Instruction manual

Touch-it Automation glass Hygienic

04/2022

www.christ-es.com

Touch-it Automation glass Hygienic

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1 Identification

Target group

This document is not intended for end customers! Necessary safety instructions for the end customer must be passed on by the machine builder or system provider and adopted in the respective national language.

Intended use

This product has not been designed, developed and manufactured for use that creates fatal risks and hazards without exceptionally assured safety measures. These include death, injury, or serious physical harm or otherwise caused loss. These represent nuclear response monitoring, nuclear control systems, air traffic control, mass transportation control, medical life support systems, and weapons systems control.

Technical changes

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Trademarks

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History

The following editions of the manual have already been published:

Version	Comment
04/2021	First edition
12/2021	Avoid burn-in on displays UPS buffer duration

Table 1: History

Design of safety instructions

⚠ DANGER	
	Indicates an imminent danger Failure to follow the instructions may result in death or serious injury

⚠ WARNING	
	Indicates a dangerous situation Failure to observe this warning may result in serious injury or major damage to property

⚠ CAUTION	
	Indicates a possible dangerous situation Failure to observe the advice can result in injuries or property damage

NOTICE	
	Indicates user tips and useful information Important information to avoid malfunctions

2 Product description

Every industry has its own requirements for machine and system operation. To meet all of them, there are different housing variants with industry-specific features.

All touch panels are equipped with multitouch technology in various inch sizes as standard. This means that gesture control, as used on tablets or smart phones, is no problem. This makes machine operation particularly user-friendly.

Christ also offers the greatest possible flexibility in terms of operating systems with Windows 10 or Linux distributions. The sophisticated device design enables use in large temperature ranges completely without fans. This enables versatile use without any maintenance effort.

The hygienic version of the touch panel has a stainless steel housing and is completely IP69 protected. It is particularly suitable for use in hygienically demanding environments such as the pharmaceutical or food industry. Glove operation is also possible here with the help of an adapted touch.

Another aspect is the scalability of performance. A distinction is made here between different configuration levels: monitor, distance monitor (for use over long distances), web panel and particularly powerful panel PCs with Intel® Celeron® or Core™ i3, i5, or i7 processors.

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2.1 System Overview

XELO (x86)

CPU	AMD® GX-415GA Quad Core™ 1.5 GHz	Intel® Core™ i5-5350U Dual Core 1.8 GHz	Intel® Core™ i5-7300U 2.6 GHz
Graphic	Radeon HD 8330E	Intel® HD Graphics 6000	Intel® HD Graphics 620
Memory	1 x DDR3 slot, max. 8 GB	2 x DDR3 slot, zusammen max. 16 GB	2 x DDR4 slot, zusammen max. 32 GB
BIOS	AMI BIOS, Unterstützt ACPI Funktion IB903F	AMI BIOS, Unterstützt ACPI Funktion IB909F	AMI BIOS, Unterstützt ACPI Funktion IB917
Interfaces	4 x USB: 2 x USB 2.0 Port (Type A); 2 x USB 3.0 Port (Type A) 2 x 1 GBit Ethernet (RJ45) 1 x RS-232 / RS-422 / RS-485 (Bios settings) (Sub-D) 1 x Extension Connector (Phoenix DMCV 1,5/19-G1F-3,5-LR P20THR) 2 x Fieldbus (RJ45)		

Table 2: System Overview XELO

CE (ARM)

CPU	NXP® i.MX6DL, DualCore 1 GHz	NXP® i.MX6Q, QuadCore 1 GHz
Graphic	3D Vivante GC880 / 2D Vivante GC320	
Interfaces	2 x USB: 2 x USB 2.0 Host (Type A) 1 x 100 MBit Ethernet (RJ45) 1 x RS-232 / RS-485 / CAN (Sub-D)	

