EA HMI Series - Hardware

FEATURES

- Brilliant color display with typ. 1,000 cd/m²
- Touch panel included, wide viewing angle with ±170°
- Modbus RTU and TCP (Remote)
- Free definable display content: text, pictures, value, bargraph, instrument...
- Supports up to 256 modbus register
- Many interface options, RS485, LAN, WiFi, Modbus....
- Wide power supply range 5V..30V=
- Wall mount and panel mount
- Quick and easy cable commissioning thanks to tool-free push-in connection technology
- The display supports communication with over 20 different PLC models, including Siemens Logo!, S7-200, S7-1200/1500, S7-300/400, Allen Bradley, Mitsubishi FX, Beckhoff, easyE4 and many more.

ORDER CODE

Small/Short Protocol

2.8" Touch, WIFI and RS485	**EA HMI028WU-32ATCS**
2.8" Touch, LAN, WIFI and RS485	**EA HMI028LU-32ATCS**
4.3" Touch, WiFi and RS485	**EA HMI043WU-42ATCS**
4.3" Touch, LAN, WiFi and RS485	**EA HMI043LU-42ATCS**
7.0" Touch, WiFi, RS485 and USB	**EA HMI070WU-16ATCS**
7.0" Touch, LAN, WiFi, RS485 and USB	**EA HMI070LU-16ATCS**

Modbus

2.8" Touch, Modbus RTU/TCP, WiFi and RS485	**EA HMI028WM-32ATCS**
2.8" Touch, Modbus RTU/TCP, LAN, WiFi and RS485	**EA HMI028LM-32ATCS**
4.3" Touch, Modbus RTU/TCP, WiFi and RS485	**EA HMI043WM-42ATCS**
4.3" Touch, Modbus RTU/TCP, LAN, WiFi and RS485	**EA HMI043LM-42ATCS**
7.0" Touch, Modbus RTU/TCP, WiFi and RS485	**EA HMI070WM-16ATCS**
7.0" Touch, Modbus RTU/TCP, LAN, WiFi and RS485	**EA HMI070LM-16ATCS**

ACCESSORIES

Mounting clips (2 pcs.)	**EA 00C1-1KNS**
24V= power supply unit 110/230V~	**EA PS24V-18W**
Y cable for power supply (for 1-2 displays)	**EA KH21-102Y**
USB <-> RS-485 Adaptor	**EA 9790-USB485**

Content

EA HMI Series

Measure, monitor and visualize. The new HMI series expands a classic control unit in control cabinet with an color display inclusive touch. Measured values can be displayed and settings can be made by touch. Thanks to edge computing, even complex and visually appealing screen layouts can be easily implemented.
Display is remote (slave) on Modbus.

WiFi, RS232, RS-485, Ethernet

Program your control tasks via USB, LAN, RS232, RS485 and connect the desired HMI displays via RS232, RS-485 or WiFi. The HMI modules understand various protocols, like Modbus. In Modbus display is always slave. Address can be set individually. The modules come in a high-quality injection-molded plastic housing. This may be used for wall mounting, but it also perfectly suits for front panel installation. The modules itself use a high brightness, all angle view IPS display. Perfect for indoor and outdoor usage.

Arbitrarily expandable

Different requirements need different displays. Choose from different sizes. All displays were developed in Germany. The support includes at any time a direct contact person from the development incl. assistance in programming.

	2.8“	4.3“	7“	10.1“	Unit
Resolution	320x240	480x272	1024x600	1280x800	Pixel
Dimension	84x58	114x84	190x125	240x165	mm
Interfaces[1]	RS485, WiFi, LAN, USB[2]	RS232, RS485, WiFi, LAN	RS232, RS485, WiFi, LAN, USB[2]	RS232, RS485, WiFi, LAN, USB[2]	
Protocol[1]	Modbus, Small, Short	Modbus, Small, Short	Modbus, Small, Short	Modbus, Small, Short	
U-Plaster mount	no	no	no	no	
Wallmount	yes	yes	yes	yes	
Front panel mount	yes	yes	yes	yes	
Display	IPS with PCAP, optically bonded				

[1] depends on part number
[2] no Modbus

Wall mounting, Panel Mounting

Different locations require different housings. Therefore DISPLAY VISIONS plans different housing. For the small 1.5" display a flush mounting variant is also planned (U-plaster).
In each case, the front is made of scratch-resistant glass. Thanks to a touch-sensitive surface, direct and intuitive interactions are possible. All brilliant displays with 1,000 cd/m² in outstanding IPS technology for an all-round viewing angle and stable colors.

Accessories

There are some accessories available to give you an easy start.

Power supply

EA PS24V-18W: The 24V plug-in power supply provides stable voltage. It comes with a plug for Europe, USA, Australia and UK. On DC site there's a 2.1mm hollow plug, cable is about 1m long. It got enough power to supply 2-3 displays.

Y cable:

EA KH21-102Y: This cable matches to the power supply above. It has 2 open ends to supply up to 2 displays directly.

.

USB - RS485 interface

EA 9790-USB485: With this USB plug it becomes easy to connect any RS485 display to the PC e.g. for project update.

Nomenclature

Example

EA HMI043WM-42ATCS	// 4.3“ Display, 24V, 480x272 dots, WiFi Modbus Touch black plastic housing
EA HMI070LU-16ATCS	// 7.0“ Display, 24V, 1024x600 dots, LAN Small protocoll Touch black plastic housing

Description

EA HMI	**043**	**W**	**U**	**-**	**42**	**A**	**TC**	**S**
Brand	Size	Interface	Protocol	-	Resolution	Revision	Touchpanel	Housing

Brand

"EA HMI" series is a DISPLAY VISIONS module family for HMI series. It includes various sizes of HMI-Modules that are connected to any standard plc.

Size

- 028 (2,8”)
- 043 (4,3”)
- 070 (7”)
- 101 (10.1”)
- more coming soon

Interface

- R (RS232)
- W (WiFi and RS485)
- L (LAN, WiFi and RS485)
- more coming soon

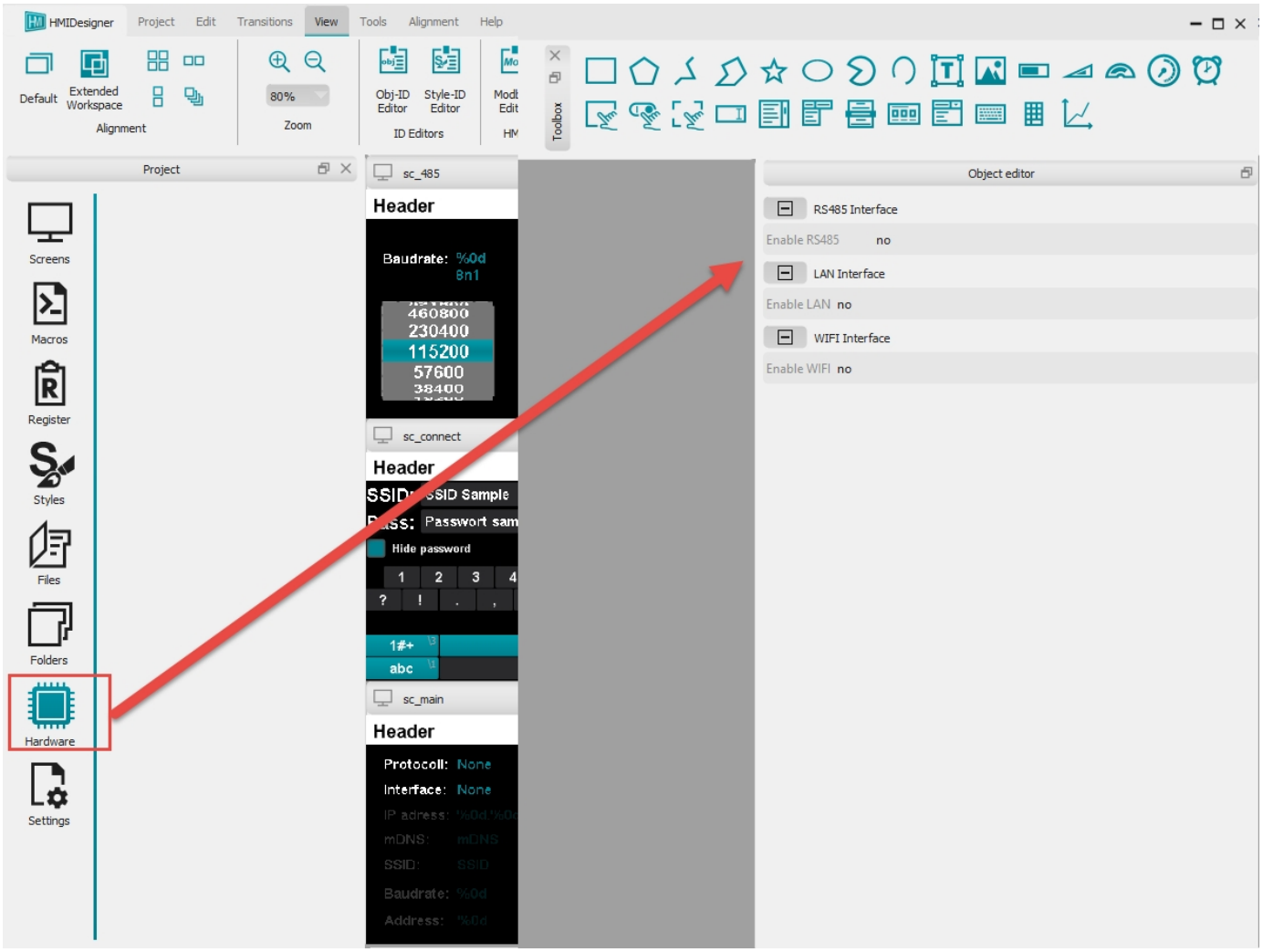
Protocol

- U (uniTFT-Series, Small-/Shortprotocol)
- M (Modbus)

Interface

Depending on the display it comes with various interfaces and settings for them.

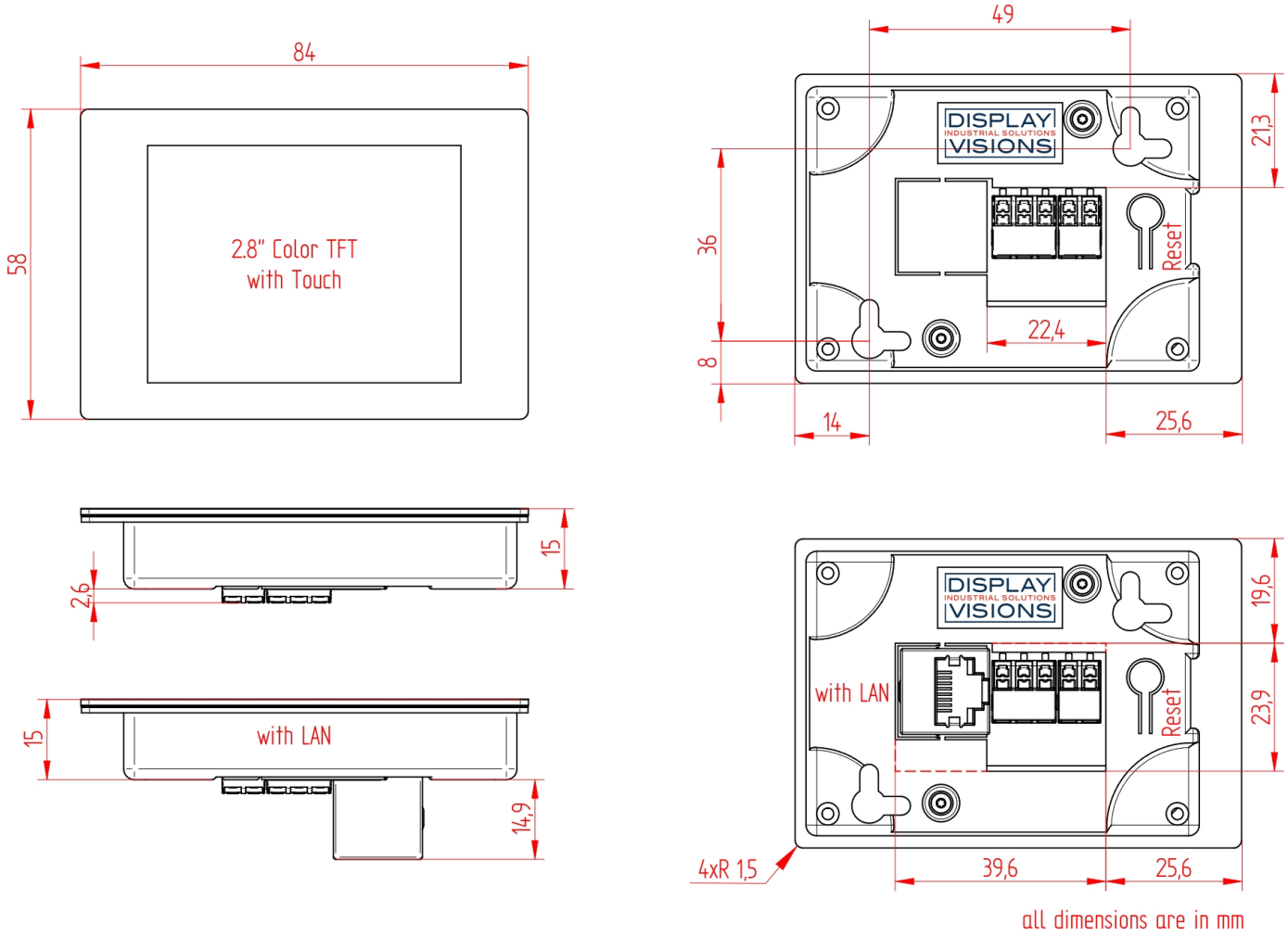
The WYSIWYG tool, called HMIdesigner, provides to set up the hardware definition of the interfaces.
Alternatively the interface setting can be done in boot menu directly on display.



