

Touch Terminals

HMx700 Series Instruction Manual



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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 HMx700 series.

The following models are available:

HMx705 Touch terminal with 5" TFT color widescreen, multi-touch capacitive touchscreen

HMx707 Touch terminal with 7" TFT color widescreen, multi-touch capacitive touchscreen

HMx710 Touch terminal with 10.1" TFT color widescreen, multi-touch capacitive touchscreen

HMx715 Touch terminal with 15.6" TFT color widescreen, multi-touch capacitive touchscreen

HMx721 Touch terminal with 21.5" TFT color widescreen, multi-touch capacitive 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

- The product shall only be used in an area of not more than pollution degree 2, as defined in IEC/EN 60664-1.
- The product shall be installed in an enclosure that provides a degree of protection not less than IP54 in accordance with IEC/EN 60079-15.
- Transient protection shall be provided that is set at a level not exceeding 140% of the peak rated voltage value at the supply terminals to the product.
- 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.
- Ensure that the ventilation holes are not covered.
- Care shall be taken to avoid that layers of dust form on the touch terminals in a way that might cause the accumulation of static charges.
- Keep the faceplate of the product clean. 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	CISPR 22 Class A	
	CISPR 16-2-3	
EN 61000-6-2	EN 61000-4-2	EN 61000-4-6
	EN 61000-4-3	EN 61000-4-8
	EN 61000-4-4	EN 61000-4-11
	EN 61000-4-5	EN 61000-4-29
	EN 60945	

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 HMx700 series touch terminals combine state-of-the-art connectivity features and top performance with an outstanding design.

The products have been designed as IoT edge devices. They combine a powerful controller with networking capability (up to 3 Ethernet networks) and outstanding communication options including client/ server OPC UA. They are the ideal choice for all demanding IoT edge applications including factory, marine and building automation.

The glass projected capacitive touchscreen with a brilliant display up to 21.5" and a resolution of 1920x1080 guarantees great optical performance. With the support of multi-touch gesture programming the HMx700 series touch terminals can provide the most natural human interfaces.

The HMx700 series touch terminals have been designed to run the software HMWIN Studio for powerful HMI applications.

- OPC UA server / client gateway
- Secure connectivity with Corvina Cloud and full network separation
- Powerful browser with industry standard web engines
- 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
- Year/week of production
- Version ID of the product
- Serial number

7. Technical data common to all models

7.1 Hardware specifications

Touchscreen technology	Projected capacitive
Real-time clock back-up battery	3V, 50mAh lithium, rechargeable, not user-replaceable, model VL2330
Fuse	Automatic
Flash memory	4GB (HMx705, HMx707, HMx710) 8GB (HMx715, HMx721)
RAM	512MB (HMx705) 1GB (HMx707, HMx710) 2GB (HMx715, HMx721)
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)	-20 to +60°C (vertical installation) Plug-in modules and USB devices may limit max. temperature to +50°C	EN 60068-2-14
Storage temperature	-20 to +70°C	EN 60068-2-1 EN 60068-2-2 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)	EN 60529

7.3 Electromagnetic compatibility (EMC)

Radiated disturbance test	Class A	CISPR 22 CISPR 16-2-3
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
Power frequency magnetic field immunity test	Enclosure, 50/60Hz, 30A/m	EN 61000-4-8

7.4 Durability information

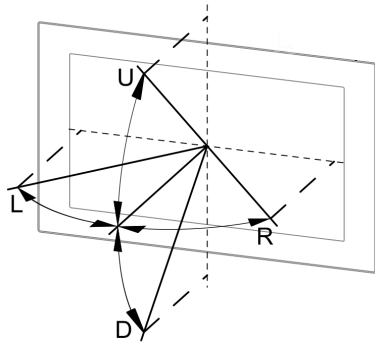
Backlight service life (LED type)	40000 hours or more (Time of continuous operation until the brightness of the backlight reaches 50% of the rated value when the surrounding air temperature is 25°C) * see note
Surface resistance	The HMx700 series front glass is resistant (no visible changes) to the following chemicals and liquids after an application time of 24 hours: Betadine (10% povidone solution), Coffee, Cola, Dextrose (5% glucose solution), Electrode gel/paste, Ethyl alcohol (70–90%), Hydrogen chloride (0.5% solution pH=1), Hydrogen peroxide (3% solution), Isopropyl alcohol, NaCl (0.9% solution), Quaternary ammonium compound, Sodium hypochlorite

