

Contents

1	Introduction	5
1.1.	General Remarks	5
1.1.	Explanation of Symbols	5
1.1.1.	Danger warnings	5
1.1.2.	Warnings indicate the following:	5
1.1.3.	Information pictograms indicate the following:	6
1.2.	Copyright note	6
1.3.	Contents of this Documentation	6
1.4.	Additional Products and Documents	6
1.4.1.	Software products	6
1.4.2.	Documents	6
1.4.3.	Datasheets	6
1.5.	Items delivered	7
1.5.1.	Built-in version	7
1.5.2.	VESA mount version	7
1.6.	Installation	7
1.7.	Safety Recommendations and Warnings	7
1.7.1.	EMC	7
1.7.2.	Battery	8
1.7.3.	Hot surface	8
1.8.	Electro-Static Discharge	8
1.9.	Life Cycle Information	8
1.9.1.	Transportation and Storage	8
1.9.2.	Assembly and Installation	8
1.9.3.	Operation	8
1.9.4.	Maintenance and Repair	8
1.9.5.	Disposal and WEEE	8
1.9.6.	Warranty	9
1.9.7.	RoHS	9
2	Product Description	10
2.1.	Introduction	10
2.1.1.	Benefits of Syslogic's Projected capacitive touch panels	10
2.1.2.	Intended use of Projected Capacitive Touch Panels	10
2.2.	Device Variants	11
2.3.	Accessories	11
2.4.	Features	12
2.4.1.	HBxxxPU7F16-xxx	12
2.4.2.	HVxxxPU71x16-xxx	12
3	Hardware Description	13
3.1.	Overview	13
3.2.	Dimensions	13

3.2.1.	HBxxxPU71x16-xxx	13
3.2.2.	HVxxxPU71x16-xxx	14
3.3.	Mounting	15
3.3.1.	TFT/HBxxxPU71x16-xxx	15
3.3.2.	TFT/HVxxxPU71x16-xxx	17
3.4.	Service Cover	18
3.4.1.	TFT/HBxxxPU71x16-xxx	18
3.4.2.	TFT/HVxxxPU71x16-xxx	18
3.5.	Interfaces	19
3.5.1.	Power supply	19
3.5.2.	System Interfaces	19
3.6.	Touch Screen	19
3.6.1.	Basic functions of the touch screen	19
3.6.2.	Using On Screen Keyboard (OSK) with Windows7	19
3.6.3.	Touch screen calibration using Windows 7 touch driver	20
3.7.	Cleaning the Projected capacitive touch panel	Fehler! Textmarke nicht definiert.
3.7.1.	Cleaning the glas front	20
3.7.2.	Cleaning the metal housing	20
4	Programming Information	21
4.1.	Overview	21
4.1.	Operating systems	21
5	Technical Data	22
5.1.	General Electrical Data	22
5.2.	EMI / EMC Specification	24
1.1.1.	Emission	24
1.1.2.	Immunity	25
5.3.	Environmental Specification	25
6	Product Revision History	26
6.1.	Hardware	26
7	Manufacturer Information	27
7.1.	Contact	27

List of Tables

Tab. 1	Disposal Materials	9
Tab. 2	Projected capacitive touch panel versions	11
Tab. 3	Projected capacitive touch panel accessories	11
Tab. 4	HBxxxPU71x16-xxx dimensions	13
Tab. 5	HVxxxPU71x16-xxx dimensions	14
Tab. 6	TFT/HBxxxPU71x16-xxx Mounting dimensions	15
Tab. 7	HVxxxPU71x16-xxx VESA dimensions	17
Tab. 8	Power supply connector P1 (1x4 pin)	19
Tab. 9	General Absolute Maximum Ratings	22
Tab. 10	General Recommended Operating Conditions	22
Tab. 11	General Electrical Characteristics	23
Tab. 12	Emission requirements	24
Tab. 13	Immunity requirements	25
Tab. 14	Environmental Specification	25
Tab. 15	Hardware Revision State	26

List of Figures

Fig. 1	HBxxxPU71x16-xxx	12
Fig. 2	HVxxxPU7F16-xxx	12
Fig. 3	Required Cut out HVxxxPU7F16-xxx	15
Fig. 4	Screws to hold the mounting Frame	16

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.

The following registered trademarks are used:

CompactFlash	trademark of SanDisk Corporation
Intel Atom	trademark of Intel Corporation
Windows Embedded Compact	trademark of Microsoft Corporation
Windows Embedded Standard	trademark of Microsoft Corporation

All other trademarks appearing in this document are the property of their respective company.

1.1. Explanation of Symbols

1.1.1. 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.

1.1.2. 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.

1.1.3. Information pictograms indicate the following:

Important information about the product or the relevant section of the document requiring the particular attention of the reader.



The "Information" pictogram has the following meaning:
Indicates important and instructional information.

1.2. Copyright note

This documentation is the intellectual property of Syslogic Datentechnik AG, which also has the exclusive copyright. Any modification of the content, duplication or reprinting of this documentation, as well as any distribution to third parties can only be made with the express permission of Syslogic Datentechnik AG.

Syslogic Datentechnik AG does not accept any liability for damages arising from the use of any incorrect or incomplete information contained in this documentation or any information missing.

All brand and product names are trademarks or registered trademarks of the owner concerned.

1.3. Contents of this Documentation

This document addresses to system integrators, programmers, instructed installation and maintenance personal working with the system. It provides all information needed to set-up, mount, start-up and operate this device.

1.4. Additional Products and Documents

1.4.1. Software products

There are no additional software products except operating systems:

- Operating Systems: check chapter 4.1 for a list of supported implementations.

1.4.2. Documents

For details regarding the integrated IPC see separate product documentation DOC/COMPACT71-SLE.