Dimension

Following pages show drawings with dimensions noted.

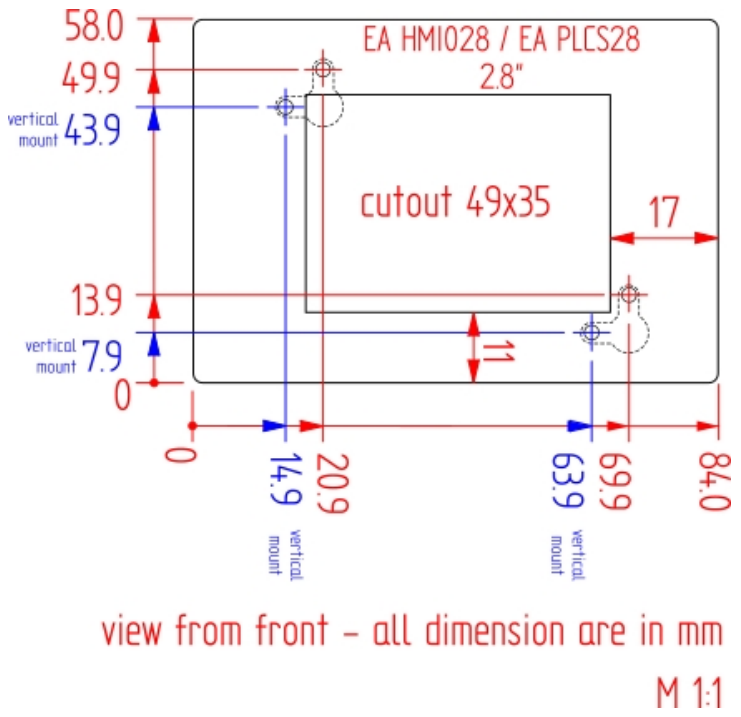
EA HMI028XX-32ATCS
HMI Display with Touch 2.8"



Wall Mount

The EA HMI028 is prepared for easy wall mount. Simply fixed by 2 screws 3x16 DIN 7981 or similar. Note that you need a cutout of 49x35 mm for cable and RJ45 connector.
Display may be mounted horizontally (landscape mode) or vertically (portrait mode). See dimensions for vertical mount in blue color.
Please find here a drilling template as a pdf to print out.

This is view from front side:

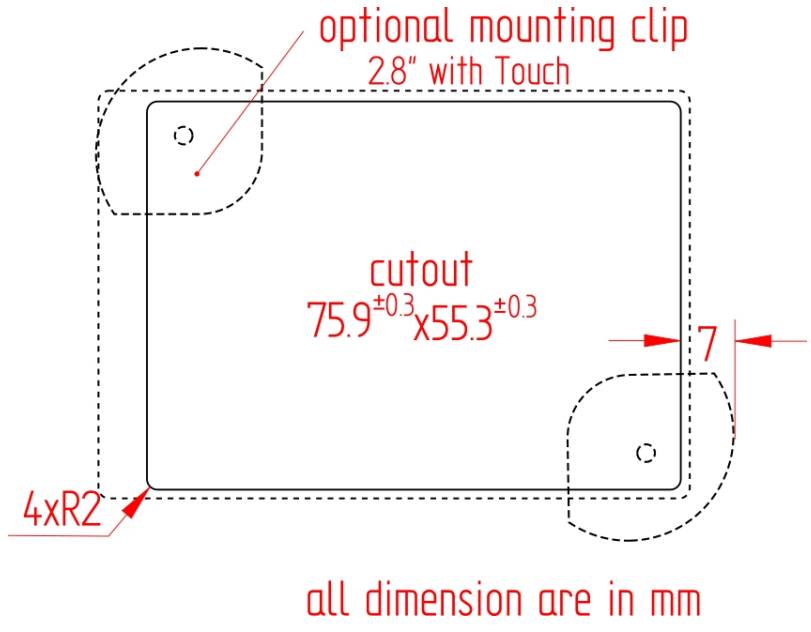


Panel Mount

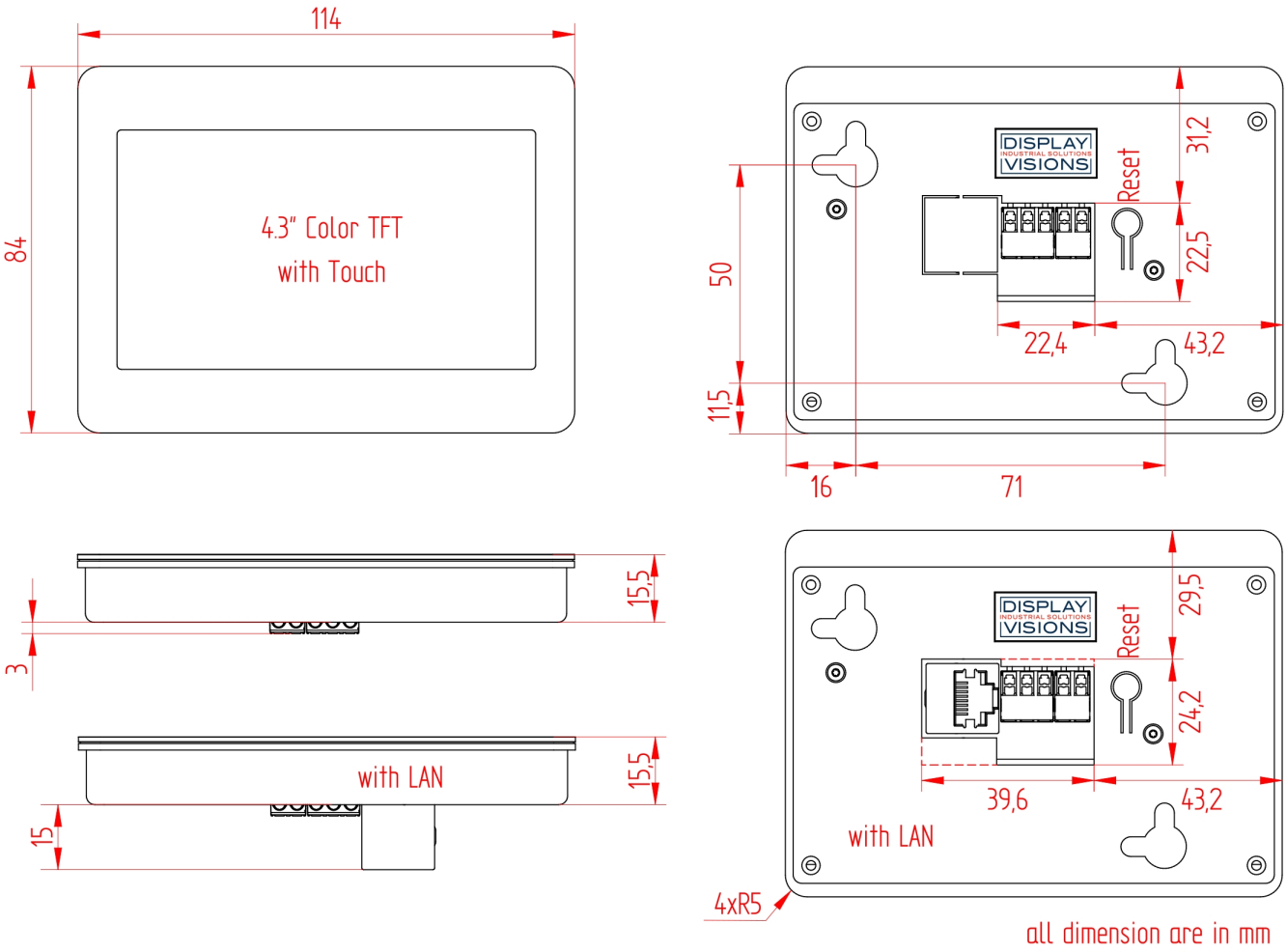
The EA HMI028 can be easily installed in any front panel. It's made for panel thickness from 1.0mm to 6.0mm and will be fixed by 2 or 4 mounting clips EA 00C1-1KNS (please order separately). Assembly is done by screws (included).

Panel thickness	Recommended screws	
1.0~4.0 mm	2.5x10	Do not use screw longer than 10mm. Otherwise display could be damaged!
3.0~6.0 mm	2.5x12	

Recommended cutout is 75.9x55.3mm. The dashed area represents the display outline and the mounting clips.
This is view from front
:



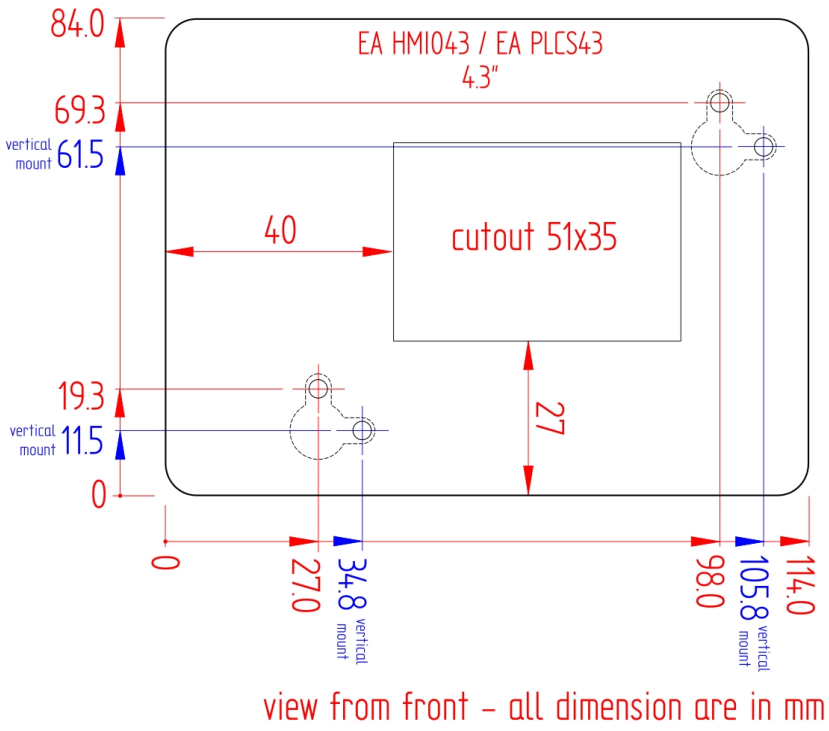
EA HMI043XX-42ATCS
HMI Display with Touch 4.3"



Wall Mount

The EA HMI043 is prepared for easy wall mount. Simply fixed by 2 screws 4x16 DIN 7981 or similar. Note that you need a cutout of 51x35 mm for cable and RJ45 connector.
Display may be mounted horizontally (landscape mode) or vertically (portrait mode). See dimensions for vertical mount in blue color.
Please find here a drilling template as a pdf to print out.

This is view from front side:

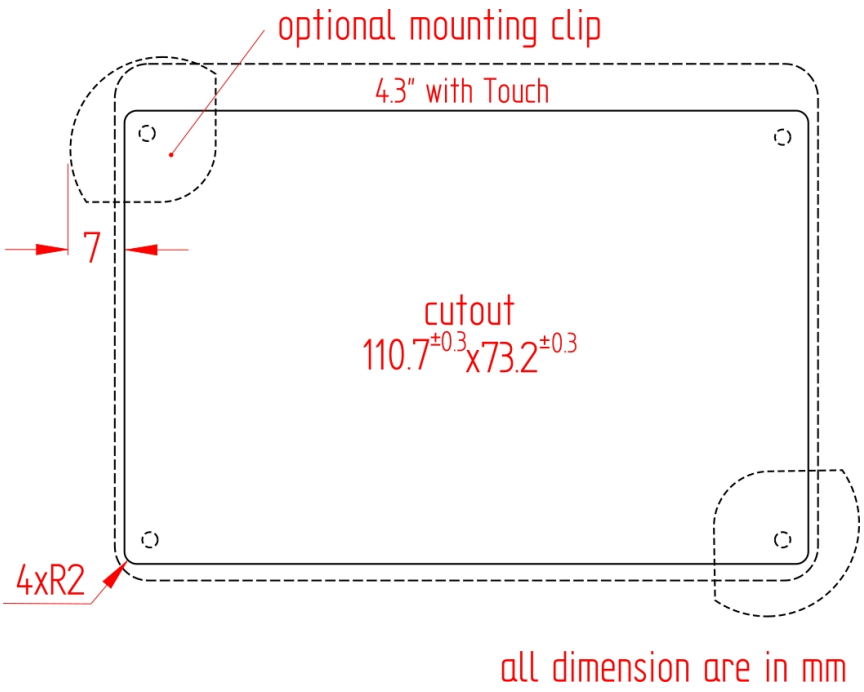


Panel Mount

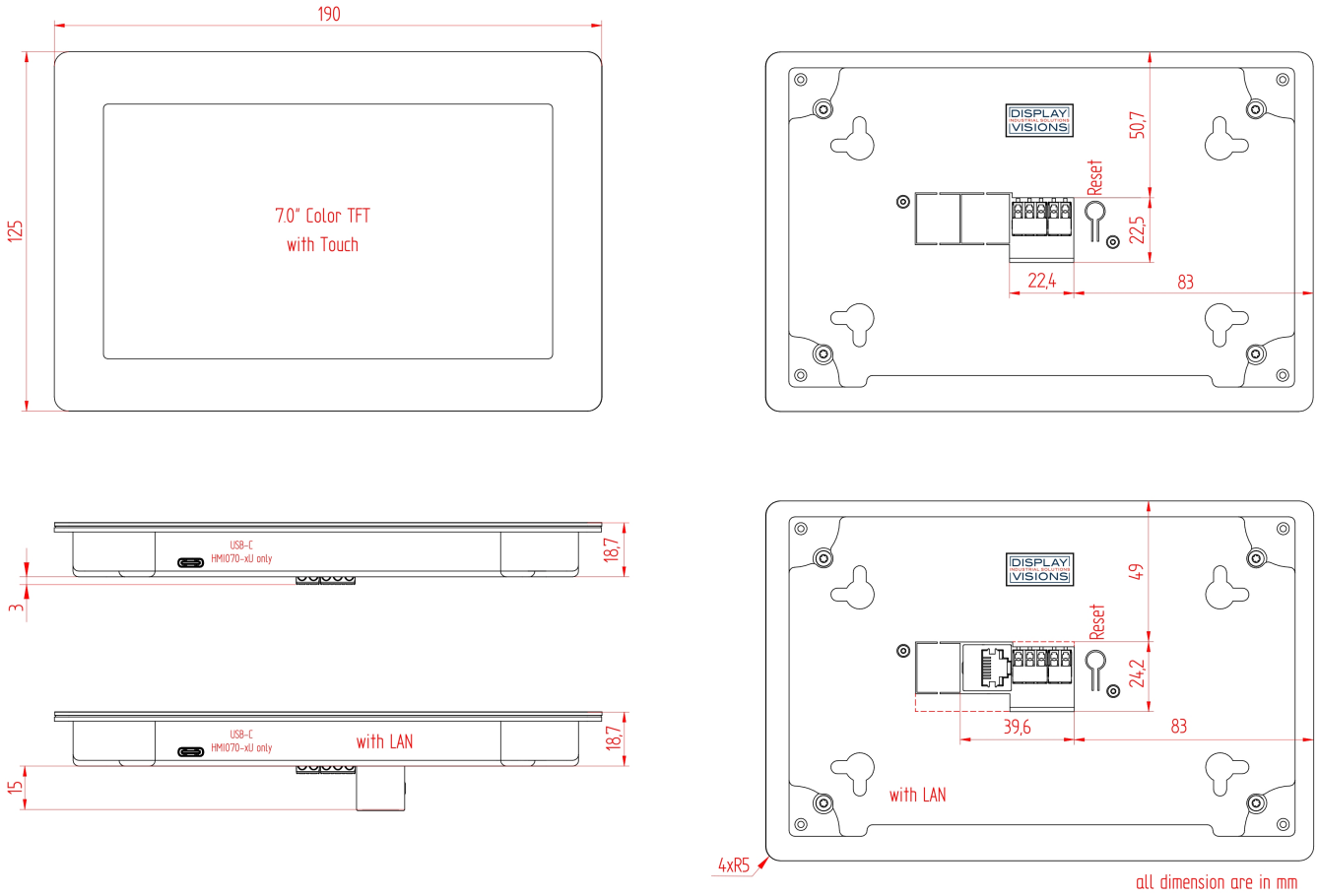
The EA HMI043 can be easily installed in any front panel. It's made for panel thickness from 1.0mm to 6.0mm and will be fixed by 2 or 4 mounting clips EA 00C1-1KNS (please order separately). Assembly is done by screws (included).

Panel thickness	Recommended screws	
1.0~4.0 mm	2.5x10	Do not use screw longer than 10mm. Otherwise display could be damaged!
3.0~6.0 mm	2.5x12	

Recommended cutout is 110.7x73.2mm. The dashed area represents the display outline and the mounting clips.
This is view from front:


optional mounting clip
4.3" with Touch
7
cutout
110.7±0.3x73.2±0.3
4xR2
all dimension are in mm

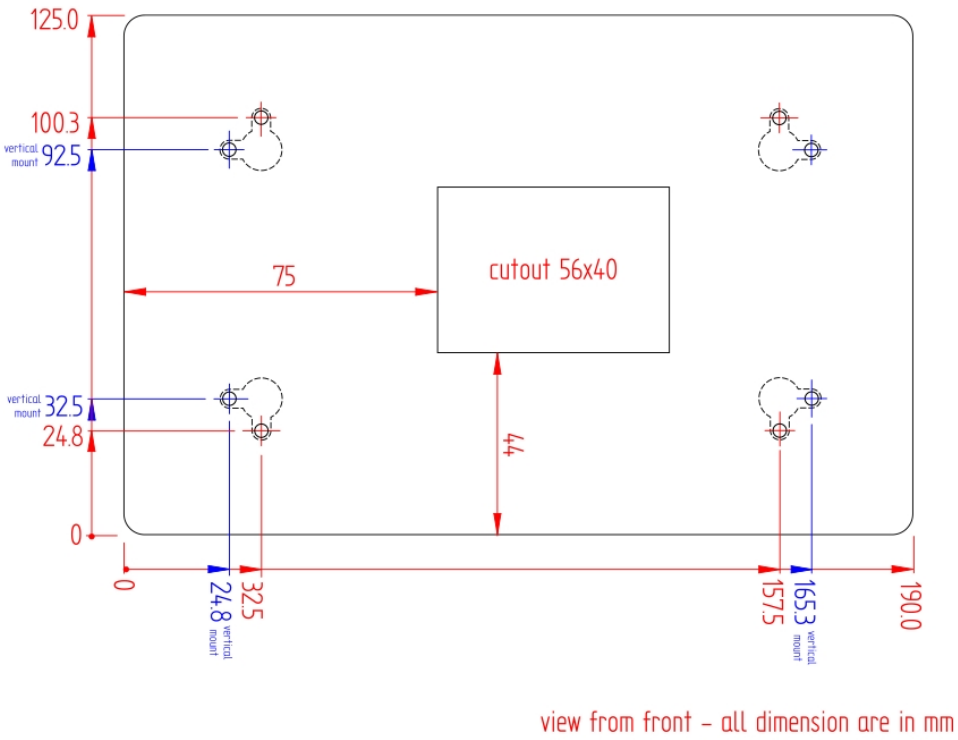
EA HMI070XX-16ATCS
HMI Display with Touch 7.0"



Wall Mount

The EA HMI070 is prepared for easy wall mount. Simply fixed by 2 screws 4x16 DIN 7981 or similar. Note that you need a cutout of 56x40 mm for cable and RJ45 connector.
Display may be mounted horizontally (landscape mode) or vertically (portrait mode). See dimensions for vertical mount in blue color.
Please find here a drilling template as a pdf to print out.

This is view from front side:



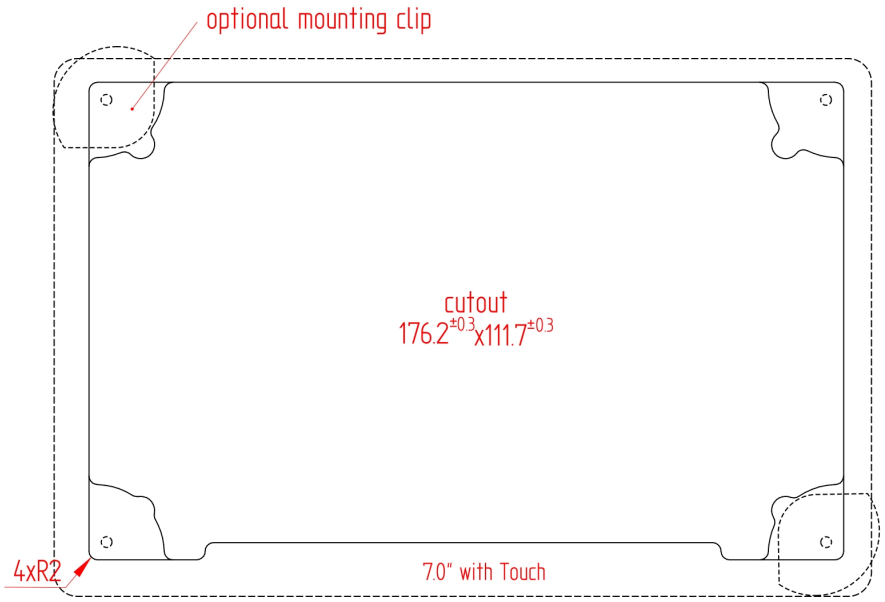
view from front - all dimension are in mm

Panel Mount

The EA HMI070 can be easily installed in any front panel. It's made for panel thickness from 2 mm to 6 mm and will be fixed by 2 or 4 mounting clips EA 00C1-1KNS (1 pair, please order separately). Assembly is done by screws (included).

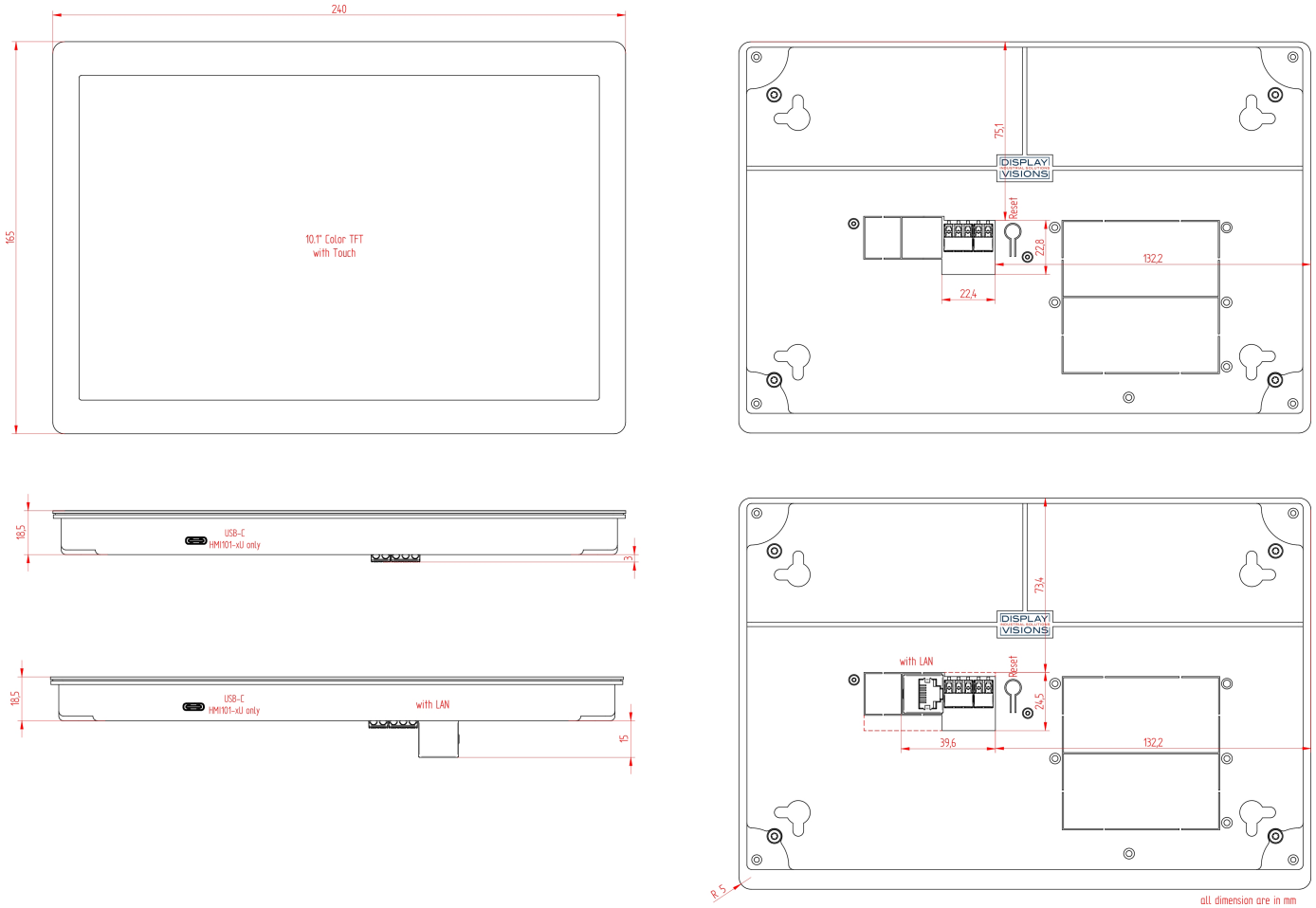
Panel thickness	Required screw (included in EA 00C1)	Note
2.0~4.0 mm	2.5x10	Do not use screw longer than 10mm. Otherwise display coul damaged!
3.0~6.0 mm	2.5x12	