* 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

	HMx705	HMx707	HMx710	HMx715	HMx721
Horizontal viewing angle	L/R: typ. 70°	L/R: typ. 70°	L/R: typ. 85°	L/R: typ. 80°	L/R: typ. 89°
Vertical viewing angle	U: typ. 50° D: typ. 70°	U: typ. 50° D: typ. 60°	U/D: typ. 85°	U/D: typ. 75°	U/D: typ. 89°

8. Technical data by model

8.1 HMx705, HMx707, HMx710

	HMx705	HMx707	HMx710
Display / Backlight	TFT color / LED		
Colors	64K	16M	
Resolution (pixel)	800 x 480		1280 x 800
Brightness	300cd/m ² typ.	500cd/m ² typ.	
Display size (inch)	5" widescreen	7" widescreen	10.1" widescreen
Dimming	yes (to 0%)		
Flash memory	4GB		
RAM	512MB	1GB	
Operating system	Linux RT		
CPU	ARM Cortex-A8, 1GHz	ARM Cortex-A9 dual core, 800MHz	
SD card slot	yes		
Serial port	1 (RS232, RS485, RS422 software configurable)		
Ethernet port	2x 10/100Mbit	2x 10/100Mbit 1x 10/100/1000Mbit	
USB port	1 host interface version 2.0, max. 500mA	2 host interfaces version 2.0, max. 500mA	
Expansion slot	1 optional plug-in	2 optional plug-ins	
Real-time clock	yes		
Voltage	24V DC (* see note)		
Current rating (at 24V DC)	0.6A	0.7A	1A
Weight	1kg	1.3kg	1.7kg

* 10–32V DC

For applications requiring compliance with EN 61131-2 and specifically in reference to 10ms voltage dips (according to EN 61000-4-29), the lower power supply voltage limit is 20.4V DC.

8.2 HMx715, HMx721

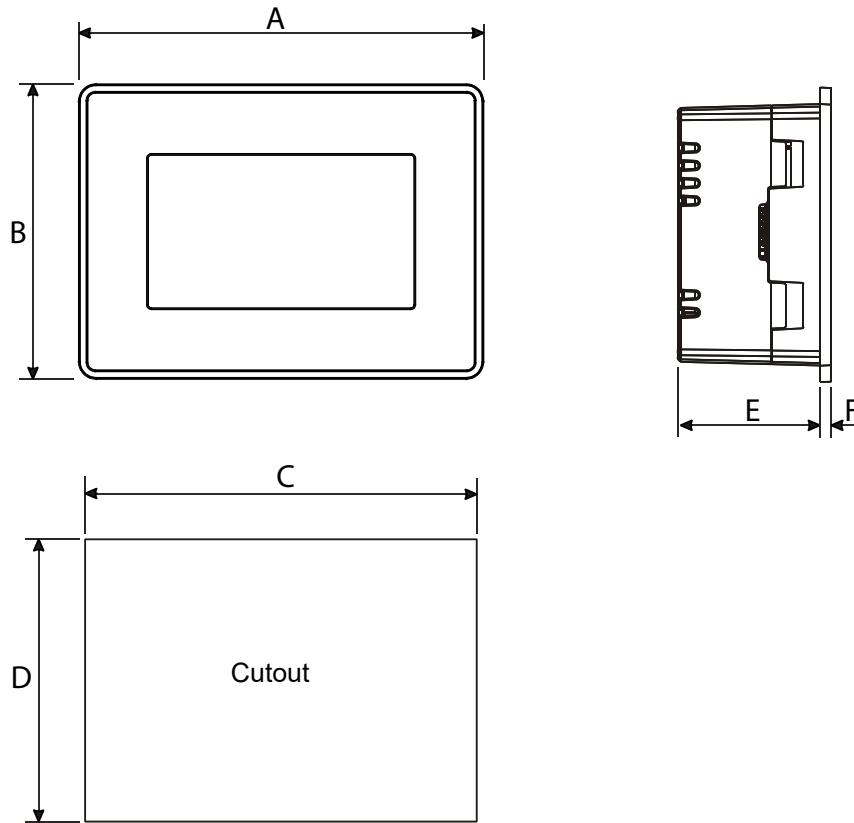
	HMx715	HMx721
Display / Backlight	TFT color / LED	
Colors	16M	
Resolution (pixel)	1366 x 768	1920 x 1080
Brightness	400cd/m ² typ.	300cd/m ² typ.
Display size (inch)	15.6" widescreen	21.5" widescreen
Dimming	yes (to 0%)	
Flash memory	8GB	
RAM	2GB	
Operating system	Linux RT	
CPU	ARM Cortex-A9 quad core, 800MHz	
SD card slot	yes	
Serial port	1 (RS232, RS485, RS422 software configurable)	
Ethernet port	2x 10/100Mbit 1x 10/100/1000Mbit	
USB port	2 host interfaces version 2.0, max. 500mA	
Expansion slot	2 optional plug-ins	
Real-time clock	yes	
Voltage	24V DC (* see note)	
Current rating (at 24V DC)	1.2A	1.7A
Weight	4.1kg	6.1kg