1.4.3. Datasheets

For additional and more detailed information on the Intel Atom processor and chipset refer to the following documents:

- Datasheet Intel Atom Processor E6xx Series
<http://download.intel.com/embedded/processor/datasheet/324208.pdf#iid=3790>
- Specification Update Intel Atom Processor E6xx Series
<http://download.intel.com/embedded/processor/specupdate/324209.pdf?iid=3876#iid=3876>
- Datasheet Intel Platform Controller Hub EG20T(PCH)
<http://download.intel.com/embedded/chipsets/datasheet/324211.pdf#iid=3791>
- Specification Update Intel Platform Controller Hub EG20T (PCH)
<http://download.intel.com/embedded/processor/specupdate/324209.pdf?iid=3876#iid=3876>
- Datasheet Intel 82574 GbE Controller Family
<http://download.intel.com/design/network/datashts/82574.pdf>
- Datasheet NXP SJA1000
http://www.nxp.com/documents/data_sheet/SJA1000.pdf

1.5. Items delivered

1.5.1. Built-in version

- 1x TFT/HBxxxPU71G16-xXXE
- 1x Fixing Frame with M4x10 securing screws
- 1x Power supply connector Weidmüller BCZ 3.81/04/180F SN SW (1792970000)

1.5.2. VESA mount version

- 1x TFT/HVxxxPU71F16-xXXE
- 1x Power supply connector Weidmüller BCZ 3.81/04/180F SN SW (1792970000)
- 4x M4x8 securing screws for VESA100 mounting

1.6. Installation

The installation of the system is described in this documentation.

For details regarding the integrated IPC see separate product documentation DOC/COMPACT71-SLE.

1.7. Safety Recommendations and Warnings

The product is intended for measurement, control and communications applications in industrial environment. The products must be installed by specially trained people. The strict observation of the installation guideline is mandatory.

The use of the product in systems in which life or health of persons is directly dependent (e.g. life support systems, patient monitoring systems, etc.) is not allowed.

The use of the product in potentially explosive atmospheres requires additional external protection circuitry which is not provided with the product.



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.

In case of uncertainty or of believed errors in the documentation please immediately contact the manufacturer (address see chapter 7). Do not use or install the product if you are in doubt. In any case of misuse of the product, the user is solely liable for the consequences.

1.7.1. 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.

1.7.2. Battery



Important note

Caution! 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.

Never short the battery.

1.7.3. 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 burns.

1.8. Electro-Static Discharge

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

1.9. Life Cycle Information

1.9.1. Transportation and Storage

During transportation and storage the product must be in the 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 are 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 and WEEE

At the end of the life span the product must be properly disposed. This product contains a multitude of elements and must be disposed like computer parts. This product contains batteries which should be properly disposed.

The products of the IPC/HxxxPU71 products are not designed ready for operation for the end-user and intended for consumer applications. Therefore the Waste Electrical and Electronic Equipment (WEEE) Directive (2002/96/EC) is not applicable. But users should still dispose the product properly at the end of life.

The wrapping contains the following materials: Cardboard box and transportation protection.

Materials	Description
Front Glas	Safety glas
Front Touch	Glas, Plastic, Copper
Front frame	Metal /AlMg 4.5 Mn)
Hoods	Galvanized sheet steel
Mounting plates	Galvanized sheet steel
Display LED	1 Disposal quality
Print boards	1 Disposal quality

Tab. 1 Disposal Materials

1.9.6. 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 operating 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.

1.9.7. RoHS

The product is designed and produced according to the Restriction of Hazardous Substances (RoHS) Directive (2002/95/EC).

2 Product Description

2.1. Introduction

2.1.1. Benefits of Syslogic's Projected capacitive touch panels

- Different screen sizes
- Robust touch screen technology
- Front protection to IP65

The product meets all the requirements of state-of-the-art advanced Panel Computer.

The product is a rugged information, display and input device that is specially developed for operation in harsh environments.

The TFT technology makes a wide range of applications possible with a perfect and clear picture on an absolutely flat surface.

The absolutely flat PCT (Projected capacitive Touch) touch panel offers the latest Dual-Touch technology. PCT Touch Screen can be used with fingers or with special capacitive touch gloves or pens/stylus. Calibration of the touch screen can be easily made with the Touch driver software described in chapter 2.4.

A metal housing with a solid front frame and scratch resistant safety glass protects the device

Reliably during long and rugged periods of use (front protection: IP65) and requires little care and maintenance.

2.1.2. Intended use of Projected Capacitive Touch Panels

The Projected Capacitive Touch Panel is designed for:

- Visualization and process control
- PLC visualization
- General control and automation tasks
- Industrial use
- For medical technology
- 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	Memory	X1 Port
TFT/HB104PU71G16-xxxE	10.4" XGA	Flush mounting	2GB	RS232
TFT/HB121PU71G16-xxxE	12.1" XGA	Flush mounting	2GB	RS232
TFT/HB150PU71G16-xxxE	15.0" XGA	Flush mounting	2GB	RS232
TFT/HV104PU71G16-xxxE	10.4" XGA	VESA mounting	2GB	RS232
TFT/HV121PU71G16-xxxE	12.1" XGA	VESA mounting	2GB	RS232
TFT/HV150PU71G16-xxxE	15.0" XGA	VESA mounting	2GB	RS232

Tab. 2 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	Touch driver software for Windows 9x / Me / 2000 / XP / 7 / Embedded