Recommended cutout is 176.2x111.7mm. The dashed area represents the display outline and the mounting clips.
This is view from front:



all dimension are in mm

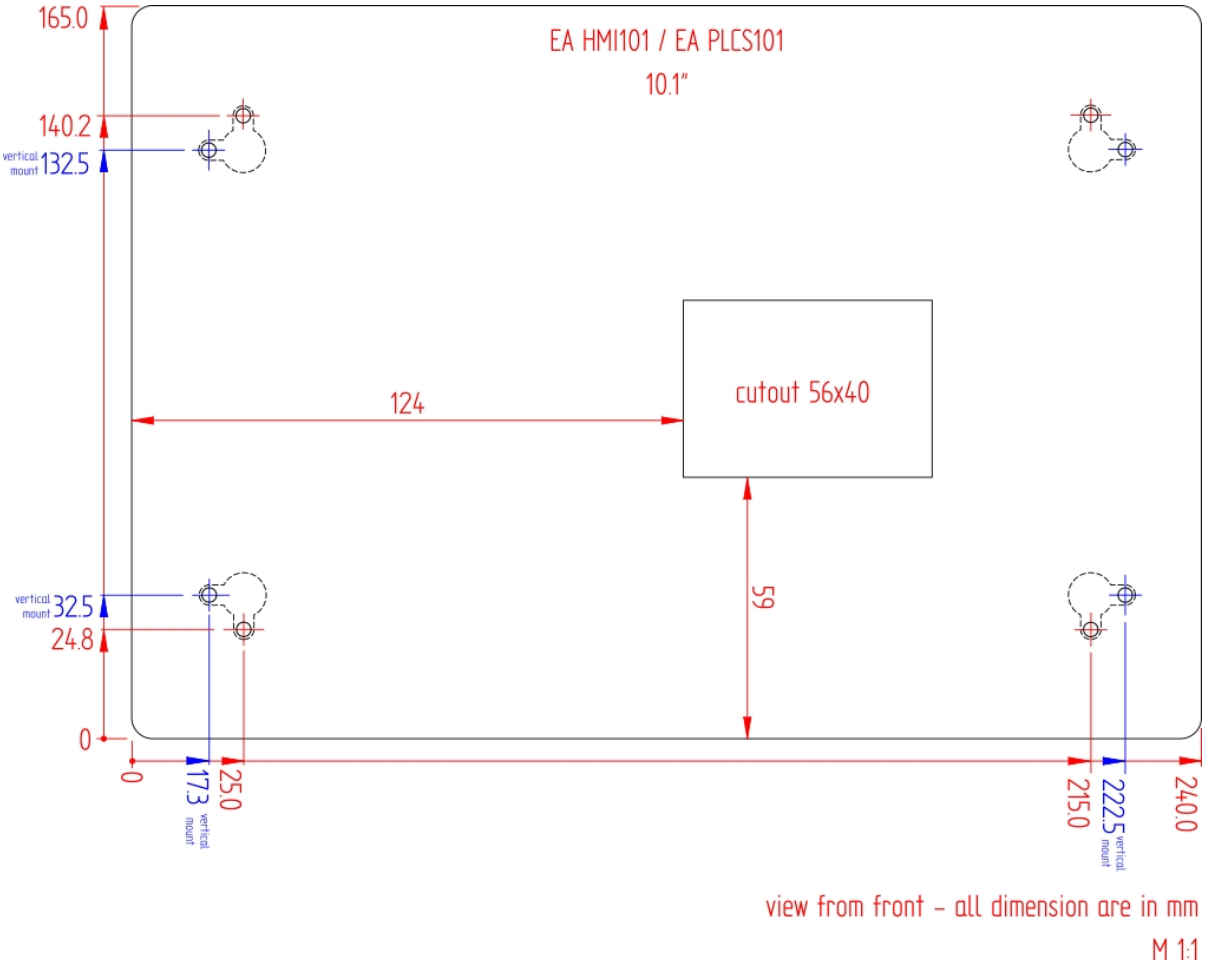
EA HMI101XX-18ATCS
HMI Display with Touch 10.1"



Wall Mount

The EA HMI101 is prepared for easy wall mount. Simply fixed by 2 screws 4x16 DIN 7981 or similar. Note that you need a cutout of 56x40 mm for cable and RJ45 connector.
Display may be mounted horizontally (landscape mode) or vertically (portrait mode). See dimensions for vertical mount in blue color.
Please find here a drilling template as a pdf to print out.

This is view from front side:

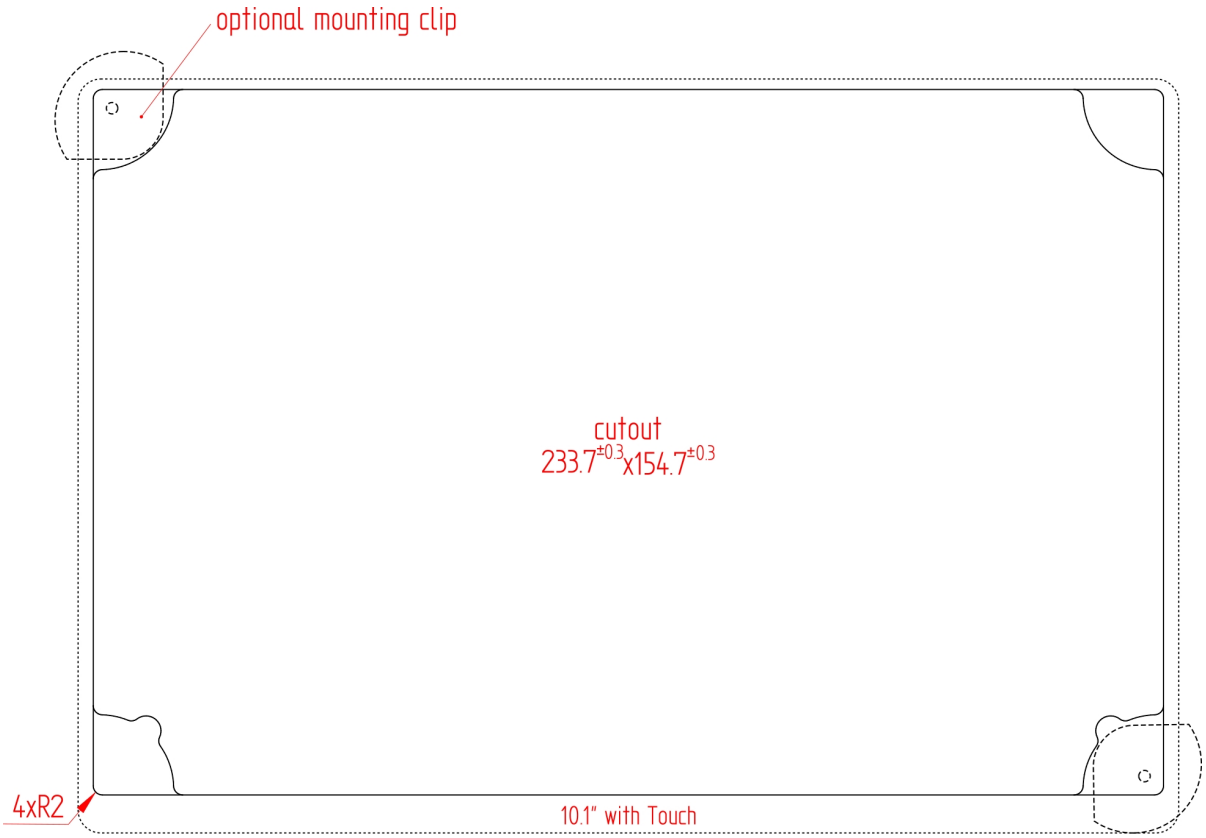


Panel Mount

The EA HMI101 can be easily installed in any front panel. It's made for panel thickness from 2 mm to 6 mm and will be fixed by 2 or 4 mounting clips EA 00C1-1KNS (1 pair, please order separately). Assembly is done by screws (included).

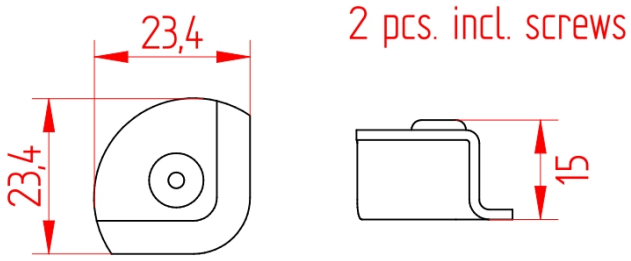
Panel thickness	Required screw (included in EA 00C1)	Note
2.0~4.0 mm	2.5x10	Do not use screw longer than 10mm. Otherwise display coul damaged!
3.0~6.0 mm	2.5x12	

Recommended cutout is 233.7x154.7mm. The dashed area represents the display outline and the mounting clips.
This is view from front:


optional mounting clip
cutout
233.7±0.3x154.7±0.3
4xR2
10.1" with Touch
all dimension are in mm

EA 00C1-1KNS
Mounting Clips for HMI series

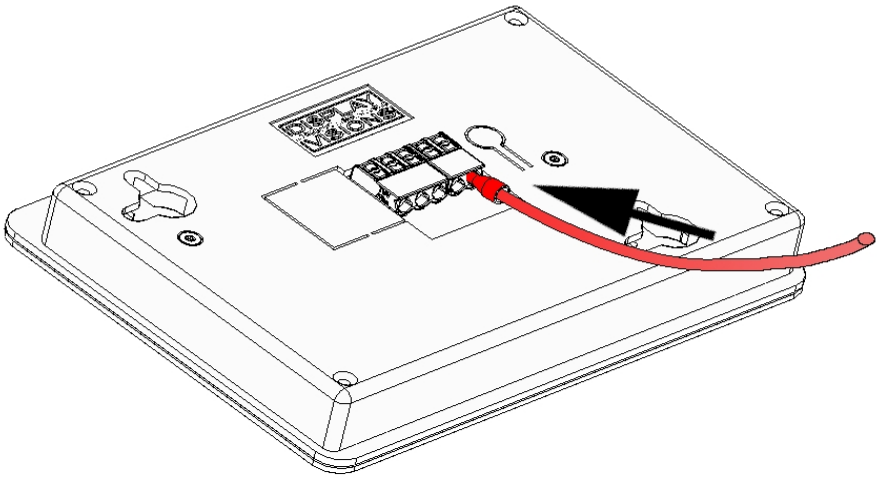
There are optionally 2 mounting clips to fix the HMI displays.
They come together with screws in 2 different length for different panel thickness: 2.5x10 and 2.5x12



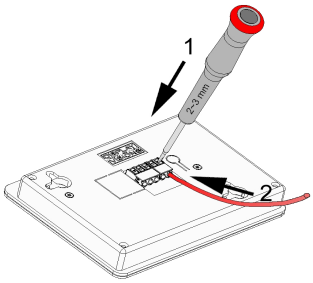
Connection

The white terminal blocks provide a tool-free connection for wires from AWG 18 to AWG 24, which is 0.8 to 0.2 mm² The wire should be stripped for 10 mm length. Both can be used, riged conductors and cable litz. To release simply insert a screw driver into the slot above the cable entry and pull out the cable. Also to insert a cable litz, a screw driver need to be used meanwhile.

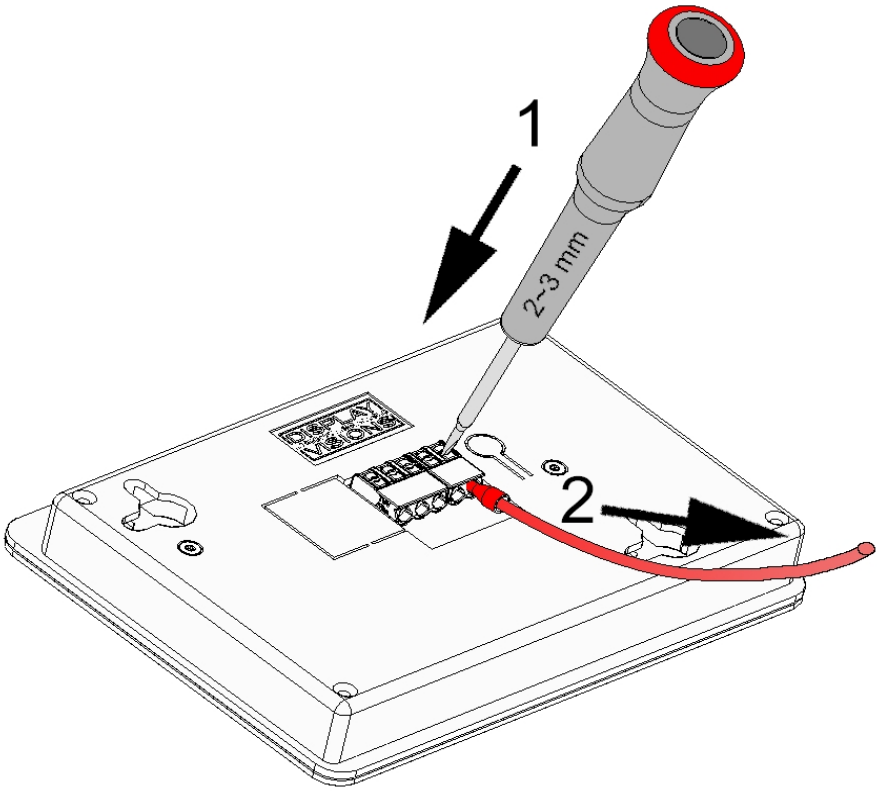
Riged cable



Cable litz



Release


1
2~3 mm
2

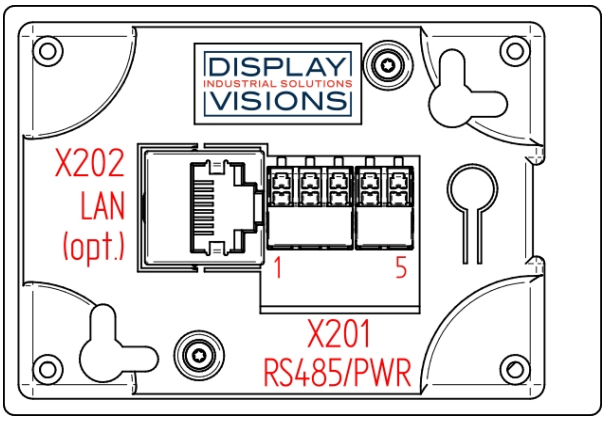
Connection EA HMI028XX-32ATCS

The EA HMI028XX-32ATCS is made for wall-mount or installation in equipment.