* 10–32V DC

For applications requiring compliance with EN 61131-2 and specifically in reference to 10ms voltage dips (according to EN 61000-4-29), the lower power supply voltage limit is 20.4V DC.

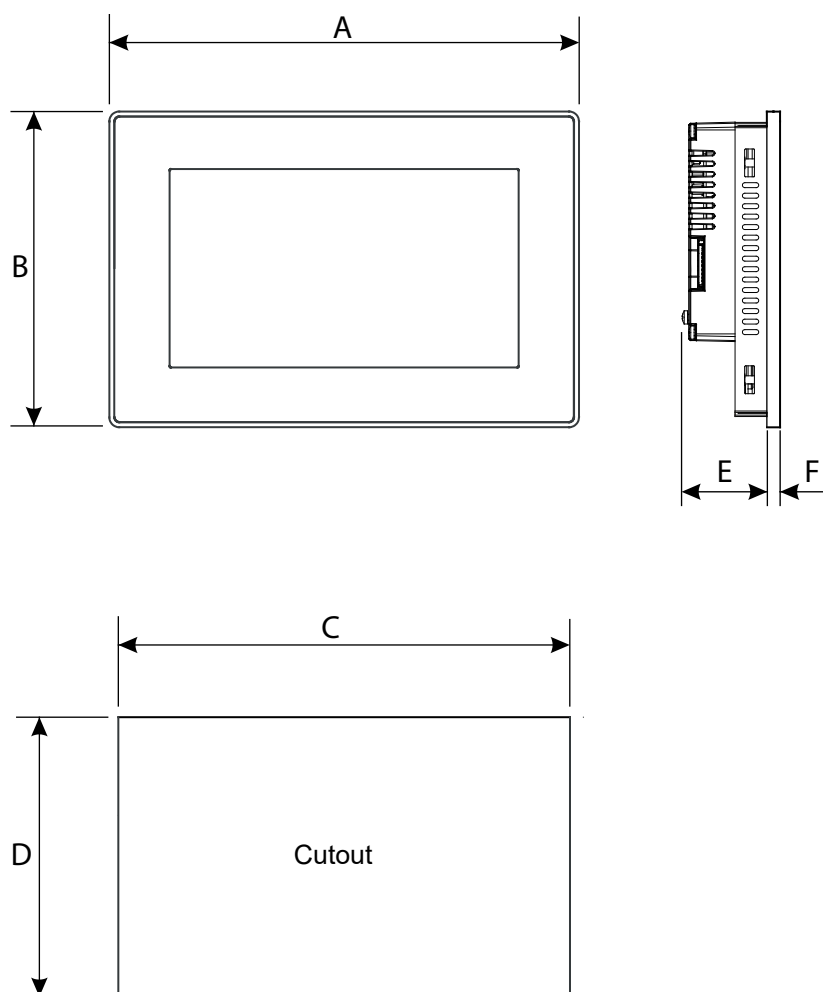
9. Product dimensions

9.1 HMx705



A	B	C	D	E	F
147mm	107mm	136mm	96mm	56mm	8mm

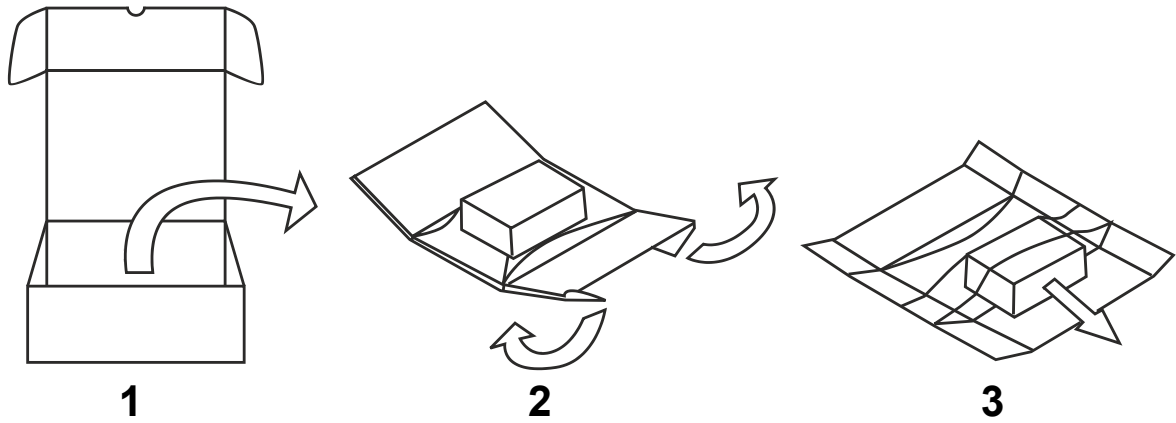
9.2 HMx707, HMx710, HMx715, HMx721



