TFT/PB101PU-xxxx

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0.1	15.04.2019	D. Lagler	Preliminary version
0.2	26.04.2019	D. Lagler	Replaced graphics in chapter 3.2.4
0.3	08.08.2019	D. Lagler	Changed Pinout RS232

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1 Introduction

1.1 General Remarks

The content and presentation of this document has been carefully checked. No responsibility is accepted for any errors or omissions in the documentation.
Note that the documentation for the products is constantly revised and improved. The right to change this documentation at any time without notice is therefore reserved.
Syslogic is grateful for any help referring to errors or for suggestions for improvements.

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1.2 Explanation of Symbols

1.2.1 Danger warnings

The following information is for your personal safety and the prevention of damage to the product described or connected devices.
Safety instructions and warnings for the prevention of danger to the life and health of users or service personnel and for the prevention of damage are highlighted in this document by the pictograms specified below. *Warning* and *Information* pictograms are shown in this document.

1.2.2 Warnings indicate the following:

Death, serious injury or substantial material damage may occur if the related safety measures are not implemented.
The individual *Warning* pictograms have the following meaning:

Attention! General!
Is an instruction that must be observed in order to ensure protection before, while and after using the device. The correct procedure must be observed.

Attention! Electric shock!
Persons may be exposed to dangerous voltages in electrical installations.
There is a danger of electric shock if a live part is touched.

Attention! Observe ESD measures!
Electrostatic discharge may destroy electronic components.

Attention! Hot surfaces
Keep clear of surfaces. They may be hot.

1.2.3 Information pictograms indicate the following:

Important information about the product or the relevant section of the document requiring the particular attention of the reader is marked as followed:

Indicates important and instructional information.

1.3 Copyright note

1.4 Contents of this Documentation

This document addresses to system integrators, programmers and instructed installation and maintenance personal working with the PROTOUCH-WIDE MONITOR system. It provides all information needed to configure setup and program the product.

1.5 Additional Products and Documents

1.5.1 Hardware Products

The following hardware products are mandatory together with this documentation:

PSU/DT24V60W-3A - 24V Desktop Power Supply 60W - 3 pole
or an equivalent CE-compliant AC/DC power supply

1.5.2 Software Products

1.5.3 Documents

1.6 Items delivered

1.1.1. Built-in version

- 1x TFT/PB101PU-xxxx
- 1x Fixing Frame with M3x6 and M3x8 securing screws
- 1x Power supply connector Weidmüller BCZ 3.81/03/180F SN SW (1792960000)

1.1.2. To be purchased separately

- CE-compliant power supply
  e.g. PSU/DT24V60W-3A - 24V Desktop Power Supply 60W - 3 pole

1.7 Installation

The installation of the system is described in chapter 3 of this documentation.

1.8 Safety Recommendations and Warnings

The products are intended for measurement, control and communications applications in industrial environments. The products must be assembled and installed by specially trained people. The strict observation of the assembly and installation guidelines is mandatory.
The use of the products in systems in which the life or health of persons is directly dependent (e.g. life support systems, patient monitoring systems, etc.) is not allowed.
The use of the products in potentially explosive atmospheres requires additional external protection circuitry which is not provided with the products.
In case of uncertainty or of believed errors in the documentation please immediately contact the manufacturer (address see chapter 7.1). Do not use or install the products if you are in doubt. In any case of misuse of the products, the user is solely liable for the consequences.

1.8.1 General warnings

Important note
Ensure that the power supply is disconnected from the device before working on the device (connecting interfaces, replacing flash cards, batteries, opening the enclosure, etc.).

Important note
The output voltage of the external power supply shall be SELV and shall be limited power source according to clause 2.5 EN 60950-1.
Please read the safety instructions of the power supply before installing/connecting the device.

1.8.2 EMC

Important note
This is a Class A product and not intended to be used in domestic environment. The product may cause electromagnetic interference. Appropriate measures must be taken.

Important note
To fullfill class A of EN55032 and EN55024 a CE-compliant AC/DC power supply must be used. Cable length between power supply and device is limited to 3m.

1.8.3 Electro Static Discharge

Electronic boards are sensitive to Electro-Static Discharge (ESD). Please ensure that the product is handled with care and only in an ESD protected environment. Otherwise a proper operation is not guaranteed.

1.8.4 Battery

Changing batteries

Danger of explosion if the battery is not correctly replaced. Replace only with the same or equivalent type recommended by the manufacturer.

Dispose of used batteries according to the manufacturer's instructions.

Maintenance of battery

Empty batteries may leak.

Never short the battery.

1.8.5 Hot surface

Attention! Hot surfaces
Make sure the device is not hot before mounting or changing the installation. The device may be hot and may cause burs.

1.9 Life Cycle Information

1.9.1 Transportation and Storage

During transportation and storage, the products must be in their original packing. It is recommended, to keep the original packing in case of return of the product to the factory for repair. Note that the packing is recyclable.

1.9.2 Assembly and Installation

Observe the EMI-precautions against static discharge. Carefully read the installation documentation before unpacking the product.
The installation procedures must be strictly observed. Note that deviations from the installation guidelines may result in degraded operational reliability or in unfavourable EM-radiation or EM-susceptibility.

1.9.3 Operation

The operating environment must guarantee the environmental parameters (temperature, power supply, etc.) specified in the technical specification section of this document.
The main functionality of the product is defined by the application program. The application program is not part of the delivery by Syslogic but is defined, developed and tested by the customer or a system-integrator for each specific application. Refer to the respective documentation for more information.

1.9.4 Maintenance and Repair

In the rare case of a product hardware-failure or malfunction, the complete product should be exchanged. The faulty product must be returned to the factory for repair. Please use whenever possible the original packing for return of the product (EMI and mechanical protection).

1.9.5 Disposal

At the end of the lifespan the PROTOUCH-WIDE MONITOR products must be properly disposed. PROTOUCH-WIDE MONITOR products contain a multitude of elements and must be disposed like computer parts. The PROTOUCH-WIDE MONITOR products contain batteries which should be properly disposed.

1.9.6 RoHS

The products of the PROTOUCH-WIDE MONITOR family are designed and produced according to the Restriction of Hazardous Substances (RoHS) Directive (2011/65/EU).

1.9.7 WEEE

The products of the PROTOUCH-WIDE MONITOR family are not designed ready for operation for the end-user and are not intended for consumer applications. According to Waste Electrical and Electronic Equipment (WEEE) Directive (2002/96/EC) Syslogic takes back defective devices for proper disposal at the point of sale.

2 Product Description

2.1 Introduction

2.1.1 Benefits of Syslogic`s Projected capacitive touch panels

The product meets all the requirements of state-of-the-art advanced touch monitor
The TFT technology makes a wide range of applications possible with a perfect and clear picture on an absolutely flat surface.
A metal housing with a solid front frame and scratch resistant glass protects the device
A robust touch screen technology is used.
The product is an information display and input device providing a front protection of IP65.
The absolutely flat PCT (Projected capacitive Touch) touch panel offers the latest Multi-Touch technology. PCT Touch Screen can be used with fingers or with special capacitive touch or thin latex gloves. The touchscreen is self-calibrating.
The device is reliably during long periods of use and requires little care and maintenance.
The product is available for long term.

2.1.2 Intended use of Projected Capacitive Touch Panels

The Projected Capacitive Touch Panel is designed for:
– Visualization and process control
– General control and automation tasks
– Industrial use
– For multi-media systems
– Operation in the ambient conditions specified in the technical data

This device description is designed as a reference guide for the installation, connection, operation and maintenance of all versions of the Projected Capacitive Panel, and also provides all the relevant technical data.

