are taken in order to ensure conformity with EN 61000-6-3.

The products are in compliance with the Restrictions on Certain Hazardous Substances (RoHS) Directive 2011/65/EU.

In compliance with the above regulations the products are CE marked.

5. Product overview

The HM500 series touch terminals combine state-of-the-art features and top performance with an outstanding design. They are the ideal choice for all demanding HMI applications including factory and building automation.

The HM500 series touch terminals have been designed to run the software HMWIN Studio.

- HMWIN runtime included. Full compatibility with HMWIN Studio.
- Full vector graphic support. Native support of SVG graphic objects. Transparency and alpha blending.
- Full object dynamics: control visibility and transparency, move, resize, rotate any object on screen. Change properties of basic and complex objects.
- TrueType fonts.
- Multilanguage applications. Easily create and manage your applications in multiple languages to meet global requirements. Far East languages are supported. Tools available in HMWIN Studio support easy third-party translations and help reducing development and maintenance costs of the application.
- Data display in numerical, text, bargraph, analog gauges and graphic image formats.
- Rich set of state-of-the-art HMI features: data acquisition, alarm handling, scheduler and timed actions (daily and weekly schedulers, exception dates), recipes, users and passwords, RSS feeds, rotating menus.
- Multiple drivers communication capability.
- Remote monitoring and control. Client-Server functionality.
- Online and offline simulation with HMWIN Studio.
- Powerful scripting language for automating HMI applications. Script debugging improves efficiency in application development.
- Rich gallery of vector symbols and objects.
- Optional plug-in modules.

6. Product identification

The product may be identified through a plate attached to the rear cover. You will have to know the product type you are using for correct usage of the information contained in the manual.

The following information is provided by the plate:

- Product model name
- Product part number
- Month/year of production
- Serial number
- Version ID of the product

7. Technical data common to all models

7.1 Hardware specifications

Touchscreen technology	Resistive
Real-time clock back-up battery	3V, 50mAh lithium, rechargeable, not user-replaceable, model VL2330
Fuse	Automatic
Flash memory	128MB (HM504, HM507) 256MB (HM510)
Recipe memory	Yes (Flash memory storage limited only by available memory)
Real-time clock	Clock/calendar with back-up battery
Accuracy real-time clock (at 25°C)	<100ppm

7.2 Environmental conditions

Operating temperature (surrounding air temperature)	0 to +50°C	EN 60068-2-14
Storage temperature	-20 to +70°C	EN 60068-2-14
Operating and storage humidity	5–85% RH non-condensing	EN 60068-2-30
Vibrations	5–9Hz, 7mm _{p-p} 9–150Hz, 1g	EN 60068-2-6
Shock	±50g, 11ms, 3 pulses per axis	EN 60068-2-27
Degree of protection	IP66 (front), IP20 (rear) * see note	EN 60529

* The front face of the product, installed in a solid panel, has been tested using conditions equivalent to the standards shown in this section. Even though the level of resistance of the product is equivalent to these standards, oils that should have no effect on the product can possibly harm it. This can occur in areas where either vaporized oils are present, or where low viscosity cutting oil is allowed to adhere to the product for long periods of time. If the front face protection sheet on the product gets peeled off, these conditions can lead to the ingress of oil into the product and separate protection measures are suggested. If the installation gasket is used for a long period of time, or if the product and its gasket are removed from the panel, the original degree of the protection cannot be guaranteed.

7.3 Electromagnetic compatibility (EMC)

Radiated disturbance test	Class A	EN 55011
Electrostatic discharge immunity test	8kV (air electrostatic discharge) 4kV (contact electrostatic discharge)	EN 61000-4-2
Radiated, radio frequency, electromagnetic field immunity test	80MHz–1GHz, 10V/m 1.4–2GHz, 3V/m 2–2.7GHz, 1V/m	EN 61000-4-3
Burst immunity test	±2kV DC power port ±1kV signal line	EN 61000-4-4
Surge immunity test	±0.5kV DC power port (line to earth) ±0.5kV DC power port (line to line) ±1kV signal line (line to earth)	EN 61000-4-5
Immunity to conducted disturbances induced by radiofrequency field	0.15–80MHz, 10V	EN 61000-4-6