Tab. 3 Projected capacitive touch panel accessories

2.4. Features

2.4.1. HBxxxPU7F16-xxx

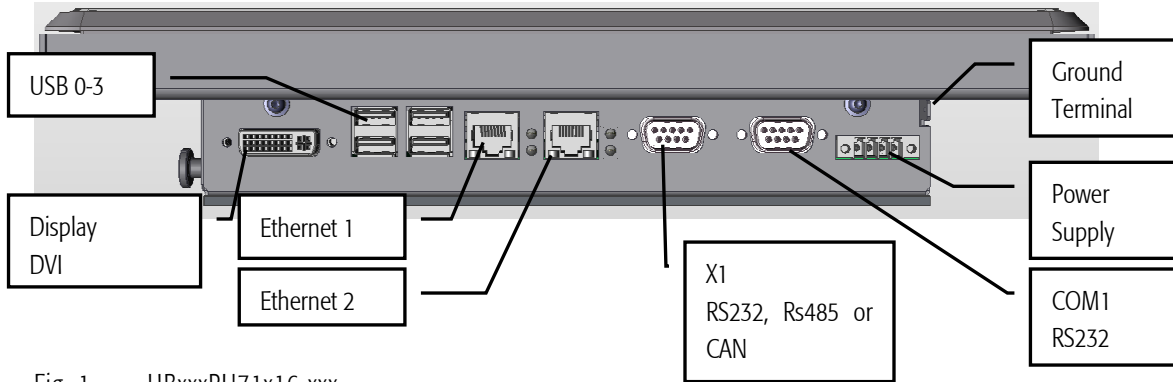


Fig. 1 HBxxxPU71x16-xxx

2.4.2. HVxxxPU71x16-xxx

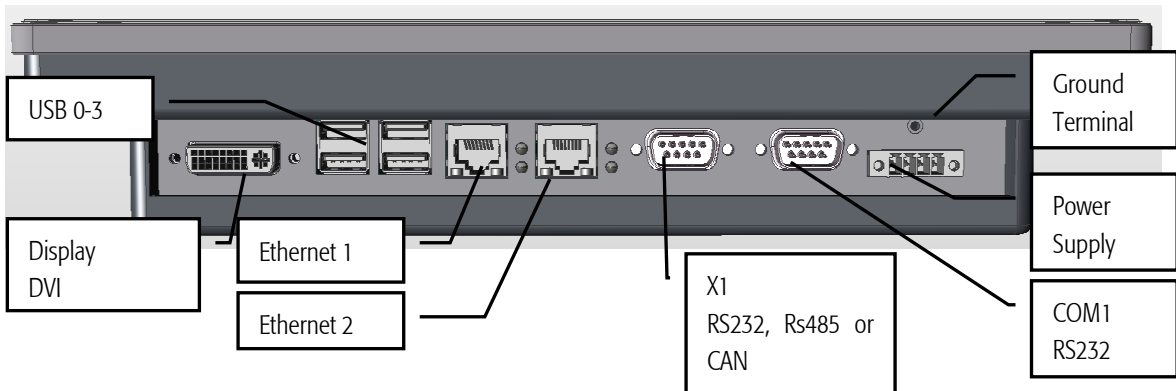


Fig. 2 HVxxxPU7F16-xxx

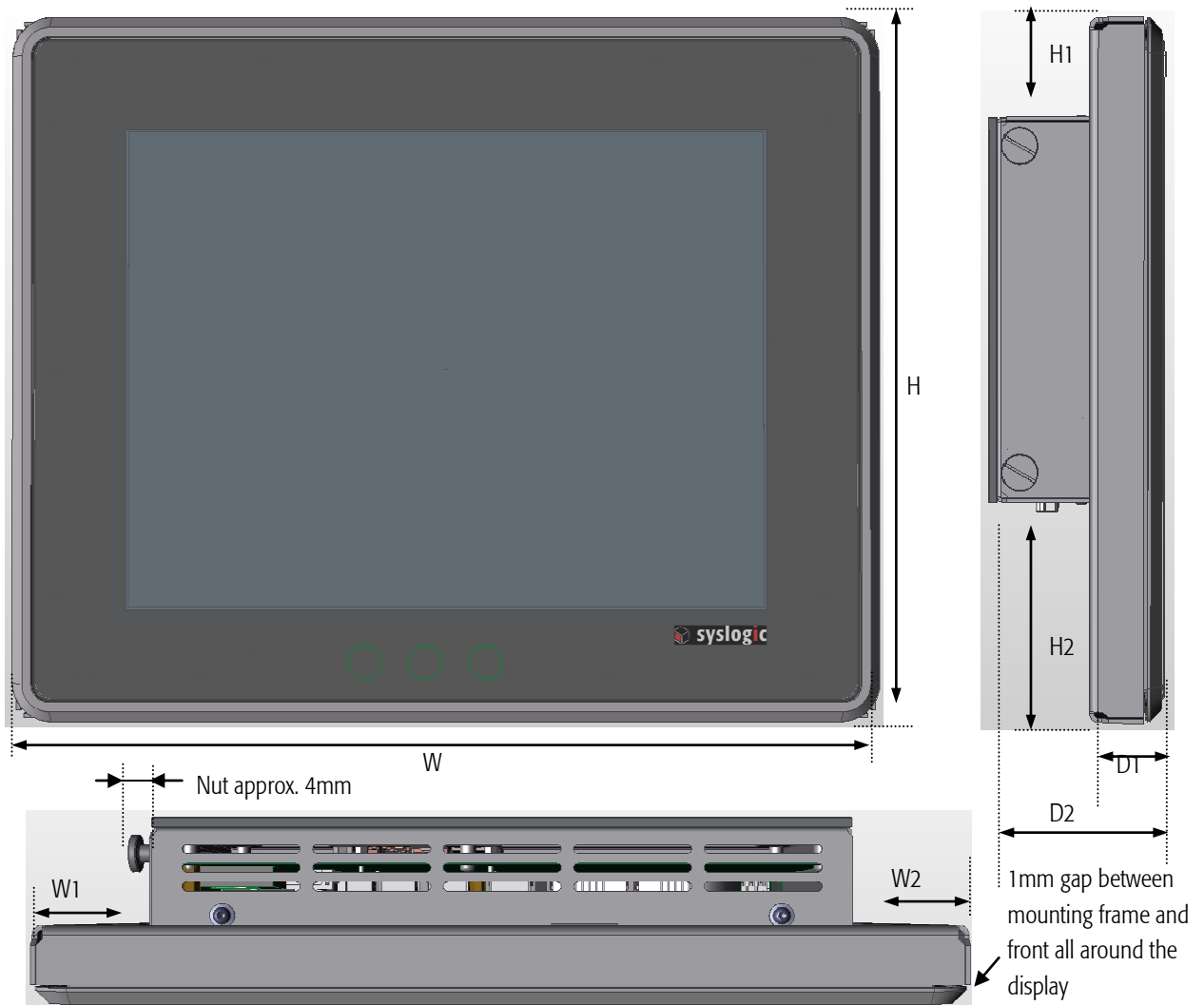
3 Hardware Description

3.1. Overview

For details regarding the integrated IPC see separate product documentation **DOC/COMPACT7-SLE**.