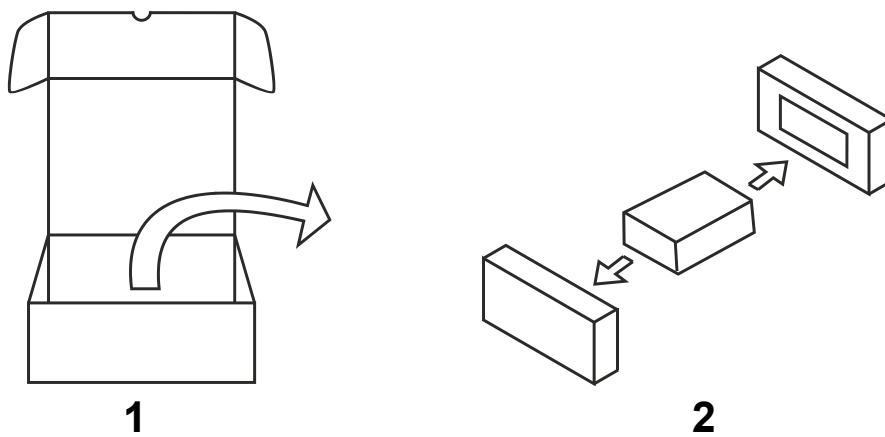
Model	A	B	C	D	E	F
HMx707	187mm	147mm	176mm	136mm	47mm	8mm
HMx710	282mm	197mm	271mm	186mm	56mm	8mm
HMx715	422mm	267mm	411mm	256mm	56mm	8mm
HMx721	552mm	347mm	541mm	336mm	56mm	8mm

10. Unpacking and packing instructions

HMx705, HMx707, HMx710



HMx715, HMx721



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. There is a risk that the product might be overheating.