2.2 Device Variants

The Projected capacitive touch panels are available in the following versions:

Order code	Flat screen	Mounting type	Connections
TFT/PB101PU-N001E	10.1" WXGA	Flush mounting	Displayport, DVI, VGA, USB
TFT/PV101PU-N001E	10.1" WXGA	Vesa mounting	Displayport, DVI, VGA, USB

Tab. 1 Projected capacitive touch panel versions

2.3 Accessories

The following accessories are not necessarily supplied with the device. These parts could be ordered additionally or downloaded under www.syslogic.com:

Accessories		
Order code	**Type designation**	**Description**
TouchDriver	Touch driver software	Built-in touch driver software for Windows / Linux / Android
PSU/DT24V60W-3A	Power supply	24V Desktop Power Supply 60W - 3 pole

Tab. 2 Projected capacitive touch panel accessories

2.4 Features

2.4.1 TFT/PB101PU-N001E

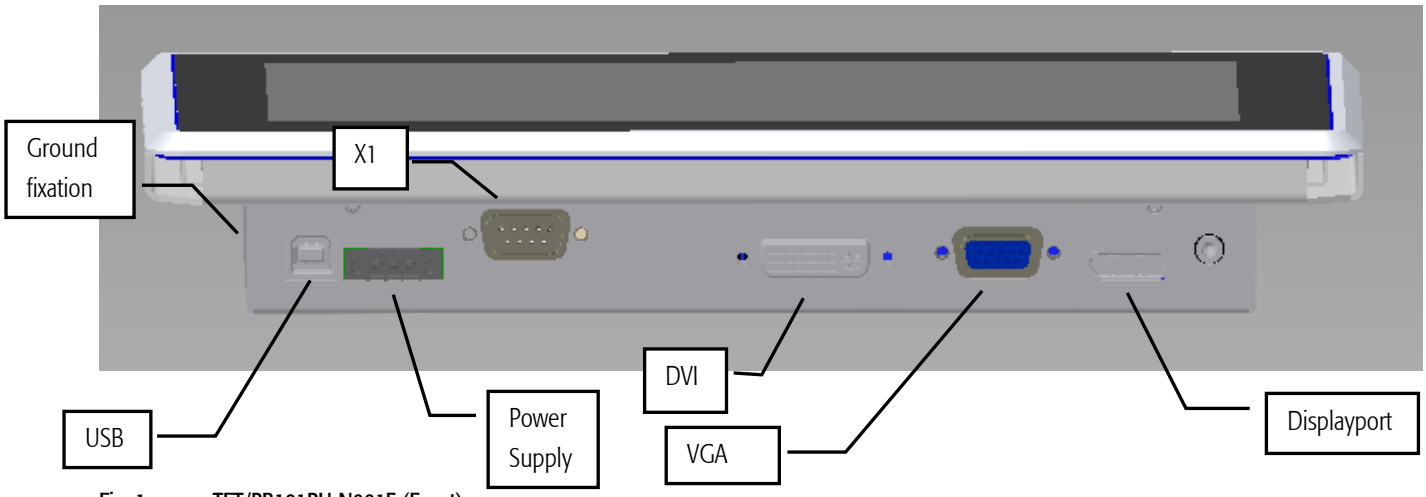


Fig. 1 TFT/PB101PU-N001E (Front)

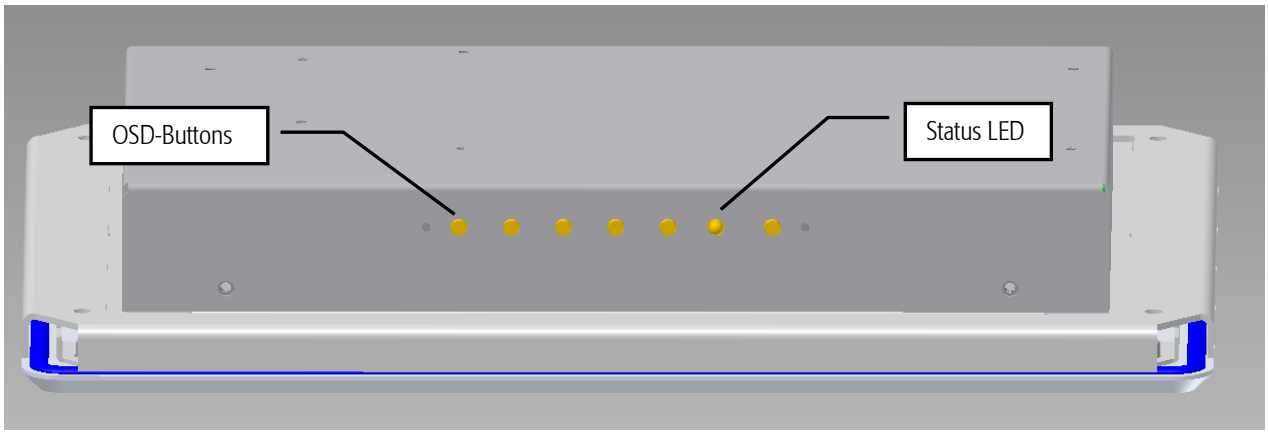


Fig. 2 TFT/PB101PU-N001E (Back)

2.4.2 Power supply

The A/D board and its peripherals are powered by a non-isolated, integrated power supply which generates all the necessary voltages.

Device Connection

Weidmueller BCZ 3.81/03/180F SN BK (Ordercode 1792960000)

Power Supply requirements:

- The power supply used must fulfil CE and safety normative according to the application.
- Always use a short circuit protected power supply.
- Do not use power supplies wires or cables longer than 3m.

Pin	Signal	Marking	Remarks
1	NC		
2	+24VDC	VDC	
3	GND	GND	GND (/shield)

Tab. 3 Power supply connector (1x3 pin)

2.4.3 VGA

Input socket for VGA signals

Device Connection

The VGA interface uses the standard VGA connector Mini DSUB 15pin

Pin Number	Symbol	Signal
1	RED	Analog Red
2	GREEN	Analog Green
3	BLUE	Analog Blue
4	GND	No connection
5	GND	Digital GND
6	RGND	Red Return
7	GGND	Green Return
8	BGND	Blue Return
9	NC	+5V DC
10	SGND	Sync GND
11	NC	No connection
12	SDA	DDC Serial Data
13	HSYNC	Horizontal Sync
14	VSYNC	Vertical Sync
15	SCL	DDC Data Clock

Important Note

Maximum cable length allowed for display connection is 3 m. If longer cables are used, special overvoltage and filtering elements must be installed to comply with the requirements of EMI/RFI *CE*-certification. Only use high quality industrial devices with sufficient EMI compatibility.

2.4.4 DVI

Input socket for DVI-D signals

Device Connection

The DVI-D interface uses the standard DVI-D connector

Pin Number	Signal	Pin Number	Signal
1	TMDS 2-	2	TMDS 2+
3	TMDS 2/4 SHIELD	4	TMDS 4-
5	TMDS 4+	6	DDC Clock
7	DDC Data	8	NC
9	TMDS 1-	10	TMDS 1+
11	TMDS 1/4 SHIELD	12	TMDS 3-
13	TMDS 3+	14	+5V
15	GND for 5V	16	Hot Plug Detect
17	TMDS 0-	18	TMDS 0+
19	TMDS 0/5 SHIELD	20	TMDS 5-
21	TMDS 5+	22	TMDS Clk SHIELD
23	TMDS Clk+	24	TMDS Clk-

Important Note

Maximum cable length allowed for display connection is 3 m. If longer cables are used, special overvoltage and filtering elements must be installed to comply with the requirements of EMI/RFI *CE*-certification. Only use high quality industrial devices with sufficient EMI compatibility.