3.2. Dimensions

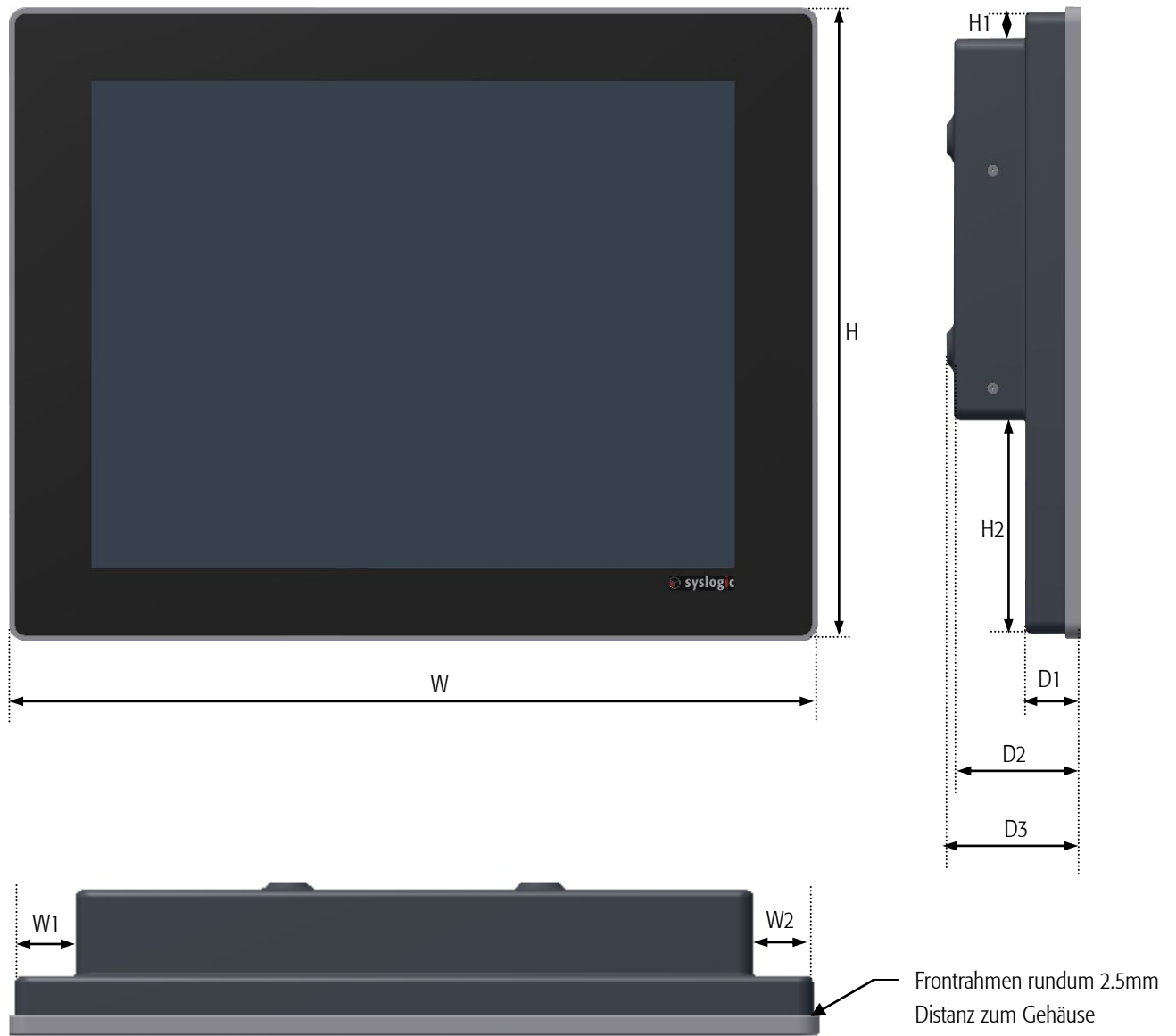
3.2.1. HBxxxPU71x16-xxx



Device	W [mm]	W1 [mm]	W2 [mm]	H [mm]	H1 [mm]	H2 [mm]	D1 [mm]	D2 [mm]
TFT/HB104PU71x16-xxx	288	30	31	234	31	71.5	25	59.5
TFT/HB121PU71x16-xxx	333	52.6	53.6	275	31	112	25	59.5
TFT/HB150PU71x16-xx	395	84.7	83.7	312	31	150.7	29.5	61.5

Tab. 4 HBxxxPU71x16-xxx dimensions

3.2.2. HVxxxPU71x16-xxx



Device #	W [mm]	W1 [mm]	W2 [mm]	H [mm]	H1 [mm]	H2 [mm]	D1 [mm]	D2 [mm]	D3 [mm]
TFT/HV104PU71x16-xxx	278	15	15	224	14	39,5	24,5	58,8	62
TFT/HV121PU71x16-xxx	323	26,5	26,5	265bb	15	67,5	24,5	58,8	62
TFT/HV150PU71x16-xxx	385	57,5	57,5	302	15	104,5	27,5	61,5	65