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.

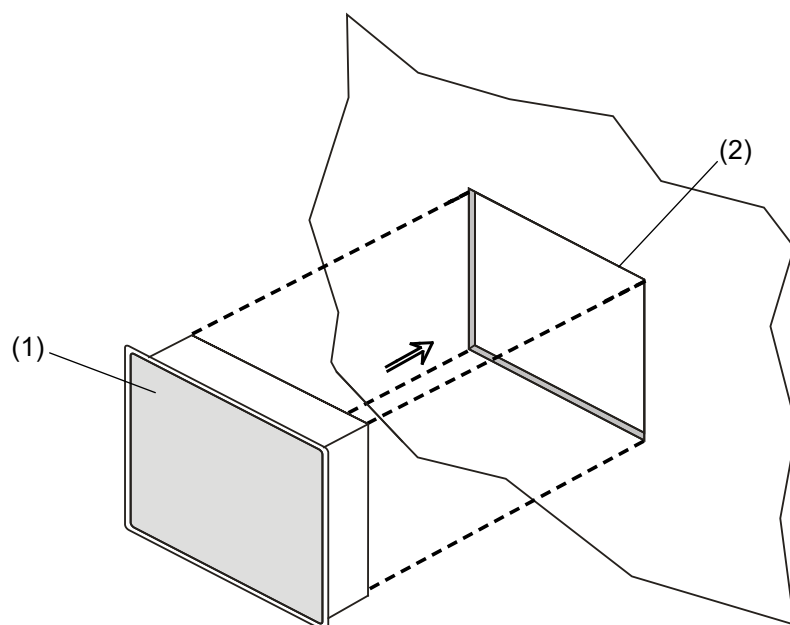
Do not use tools of any kind (screwdrivers, etc.) to operate the touchscreen of the product.

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 $\leq 120\mu\text{m}$.



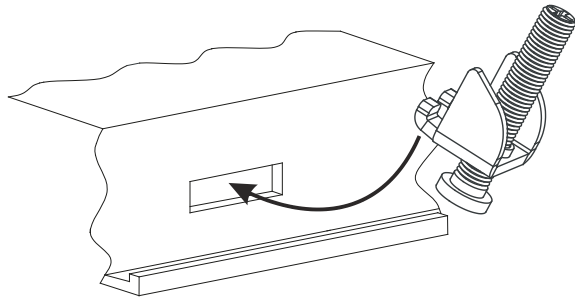
(1) HMX700 series touch terminal

(2) Installation cutout

11.2 Installation procedure

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

Place the fixing brackets contained in the fixing kit as shown in the following figure.