2.4.5 DisplayPort

Input socket for displayport signals

Device Connection

The DisplayPort interface uses the standard displayport connector

Pin Number	Signal	Pin Number	Signal
1	LANE 3-	2	GND
3	LANE3+	4	LANE 2-
5	GND	6	LANE 2+
7	LANE 1-	8	GND
9	LANE 1+	10	LANE 0-
11	GND	12	LANE 0+
13	GND	14	C.E.C.
15	AUX CH+	16	GND
17	AUX CH-	18	Hot Plug Detect
19	Return for Power	20	DP Power

Important Note

Maximum cable length allowed for display connection is 3 m. If longer cables are used, special overvoltage and filtering elements must be installed to comply with the requirements of EMI/RFI *CE*-certification. Only use high quality industrial devices with sufficient EMI compatibility.

2.4.6 USB Interface

The PROTOUCH-WIDE MONITOR is equipped with an USB port to connect the touchpanel to the PC

Device Connection

The USB interface uses a standard B type USB connector

Important Note

Maximum cable length allowed for USB connection is 2.7 m. If longer cables are used, special overvoltage and filtering elements must be installed to comply with the requirements of EMI/RFI *CE*-certification. Only use high quality industrial USB devices with sufficient EMI compatibility.
Use shielded cables for maximum EMI protection.
Drawing excessively power might disturb operation.

2.4.7 Status LED

The two coloured LEDs shows the following states:

LED	Status
Green	Input signal OK
Red	No input signal detected

Tab. 4 Status LEDs

2.4.8 On Screen Display OSD (only on selected products)

Several display settings can be adjusted using the buttons of the OSD keyboard. The hot key function is used to access the described menu item without having to navigate through the entire menu.

Key	Description	Hot Key Description
Menu	Open OSD menu	Menu popup / menu exit
Down	Down	Auto adjust for VGA
DEC	Enter sub-menu, decrease key or left key	
INC	Enter sub-menu, increase key or right key	
Source	Open Source select menu	
PWR	Power on/off	

Tab. 5 OSD key description

Menu tree

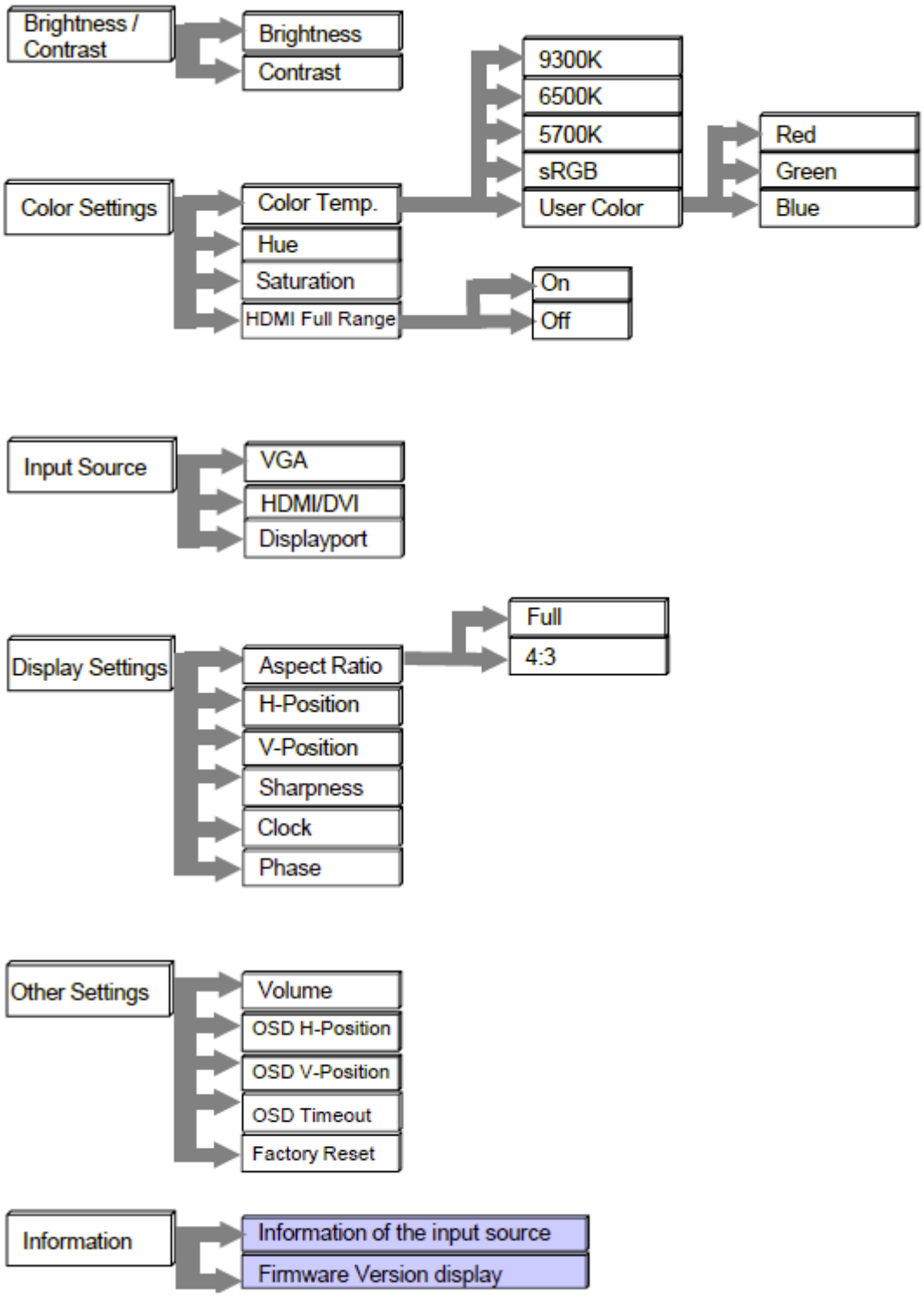


Fig. 3 OSD menu tree

2.4.9 X1 (only on selected products)

X1 offers the possibility to control the monitor remotely by RS232 protocol
The signals are on 5V-TTL level therefore a level converter is needed to connect to a standard RS232 port. The 5VDC on Pin 9 can be used to supply such a converter with the necessary voltage.

Device Connection

The Serial Port X1 is available on DSUB-9

Pin Number	RS232
1	NC
2	RXD
3	TXD
4	NC
5	GND
6	NC
7	NC
8	NC
9	+5VDC

Tab. 6 Serial Port X1

Important Note

Maximum cable length allowed for X1 connection is 2.8 m. If longer cables are used, special overvoltage and filtering elements must be installed to comply with the requirements of EMI/RFI *CE*-certification. Only use high quality industrial devices with sufficient EMI compatibility.