Tab. 5 HVxxxPU71x16-xxx dimensions

3.3. Mounting

3.3.1. TFT/HBxxxPU71x16-xxx

To mount the device follow these steps:

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

Device #	Front cut out dimensions		Edge radius	Wall thickness
	W [mm]	H [mm]	R [mm]	D [mm]
TFT/HB104PU71x16-xxx	271 ^{-0/+2}	217 ^{-0/+2}	Max. 3mm	1 to 5
TFT/HB121PU71x16-xxx	316 ^{-0/+2}	258 ^{-0/+2}		
TFT/HB150PU71x16-xxx	378 ^{-0/+2}	295 ^{-0/+2}		

Tab. 6 TFT/HBxxxPU71x16-xxx Mounting dimensions

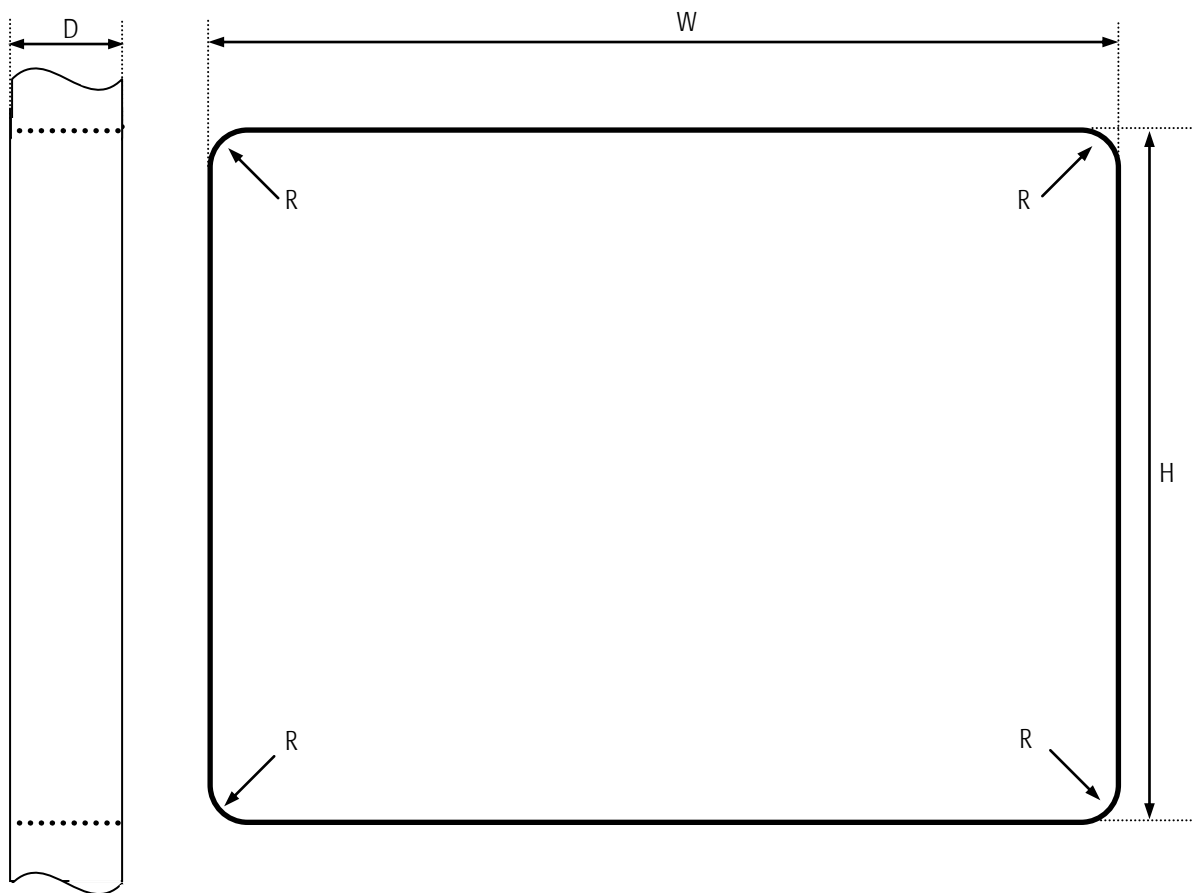


Fig. 3 Required Cut out HVxxxPU7F16-xxx



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.

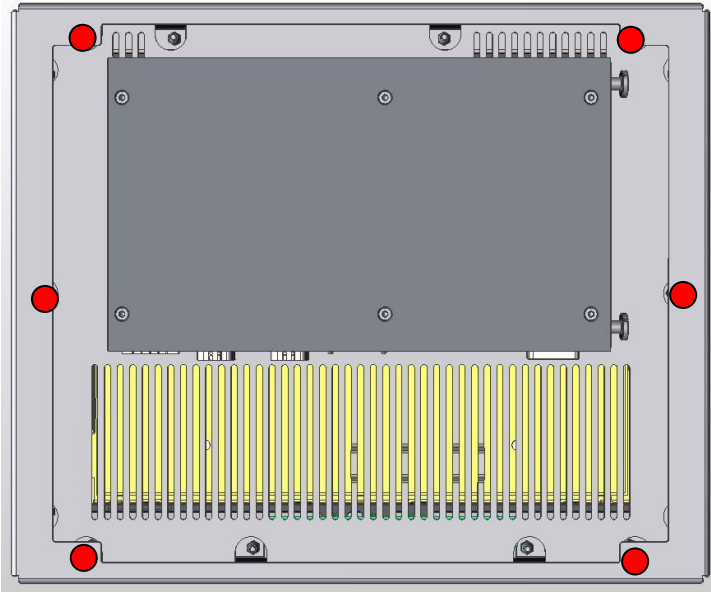
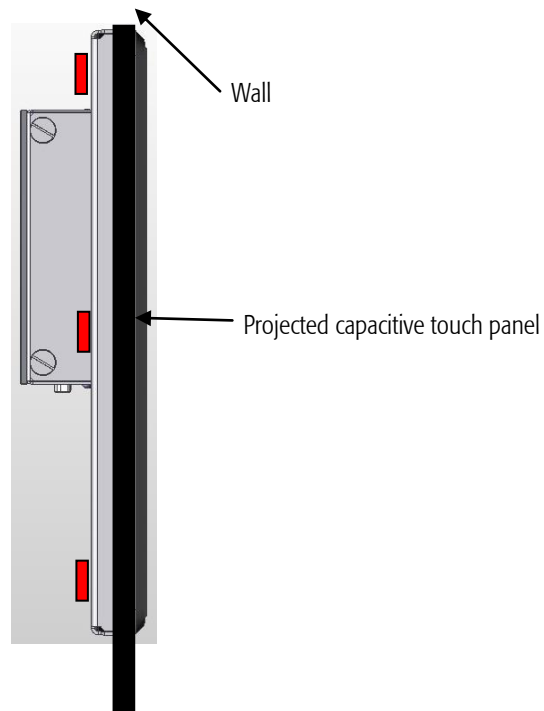