Commissioning is quick and easy thanks to tool-free push-in connection technology

EA HMI028WU-32ATCS, EA HMI028WM-32ATCS, EA HMI028LU-32ATCS, EA HMI028LM-32ATCS

X201 provides RS-485 signals and power supply. X202 is optionally assembled for Ethernet connection via RJ-45.



Power Supply and RS-485 (X201)

The white terminal blocks provide a tool-free connection for wires from AWG 12 to AWG 28, which is 0,09 to 4 mm². The wire should be stripped for 10 mm length. To release simply insert a screw driver into the slot above the cable entry and pull out the cable. Also to insert a cable litz, a screw driver need to be used meanwhile.

Pin	Symbol	I/O	Description
201.1	485A+	I/O	RS485 Positive Channel
201.2	485B-	I/O	RS485 Negative Channel
201.3	GND	PWR	Ground 0 V
201.4	VIN	PWR	Power supply +6 .. +30V=
201.5	GND	PWR	Ground 0 V

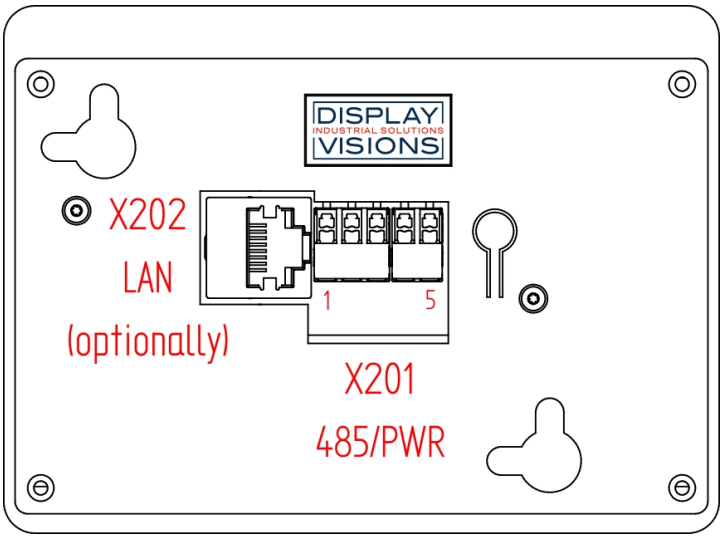
Connection EA HMI043XX-42ATCS

The EA HMI043XX-42ATCS is made for wall-mount or installation in equipment.

Commissioning is quick and easy thanks to tool-free push-in connection technology

EA HMI043WU-42ATCS, EA HMI043WM-42ATCS, EA HMI043LU-42ATCS, EA HMI043LM-42ATCS

X201 provides RS-485 signals and power supply. X202 is optionally assembled for Ethernet connection via RJ-45.



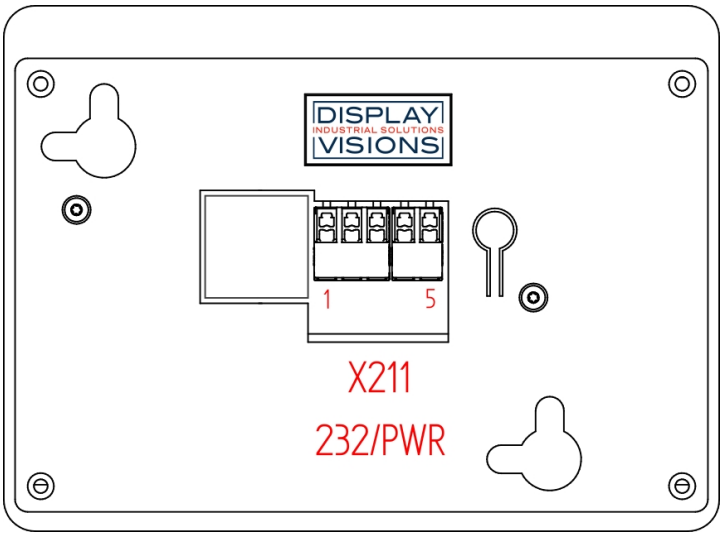
Power Supply and RS-485 (X201)

The white terminal blocks provide a tool-free connection for wires from AWG 12 to AWG 28, which is 0,09 to 4 mm². The wire should be stripped for 10 mm length. To release simply insert a screw driver into the slot above the cable entry and pull out the cable. Also to insert a cable litz, a screw driver need to be used meanwhile.

Pin	Symbol	I/O	Description
201.1	485A+	I/O	RS485 Positive Channel
201.2	485B-	I/O	RS485 Negative Channel
201.3	GND	PWR	Ground 0 V
201.4	VIN	PWR	Power supply +6 .. +30V=
201.5	GND	PWR	Ground 0 V

EA HMI043RU-42ATCS

X211 provides RS-232 signals and power supply.



Power Supply and RS-232 (X211)

The white terminal blocks provide a tool-free connection for wires from AWG 12 to AWG 28, which is 0,09 to 4 mm². The wire should be stripped for 10 mm length. To release simply insert a screw driver into the slot above the cable entry and pull out the cable. Also to insert a cable litz, a screw driver need to be used meanwhile.

Pin	Symbol	I/O	Description
211.1	TxD	I/O	RS232 Transmit (±12V)
211.2	RxD	I/O	RS232 Receive (±12V)
211.3	GND	PWR	Ground 0 V
211.4	VIN	PWR	Power supply +6 .. +30V=
211.5	GND	PWR	Ground 0 V

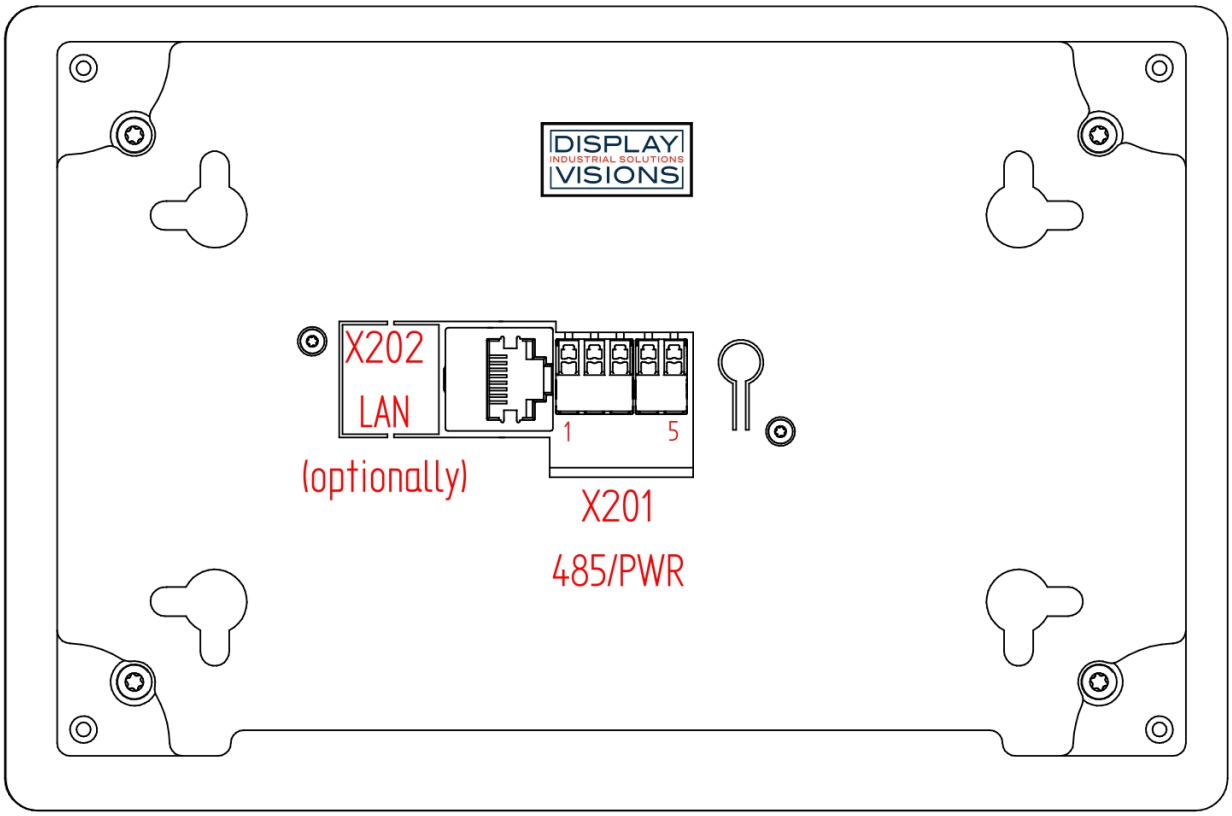
Connection EA HMI070XX-16ATCS

The EA HMI070XX-16ATCS is made for wall-mount or installation in equipment.

Commissioning is quick and easy thanks to tool-free push-in connection technology

EA HMI070WU-16ATCS, EA HMI070WM-16ATCS, EA HMI070LU-16ATCS, EA HMI070LM-16ATCS

X201 provides RS-485 signals and power supply. X202 is optionally assembled for Ethernet connection via RJ-45.



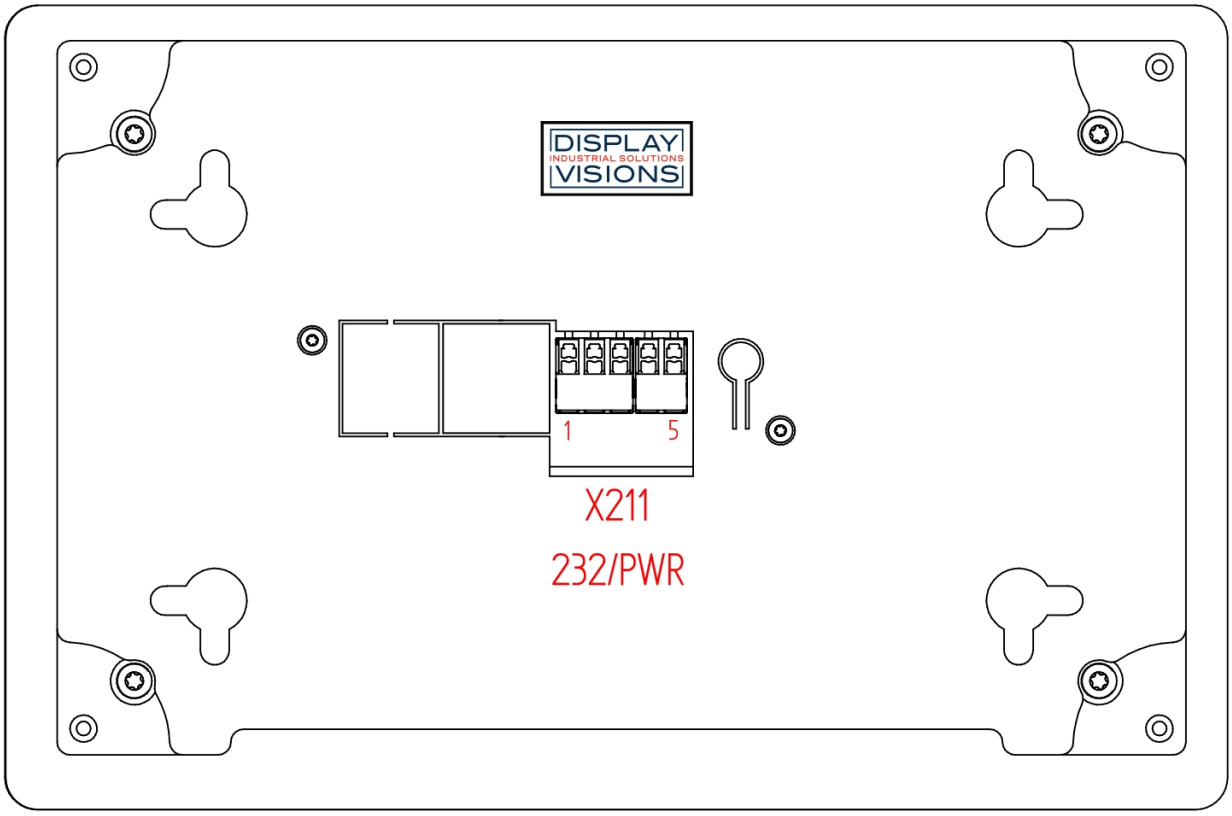
Power Supply and RS-485 (X201)

The white terminal blocks provide a tool-free connection for wires from AWG 12 to AWG 28, which is 0,09 to 4 mm². The wire should be stripped for 10 mm length. To release simply insert a screw driver into the slot above the cable entry and pull out the cable. Also to insert a cable litz, a screw driver need to be used meanwhile.

Pin	Symbol	I/O	Description
201.1	485A+	I/O	RS485 Positive Channel
201.2	485B-	I/O	RS485 Negative Channel
201.3	GND	PWR	Ground 0 V
201.4	VIN	PWR	Power supply +6 .. +30V=
201.5	GND	PWR	Ground 0 V

EA HMI070RU-16ATCS

X201 provides RS-232 signals and power supply.



Power Supply and RS-232 (X211)

The white terminal blocks provide a tool-free connection for wires from AWG 12 to AWG 28, which is 0,09 to 4 mm². The wire should be stripped for 10 mm length. To release simply insert a screw driver into the slot above the cable entry and pull out the cable. Also to insert a cable litz, a screw driver need to be used meanwhile.