Communication protocol

Command length: 5 bytes
Check sum: 0xFF
Byte definition: AA BB CC DD EE, with
AA: Start string of commands
BB: String of command function
CC: String of set or get value
DD: Blank string, normally 00
EE: added string to meet check sum
Baud rate: 9600

Function	Command	Description
Menu	BF 06 00 00 3A	Menu popup
Down	BF 09 00 00 37	Auto adjust hot key
Up	BF 04 00 00 3C	Brightness hot key
Decrease	BF 05 00 00 3B	Contrast hot key
Increase	BF 07 00 00 39	
Source	BF 08 00 00 38	Source select key
Power	BF 00 00 00 40	Power key
Source change VGA	BF 0A 00 00 36	
Source change DVI	BF 0B 00 00 35	
Source change Displayport	BF 0C 00 00 34	
Get brightness	BF 01 00 00 3F	
Increase brightness	BF 2D 00 00 13	
Decrease brightness	BF 03 00 00 3D	
Get contrast	BF 0F 00 00 31	
Increase contrast	BF 2E 00 00 12	
Decrease contrast	BF 11 00 00 2F	
Power off	BF 31 00 00 0F	
Power on	BF 32 00 00 0E	
Backlight off	BF 33 00 00 0D	
Backlight on	BF 34 00 00 0C	
Get backlight status	BF 35 00 00 0B	
Place factory reset	BF 30 00 00 10	
Get input source status	BF 1E 00 00 22	
Get power status	BF 1F 00 00 21	
Get PC red colour value	BF 13 00 00 2D	
Get PC green colour value	BF 14 00 00 2C	
Get PC blue colour value	BF 15 00 00 2B	
Set PC colour temp (increase)	BF 16 00 00 2A	cool – normal – warm – sRGB - user
Set PC colour temp (decrease)	BF 17 00 00 29	user – sRGB – warm – normal – cool
Increase PC red colour value	BF 18 00 00 28	
Decrease PC red colour value	BF 19 00 00 27	
Increase PC green colour value	BF 1A 00 00 26	
Decrease PC green colour value	BF 1B 00 00 25	
Increase PC blue colour value	BF 1C 00 00 24	
Decrease PC blue colour value	BF 1D 00 00 23	
Set brightness value	BF 02 1E 00 20	Brightness 30
	BF 02 38 00 06	Brightness 56
	BF 02 5D 00 E1	Brightness 93
Set contrast value	BF 10 00 00 30	Contrast 30
	BF 10 23 00 0D	Contrast 35
	BF 10 5° 00 D6	Contrast 90

Tab. 7 RS232 communication protocol

2.4.10 Internal connectors

Fuse

The main fuse protects the system against destruction in case of high energy distortions on the power line. For replacement, the system must be opened in an ESD protected environment. Only an entitled instructed person is allowed for this operation. Replacement fuse type is Littelfuse 452004.MRL (4A slow-blow).

2.5 Display timings

The PROTOUCH-WIDE MONITOR supports several established and standard timings. Nevertheless, for optimal performance it is best to set the output from the PC to the native resolution of the device.

Resolution	Refresh rate	VGA	DVI-D	DP	Px101PU
720x400	70Hz	X	X	X	
640x480	60Hz	X	X	X	
640x480	67Hz	X	X	X	
640x480	72Hz	X	X	X	
640x480	75Hz	X	X	X	
800x600	56Hz	X	X	X	
800x600	60Hz	X	X	X	
800x600	72Hz	X	X	X	
800x600	75Hz	X	X	X	
832x624	75Hz	X	X	X	
1024x768	60Hz	X	X	X	
1024x768	70Hz	X	X	X	
1024x768	75Hz	X	X	X	
1280x800	60Hz	X	X	X	X
1280x1024	75Hz			X	
1280x720	60Hz			X	
1600x1200	60Hz			X	

2.6 Touch Screen

The devices use an Ilitek Ili2511 chipset.

2.6.1 Basic functions of the touch screen

The touch screen operates using the PCT (Projected Capacitive Touch) technology.
Therefore, the touch must be manipulated using fingers, thin latex or special gloves or pens/styluses that are made for use with capacitive touch panels.
Depending on the driver version and Operating System the PCT touch supports Multi-touch up to 5 points. Which means you can operate the touch screen with more than one finger for drawing or selecting.

2.7 Maintenance

To replace the fuse it is required to open the device.

Shutdown the system and disconnect from power supply and all other connections

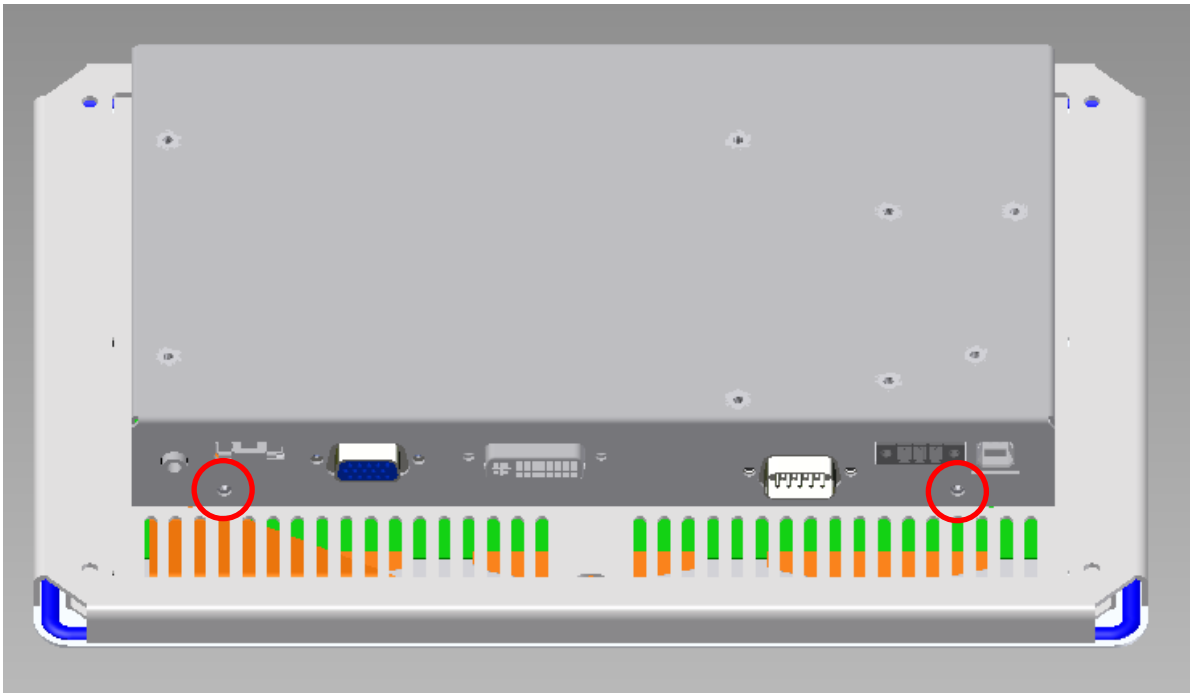
Make sure the device has cooled down to room temperature