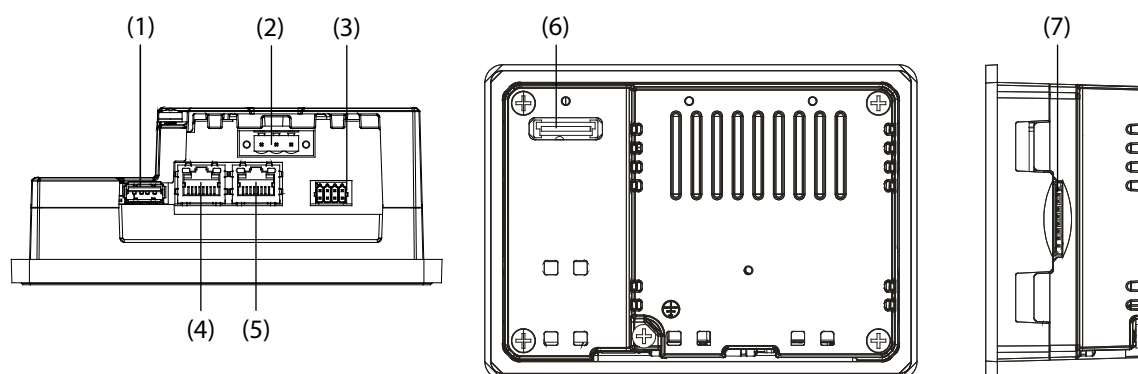
! Notice

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

Tightening torque: 130Ncm

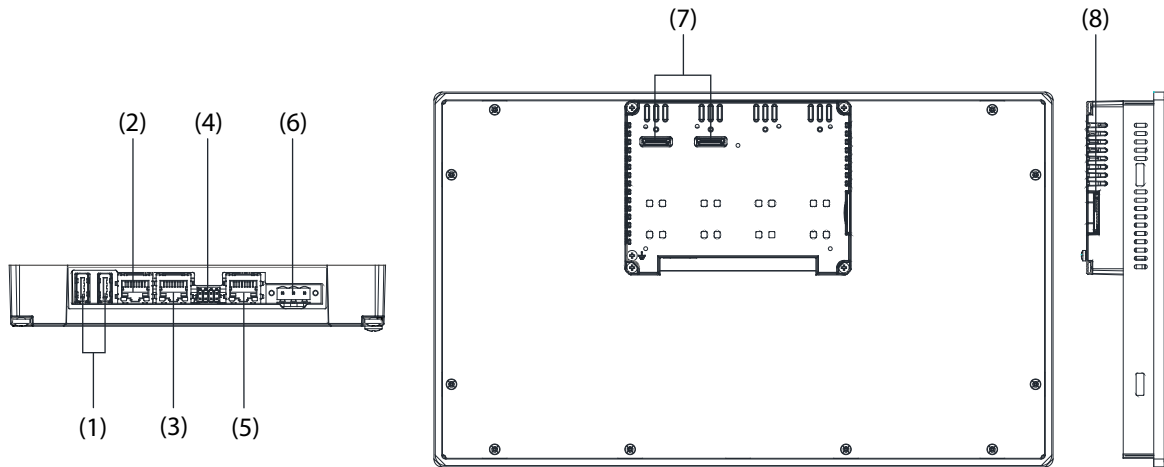
12. Connections

12.1 HMx705



- (1) USB port (V2.0, max. 500mA, for maintenance only)
- (2) Power supply
- (3) Serial port
- (4) Ethernet port 0 (10/100Mbit)
- (5) Ethernet port 1 (10/100Mbit)
- (6) Expansion slot for plug-ins
- (7) SD card slot

12.2 HMx707, HMx710, HMx715, HMx721



- (1) USB port (V2.0, max. 500mA, for maintenance only)
- (2) Ethernet port 2 (10/100Mbit)
- (3) Ethernet port 1 (10/100Mbit)
- (4) Serial port
- (5) Ethernet port 0 (10/100/1000Mbit)
- (6) Power supply
- (7) 2x expansion slot for plug-ins
- (8) SD card slot

12.3 Serial port

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

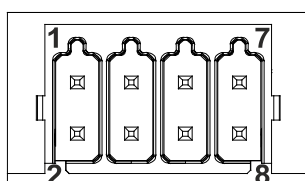
Standards available for the signals in the PLC port connector are: RS232, RS422, RS485. Use the corresponding communication cable for the connection.

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

RS232

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

Serial port



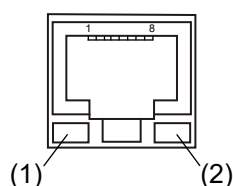
RS422, RS485

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

For RS485, pins 1-2 and 3-4 must be connected externally.

12.4 Ethernet port

The Ethernet port has two LED status indicators.