7.4 Durability information

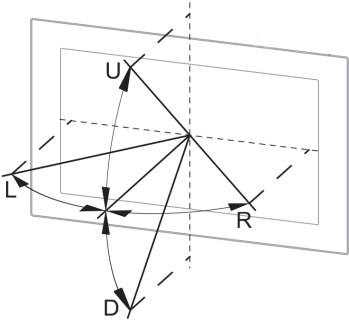
Backlight service life (LED type)	40000 hours or more (Time of continuous operation until the brightness of the backlight reaches 50% of the rated value when the surrounding air temperature is 25°C) * see note
Front foil (without direct exposure to sunlight or UV rays)	10 years if the surrounding air temperature is 25°C
UV resistance	Indoor applications: After 300 hours cycled humidity in QUV accelerated weathering, some yellowing and brittleness may be present.
Surface resistance	Contact for ½ hour at 21°C, no visible effect: acetone, butyl cellosolve, cyclohexanone, ethyl acetate, hexane, isopropyl alcohol, mek, methylene chloride, toluene, xylene Contact for 24 hours at 49°C, no visible effect: coffee, ketchup, lemon juice, mustard (slight yellow stain), tea, tomato juice
Touchscreen reliability	>1 million operations

* Extended use in environments where the surrounding air temperature is 40°C or higher may degrade backlight quality, reliability or durability.

7.5 Viewing angles

The viewing angles for the horizontal (L, R) and vertical (U, D) axes are specified in reference to the vertical axis of the display. The viewing angles always refer to the standard mounting orientation.

For the viewing angle values (U, D, L, R), refer to the technical data of the respective touch terminal model.



- U: From top
- D: From bottom
- L: From left
- R: From right

	HM504	HM507	HM510
Horizontal viewing angle	L/R: typ. 50°	L/R: typ. 65°	L/R: typ. 80°
Vertical viewing angle	U: typ. 45°	U: typ. 55°	U/D: typ. 70°
	D: typ. 50°	D: typ. 65°	