Table 3: System Overview CE

2.2 Housing Variant Automation Hygienic

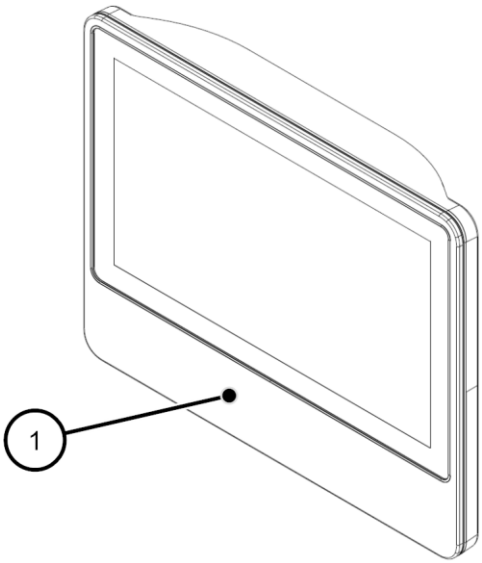

Illustration 1: Automation Hygienic Front View

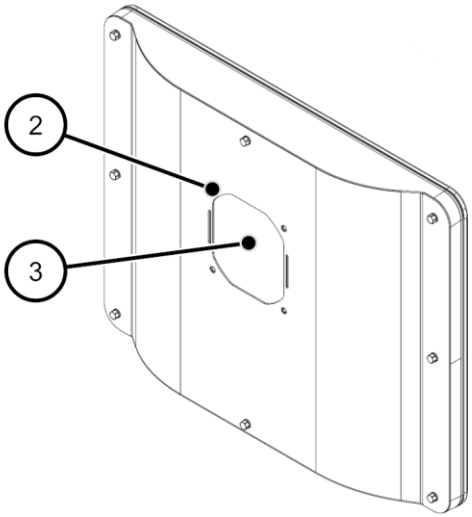

Illustration 2: Automation Hygienic Rear View

1	Control Element Area
2	VESA MIS-D, 100
3	Interface Area

Table 4: Automation Hygienic Front View and Automation Hygienic Rear View

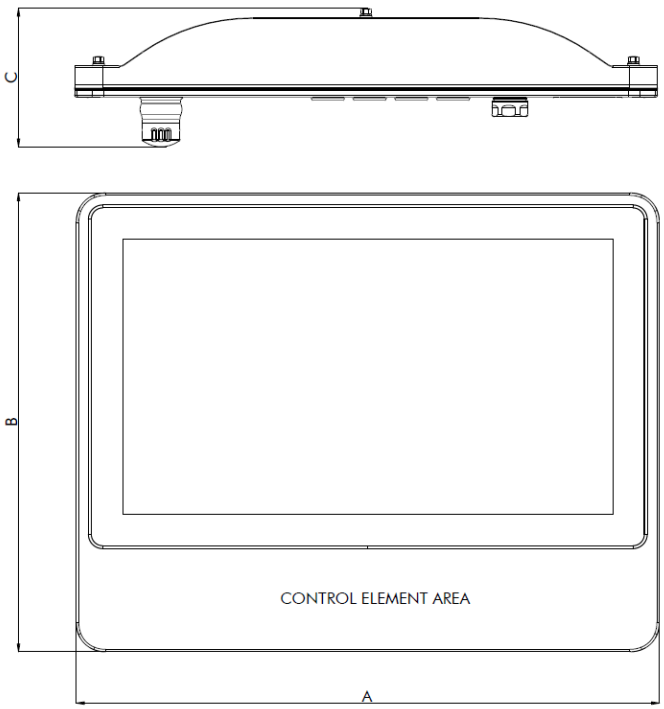

Illustration 3: Dimensions Automation Hygienic

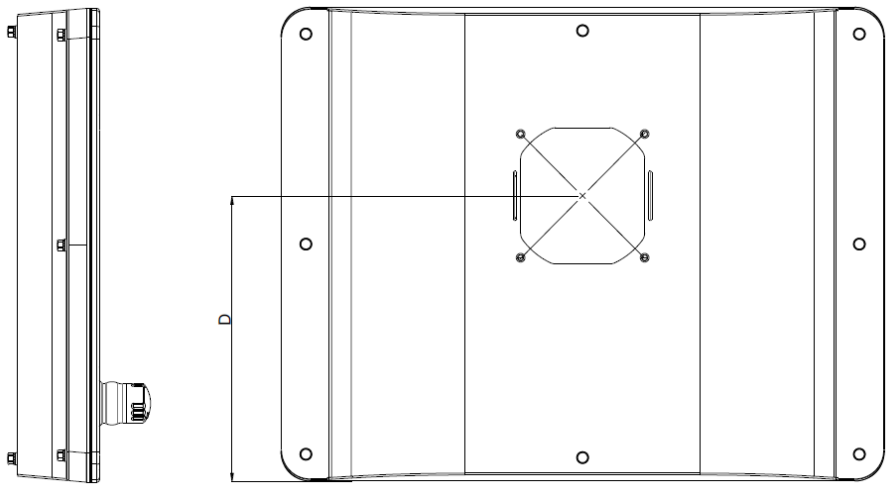

Illustration 4: Dimensions Automation Hygienic Rear

Size	A	B	C	D
18.5"	486	383	115	230

Table 5: Dimensions Automation Hygienic

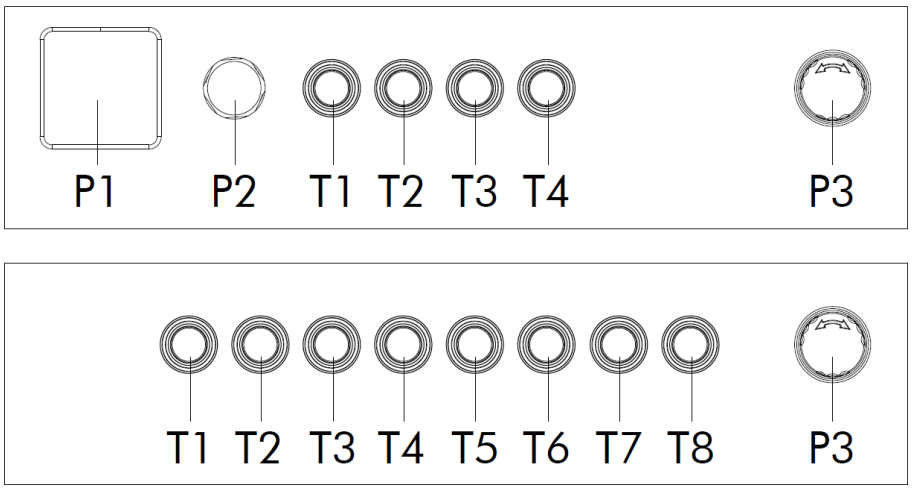

Illustration 5: Positions Control Element Area

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Components of the housing variant Automation Hygienic

We offer the following components for installation in button positions T1 to T8.

Illustration	Properties	
Pushbutton 	Series	SHORTRON® base-plate mounting
	Degree of protection	IP69
	Travel	2.3 mm
	Illumination	Yes, white LED
	Labelling Option	Yes
	Front Bezel	Stainless steel
	Operating Temperature	-25°C ... 70°C
	Contact Element	Changeover Contact
	Front ring	Blue, Green, Red, Black
Emergency Stop 	Series	QUARTRON®
	Degree of protection	IP66 / IP69K
	Illumination	No
	Labelling Option	No
	Front Bezel	Yellow
	Mushroom Head	Red
	Operating Temperature	-30°C ... 70°C
	Contact Elements	max. 2 x normally closed / 2 x normally open / 1 x normally closed + 1 x normally open
	Switching Position Indicator	No
	Release	Twist right or left
	Anti-lock Collar	Yes

Table 6: Pusbutton Components

2.3 Add-On

UPS (Uninterruptible Power Supply)

Energy Storage	400 Ws
Charge Duration	90 % in 45 seconds 100 % in 80 seconds
Configuration	Shutdown Time Dimming Time Dimming Intensity

The instruction for the UPS can be found in the FAQ section of the Christ website: FAQ - Questions and Answers

The device was operated with the following conditions: operating system Windows 10 IoT, no applications, display brightness 0 %.

It must be ensured that the customer application is ended quickly enough for the panel to shut down properly. Otherwise no protection against data loss or any other disfunction can be guaranteed. Depending on the CPU utilization, display and peripherals, the buffer time can be significantly shorter.

The exact buffer duration must be determined anew in every system setup.