(1) Yellow LED

ETH0:

ON: 1000Mbit link; OFF: 10/100Mbit

ETH1/2:

ON: 100Mbit; OFF: 10Mbit

For HMx705:

ON: 100Mbit; OFF: 10Mbit

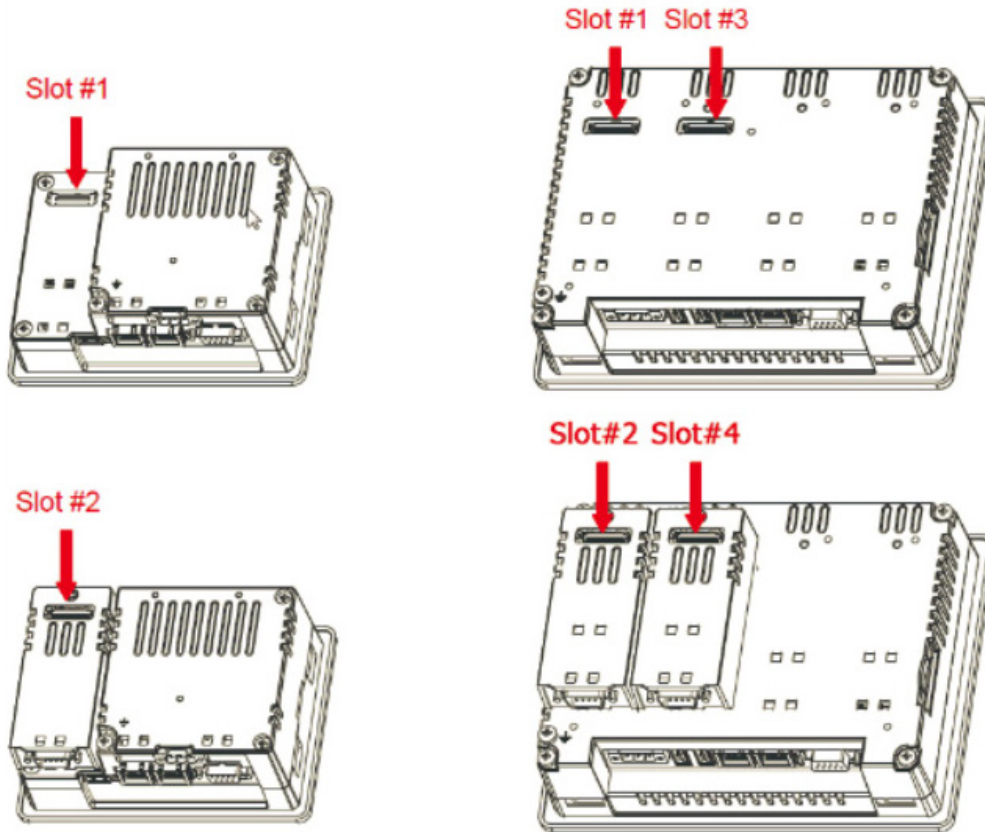
(2) Green LED

ON: No activity

Flashes: Activity

12.5 Optional plug-ins

There are two optional plug-ins available for the HMX700 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.

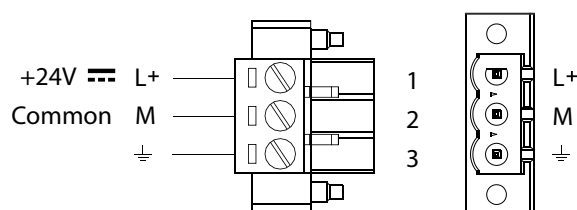
Module	Application	Max. No. of plug-ins	Bus extension connector
PLCM03	Serial RS232	2	Yes
PLCM04	Serial RS485	2	Yes

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.