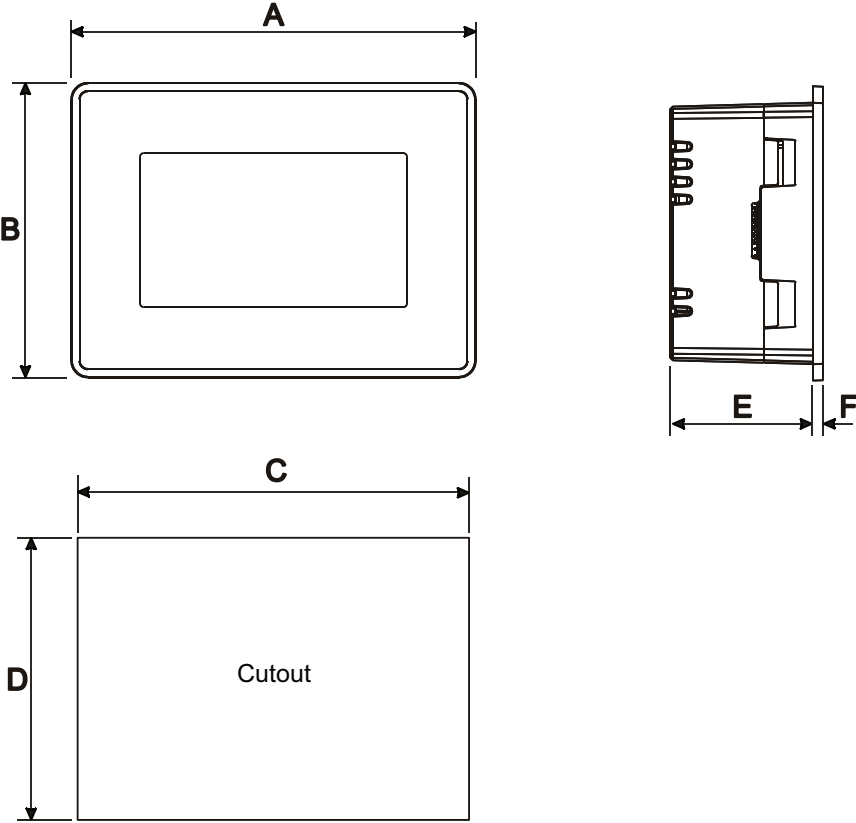
8. Technical data by model

	HM504	HM507	HM510
Display / Backlight	TFT color / LED		
Colors	64K		
Resolution (pixel)	480 x 272	800 x 480	800 x 600
Brightness	150cd/m ² typ.	300cd/m ² typ.	
Display size (inch)	4.3" widescreen	7" widescreen	10.4"
Dimming	yes (to 0%)		
Flash memory	128MB		256MB
RAM	256MB DDR		
Operating system	Microsoft Windows CE 6.0		
CPU	ARM Cortex-A8, 600MHz		ARM Cortex-A8, 1GHz
SD card slot	yes		
Serial port	1 (RS232, RS485, RS422 software configurable)		
Ethernet port	2x 10/100Mbit with integrated switch		
USB port	1 host interface version 2.0 and 1.1	2 host interfaces (1 version 2.0, 1 version 2.0 and 1.1)	
Expansion slot	1 optional plug-in	2 optional plug-ins	
Real-time clock	yes		
Voltage	24V DC (10-32V DC) * see note		
Current rating (at 24V DC)	0.4A	0.65A	1A
Weight	1kg	1kg	2.1kg

* For applications requiring compliance with EN 61131-2 and specifically in reference to 10ms voltage dips, the minimum power supply voltage is 18V DC.