Fig. 4 Screws to hold the mounting Frame

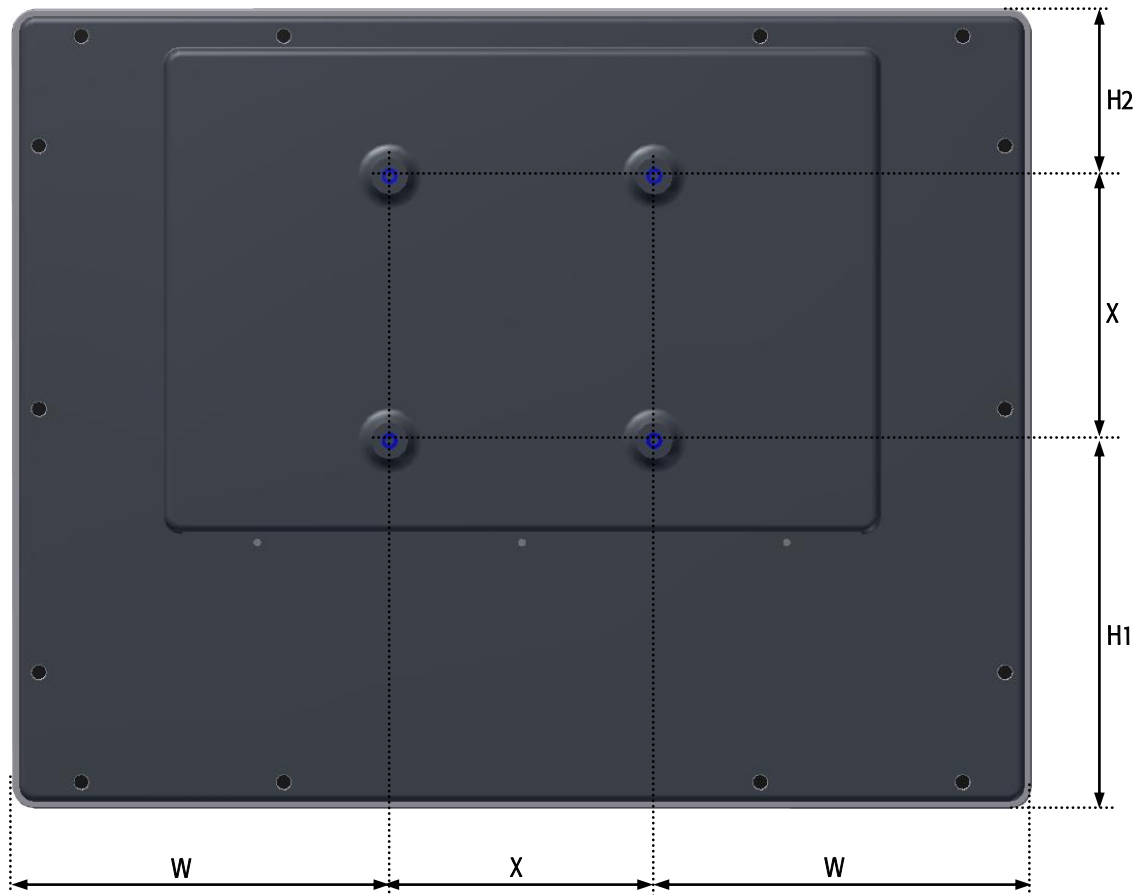
3. Insert the projected capacitive touch panel from the front into the cut out and make sure that the sealing fits properly.
4. Reattach the mounting frame and fix it into place by reattaching the screws highlighted in red.
5. The product is now installed properly.



3.3.2. TFT/HVxxxPU71x16-xxx

All TFT/HvxxxPU71x16-xxx are equipped with a VESA100 (100x100mm) mounting system delivered with M4x8 Philips screws. To mount the device follow these steps:

1. Remove the screws from the back of the device
2. Screw the device to the VESA100 mounting frame. Maximum thickness of the frame is 3mm. If using a thicker frame replace the crew. The crew must not fit more than 8mm and must fit least fit 5mm.



Device #	X [mm]	W [mm]	H 1[mm]	H2 [mm]
TFT/HV104PU71x16-xxx	100	89	74	50
TFT/HV121PU71x16-xxx	100	111.5	102	63
TFT/HV150PU71x16-xxx	100	142.5	139	63

Tab. 7 HVxxxPU71x16-xxx VESA dimensions



Mounting Angle:

Mounting Angle must be $90^{\circ} \pm 15^{\circ}$

Cooling Space:

To ensure cooling leave at least 10cm of free space around product.