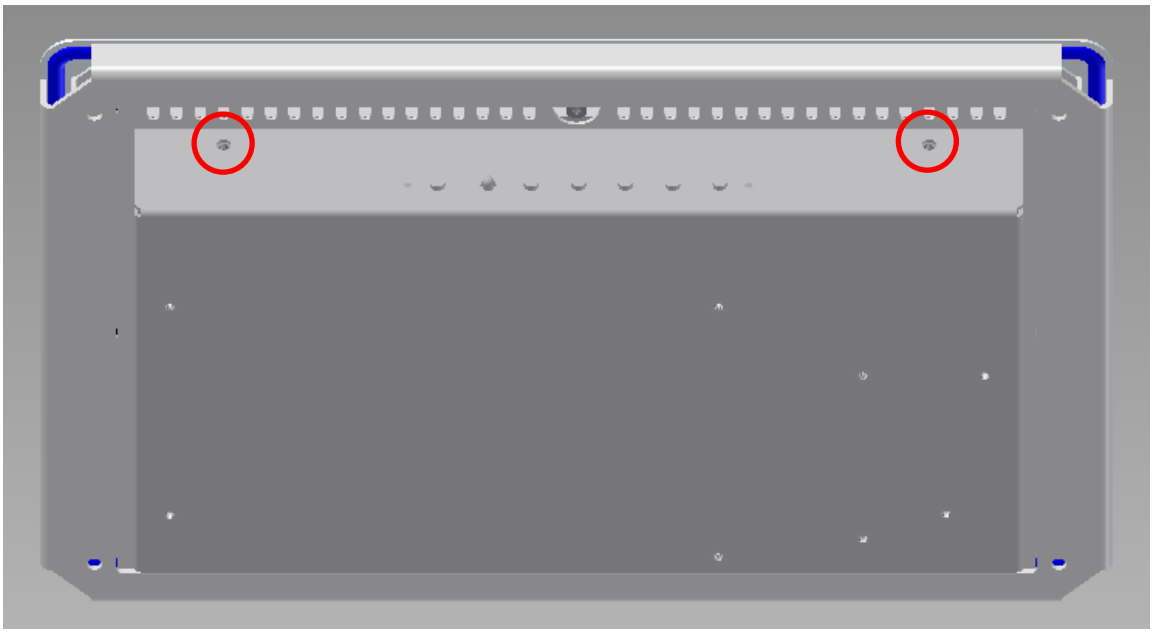
Only open the device in an ESD protected area

2.7.1 Opening the device

1. Loosen the four screws fixing the housing

   Tool: Torx screwdriver T10





2. Carefully remove the PC box

> **Important Note**
> Be careful not to tear the cables for display and touch

3. Detach the cables to the display and touch

2.7.2 Re-assemble the device

To re-assemble the device, follow 2.7.1 in reverse order

2.7.3 Replace fuse

1. Locate the fuse right behind the power connector
2. Extract with tweezers and replace with same type (Littelfuse 452004.MRL)

2.7.4 Cleaning the glass front

For cleaning the glass front please use a soft cloth and a standard glass cleaning detergent.

When cleaning during operation it may happen that input signals are generated.

Prevent the system from unwanted and dangerous actions while the front is being cleaned.

Make sure the device has cooled down to room temperature

2.7.5 Cleaning the metal housing

For cleaning the metal housing please use a soft cloth and a metal polish.

Do not use a coarse scouring cloth, scouring powder or solvent.

Cleaning should only be carried out when the device is switched off!

Make sure the device has cooled down to room temperature

2.7.6 Spare parts

Designation	Type	Order number
Power supply	24V Desktop Power Supply 60W - 3 pole	PSU/DT24V60W-3A
Fuse	4A slow-blow	Littelfuse 452004.MRL

3 Installation Description

3.1 Mounting

3.1.1 TFT/PB101PU-N001E

Mounting the device requires the following steps:

1. The desired mounting place must have a cut out and wall thickness regarding the following overview.

	Front cut out dimensions		Edge radius	Wall thickness
Device #	W [mm]	H [mm]	R [mm]	D [mm]
TFT/PB101PU-N001E	259 $^{-0/+1}$	178 $^{-0/+1}$	max. 3	1 to 5

Tab. 8 TFT/HB101PU81xxx-C001S Mounting dimensions

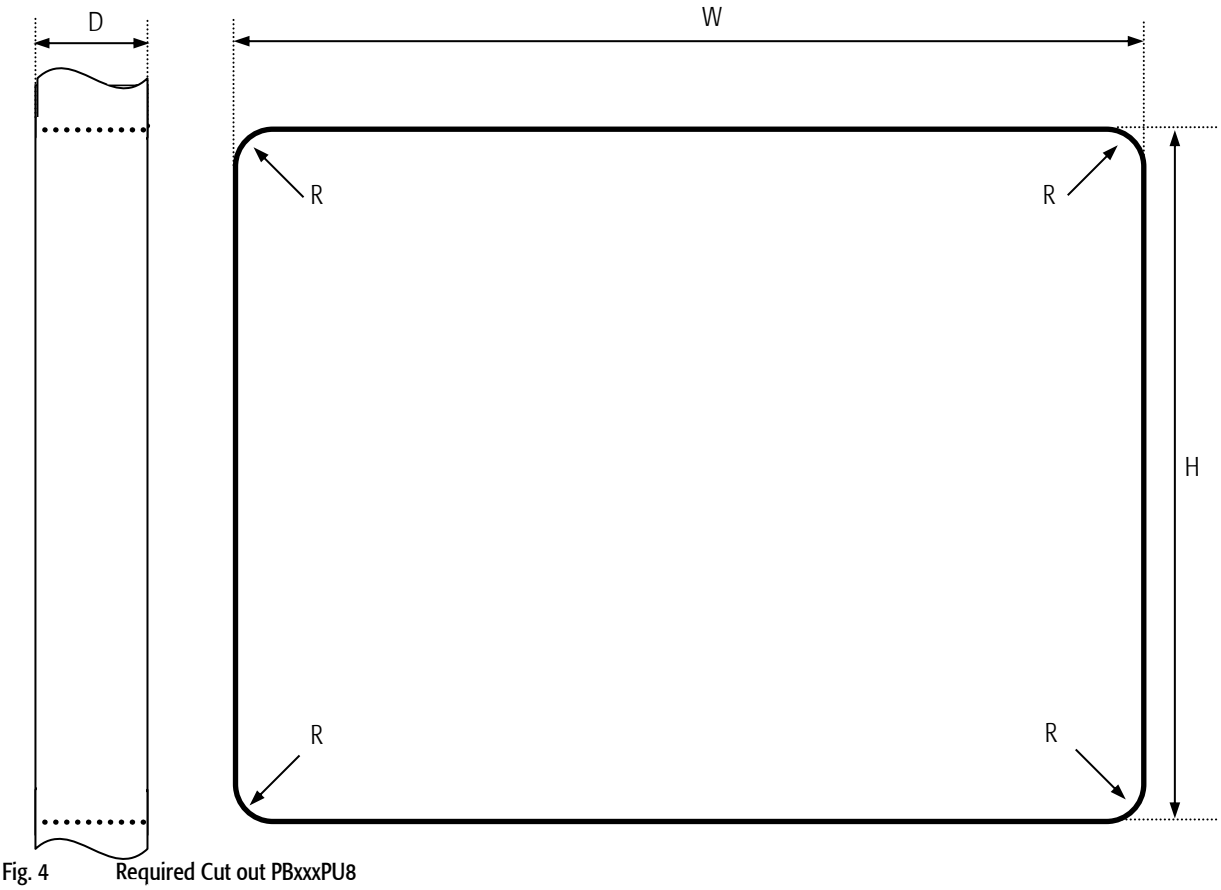


Fig. 4 Required Cut out PBxxxPU8

Mounting Angle:
Mounting Angle must be 90°
Cooling Space:
To ensure cooling leave at least 10cm of free space around product.