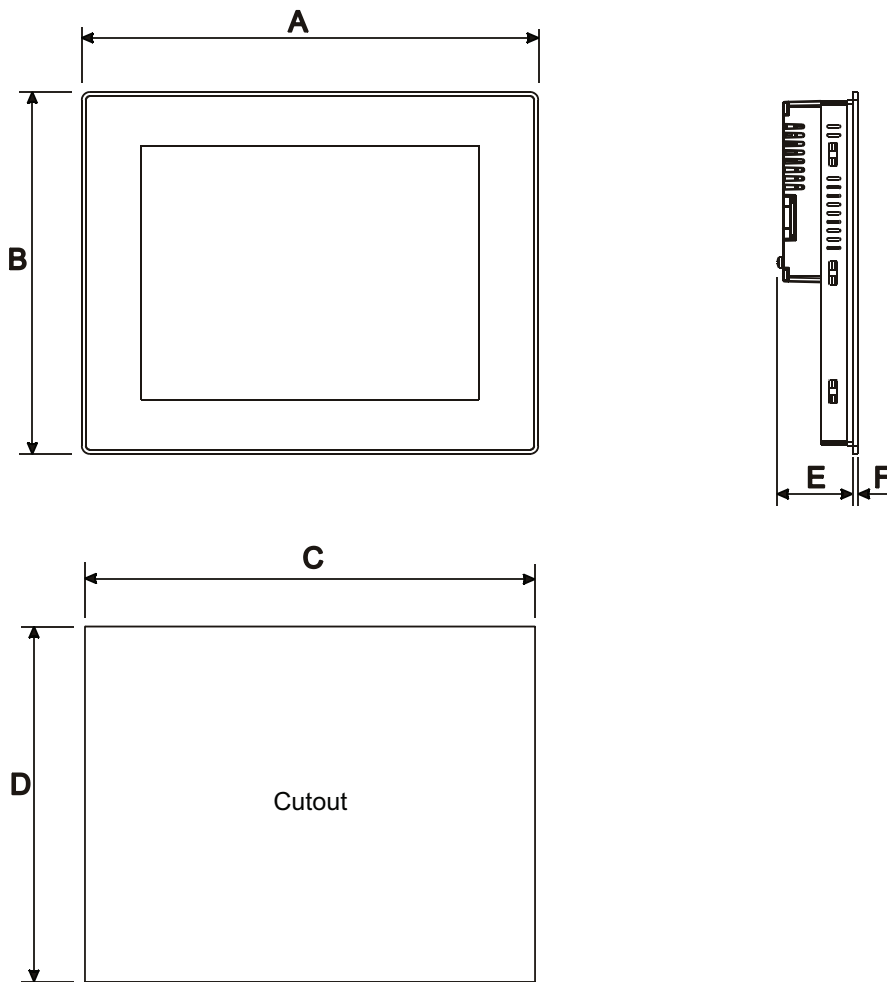
9. Product dimensions

9.1 HM504



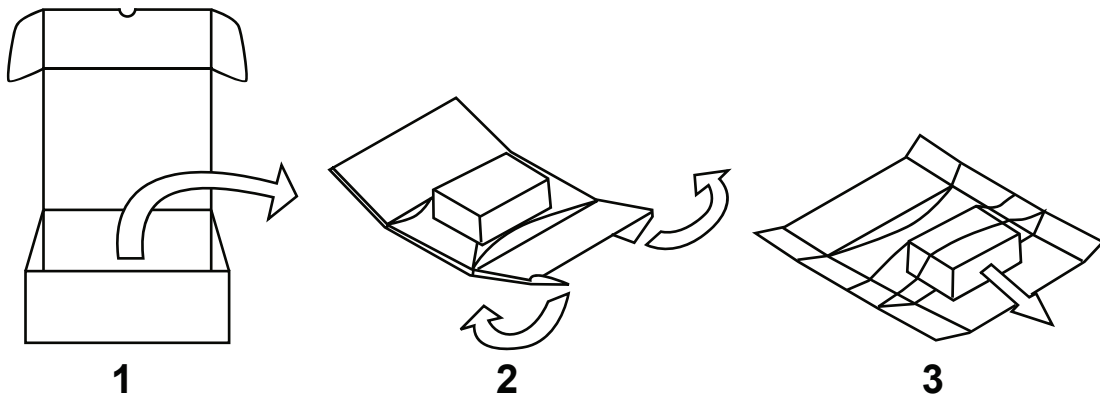
A	B	C	D	E	F
149mm	109mm	136mm	96mm	56mm	4mm

9.2 HM507, HM510



Model	A	B	C	D	E	F
HM507	187mm	147mm	176mm	136mm	47mm	4mm
HM510	287mm	232mm	276mm	221mm	56mm	4mm

10. Unpacking and packing instructions



To repack the product, please follow the instructions backwards.

11. Installation

11.1 Installation environment

The product is not intended for continuous exposure to direct sunlight. This might accelerate the aging process of the front panel film.

The product is not intended for installation in contact with corrosive chemical compounds. Check the resistance of the front panel film to a specific compound before installation.

Do not use tools of any kind (screwdrivers, etc.) to operate the touchscreen of the product.

In order to meet the front panel protection classifications, proper installation procedure must be followed:

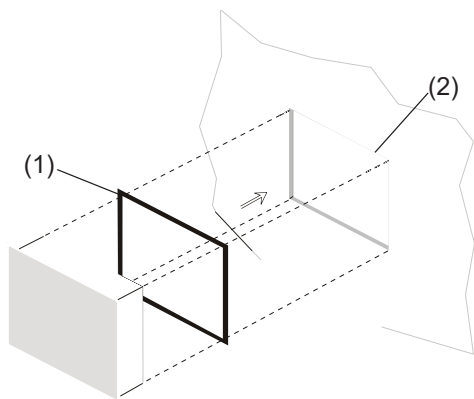
- The borders of the cutout must be flat.
- Each fixing screw must be tightened until the plastic bezel corner gets in contact with the panel.
- The cutout for the panel must be of the dimensions indicated in this manual.

IP66 is guaranteed only if:

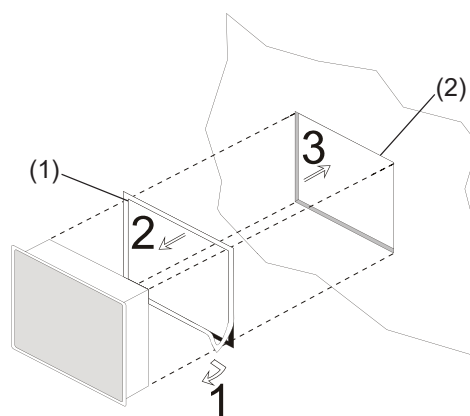
- The max. deviation from the plane surface to the cutout is $\leq 0.5\text{mm}$.
- The thickness of the case where the product is mounted is from 1.5mm to 6mm.
- The max. surface roughness where the gasket is applied is $\leq 120\mu\text{m}$.