For best thermal performance use spacer M4 x 5mm between the VESA mounting frame and the device

3.4. Service Cover

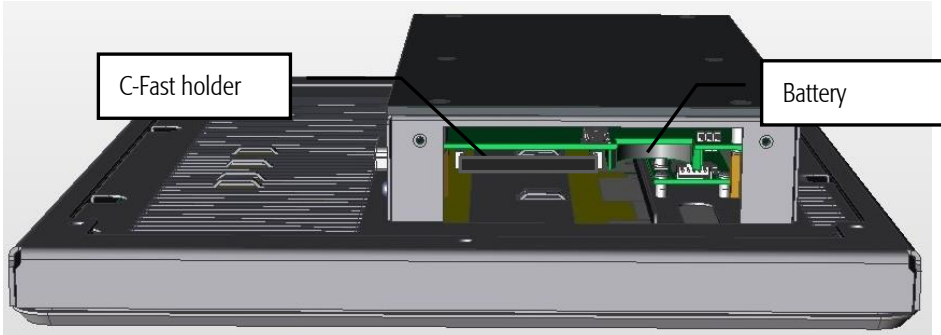
To change the battery or the C-Fast follow the steps described in this chapter

3.4.1. TFT/HBxxxPU71x16-xxx

1. To remove the Service Cover remove the two knurled screws highlighted and remove the cover.



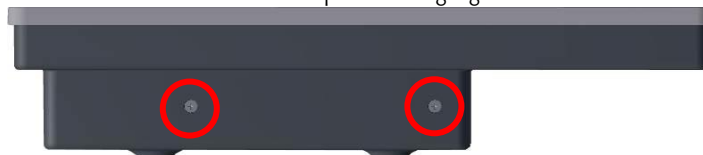
2. After removing the cover the C-Fast and the battery slot are accessible.



3. Please install the Service Cover before operating the Projected capacitive touch panel.

3.4.2. TFT/HVxxxPU71x16-xxx

1. To remove the Service Cover remove the two Philips screws highlighted in red and remove the cover.



2. After removing the cover the battery and the C-Fast slot are accessible.



3. Please install the Service Cover before operating the Projected Capacitive Touch Panel.

3.5. Interfaces

3.5.1. Power supply

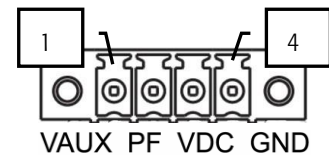
The processor and its peripherals are powered by a non-isolated, integrated power supply which generates all internal voltages.



Power Supply requirements:

- The power supply used must fulfil surge protections 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	+24VDC_AUX	VAUX	Additional, permanent power supply
2	Fail/Remote on/off	PF	Power fail input
3	+24VDC	VDC	+10V..+30V
4	GND	GND	GND (/shield)



Tab. 8 Power supply connector P1 (1x4 pin)

For normal operation the external power supply has to be connected to the pins 3 (+24VDC) and 4 (GND) of the connector P1.

Pin 1 (+24VDC_AUX) is used to extend battery life time if the device main power is disabled.

Pin 2 is used as an input for either a power fail on remote on/off signal.

3.5.2. System Interfaces

For details regarding the integrated IPC interfaces see separate product documentation DOC/COMPACT71-MLE.

3.6. Touch Screen

All devices use a DMC Touch Sensor with an EETI chipset. If the native operating system does not provide required features, install EETI eGalax Touch driver.

3.6.1. 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, 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 Dual-touch. Which means you can operate the touch screen with two fingers for drawing or selecting.



The calibration should be carried out with a touch stylus in order to ensure the optimum functioning of the touch screen.

3.6.2. Using On Screen Keyboard (OSK) with Windows7

When using the On Screen Keyboard (OSK) for Tablet Computer TabTip.exe under Windows 7 you need to use the original Windows7 driver that is automatically installed instead of the separate touch driver provided by Syslogic to allow TabTip.exe to work properly.

If you use TabTip.exe in Windows7 instead of OSK.exe you will benefit from some comfort features like automatic activation of the OnScreenKeyboard when you activate a text input field.

Note:

If you need to use the special features provided by separate touch driver provides you can use OSK.exe instead of TabTip.exe. But the automatic activation of the On Screen Keyboard when you activate a text input field will not work.

3.6.3. Touch screen calibration using Windows 7 touch driver

To calibrate the touch using the Windows7 with the Windows touch driver execute the following steps:

1. Tap the Start button, Control Panel and then Hardware and Sound.
2. Select Tablet PC Settings, then Calibrate the screen for pen or touch input.
3. On the Display tab select Calibrate located in the section Display Options. Follow the on-screen instructions to calibrate the touch screen.

3.6.4. Cleaning the glas front

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



Even the touch controller is optimized to detect cleaning it may happen that input are generated. Prevent unwanted and potentially dangerous actions while the front is being cleaned.

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

3.6.5. 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!

3.7. Display brightness

Display brightness can be adjusted writing one byte to the I/O register 0x820d. Use the io_rw (Debian, lincan demo) or the DumpPort (Windows 7, WINIO_v3) to access the register.

Value	Signal	Remarks
0xFF	Maximum Brightness (default)	
0x10-0xFE	Brightness from dark to bright	
0x00	Backlight turned off	

Tab. 9 Meaning of the backlight register.

4 Programming Information

4.1. Overview

For details regarding the integrated IPC see separate product documentation DOC/COMPACT71-MLE.

4.1. Operating systems

Syslogic offers an implementation for the following operating systems (OS):



Debian Linux Distribution
IPC/DEBIAN-60A



Microsoft Windows Embedded
Standard 2009
IPC/WINESTD09-71A



Microsoft Windows Embedded 7
IPC/WINESTD7-71A

Others on request.

Important note

When implementing a BSP for a new OS be sure to use the "Pentium Platform".

5 Technical Data

5.1. General Electrical Data

Important Note

Do not operate the product outside of the recommended operating conditions. Otherwise lifetime and performance will degrade.