2. Remove the screws highlighted in red and then remove the mounting frame.

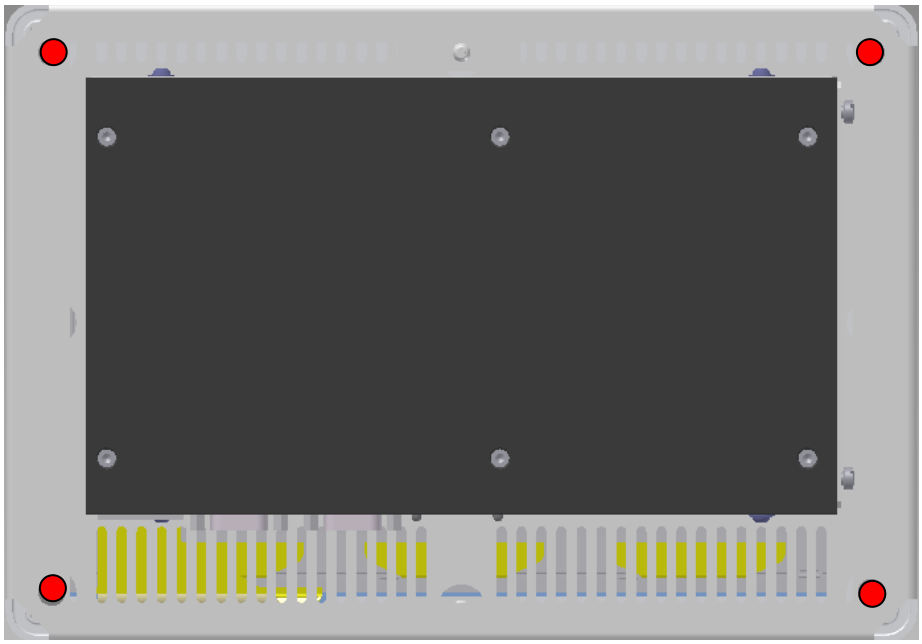


Fig. 5 Screws to hold the mounting Frame

3. Insert the projected capacitive touch panel from the front into the cut out and make sure that the sealing fits properly.
4. Reattach the mounting frame and fix it into place by reattaching the screws highlighted in red. Required torque: 1.3Nm
5. The product is now installed properly.

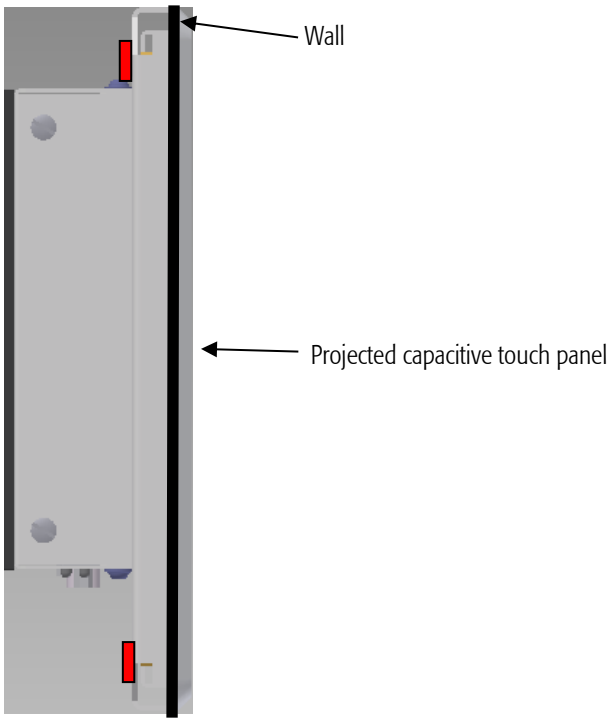


Fig. 6 Fully installed PROTOUCH-WIDE MONITOR

3.2 Installation and cabling

3.2.1 Introduction

Installation and cabling of the PROTOUCH-WIDE MONITOR system has to be done with great care; the correct cabling is essential for high operational reliability and the correct grounding is necessary for protection and EMC. To meet the requirements of *CE*-certification all cables must be shielded. The enclosure must be connected to ground via the designated fastener (see 4.3 for details).

Important Note

To meet the requirements of EMI/RFI *CE*-certification, correct mounting, installation and cabling of the PROTOUCH-WIDE MONITOR system according to these guidelines is absolutely necessary.

3.2.2 Powering the PROTOUCH-WIDE MONITOR System

The *logic supply voltage*, i.e. the power driving the electronic circuits (motherboard and extensions) is internally generated from the 12/24VDC power supply input. Remember that the power supply is non-isolated. The power supply has to be connected according to paragraph 2.4.2 . Maximum allowed cable length between AC/DC power supply and system power input is 3m. If the cable is longer than 3m or routed outside the building, special overvoltage and filtering elements have to be installed to comply with the requirements of EMI/RFI *CE*-certification. When selecting the external power supply, the maximum power dissipation of the system has to be considered.

The PROTOUCH-WIDE MONITOR system must only be operated indoors and must be connected to an indoor power supply. Maximum cable length allowed for power supply connection is 3m. If longer cables are used, special overvoltage and filtering elements must be installed to comply with the requirements of EMI/RFI *CE*-certification.

Please make sure that the input voltage does not exceed the recommended operating range otherwise the electronics board could get damaged and correct operation cannot be guaranteed.
Use an overload protected power supply to prevent damage in case of a short inside the system.
The AC/DC power supply must fulfil the requirements for EMI/RFI *CE*-certification.

3.2.3 Cabling the interfaces

Use appropriate cabling for all interfaces. Shielded cabling is required to meet the EMI/EMC limits.

3.2.4 Grounding

The system can be grounded using the designated grounding fastener with appropriate cable end sleeve.
In some cases, it is recommended to connect the shields of the cables to chassis potential at the entry point into the housing cabinet as shown in Fig. 7. If the cables enter a hermetically closed cabinet, use special 360-degree metal clamps (EMI/RFI protected types which contact to the cable shield).

Important Note

Grounding of the cable's shields using *pig-tail wires* are not recommended because of their high impedance at high frequencies. It is better to clamp the shields onto a grounded copper rail.

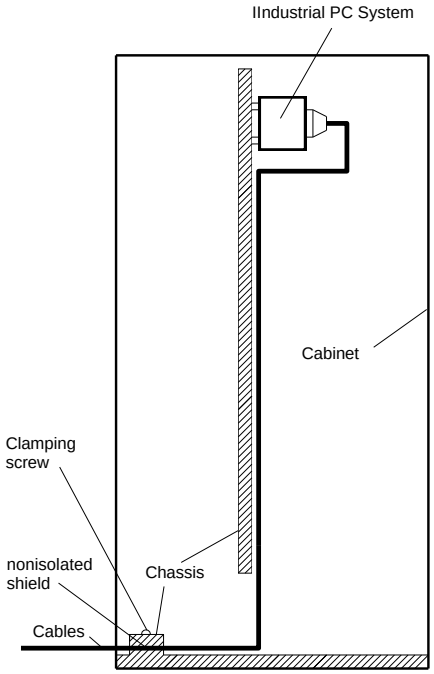


Fig. 7 Additional grounding of the cable shields at the entry point of a cabinet

3.2.5 Cabling of communication links

If the communication ports are non-isolated ports, cable shields have to be connected to chassis potential on both sides of the interconnection cable. If the cable is very long, a thick copper wire (10 mm²) for potential adjustment is highly recommended. Fig. 9 shows a non-isolated system with common chassis ground.
Some of the communication ports are galvanically isolated ports. In such cases the shield of the interconnection cable must be wired to chassis potential only on one side of the cable.