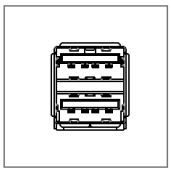
Intel® Celeron™ 3965U	59 s
Intel® Core™ i3-7100U	57 s
Intel® Core™ i5-7300U	34 s
Intel® Core™ i7-7600U	38 s
Intel® Celeron™ N3350	99 s

Table 7: UPS buffer duration

3 Description Hardware

3.1 External Interfaces

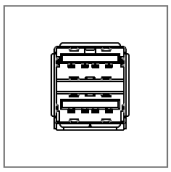
USB Host 2.0 (Type A)



PIN	Function	Description
1	VBUS	USB VCC
2	D-	USB Data-
3	D+	USB Data+
4	GND	USB Ground

Table 8: Pinout USB 2.0

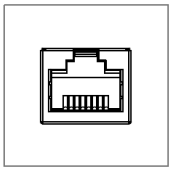
USB Host 3.0 (Type A)



PIN	Function	Description
1	VBUS	USB VCC
2	D-	USB Data-
3	D+	USB Data+
4	GND	USB Ground
5	StdA_SSRX-	SuperSpeed transmitter differential pair
6	StdA_SSRX+	SuperSpeed transmitter differential pair
7	GND_DRAIN	Ground for signal return
8	StdA_SSTX-	SuperSpeed receiver differential pair
9	StdA_SSTX+	SuperSpeed receiver differential pair

Table 9: Pinout USB 3.0

Ethernet



PIN	Function	Description
1	D1+	Transmit Data +
2	D1-	Transmit Data -
3	D2+	Receive Data+
4	D3+	Bidirectional +
5	D3-	Bidirectional -
6	D2-	Receive Data -
7	D4+	Bidirectional +
8	D4-	Bidirectional -

Table 10: Pinout Ethernet

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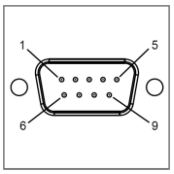
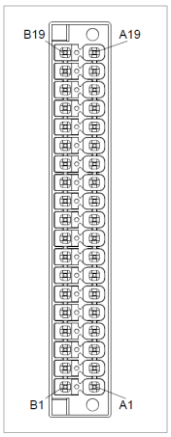
Serial Connector



	RS-232		RS-422		RS-485	
PIN	Function	Description	Function	Description	Function	Description
1	DCD	Data Carrier Detect	TX-	Transmitter Differential Pair -	DATA-	Data Differenital Pair A
2	RX	Receive Data	TX+	Transmitter Differential Pair +	DATA+	Data Differential Pair B
3	TX	Transmit Data	RX+	Receiver Differential Pair +	n.c.	not connected
4	DTR	Data Transmit Ready	RX-	Receiver Differential Pair -	n.c.	not connected
5	GND	Ground	GND	Ground	GND	Ground
6	DSR	Data Set Ready	n.c.	not connected	n.c.	not connected
7	RTS	Ready To Send	n.c.	not connected	n.c.	not connected
8	CTS	Clear To Send	n.c.	not connected	n.c.	not connected
9	RI	Ring Indicator	n.c.	not connected	n.c.	not connected

Table 11: Pinout Serial Connector

Phoenix DMCV 1,5/19-G1F-3,5-P20THR



PIN	Function	Description	PIN	Function	Description
A1	NOT A1	Emergency Stop Contact A1	B10	T3 1.4	Position T3 Contact 1.4
B1	NOT A2	Emergency Stop Contact A2	A11	T3 1.2	Position T3 Contact 1.2
A2	NOT B1	Emergency Stop Contact B1	B11	T3 LED X1	Position T3 LED Contact X1
B2	NOT B2	Emergency Stop Contact B2	A12	--	--
A3	--	--	B12	T6 1.2	Position T6 Contact 1.2
B3	--	--	A13	T6 1.4	Position T6 Contact 1.4
A4	--	Data0+	B13	T6 LED X1	Position T6 LED Contact X1
B4	T2 1.2	Position T2 Contact 1.2	A14	--	--

A5	T2 1.4	Position T2 Contact 1.4	B14	T5 1.4	Position T5 Contact 1.4
B5	T2 LED X1	Position T2 LED Contact X1	A15	T5 1.2	Position T5 Contact 1.2
A6	--	--	B15	T5 LED X1	Position T5 LED Contact X1
B6	T1 1.4	Position T1 Contact 1.4	A16	T8 1.4	Position T8 Contact 1.4
A7	T1 1.2	Position T1 Contact 1.2	B16	T8 LED X1	Position T8 LED Contact X1
B7	T1 LED X1	Position T1 LED Contact X1	A17	T7 1.2	Position T7 Contact 1.2
A8	--	--	B17	T7 LED X1	Position T7 LED Contact X1
B8	T4 1.2	Position T4 Contact 1.2	A18	GND	Ground
A9	T4 1.4	Position T4 Contact 1.4	B18	24 VDC	24 VDC
B9	T4 LED X1	Position T4 LED Contact X1	A19	GND	Ground
A10	--	--	B19	24 VDC	24 VDC

Table 12: Pinout Phoenix DMCV 1,5/19-G1F-3,5-P20THR

The pinout can vary. This can be seen in the device specific datasheet.

EtherCAT® / Profinet®

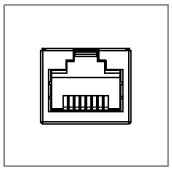
	The pinout corresponds to the EtherCAT® and Profinet® standards.

Table 13: Pinout EtherCAT® / Profinet®

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HDMI

PIN	Function	Description
1	D2 P	Data2+
2	PE	Shield Data2
3	D2 N	Data2-
4	D1 P	Data1+
5	PE	Shield Data1
6	D1 N	Data1-
7	D0 P	Data0+
8	PE	Shield Data0
9	D0 N	Data0-
10	CLK P	Clock+
11	PE	Clock Schirm
12	CLK N	Clock-
13	CEC	CEC
14	Utility	Utility
15	SCL	Serial Clock
16	SDA	Serial Data
17	GNDA	Ground
18	+5 V	+5 V
19	HP Detect	Hot-Plug-Detection

Table 14: Pinout HDMI

4 Environmental Conditions

⚠ WARNING	
	Insufficient air supply to the device Overheating ➢ Never cover the device completely or operate it in a small, unventilated housing

4.1 Temperature test

The values for operating temperature and humidity were determined under worst-case conditions. The maximum workload of the system was achieved by the BurnInTest from PassMark Software Pty Ltd.

The test ran under 100 % utilisation of:

- CPU
- RAM
- 2D and 3D Graphic (x86 only)
- Brightness of the display

4.2 IP Protection Class

The protection class only can be guaranteed under the following conditions:

- The device is installed correctly
- All components and covers of the interfaces are assembled
- Compliance with all environmental conditions

5 Assembly and Commissioning

This chapter describes all the steps for assembly. The following warnings are safety instructions that must be applied throughout the assembly chapter and in every other life cycle of the device.

⚠ DANGER	
	Danger from electric shock, explosion or electric arc Serious injury or death ➢ Pull out the mains plug and do not open the covers

⚠ WARNING	
	Dropping a device Injuries and bruises to the legs and / or feet ➢ Wear safety shoes

5.1 Torque

All screws must be tightened with a minimum torque.