3 conductors, minimum 1.5mm² wire diameter, minimum temperature conductor rating 105°C

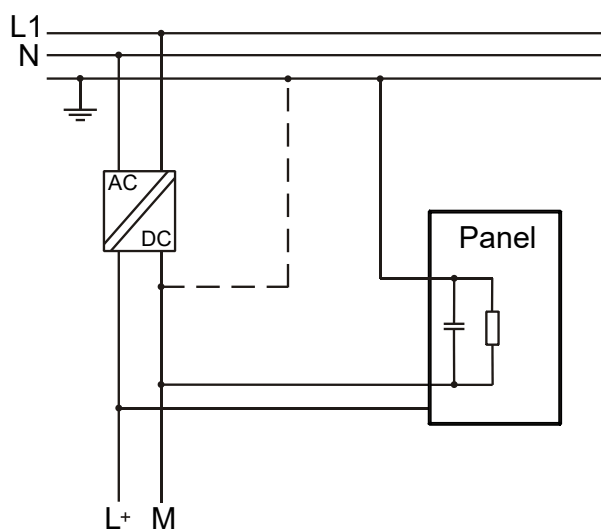
NOTE

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

The product must always be grounded to earth using a wire with a minimum diameter of 1.5mm². 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 1MΩ 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.

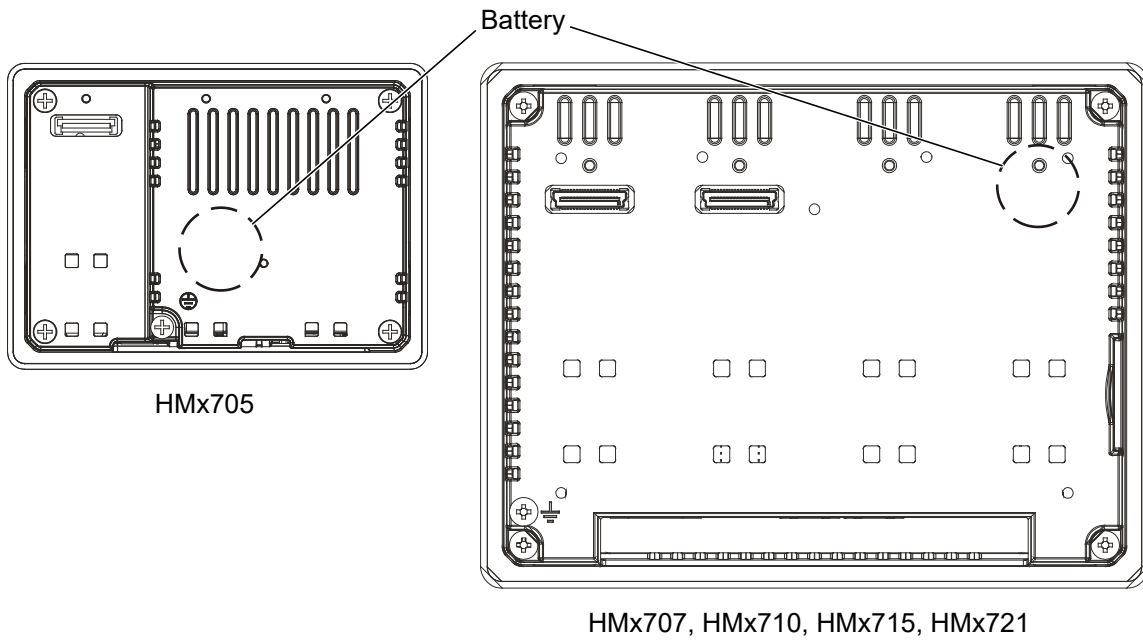


All the electronic devices in the control system must be properly grounded. Grounding must be performed according to applicable regulations.

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. Getting started

The HMx700 series touch terminals must be programmed with the programming software HMWIN Studio (starting from v2.6), 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

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

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

15. 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.

16. Record of changes

ACGM0197V4EN, January 2023

- Deleted the chapter “System settings tool”
- Updated the description for the yellow LED in chapter “12.4 Ethernet port”
- Updated company name and back page
- Modified the manual design

ACGM0197V3EN, April 2021

- Removed the pictures of the rating plates
- Added “Important symbols” page

ACGM0197V2EN, February 2021

- Added information about the chemical resistance of the front glass
- Corrected the product number
- Corrected the reference standard regarding the power supply range (10–32V DC)
- Added brightness, operating system and CPU information
- Updated the back page
- Corrected the PEWEU manual version number on front and back cover

ACGM0197V1EN, February 2019

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