11.2 Applying the gasket

The gasket should be applied on the rear of the frame.



HM504, HM507



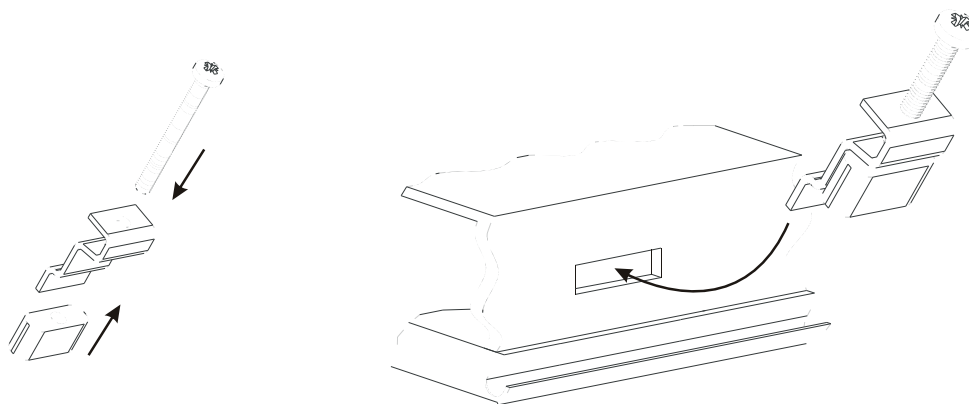
HM510

- (1) Gasket
- (2) Installation cutout

11.3 Installation procedure

For details on installation, please refer to the “Installation Guide” provided with the product.

Place the fixing brackets as shown in the following figure.

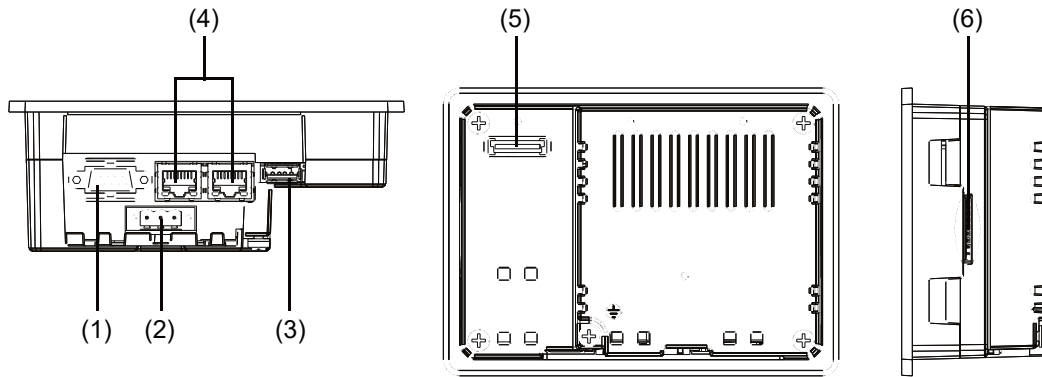


! Notice

Make sure to screw each fixing screw until the bezel corner gets in contact with the panel.