Pin	Symbol	I/O	Description
211.1	TxD	I/O	RS232 Transmit (±12V)
211.2	RxD	I/O	RS232 Receive (±12V)
211.3	GND	PWR	Ground 0 V
211.4	VIN	PWR	Power supply +6 .. +30V=
211.5	GND	PWR	Ground 0 V

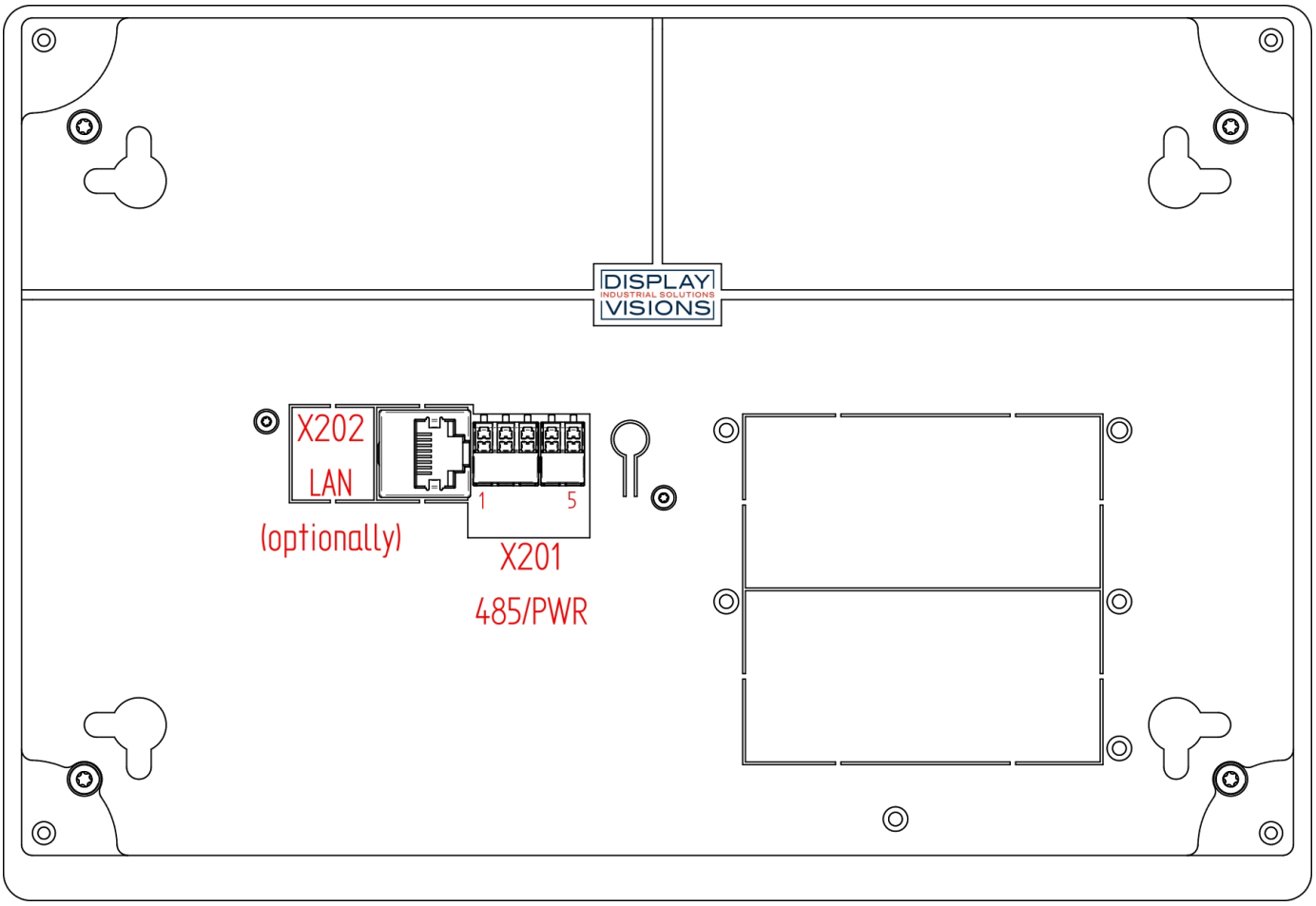
Connection EA HMI101XX-18ATCS

The EA HMI101XX-18ATCS is made for wall-mount or installation in equipment.

Commissioning is quick and easy thanks to tool-free push-in connection technology

EA HMI101WU-18ATCS, EA HMI101WM-18ATCS, EA HMI101LU-18ATCS, EA HMI101LM-18ATCS

X201 provides RS-485 signals and power supply. X202 is optionally assembled for Ethernet connection via RJ-45.



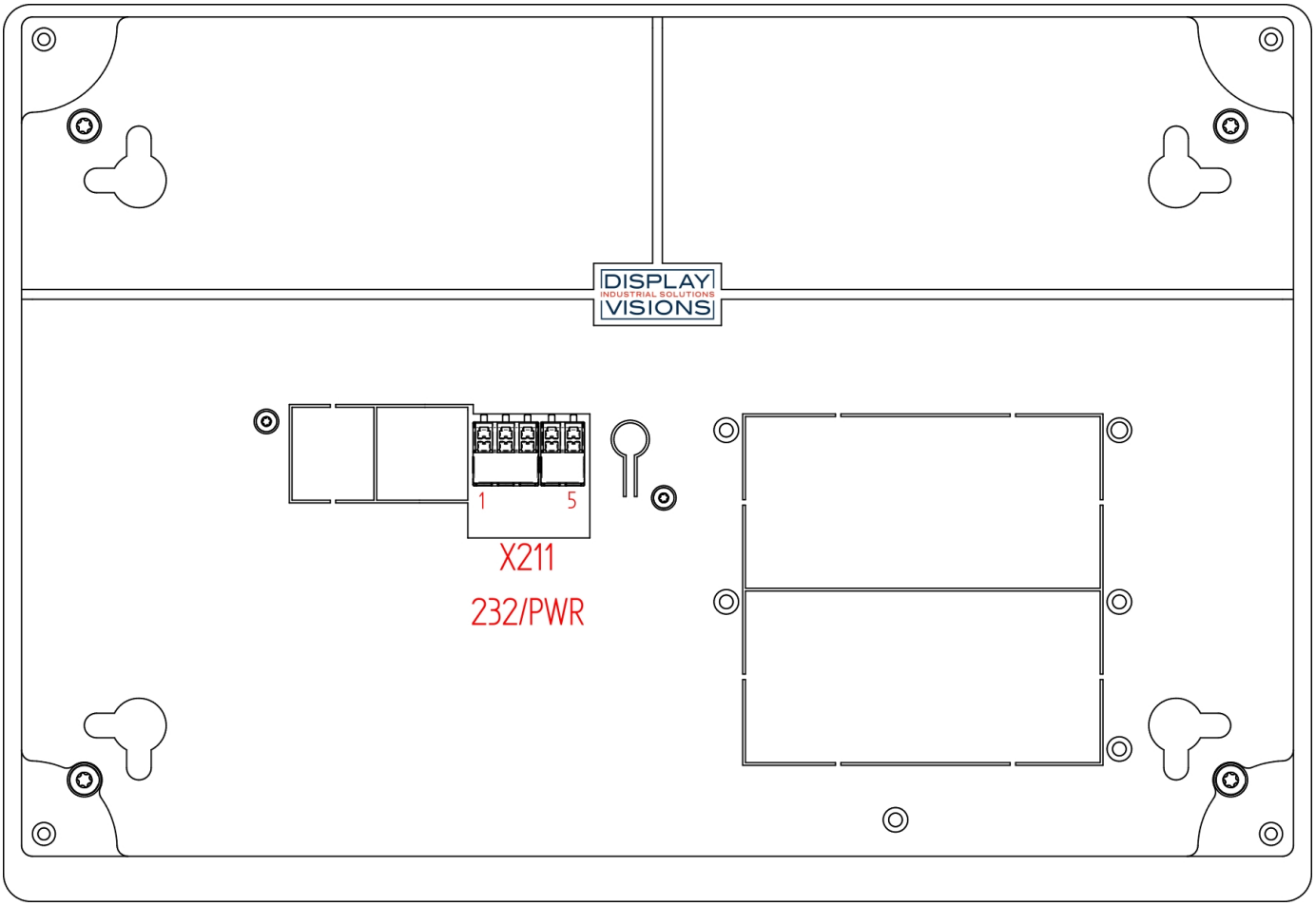
Power Supply and RS-485 (X201)

The white terminal blocks provide a tool-free connection for wires from AWG 12 to AWG 28, which is 0,09 to 4 mm². The wire should be stripped for 10 mm length. To release simply insert a screw driver into the slot above the cable entry and pull out the cable. Also to insert a cable litz, a screw driver need to be used meanwhile.

Pin	Symbol	I/O	Description
201.1	485A+	I/O	RS485 Positive Channel
201.2	485B-	I/O	RS485 Negative Channel
201.3	GND	PWR	Ground 0 V
201.4	VIN	PWR	Power supply +6 .. +30V=
201.5	GND	PWR	Ground 0 V

EA HMI101RU-18ATCS

X201 provides RS-232 signals and power supply.



Power Supply and RS-232 (X211)

The white terminal blocks provide a tool-free connection for wires from AWG 12 to AWG 28, which is 0,09 to 4 mm². The wire should be stripped for 10 mm length. To release simply insert a screw driver into the slot above the cable entry and pull out the cable. Also to insert a cable litz, a screw driver need to be used meanwhile.

Pin	Symbol	I/O	Description
211.1	TxD	I/O	RS232 Transmit (±12V)
211.2	RxD	I/O	RS232 Receive (±12V)
211.3	GND	PWR	Ground 0 V
211.4	VIN	PWR	Power supply +6 .. +30V=
211.5	GND	PWR	Ground 0 V

Electrical Specification

Following pages show the electrical specifications.

EA HMI028xx-32ATCS - 2.8" HMI

General

	HMI 2.8"
Resolution	320x240x3
TFT Size	2.8" IPS
Setup	PCAP Touch Panel
Dimension	84x58x15 mm
Mount	Wall mount Panel mount
I/O	-
Interconnection[1]	RS-485, WiFi, Ethernet, USB (no Modbus)
Temp. Range	-20..+60°C
IP code	IP20
Supply Voltage	6-30V=
Display	IPS with PCAP, optically bonded

[1] depends on part number

Electrical characteristics

Item	Symbol	Condition	Min	Typ	Max	Unit	Rema
Power Supply	VIN		6		30	V	DC
Power consumption	PWR	VIN= 24V		1.3		W	EA HMI028WU-32ATCS EA HMI028WM-32ATCS EA HMI028LU-32ATCS EA HMI028LM-32ATCS
WiFi / WLAN	Operating Frequency		2412		2472	MHz	
	Tx Power	802.11n mode	12		14	dBm	
		802.11b mode	18.5		20.5	dBm	
Operating Temp.	Top.		-20		+60	°C	
Storage Temp.	Tstor.		-30		+80	°C	

EA HMI043xx-42ATCS - 4.3" HMI

General

	HMI 4.3"
Resolution	480x272x3
TFT Size	4.3" IPS
Setup	PCAP Touch Panel
Dimension	114x84x15.5 mm
Mount	Wall mount Panel mount
I/O	-
Interconnection[1]	RS232, RS-485, WiFi, Ethernet
Temp. Range	-20..+60°C
IP code	IP20
Supply Voltage	6-30V=
Display	IPS with PCAP, optically bonded

[1] depends on part number

Electrical characteristics

Item	Symbol	Condition	Min	Typ	Max	Unit	Rema
Power Supply	VIN		6		30	V	DC
Power consumption	PWR	VIN= 24V		2.4		W	EA HMI043WU-42ATCS EA HMI043WM-42ATCS EA HMI043LU-42ATCS EA HMI043LM-42ATCS
				1.5		W	EA HMI043RU-42ATCS
WiFi / WLAN	Operating Frequency		2412		2472	MHz	
	Tx Power	802.11n mode	12		14	dBm	
		802.11b mode	18.5		20.5	dBm	
Operating Temp.	Top.		-20		+60	°C	
Storage Temp.	Tstor.		-30		+80	°C	

EA HMI070xx-16ATCS - 7.0" HMI

General

	HMI 7.0"
Resolution	1024x600x3
TFT Size	7.0" IPS
Setup	PCAP Touch Panel
Dimension	190x125x18.7 mm
Mount	Wall mount Panel mount
I/O	-
Interconnection[1]	RS232, RS-485, WiFi, Ethernet, USB (no Modbus)
Temp. Range	-20..+60°C
IP code	IP20
Supply Voltage	6-30V=
Display	IPS with PCAP, optically bonded

[1] depends on part number

Electrical characteristics

Item	Symbol	Condition	Min	Typ	Max	Unit	Rema
Power Supply	VIN		6		30	V	DC
Power consumption	PWR	VIN= 24V		3.5		W	EA HMI070WU-16ATCS EA HMI070WM-16ATCS EA HMI070LU-16ATCS EA HMI070LM-16ATCS
				3.3		W	EA HMI070RU-16ATCS
WiFi / WLAN	Operating Frequency		2412		2472	MHz	
	Tx Power	802.11n mode	12		14	dBm	
		802.11b mode	18.5		20.5	dBm	
Operating Temp.	Top.		-20		+60	°C	
Storage Temp.	Tstor.		-30		+80	°C	

EA HMI101xx-18ATCS - 10.1" HMI

General

	HMI 10.1"
Resolution	1280x800x3
TFT Size	10.1" IPS
Setup	PCAP Touch Panel
Dimension	240x165x18.5 mm
Mount	Wall mount Panel mount
I/O	-
Interconnection[1]	RS232, RS-485, WiFi, Ethernet, USB (no Modbus)
Temp. Range	-20..+60°C
IP code	IP20
Supply Voltage	6-30V=
Display	IPS with PCAP, optically bonded

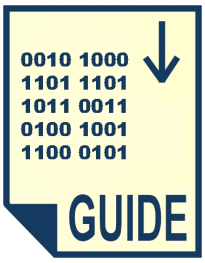
[1] depends on part number

Electrical characteristics

Item	Symbol	Condition	Min	Typ	Max	Unit	Rema
Power Supply	VIN		6		30	V	DC
Power consumption	PWR	VIN= 24V		tbd		W	EA HMI101WU-18ATCS EA HMI101WM-18ATCS EA HMI101LU-18ATCS EA HMI101LM-18ATCS
				tbd		W	EA HMI101RU-18ATCS
WiFi / WLAN	Operating Frequency		2412		2472	MHz	
	Tx Power	802.11n mode	12		14	dBm	
		802.11b mode	18.5		20.5	dBm	
Operating Temp.	Top.		-20		+60	°C	
Storage Temp.	Tstor.		-30		+80	°C	

Command Set

There are many Graphic Commands built-in to setup a nice screen. With individual macros and logical functions you create an intelligent control unit. All software commands and it's description can be found in separate manual:



Building a Screen

The most quick and simple way to create screen content is by use of HMIdesigner. HMIdesigner is a simple to use WYSIWYG tool for Windows. You build your screen by drag-and-drop and editing properties. It includes project management and a documentation tool.
There's also simulator built-in that makes it simple and fast to test your project directly.