Operating the product outside of the absolute maximum ratings may damage the hardware.

Absolute Maximum Ratings (over free-air temperature range)

Parameter	Symbol	min	nom	max	Unit
Power supply input range	Vcc	-30		30	Vdc
isolation logic to chassis (AC, 60s, 500m a.s.l., Ta=25°C)		Not insulated, GND is connected to chassis			Vrms
creepage distance logic to chassis and PCB boarder		1.5			mm

Tab. 10 General Absolute Maximum Ratings

Recommended Operating Conditions

Parameter	Symbol	min	nom	max	Unit
Power supply operating range	Vcc	10	24	30	Vdc
Operating Temperature ¹	Ta	-25		65	°C
Operating Temperature ²	Ta	-25		70	°C
Startup temperature range	Tcomp	-20			°C

Tab. 11 General Recommended Operating Conditions

¹ 50% CPU Load, 2 x GBit Ethernet connected, 100% Backlight.

² 30% CPU Load, 2 x GBit Ethernet connected, 80% Backlight for 5min, 10min off

Electrical Characteristics
(over recommended operating range, unless otherwise noted)

Parameter	Symbol	min	typ	max	Unit
Maximum nominal input current	I_{cc}				
TFT/Hx104PU71G16-A103E			820	2500	mA
TFT/Hx121PU71G16-A103E			950	2800	mA
TFT/Hx150PU71G16-A103E			980	2800	mA
full load power dissipation (at 24V input voltage) ³	P_{max}				
TFT/Hx104PU71G16-A103E			22.5		W
TFT/Hx121PU71G16-A103E			24.6		W
TFT/Hx150PU71G16-A103E			25.5		W

Tab. 12 General Electrical Characteristics

³ 50% CPU Load, 2 x GBit Ethernet connected, 100% Backlight

5.2. EMI / EMC Specification

- EN 61000-6-2 Electromagnetic compatibility (EMC), Part 6-2: Generic standards- Immunity for industrial environments
- EN 61000-6-4 Electromagnetic compatibility (EMC), Part 6-4: Generic standards – Emission standard for industrial environments
- EN 55011 Industrial, scientific and medical (ISM) radio-frequency equipment – Electromagnetic disturbance characteristics – Limits and methods of measurement.
- EN 55022 Information technology equipment - Radio disturbance characteristics - Limits and methods of measurement
- EN 55024 Information technology equipment - Immunity characteristics - Limits and methods of measurement

1.1.1. Emission

Emission requirements according to 2004/108/EC harmonized standard EN61000-6-2

Test	Standard	Limit
Radiated field	EN 61000-6-2	30 – 230MHz: 40dBuV/m (QP)
	EN 55011:2009+A1:2010 CISPR 11:2009+A1:	230 – 1000MHz: 47dBuV/m (QP)
Radiated field	EN 61000-6-2	30 – 230MHz: 40dBuV/m (QP)
	EN55022:2010	230 – 1000MHz: 47dBuV/m (QP)
	CISPR 22:2008	1000 – 3000MHz: 56dBuV/m (AVG)
		3000 – 6000MHz: 60dBuV/m (AVG)
Conducted emission	EN55011:2010	Mains AC
	EN55022:2010	0.15 – 0.5MHz: 79dBuV (QP)
	CISPR 22:2008	0.5 – 30MHz: 73dBuV (QP)
		Telecommunication ports
		0.15 – 0.5MHz: 97 to 87dBuV (QP) 0.5 – 30MHz: 87dBuV (QP)

Tab. 13 Emission requirements

1.1.2. Immunity

Immunity requirements according to 2004/108/EC harmonized standard EN61000-6-4

Test	Standard	Limit
Electro-static discharge / ESD	EN61000-4-2:2009	6kV contact - direct
	IEC61000-4-2:2008	6kV contact – indirect
	EN61000-6-2, EN55024	8kV air
RF electromagnetic field 1kHz, 80% AM	EN61000-4-3:2006	80 – 1000MHz: 20V/m
	+A1:2008+A2:2010	1.4..2.1GHz: 10V/m
	IEC61000-4-3:2006	2.1..2.5GHz: 5V/m
	+A1:2007+A2:2010	2.5..2.7GHz: 1V/m
	EN61000-6-2, EN55024	Criterion A
Electrical fast transients / burst 5/50ns	EN61000-4-4:2004	2.0kV
	IEC61000-4-4:2004	Criterion A
	EN55024	
Surge 1.2/50us	EN61000-4-5:2006	DC power :
	IEC61000-4-5:2005	2kV (line - earth)
	EN61000-6-2, EN55024	1kV (line – line)
		Criterion B
Conducted disturbances 1kHz, 80% AM		Communication ports :
		1kV (shield - earth)
		Criterion B
		All connections:
	EN61000-4-6:2009	0.15 – 80MHz: 10V/m
	IEC61000-4-6:2008	
	EN61000-6-2, EN550224	Criterion A

Tab. 14 Immunity requirements

5.3. Environmental Specification

Parameter	Symbol	min	typ	max	Unit
storage temperature range	Tst	-20		75	°C
Operating altitude				2000	MAMSL
Humidity ⁴ (not condensing)	RH	20		90	%RH

Tab. 15 Environmental Specification

⁴ above +60°C: < 133.8g/m³

6 Product Revision History

6.1. Hardware

For details regarding the integrated IPC see separate product documentation DOC/COMPACT71-MLE

Hardware Revision	Product Revision	Remarks
TFT/HxxxPU71x16-xxx	1.0	first release

Tab. 16 Hardware Revision State

7 Manufacturer Information

7.1. Contact

If you want to contact the manufacturer directly, please send a fax or 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

Email: support@syslogic.com
www: <http://www.syslogic.com/>
Fax: +41 56 200 9040
Tel: +41 56 200 9050