Screw	Torque
M3	1 Nm
M4	2,3 Nm

5.2 Connection of the power supply

Use conductors with a cross-section of 0.75 mm² to 1.5 mm². Use the MC 1,5/ 3-STF-3,5 BKBDWH:GND Q PCB connector from Phoenix.

Strip the insulation from the individual wires of the conductor (1). Insert these into the connection contacts (3) of the PCB connector and tighten the screw contacts (2) with a screwdriver and a maximum torque of 0.3 Nm.

The rear view (4) of the connector is shown for clarification.

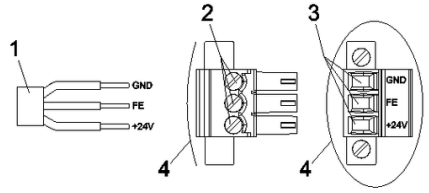

Illustration 6: Connection of the power supply

5.3 Mounting Automation Hygienic

There are four mounting threads with the measurement of M5 x 8. The fixing screws are not included in the delivery attachment of the device because of the different installation situation.

In the assembly drawing, the threads for attachment are marked in blue.

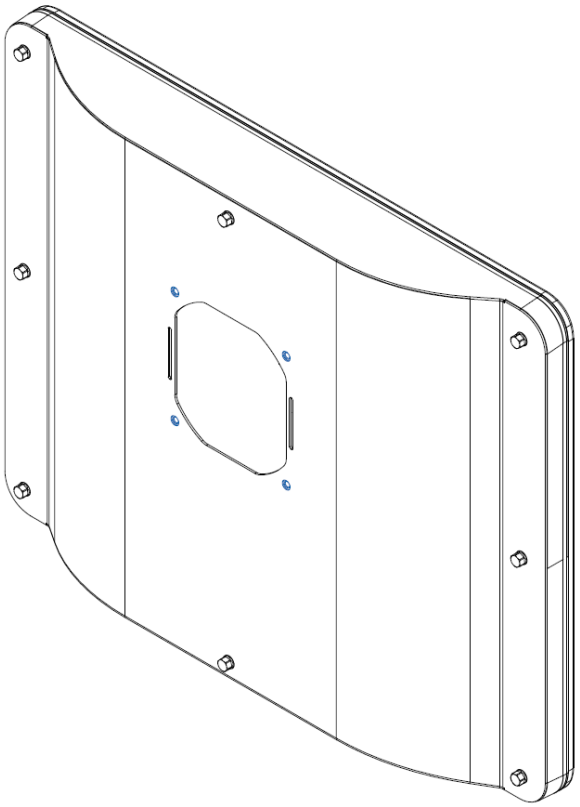

Illustration 7: Mounting Touch-it Automation Hygienic

6 Software

The x86 architecture has a BIOS (Basic Input Output System) for the basic settings of the system. This is not present in the ARM architectures. Here, updates are performed with CURT (Christ Update and Recovery Tool).

6.1 BIOS Basic Settings

AMI BIOS ROM has built-in settings program that allows users to make basic settings. This information is stored in a battery supported CMOS RAM, so it remains stored even when there is no power supply.

Accessing the BIOS works by pressing the "Del" key several times while the device is booting.

The following tabs in the BIOS enable various settings.

Main	Set date
Advanced	Make advanced BIOS settings like: COM, ACPI, etc.
Chipset	Enter host bridge parameters
Security	Set administrator password
Boot	Set Boot Option
Save & Exit	Save the settings made and initiate a restart. (Also possible with the F4 key on the keyboard)

Table 15: BIOS

Pressing F3 and confirming the query "Load Optimized Defaults?" with "Yes" restores the delivery state.

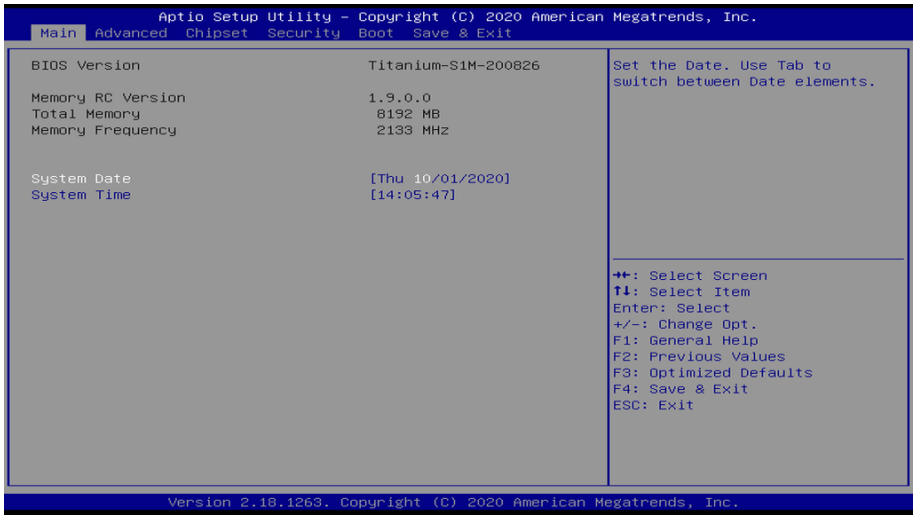

Illustration 8: BIOS

6.1.1 Set display resolution

IB903F

The following settings can be made in the BIOS:

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1. Select "Chipset" tab
2. Select "LVDS Panel Config Select"
3. Make settings
4. Save with keystroke "F4" (confirmation with "Yes")

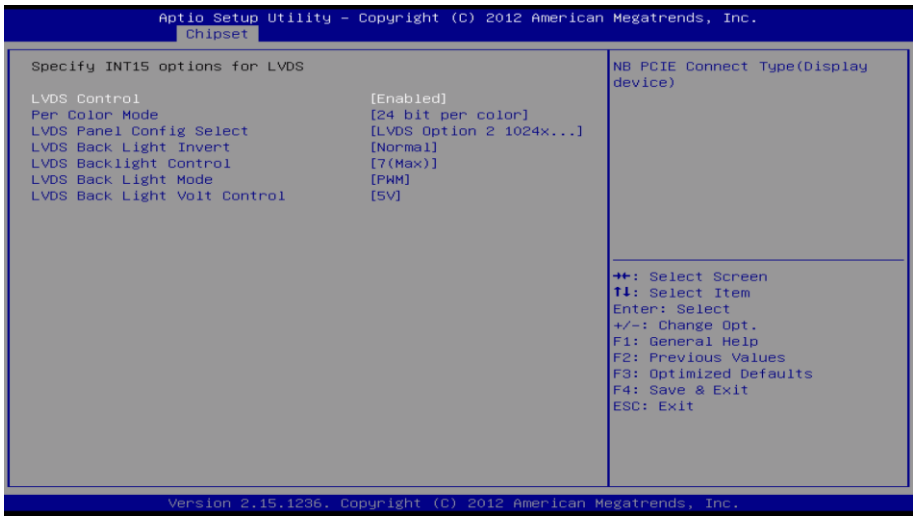


Illustration 9: BIOS Display Resolution

IB917

The following settings can be made in the BIOS:

1. Select "Advanced" tab
2. Select "LVDS (eDP/DP) Configuration"
3. Select "LVDS Chanel Type" (Set "Dual" for Full HD displays)
4. Select "Panel Type"
5. Set resolution
6. Save with keystroke "F4" (confirmation with "Yes")

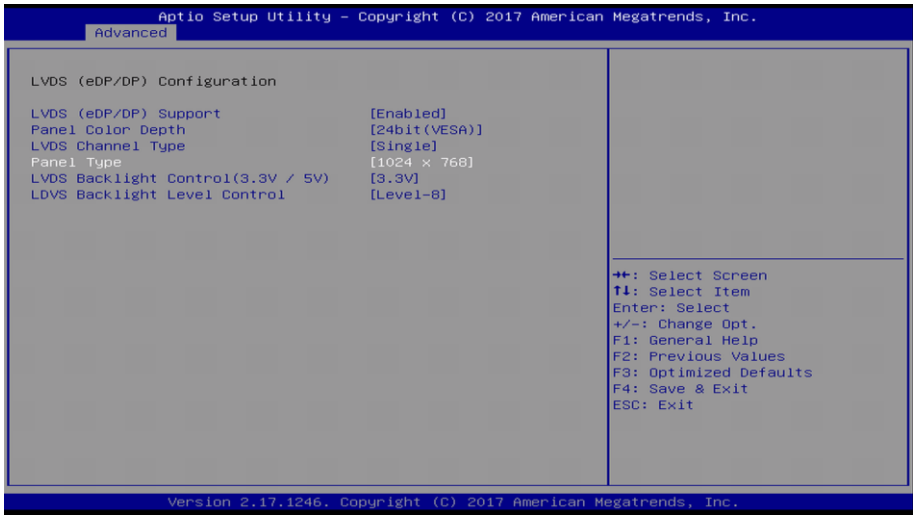


Illustration 10: BIOS Display Resolution

IB917

The following settings can be made in the BIOS:

1. Select "Advanced" tab
2. Select "LVDS (eDP/DP) Configuration"
3. Select "LVDS Chanel Type" (Set "Dual" for Full HD displays)
4. Select "LCD Panel Type"
5. Set resolution
6. Save with keystroke "F4" (confirmation with "Yes")

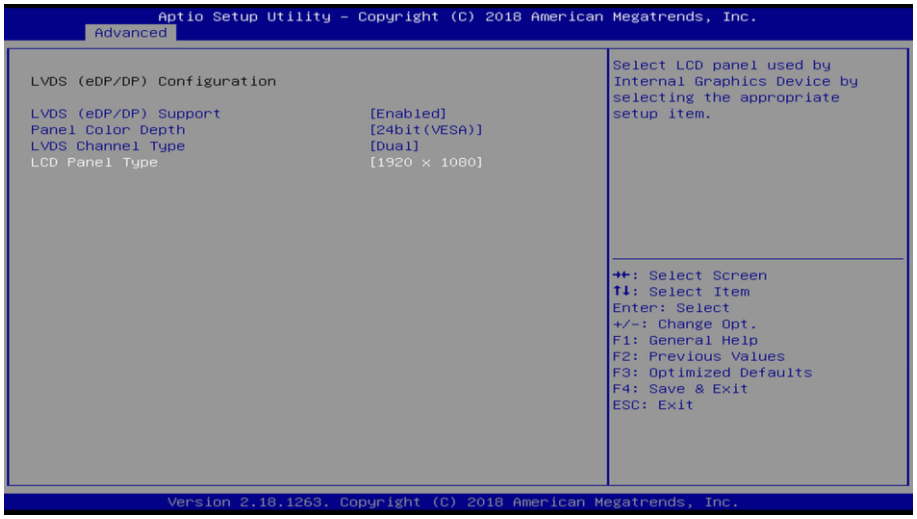


Illustration 11: BIOS Display Resolution

Note BIOS Update

For BIOS updates as described in the chapter Bios Update, the setting "LVDS (eDP/DP) Support" must be set to "Disabled". This will force a display on the screen. Resetting the setting is not necessary, this is done appropriately by the BIOS update.

1. Select "Advanced" tab
2. Select "LVDS (eDP/DP) Configuration"
3. Select "LVDS (eDP/DP) Support"
4. Select "Disabled"

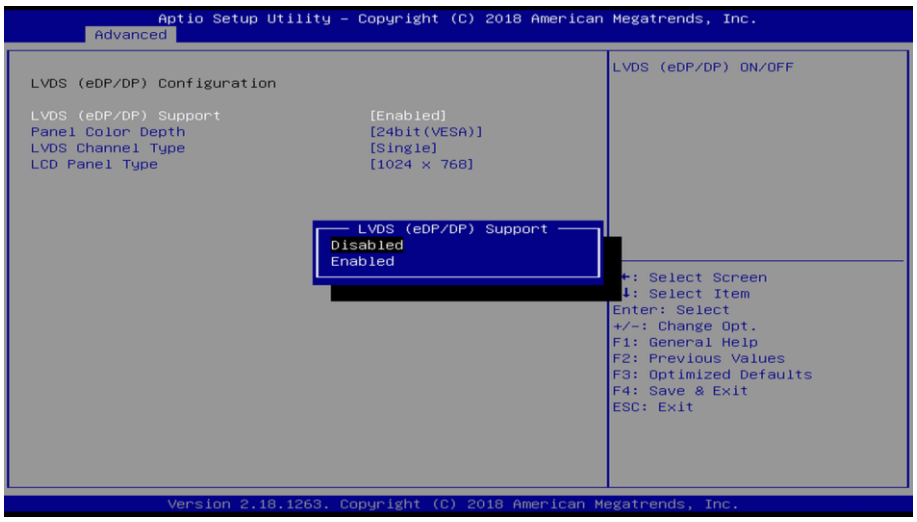


Illustration 12: BIOS LVDS Disable

6.1.2 COM Port configuration

IB903F

In order for RS-232, RS-422 and RS-485 to be recognized on the COM port, the following settings must be made in the BIOS:

1. Select "Advanced" tab
2. Select "F81866 Super IO Configuration"
3. Select "Serial Port 0 Configuration"
4. Under "Serial Port" "Enabled" must be selected
5. In "F81866 SERIAL PORT1 MODE SELECT" mode can be selected (RS232, RS422, RS485)
6. Save with keystroke "F4" (confirmation with "Yes")

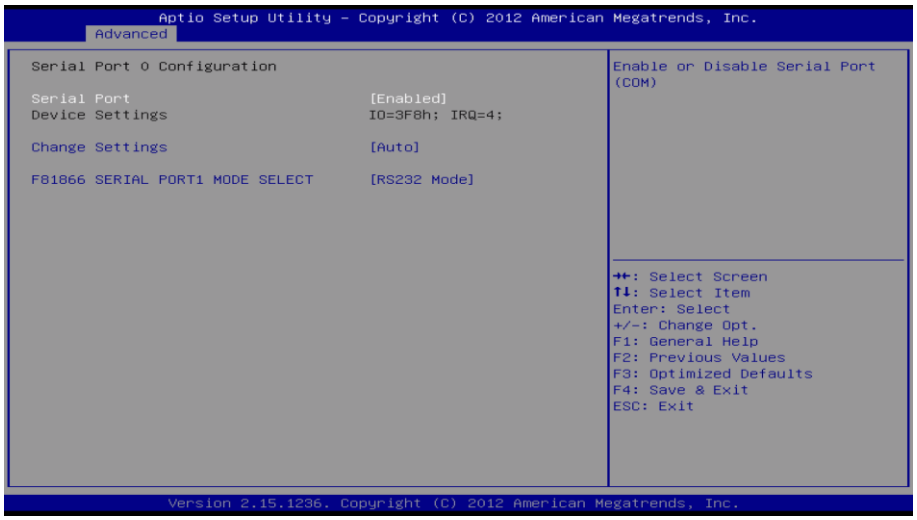


Illustration 13: BIOS COM Port

IB909F

In order for RS-232, RS-422 and RS-485 to be recognized on the COM port, the following settings must be made in the BIOS:

1. Select "Advanced" tab
2. Select "NCT6102D Super IO Configuration"
3. Select "Serial Port 1 Configuration"
4. Under "F81846 SERIAL PORT1 MODE SELECT" activate the device mode (RS232, RS422, RS485)
5. Save with keystroke "F4" (confirmation with "Yes")

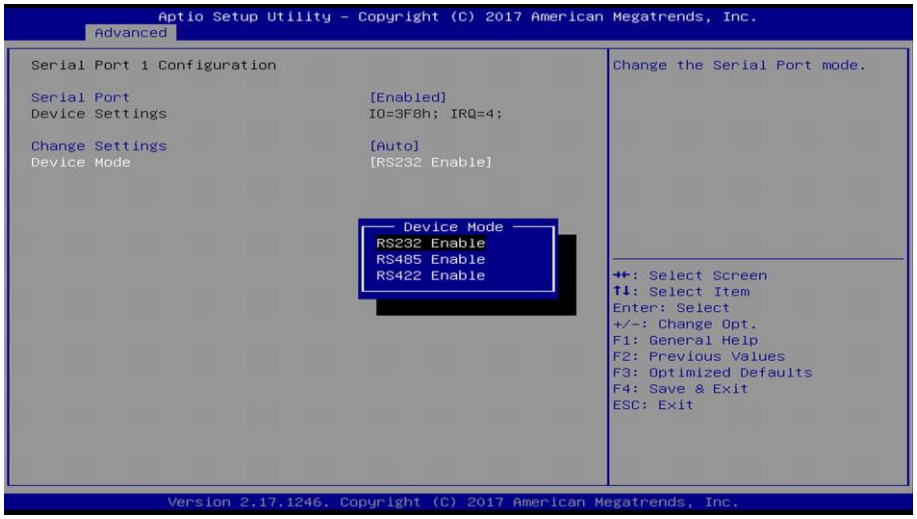


Illustration 14: BIOS COM Port

IB917

In order for RS-232, RS-422 and RS-485 to be recognized on the COM port, the following settings must be made in the BIOS:

1. Select "Advanced" tab
2. Select "F81846 Super IO Configuration"
3. Select "Serial Port 1 Configuration"
4. Under "F81846 SERIAL PORT1 MODE SELECT" activate the device mode (RS232, RS422, RS485)
5. Save with keystroke "F4" (confirmation with "Yes")