Here you can download HMIdesigner for free.

Setting the interface

The interface used by the individual project can be set directly in the project via HMI Designer. The interface parameters set for the current project must be known for data transfer. When the display is switched on for the first time, a project starts in which the parameters can be set. This project can be called up again at any time via the boot menu. A description of the project can be found in the Interface settings chapter.

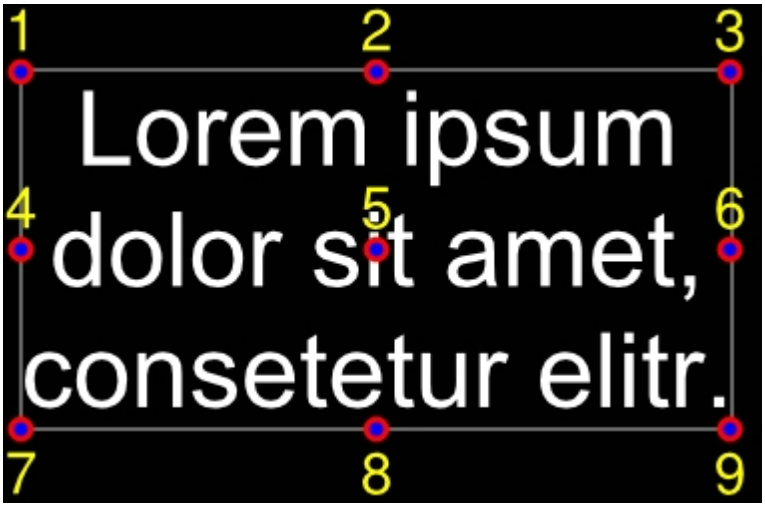
Objects

Every picture, text element and button is a so-called object. Each object got its own, individual object ID, which makes it uniquely identifiable. The object ID can be used to change the properties of an object at any time (size, position...). You can use 0 as ID for creating simple graphical objects. These objects are rendered directly to the background and aren't editable and manipulable any more. If you assign an already existing object ID to a new object, the previous object will be overwritten.
Commands for object management can be found here.

Object position / Anchor

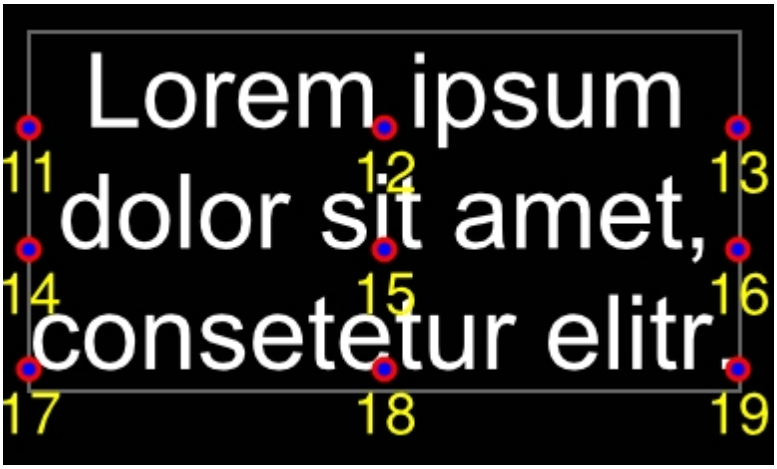
General anchors

The position of an object is based on the coordinates (origin: bottom left edge) related to the object anchor. Each object has 9 fixed anchors. Transformation on the object (e.g. rotation or shear) will be applied to the active anchor.



Strings and anchors

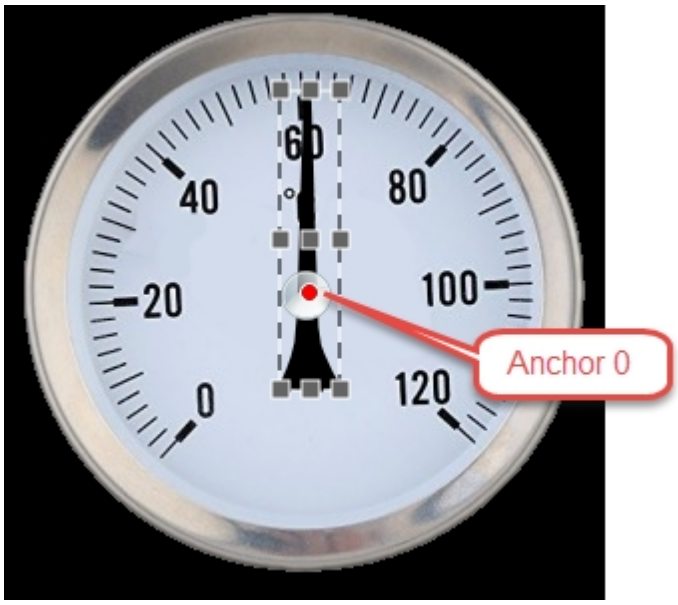
Strings have additional 9 anchors used to align objects (e.g. an underscore line) to the text base line.



Special case: Anchor 0

Each object has additionally a freely definable anchor. For circles, ellipses, and stars, the object anchor 0 is the

construction point.



Example: The pointer should rotate around the centre of the circle. The pointers 9 standard anchors (shown in dark grey) are not useful in this case because none of the defaults are located in the right position. The anchor 0 can be placed pixel-precise (#OAS) as shown, and this custom location marks the correct rotation point for the pointer object.

Styles / StyleSheets

Styles can be used to create consistent design. There are
- DrawStyles
- TextStyles
- ButtonStyles

Before placing any graphic object or text object, a DrawStyle or a TextStyle need to be defined. A DrawStyle defines the pen type and a fill color and the TextStyle the font and it's size.

DrawStyle:
Color, gradients, pattern and pen for (out)lines are defined in a DrawStyle.
TextStyle:
The appearance of a string is defined in a TextStyle. A TextStyle is based on a DrawStyle for color and some font specification for size, alignment and spacing.
ButtonStyle:
Touch buttons and switches are defined by a ButtonStyle, which consists of a TextStyle for labeling and DrawStyles for background painting.

ColorRamp:
Filling an object can be done with solid color or with some gradient. Those gradient and its colors are defined in ColorRamps and can be used linear or radial.

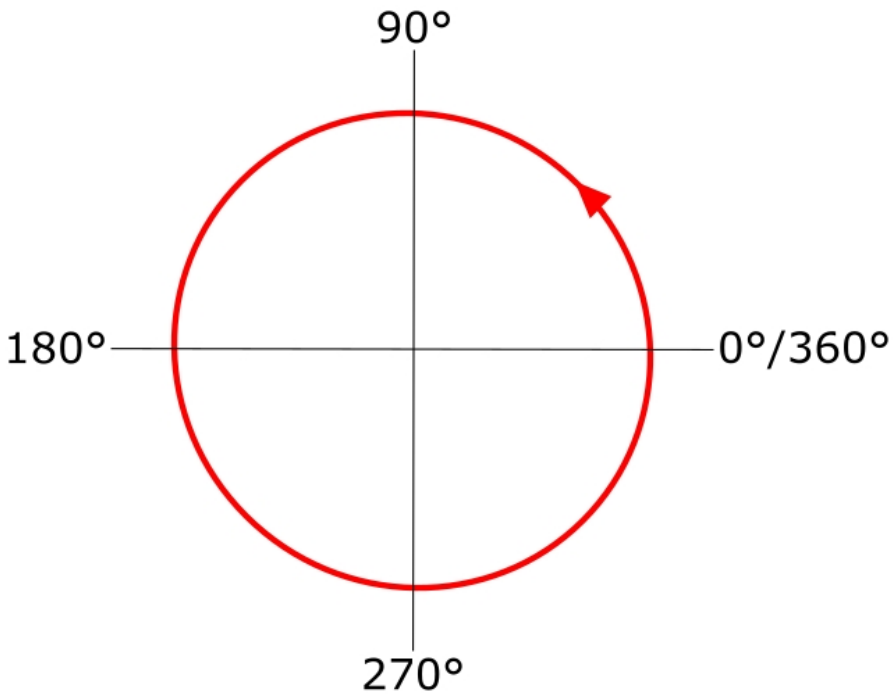
The Windows tools uniTFTDesigner supports StyleSheets that contain a collection of several Draw, Text, and ButtonStyles ans also ColorRamps.

The commands related to styles and colorramps can be found here.

Coordinate system and angle

The coordinate system refers directly to the display resolution of the module with the origin 0|0 placed in the lower left corner of the display. For example the EA uniTFTs028-A has a drawing field of 320 x 240 dots. Valid coordinates for this display are 0..319 and 0..239 hence.

Angles are given in the mathematical sense of rotation (counter-clockwise). 0° is horizontally right. Besides instruments rotation is available in 90° steps:



Multi language - String files

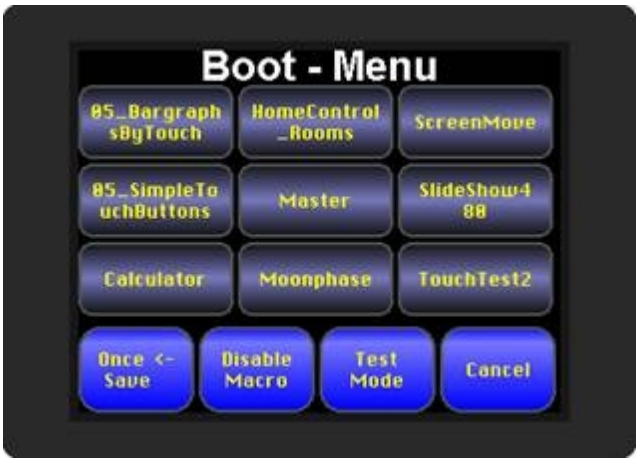
In an increasingly interdependent world of international assignments, supporting multiple languages is a must. The EA HMI series with its unicode support is part of the solution. Without unicode it's basically impossible to work with Chinese characters e.g..
The second part of supporting internationalization are string files: these text files provide a database of strings to be displayed. In macro files, strings are referenced by an index, then at runtime this index is replaced with the corresponding text taken from the string file.
Further details can be found by looking at the command description under #VFL or the examples.

Boot menu / Bootmenu

Multiple projects can be stored on the integrated memory. The project which is started automatically is defined using the "start.emc" file. To load a different project, the start file need to be updated, or on touch enabled panels, a project can be selected via the boot menu:

How to enter the boot menu?

When switching on the device (or after hardware reset), wipe over the touch panel several times in short interval.

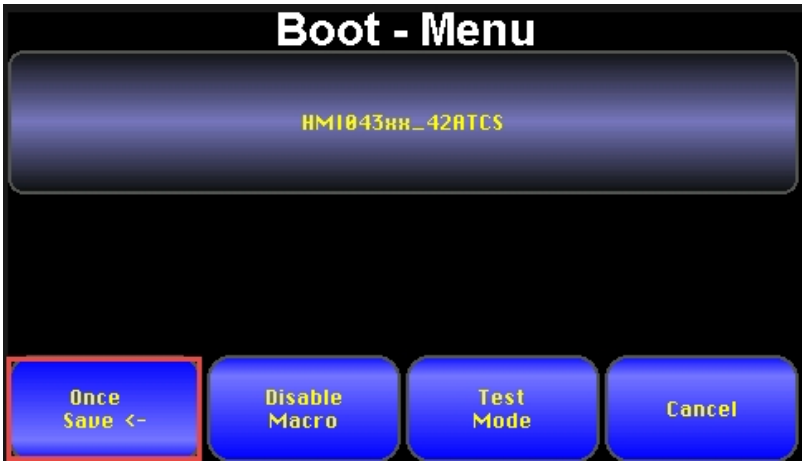


To avoid mis-use by the operator, the boot menu can be deactivated. For this purpose, an empty file named "bootmenu.off" must be placed in the root directory of the memory. This can be done using the uniEXPLORER (not with Modbus) to transfer the file, or directly via uniTFTs commands:
#FWO</bootmenu.off>
#FWC

In addition to project selection, the boot menu offers the option to start test mode and to display information about the firmware version. It also gives the possibility to set interface type, baudrate, IP address etc.