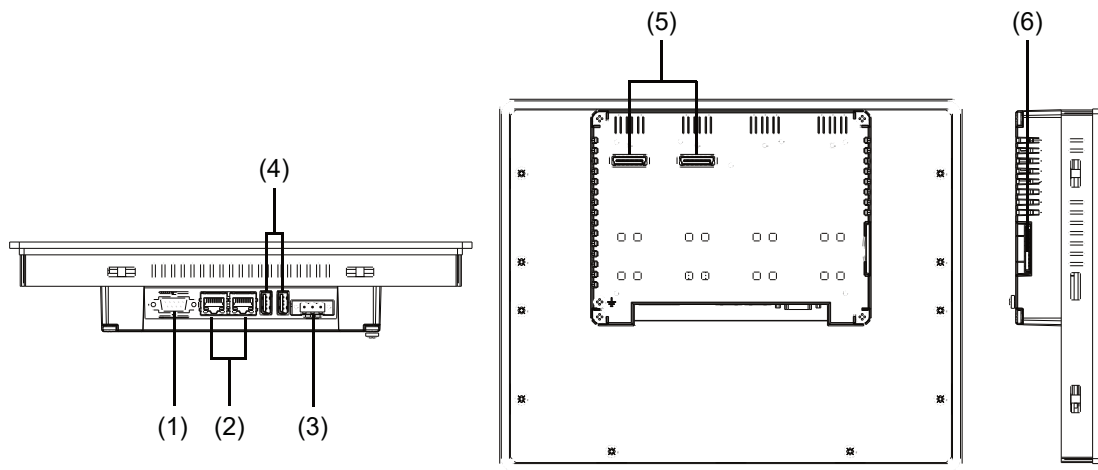
12. Connections

12.1 HM504



- (1) Serial port
- (2) Power supply
- (3) USB port
- (4) 2x Ethernet port
- (5) Expansion slot for plug-ins
- (6) SD card slot

12.2 HM507, HM510



- (1) Serial port
- (2) 2x Ethernet port
- (3) Power supply
- (4) 2x USB port
- (5) 2x expansion slot for plug-ins
- (6) SD card slot

12.3 Serial port

The serial port is used to communicate with the PLC or with another type of controller.

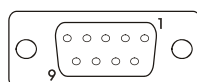
Standards available for the signals in the PLC port connector are: RS232, RS422, RS485. Use the corresponding communication cable for the connection.

The serial port is software programmable. Make sure to select the appropriate interface in the programming software.

RS232

Pin	Description
1	GND
2	
3	TX
4	RX
5	
6	+5V output
7	CTS
8	RTS
9	

Serial port



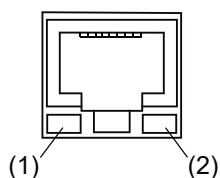
RS422, RS485

Pin	Description
1	GND
2	
3	CHA-
4	CHB-
5	
6	+5V output
7	CHB+
8	CHA+
9	

For RS485, pins 4-3 and 8-7 must be connected externally.

12.4 Ethernet port

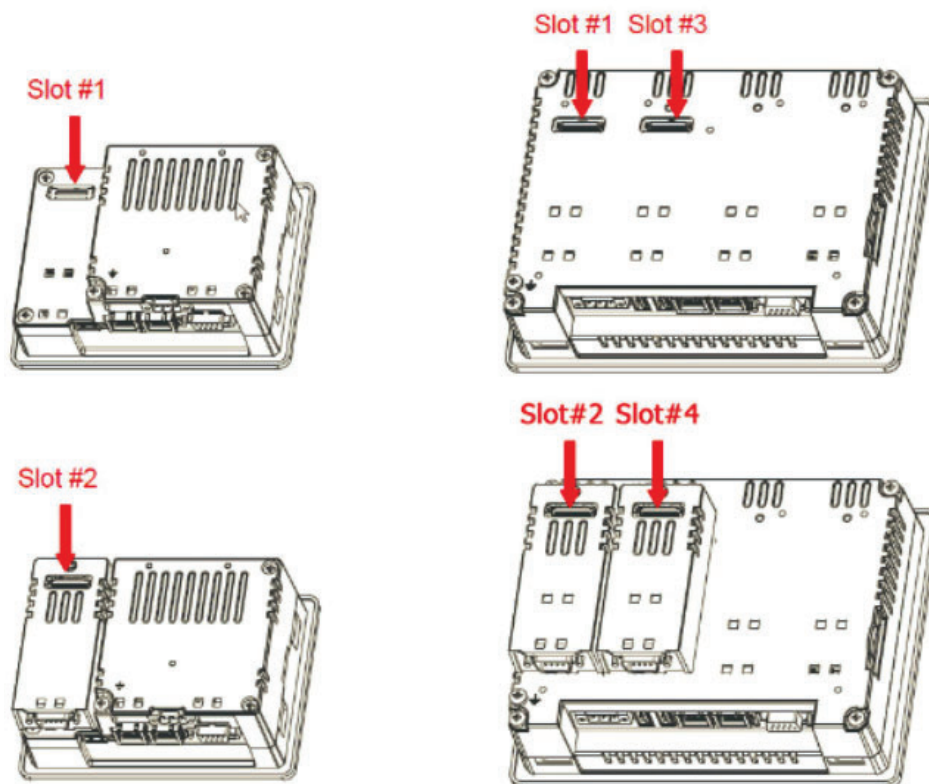
The Ethernet port has two LED status indicators.