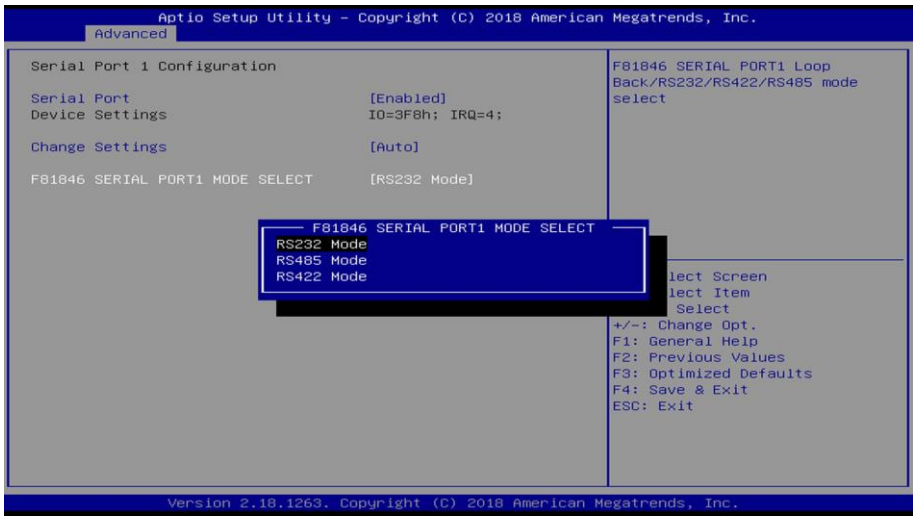


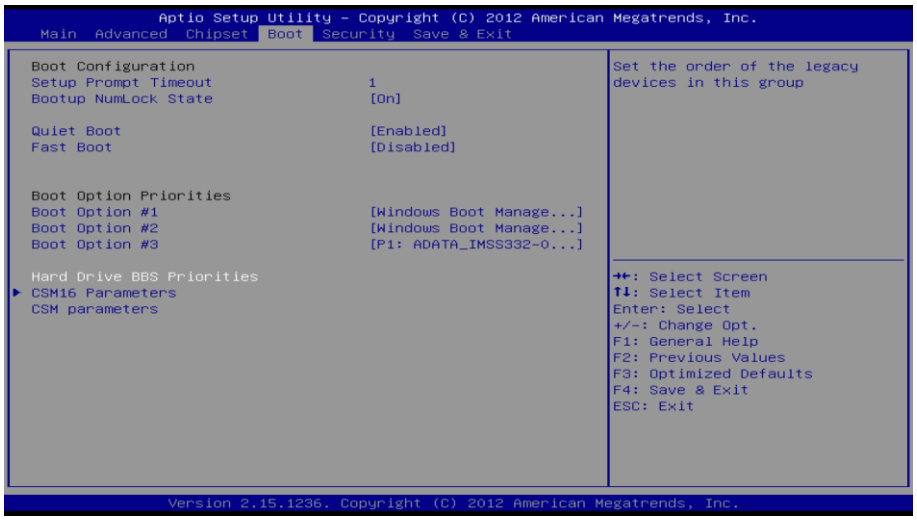
Illustration 15: BIOS COM Port

6.1.3 Set Boot Priority

IB903F

If you want to boot from a USB device, the following settings must be made in the BIOS:

1. Select "Boot" tab
2. Select "Hard Drive BBS Priorities"
3. Open the "Boot Option #1" by pressing the "Enter" key
4. Select USB device with "Enter"
5. Save with keystroke "F4" (confirmation with "Yes")



Ilustration 16: BIOS Boot Priority

Note: Devices with Windows 10

Additionally to be set for devices with Windows 10:

- Select "Boot Option #1" under "Boot Option Priorities"
- Select USB device (Windows Boot Manager must be on "Boot Option #2" or "Boot Option #3")

IB909F und IB917

If you want to boot from a USB device, the following settings must be made in the BIOS:

1. Select "Boot" tab
2. Select "UEFI" in "Boot mode select"
3. Open the "Boot Option #1" by pressing the "Enter" key
4. Select USB device with "Enter"
5. Save with keystroke "F4" (confirmation with "Yes")

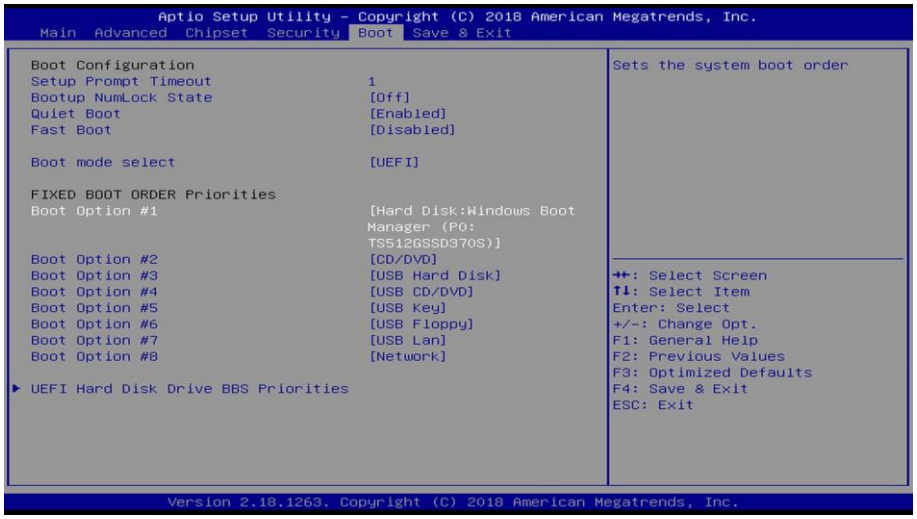


Illustration 17: BIOS Boot Priority

6.2 BIOS Update

6.2.1 Preparation

Copy the AMI BIOS update files to a bootable USB stick.

You can obtain the required files from Christ Electronic Systems. The listed file names are an example and can also have different names.

- E463853.BAT
- E463853.bin
- E463853_IB917AF-7300_UEFI_noBeep_IPC Revision.txt
- fparts.txt
- FPT.exe

6.2.2 Perform Update

IB903F

Insert the bootable USB stick with the required files into the device.

Set the USB stick to Hard Disk Boot Priority in the BIOS. You can read about the procedure under Boot Priority.

The Update Script is automatically detected on the USB stick and starts the update process.

- Enter the number of the update (here for example E463853)

```
Starting...


Microsoft(R) Windows Millennium
   (C)Copyright Microsoft Corp 1981-1999.

C:\>E463853_
```

Illustration 18: BIOS Update

- The update is executed
- If "done" is displayed at "Verifying All Block", the update was successful

```
Reading flash ............... done
Erasing All Block ........... done
Updating All Block .......... done
Verifying All Block ......... done

C:\>
```

Illustration 19: BIOS Update successful

- Disconnect the power supply
- Remove the USB stick
- The device can be started

IB909F

No update of the BIOS IB909F may be performed. The device must be sent to Christ Service for a BIOS update. The contact and the procedure for this can be found in chapter Technical Support.

Insert the bootable USB stick with the required files into the device.

In the BIOS under LVDS (eDP/DP) Configuration, set LVDS (eDP/DP) Support to Disabled. You can read about the procedure in the chapter "Setting the display panel and resolution" under Note BIOS Update.

Set the USB stick to Hard Disk Boot Priority in the BIOS. You can read about the procedure under Boot Priority.

The update script is automatically detected on the USB stick and starts the update process.

- Enter the number of the update (here for example E463853)

```
Starting...



Microsoft(R) Windows Millennium
   (C)Copyright Microsoft Corp 1981-1999.

C:\>E463853_
```

Illustration 20: IB917 BIOS Update

- The update is executed
- The message "FPT Operation Successful" indicates successful completion

```
- Verifying Flash [0x0003000]     8KB of     8KB - 100 percent complete.
RESULT: The data is identical.

FPT Operation Successful.

C:\>
```

Illustration 21: IB917 BIOS Update successful

- Disconnect the power supply
- Remove the USB stick
- The device can be started

6.3 CURT Christ Update and Recovery Tool

The instructions for CURT Christ Update and Recovery Tool can be found in the FAQ section of the Christ website: FAQ - Questions and Answers

7 Maintenance

The following chapter describes maintenance measures that can be performed by a qualified end user.

NOTICE	
	Seals attacked, damage to the housing Loss of IP protection class ➢ There must be no permanent exposure to substances containing large amounts of oils or fats.

7.1 Cleaning

⚠ DANGER	
	Triggering unintended functions Loss of control of the plant / machine / device ➢ The unit may only be cleaned when it is switched off or unplugged.

The cleaning agent may only be applied to the device in diluted form.