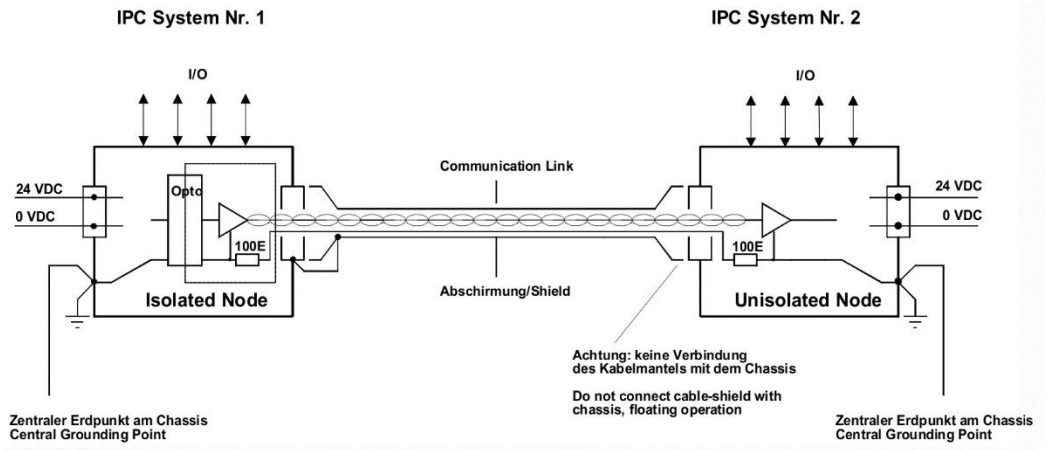


Fig. 8 shows an isolated system with independent grounds.

Important Note

Grounding of the cable's shields using *pig-tail wires* are not recommended because of their high impedance at high frequencies. It is better to clamp the shields onto a grounded copper rail.

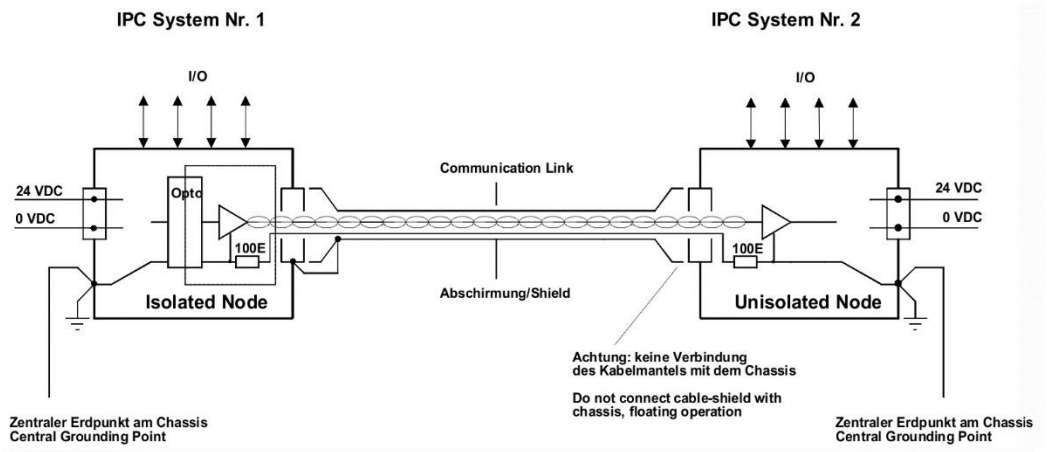


Fig. 8 Isolated communication link

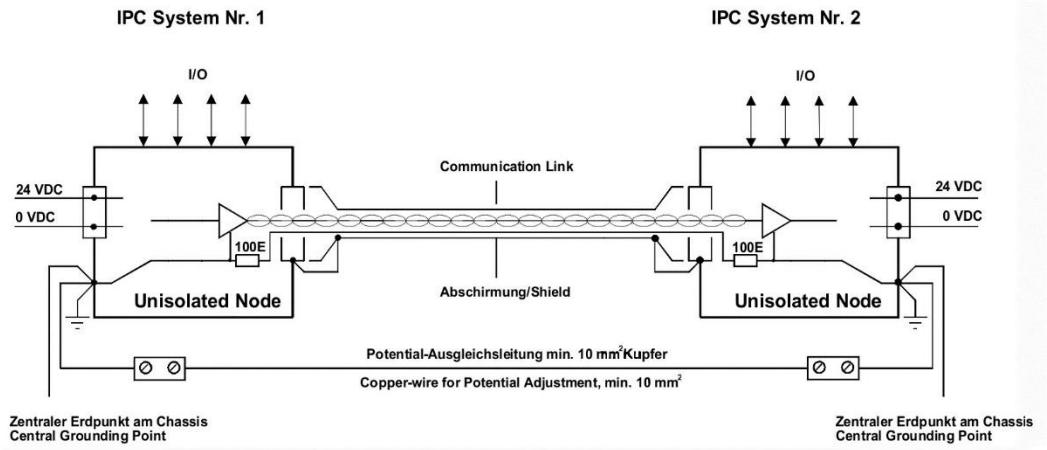


Fig. 9 Non-isolated communication link with common chassis potential

4 Technical Data

4.1 General Electrical Data

Important Note

Do not operate the PROTOUCH-WIDE MONITOR outside of the recommended operating conditions. Otherwise lifetime and performance will degrade. Operating the board and the display outside of the absolute maximum ratings may damage the hardware.

Absolute Maximum Ratings

Parameter	Symbol	min	nom	max	Unit
supply voltage	Vdc	10	12/24	36	VDC
storage temperature range	Tst	-20	25	70	°C
operating temperature range	Ta	-20		55[1]	°C
operating humidity (not condensing)	Rh	10		90	%

Tab. 9 General Absolute Maximum Ratings

Recommended Operating Conditions

Parameter	Symbol	min	nom	max	
supply voltage	VDC	12	12/24	24	VDC
operating temperature range	Ta	0	25	40	°C

Tab. 10 General Recommended Operating Conditions

Maximum cable length

Interface	Maximum Length	Comment
Power[2]	<3m	CE conformal AC/DC power supply must be used
VGA[2]	<3m	
DVI[2]	<3m	
Displayport[2]	<3m	
X1[2]	<2.7m	
USB[2]	<2.7m	

Tab. 11 Maximum cable length

[1] Depending on installation environment and specific use case; see 4.4

[2] Do not connect to lines directly leaving a building without additional safety measures

Electrical Characteristics

(over recommended operating range, unless otherwise noted)

Parameter	Symbol	min	typ	max	Unit
general parameters					
Power Consumption TFT/PB101PU-N001E, Brightness 100%	Ptot	7.5	10	15	W
Power Consumption TFT/ PB101PU-N001E, Brightness 70%	Ptot	5	7	10.5	W
Power Consumption TFT/ PB101PU-N001E, Brightness 30%	Ptot	2	3	5	W

Tab. 12 General Electrical Characteristics

Switching Characteristics (nominal conditions)

Parameter	Symbol	min	nom	max	
video sample rate	f_S			80	MHz
horizontal sync. frequency	f_{HS}	30		60	kHz
vertical sync. frequency	f_{VS}	56		75	Hz
LCD inverter brightness PWM base clock	fpwm		200		Hz

Tab. 13 General Switching Characteristics

4.2 EMI / EMC Specification

The PROTOUCH-WIDE MONITOR system fulfils the following standards:

Emission: EN55032 Class A

Immunity: EN55035 Class A

Important note

This is a Class A product and not intended to be used in domestic environment. The product may cause electromagnetic interference. Appropriate measures must be taken.

Important note

To fullfill class A of EN55032 and EN55024 a CE-conformal AC/DC power supply must be used. Cable length between power supply and device is limited to 3m.