- (1) ON: Valid link has NOT been detected
OFF: Valid link has been detected
- (2) ON: No activity
Flashes: Activity

12.5 Optional plug-ins

There are two optional plug-ins available for the HM500 series. Depending on the touch terminal type, there are one or two expansion slots.



Slot #2 and slot #4 are available only if the plug-in module is equipped with the bus extension connector.

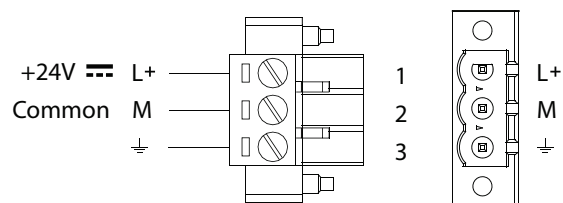
Module	Application	Max. No. of plug-ins	Bus extension connector
PLCM03	Serial RS232	2	Yes
PLCM04	Serial RS485	2	Yes

If you are planning to use PLCM03 and PLCM04 (additional serial ports), the COM port numbers will be assigned as follows:

- A module plugged in slot #1 or slot #2 will be COM2.
- A module plugged in slot #3 or slot #4 will be COM3.

12.6 Power supply, grounding, and shielding

The power supply terminal block is shown in the following figure.



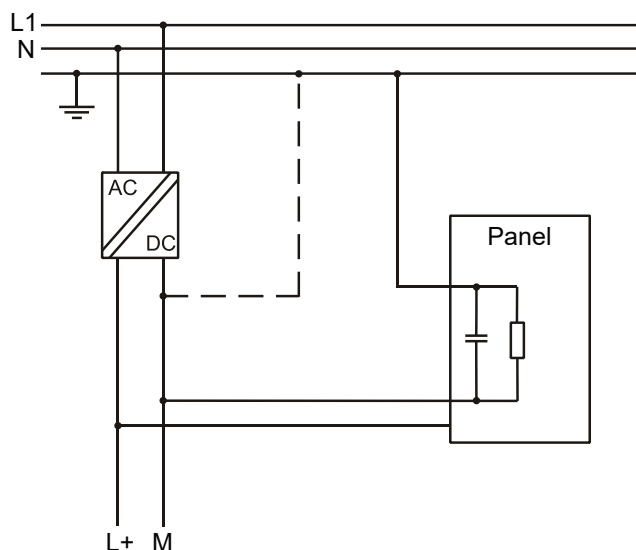
NOTE

Make sure that the power supply has sufficient power capacity for the operation of the product.

The product must always be grounded to earth. Grounding helps limit the effects of noise due to electromagnetic interference on the control system.

Earth connection must be done using either the screw or the faston terminal located near the power supply terminal block. A label identifies the ground connection. Also ground the terminal 3 on the power supply terminal block.

The power supply circuit may be floating or grounded. In the latter case, the power source common is connected as indicated with a dashed line in the following figure. When using the floating power scheme, note that internally the power common is connected to the ground with a $1\text{M}\Omega$ resistor in parallel with a 4.7nF capacitor. The power supply must have double or reinforced insulation. The suggested wiring for the power supply is shown in the following figure.