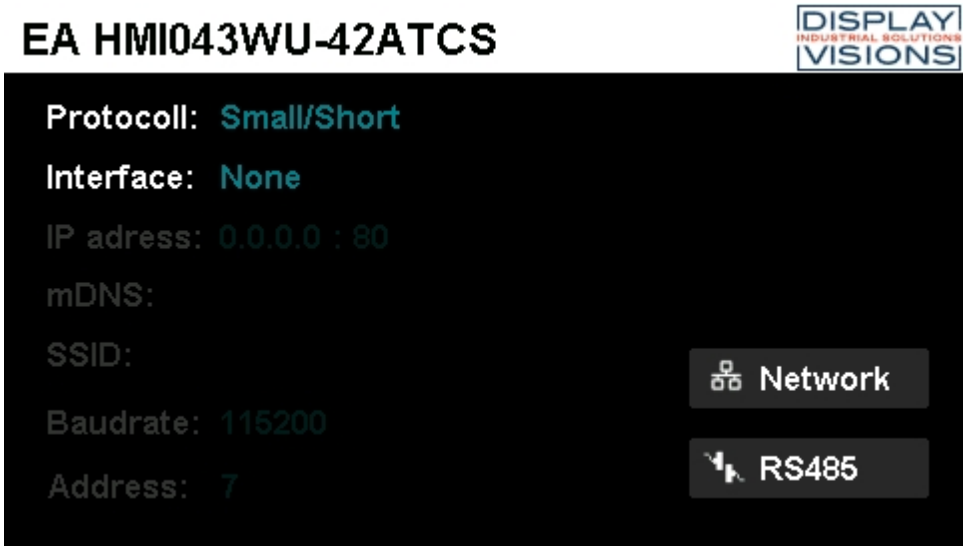
Interface settings

By default, a project can be found on the display that allows to set the interface parameters. This project can be selected at any time via the boot menu. It is important to select the Save setting. How you access the boot menu is described in the Boot menu chapter.



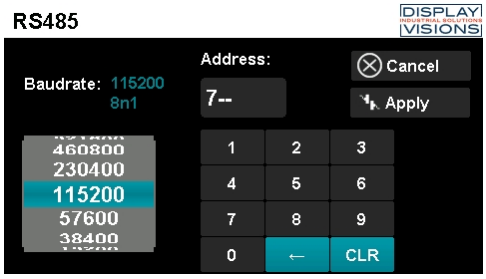
Small/Short "WU" and "LU" versions

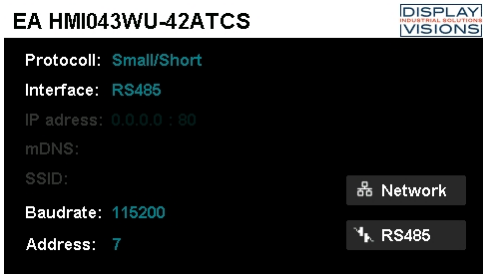
Modbus ("WM" an

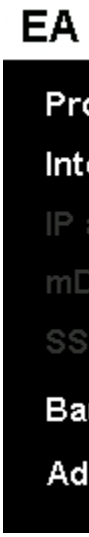


On the start page, you can select between two interfaces: network RS-485 or LAN/WIFI. You then access a submenu in which a

RS-485

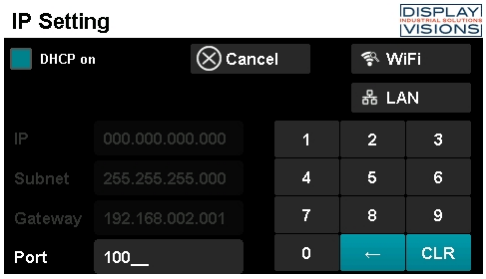


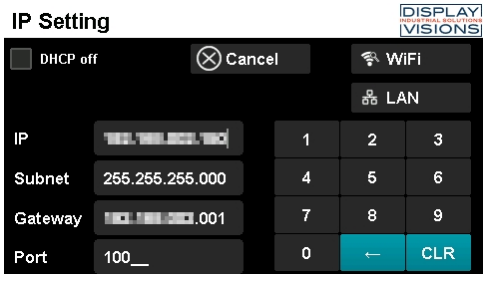


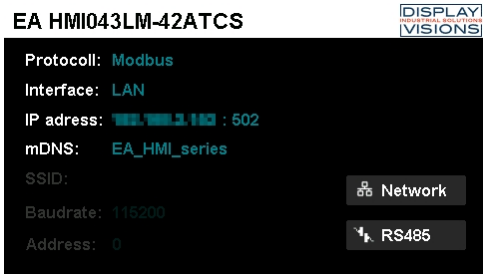


The baud rate and the RS-485 or Modbus address can be set in the RS-485 menu. By default, 115,200 baud, 8 data bits, no par

Network (LAN/WIFI)

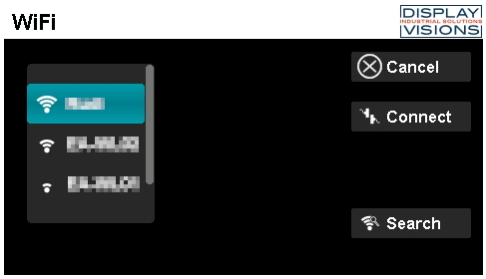


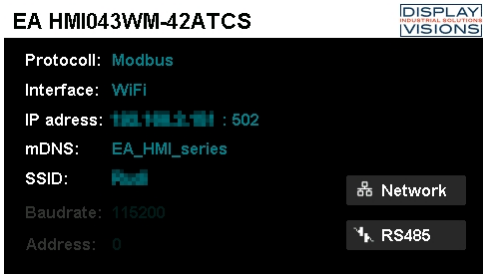




In the network settings, you can select whether DHCP is on or off. The port can also be configured.

WIFI





If WiFi is selected as interface, all available networks are scanned and listed at the beginning. The WIFI password is then entere

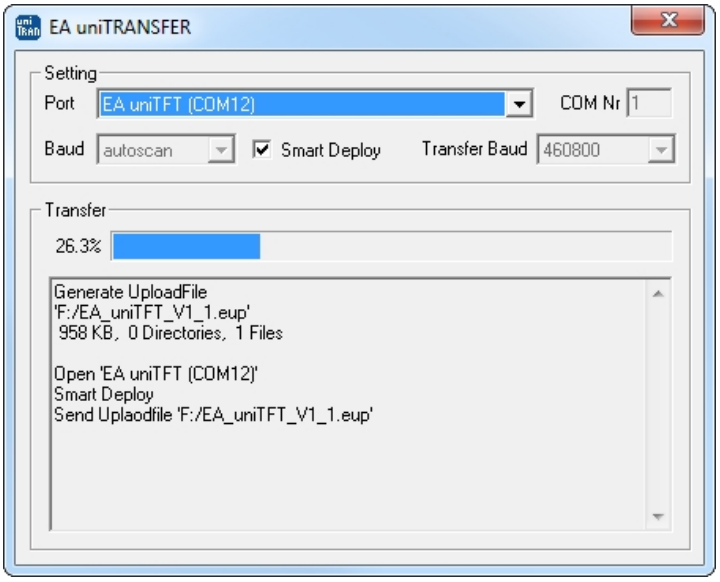
FIRMWARE OR PROJECT UPDATE

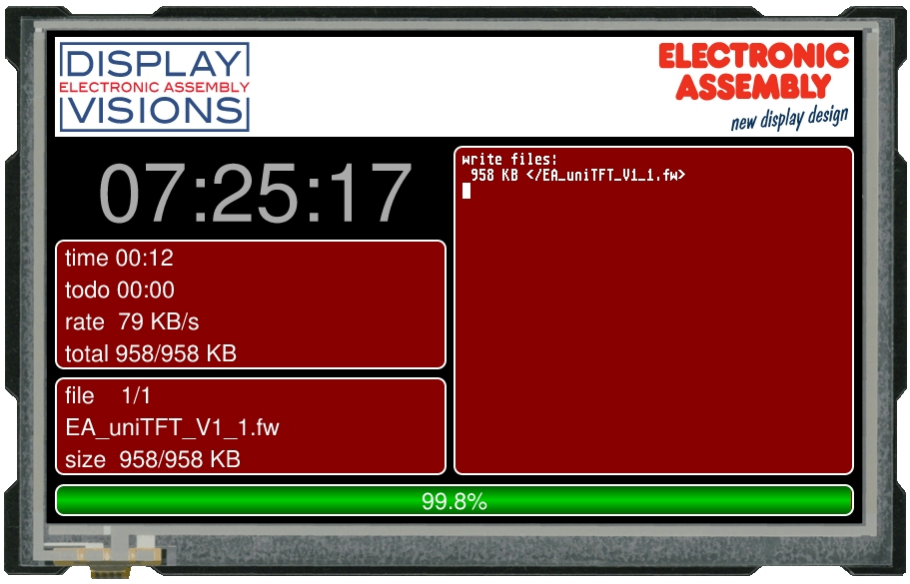
To use the latest features of the EA HMI series, it might be necessary to update the internal firmware of the module. On the other hand it might be necessary to update the HMIDesigner project in the field.

Firmware and project-update via serial interface and Windows PC:

It doesn't matter if the module is connected via modbus or short / small protocol. The tool uniTransfer is able to use both:

- Save the firmware file (e.g. EA_uniTFTs_V1_1.fw) to your local drive. The HMIDesigner project file (e.g. MyFirstProject.eup) can be found in the root directory of your project path.
- Connect the EA HMI series module with your PC
- Start uniTRANSFER.exe (found in the Simulator_and_Tools folder of the HMIDesigner installation) and select the correct interface to the EA HMI series.
- Drag'n'Drop the firmware or the project file to the EA uniTRANSFER window.





- After transferring the data, a manually reset needs to be performed, then the firmware will be loaded automatically

after restart. **Attention: Please do not switch off the module while updating.**

Firmware or project update via serial/network interface (Small/Short Protocol)

The firmware file also can be transferred to EA HMI series with any system. To do this, transfer the contents of the *.fw / *.eup file 1:1 (with protocol in packets) to the module. The transfer progress will become visible on the display module. After successful transfer, a data check will be done automatically. If the data is correct, the update starts automatically. **Attention: Please do not switch off the module while updating.**

Firmware or project update via serial/network interface (Modbus)

To update the firmware or project via Modbus with any system, the usage of user-defined function codes is mandatory. To do this, transfer the contents of the *.fw / *.eup file 1:1 to the module. The content must be divided into multiple Modbus packets and send as user-defined function. The transfer progress will become visible on the display module. After successful transfer, a data check will be done automatically. If the data is correct, the update starts automatically. **Attention: Please do not switch off the module while updating.**

Filetypes

To use image, font or sound files, they must be converted. This is done automatically by using the HMIdesigner software by including the files there.
The display works with the following file types:

File type / Extension	Description
*.evg	vectorized picture
*.epa	animated picture
*.epg	bitmap picture
*.esd	sound file
*.evf	vektorized font
*.epf	bitmap font
*.epi	bitmap gauge
*.emc	macro
*.txt	string file
*.efl	simulation of internally FLASH

Other file formats can be stored in the internal memory, but cannot be used.

Limitations

Here you will find the maximum number of each:

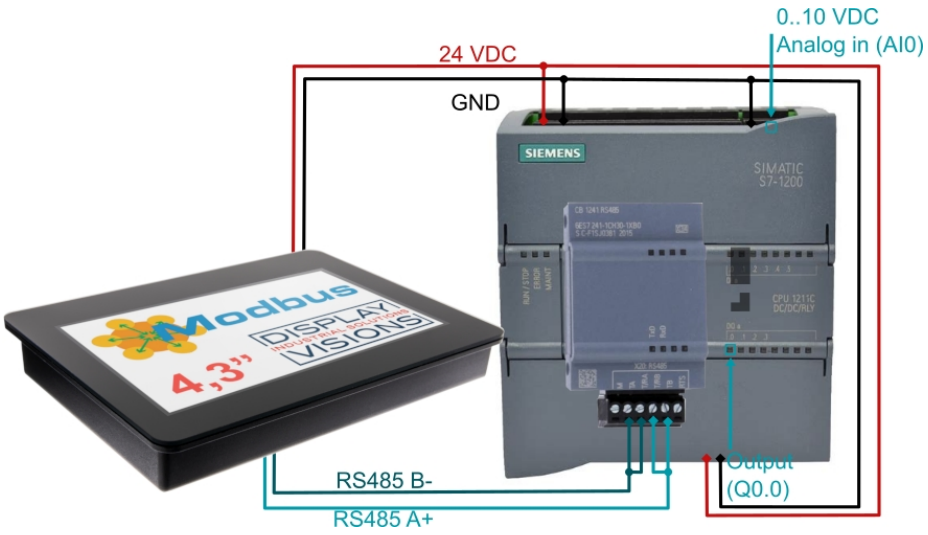
Objects	32,768
ColorRamps	100
Drawstyles	100
Dash Pattern	-
Array	200
Register	200
Stringregister	200
String length	200
Stringconstant files simultanously	8
Stringconstant definitions	1,000
StringBox lines	500
StringBox character	32,768
Process macros	10
Macro marker	100
Menü Items	200
Count of edges (star, n-edge)	40
Filename length incl. path	255

In addition, the internal memory (RAM and FLASH) might already limit beforehand.

Application Examples

For some plc like Siemens S7, Logo! and Beckhoff CX7080 we provide application examples.

Please find more at our website.



Helpfile

Date	Version	Info
2024-03-26	0.9	First release
2024-06-13	1.0	adding dimension EA HMI070