4.3 Mechanical Data

4.3.1 TFT/HB101PU

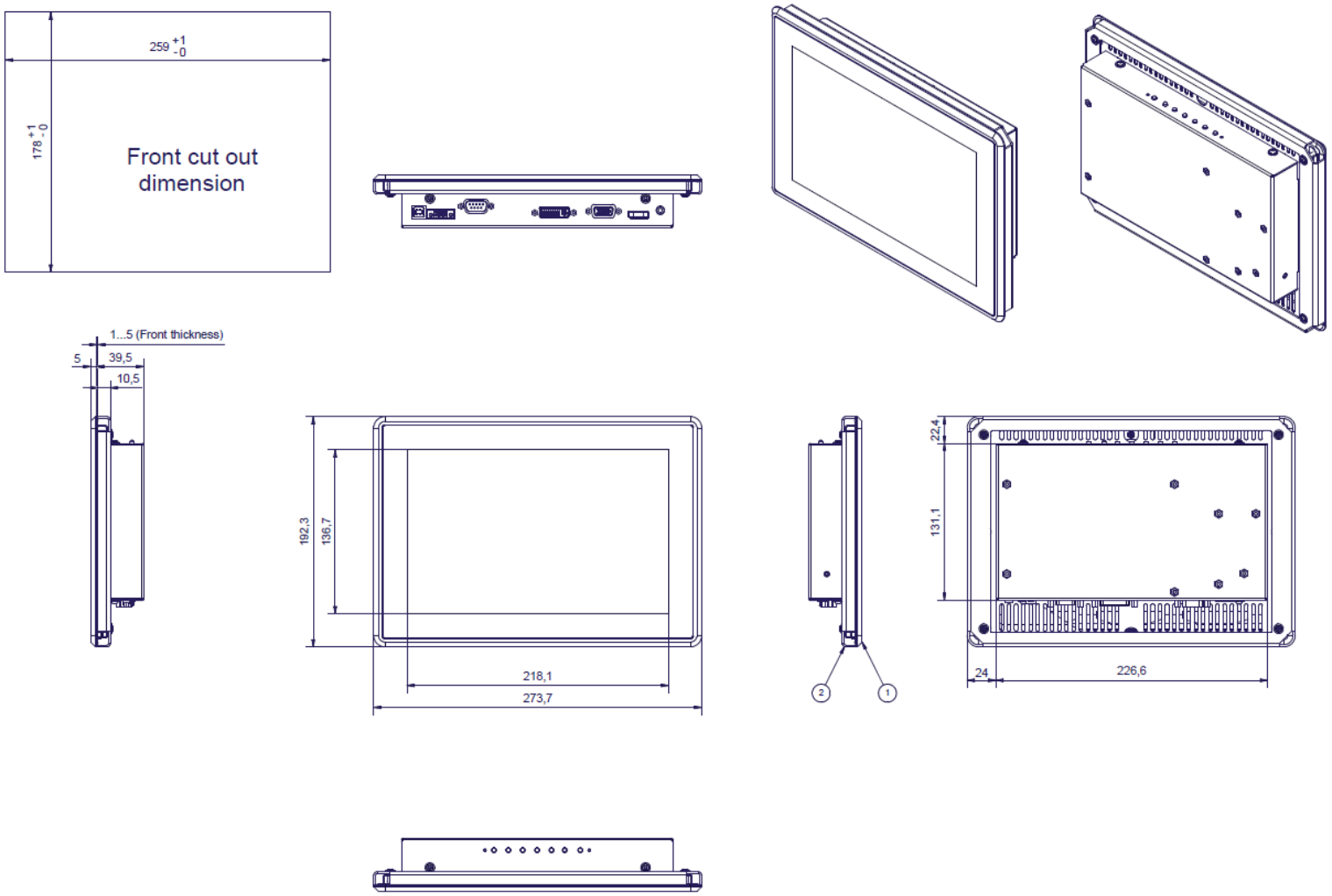


Fig. 10 TFT/HB101PU mechanical dimensions

4.4 Use cases

To give an idea on how to operate the device in good condition several us cases have been defined to help system integrators choose the best way on how to install the PROTOUCH-WIDE MONITOR

Mounting position	CPU load	GPU load	Backlight dimming	Display on-time	Airflow through device	max. ambient temperature
90°	30%	20%	100% (~850cd/m²)	all the time	1m/s	tbd
90°	30%	20%	50% (~425cd/m²)	all the time	1m/s	tbd
90°	30%	20%	100% (~850cd/m²)	all the time	2.5m/s	tbd
90°	30%	20%	50% (~425cd/m²)	all the time	2.5m/s	tbd
90°	30%	20%	20% (~170cd/m²)	5min on/10min off	none	tbd

To ensure proper operation of the device keep inside temperature below 70°C.

Operation at $70^{+0}_{-5}°C$ inside temperature is only possible during 240 consecutive hours.

Important Note

Maximum ambient temperature is highly dependent on mounting, air flow and usage conditions.

5 Firmware

5.1 Software Structure

The montor device is based on the following software structure:

Firmware

- Basic functions

Panel configuration

- Configuration depending on the built-in display

EDID

- Capabilities of the device for each display data port

5.2 Firmware Functions

Some functions as brightness and contrast can be configured by the user using the OSD (2.4.8 or the serial port (2.4.9

6 Product Revision History

6.1 Hardware

This paragraph lists the different hardware revisions of the PROTOUCH-WIDE MONITOR delivered beginning with the first production lot. Note that prototypes are not included and must be returned to factory for upgrade or replacement. All information listed in this document relies on definitive state hardware. Therefore, this information may be incompatible with the prototyping hardware.

Important Note

This document always covers the newest product revision listed in Tab. 14. Please contact the manufacturer's technical support for upgrade options.

Board Identification (see product label)	Product Revision	Remarks
TFT/PB101PU-N001E	#0.1	Prototype

Tab. 14 Hardware Revision State

6.2 Firmware

This paragraph lists the different firmware versions of the PROTOUCH-WIDE MONITOR systems delivered beginning with the first production lot. Note that prototyping boards are not included and must be returned to factory for upgrade or replacement. All information listed in this document relies on definitive state hardware. Therefore, this information may be incompatible with the prototyping board hardware.

Device Identification (see product label)	Panel file	Remarks
TFT/PB101PU-N001E	TM1280800JVHG32-00_1280x800_V1	

Tab. 15 Firmware Revision State

6.3 Errata

This paragraph lists some important errata of the current boards to enable workarounds in user software. Additional errata might be present, but a workaround is already implemented in the firmware.
Note that prototype board errata (boards with revision #0) are not listed here. Contact Syslogic technical support for prototype board information.

Important Note

This document always covers the latest product revision listed in Tab. 14
Please contact the manufacturers technical support for upgrade options.

7 Manufacturer Information

7.1 Contact

Our distributors and system integrators will gladly give you any information about our products and their use. If you want to contact the manufacturer directly, please send an email message containing a short description of your application and your request to the following address or use one of the information or technical support request forms on our internet homepage:

Syslogic Datentechnik AG
Taefernstrasse 28
CH-5405 Baden-Daettwil/Switzerland

e-mail: support@syslogic.com
Web: www.syslogic.com
T: +41 56 200 90 40
F: +41 56 200 90 50

7.2 Warranty

Our products are covered by a world-wide manufacturer's warranty. The warranty period starts at the delivery time from our official distributor to the customer. The duration of the warranty period is specified in the respective product catalogs and the offers. All products carry a date code and a job number for identification. The manufacturing data and deliveries are registered in a high-level Quality Management System.
The warranty covers material and manufacturing defects. All products must be returned via the official distributor to the factory for repair or replacement. The warranty expires immediately if the products are damaged by operation outside of the specified recommended operating conditions. The warranty also expires if the date code or job number listed on the product is altered or rendered unintelligible. The warranty does not include damage due to errors in firmware or software delivered with the products.

7.3 RMA Service

Syslogic offers a Return Material Authorization process to simplify handling of devices that needs to be returned to the manufacturer. Please follow the instructions on our web page: https://www.syslogic.com to get best service.