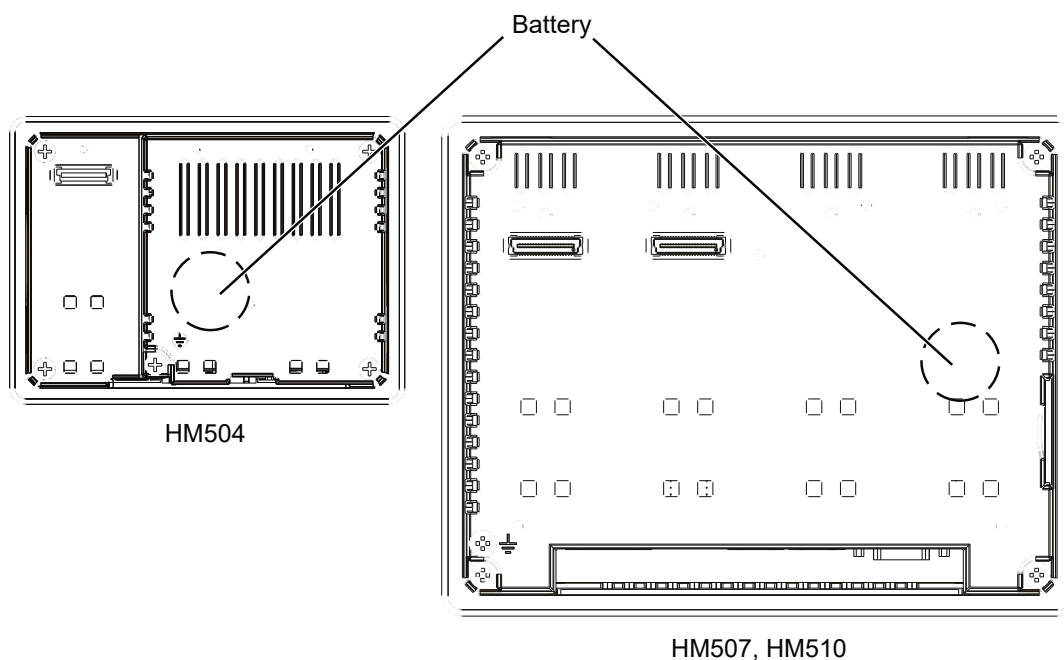


All the electronic devices in the control system must be properly grounded. Grounding must be performed according to applicable regulations.

13. Battery


The touch terminals are equipped with rechargeable lithium batteries that are not user-replaceable. The battery is needed to keep the real-time clock running (date and time).

When the touch terminal is installed for the first time, the battery must be charged for 48 hours. When the battery is fully charged, data backup at 25°C is guaranteed for 3 months.



14. LED indicator on the front

The following table shows how the LED indicator works.

Symbol	Color	State	Meaning
	Red	ON	Hardware fault or battery low
	Green	ON	Normal operation
		Flashing	Communication error

15. Getting started

The HM500 series touch terminals must be programmed with the programming software HMWIN Studio, a Windows application.

There are two options to transfer an HMWIN application project to a touch terminal:

Ethernet

Connect the touch terminal via the Ethernet interface to a personal computer running the HMWIN Studio software. Select “Run/Download to target” in HMWIN Studio.

Make sure that the firewall policy is configured in a way that allows HMWIN Studio to access the network.

USB or SD card

Create an update package using the HMWIN Studio software and copy it to a USB flash drive or an SD card.

For more details about HMWIN Studio, refer to the help topics in the software.

16. Disposal



Used electrical and electronic products must not be placed in general household waste. For proper treatment, recovery and recycling of old products, take them to applicable collection points in accordance with your national legislation.



By disposing of them correctly, you will help to save valuable resources and prevent any potential negative effects on human health and the environment.

For more information about collection and recycling, please contact your local municipality.



Dispose of batteries according to local regulations.

17. Record of changes

ACGM0194V3EN, January 2023

- Deleted the chapter “System settings tool”
- Deleted model HM513
- Added the chapters “Important symbols”, “Special instructions for use”, “Disposal”
- Updated the chapter “Standards and approvals”
- Updated company name and back page
- Modified the manual design

ACGM0194V2EN, April 2021

- Added record of changes
- Added information about the viewing angles of the displays
- Updated website URL
- Updated the back page

ACGM0194V1EN, September 2014

First edition

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