The device can be cleaned with alcoholic, slightly acidic or slightly alkaline cleaning agents without any problems.

Under no circumstances should highly aggressive solvents, chemicals or scouring agents, or cleaning agents containing chlorine, strong acids or bases be used.

When properly mounted, the Automation Hygienic device may be cleaned with high pressure / steam jet cleaning within IP69 specification.

7.2 Maintenance

It does not require any maintenance on the part of the user.

8 Technical Data

8.1 Mechanical Specifications

Enclosure Front	Glass
Enclosure	Stainless steel
Weight	max. 10 kg
Dimensions	490 x 385 x 115 [mm]
Mounting	VESA 100
Cooling	Passive

Table 16: Dimensions

8.2 Electromagnetic Compatibility

Emitted Interference	EN55032 Class A
Immunity of supply line DC	±2 kV according to IEC 61000-4-4; EFT ± 0,5 kV according to IEC 61000-4-5; Surge asymmetrical
Immunity of signal lines	±1 kV according to IEC 61000-4-4; EFT
ESD	± 4 kV Contact discharge according to EN61000-4-2 ± 8 kV Air discharge according to EN 61000-4-2
Immunity of conducted emission	3 V 150 kHz – 80 MHz, 80% AM nach IEC 61000-4-6
Immunity of high-frequency radiation	3 V/m 80 MHz – 1 GHz, 80% AM nach IEC 61000-4-3 3 V/m 1 GHz – 6 GHz, 80% AM nach IEC 61000-4-3

Table 17: Electromagnetic Compatibility

8.3 Environmental Conditions

Operating Temperature	0 ~ 40 °C
Storage Temperature	-10 ~ 70 °C
Humidity	5 ~ 80 % (non condensing)
Protection Class	IP69
Cooling	Natural Air Convection

Table 18: Environmental Conditions

8.4 Display Specifications

Color Depth	8 bit
Lifetime	min. 50,000 h
Viewing Angle (right/left/up/down)	min. 85°/85°/85°/85°
Backlight	LED
Touch Technology	PCAP

Table 19: Display Specifications

Touch-it Automation glass Hygienic

Instruction Manual

NOTICE

Pixel Errors

Due to the manufacturing process, displays may contain faulty pixels (pixel errors), which do not constitute a claim or warranty.

The international standard ISO 9241-307:2009 defines, on an international level, the maximum possible pixel errors in an LC-display. This standard discribes different error types, in consideration of different pixel error classes.

There are the following pixel error classes, each with three differnet error types:

Maximum acceptable errors per 1 Mio. pixels according to ISO 9241-307:2009				
error class	error type 1 pixel constantly illuminatied	error type 2 pixel constantly dark	error type 3 subpixel constantly illuminatied	error type 4 subpixel constantly dark
0	0	0	0	0
I	1	1	n = 0 to 2 2 - n	2 x n + 1
II	2	2	n = 0 to 5 5 - n	2 x n
III	5	15	max. 50	max. 50
IV	50	150	max. 150	max. 150

Why this classification of errors?

Each pixel of a display contains three subpixels which have the basic colors red, green and blue. The combination makes it possible to show a wide spectrum of colors.

Considering for example the display solution of 1280 x 800 pixels, thereof a total of 1,024000 pixels or 3,072000 subpixels are embedded in the display area. This means , the display holds 3,072000 single transistors at an area of 261.1 mm by 163.2 mm.

These figures make it clear that it is not possible to specifically produce defect-free displays even by today's manufacturing standards.

Christ Electronic Systems GmbH therefore adapts to the corresponding requirements of most international manufacturers. The displays must always comply with error class II. If the permissible number of errors of the pixel error class II is not exceeded, there is also no complaintable "failure" of the display.

Refering to the calculation, the following errors can occur in the display:

- Max. 2 constantly illuminated and 2 constantly dark pixels
- Max. 5 constantly illuminated or 10 constantly dark subpixel

Avoid burn-in on displays

NOTICE

Images that do not change

"Image shadows", "ghost images" arise

➢ Changing displayed images, screen saver, energy-saving mode

With LC displays, so-called "ghost images" or "image shadows" can occur under certain circumstances. These are images that remain from the previous image and are felt to be "burnt into" the display. These do not remain forever. If "image shadows" occur, the device should be switched off for a longer period of time so that the burnt-in image disappears.

To avoid "ghost images" or "image shadows", the following behaviour is recommended:

- Do not display still images over an extended period of time
- Change standing images at short intervals
- Switch off the unit or use the energy-saving mode when you do not need it
- Use the screen saver function

9 Standards and Approvals

9.1 CE Marking

The device has been tested in accordance with the applicable EU directives and the associated harmonized standards.

NOTICE	
	Decleration of Conformity The declaration of Conformity can be downloaded from the Christ Electronic Systems Homepage.

9.2 RoHS

The device complies with the requirement of the EU Directive RoHS 2011/65/EU.

9.3 Electromagnetic Compatibility

The device complies with the requirements of the EU Electromagnetic Compatibility Directive 2014/30/EU with the harmonized standards listed below:

EN 55032: 2015 Class A	Electromagnetic compatibility of multimedia equipment - Emission Requirements
EN 55035: 2017	Electromagnetic compatibility of multimedia equipment - Immunity requirements

9.4 Environmentally Appropriate Disposal

The device must not be disposed of with domestic waste.

The appliance complies with the requirement of the EU Directive WEEE 2012/19/EU, which is symbolised by the symbol with the crossed-out dustbin.

In order to enable environmentally friendly recycling, the various materials must be separated from one another.

Disposal must be carried out in accordance with the applicable legal regulations.

Component parts	Disposal
Enclosure	Metal Recycling
Electronic	Electronics Recycling
Paper / cardboard packaging	Paper / Cardboard boxes Recycling
Plastic packing materials	Plastics Recycling

10 Technical Support

Despite the highest quality standards and detailed function tests of all our products, daily use of our devices can always lead to damage or failure of a wearing part. The failure of a machine in production costs a lot of money. That is why the Christ company processes complaints as quickly as possible.

You can send the device to us without prior notice. All you need to do is fill out the cover letter for the repair and enclose it with the touch panel or IPC so that the service department can start the repair quickly.When the device arrives, it goes through a defined process that clearly documents all processes and makes the respective status traceable. As soon as your panel or IPC is registered in our system, you will receive a confirmation of receipt so that you can also get a precise overview.

Technical Support can be contacted as follows:

Service, Repair and Technical Support
Phone: +49 8331 8371-500
Fax: +49 8331 8371-497
E-Mail: service@christ-es.de

Or directly via the Homepage.
Christ Service

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