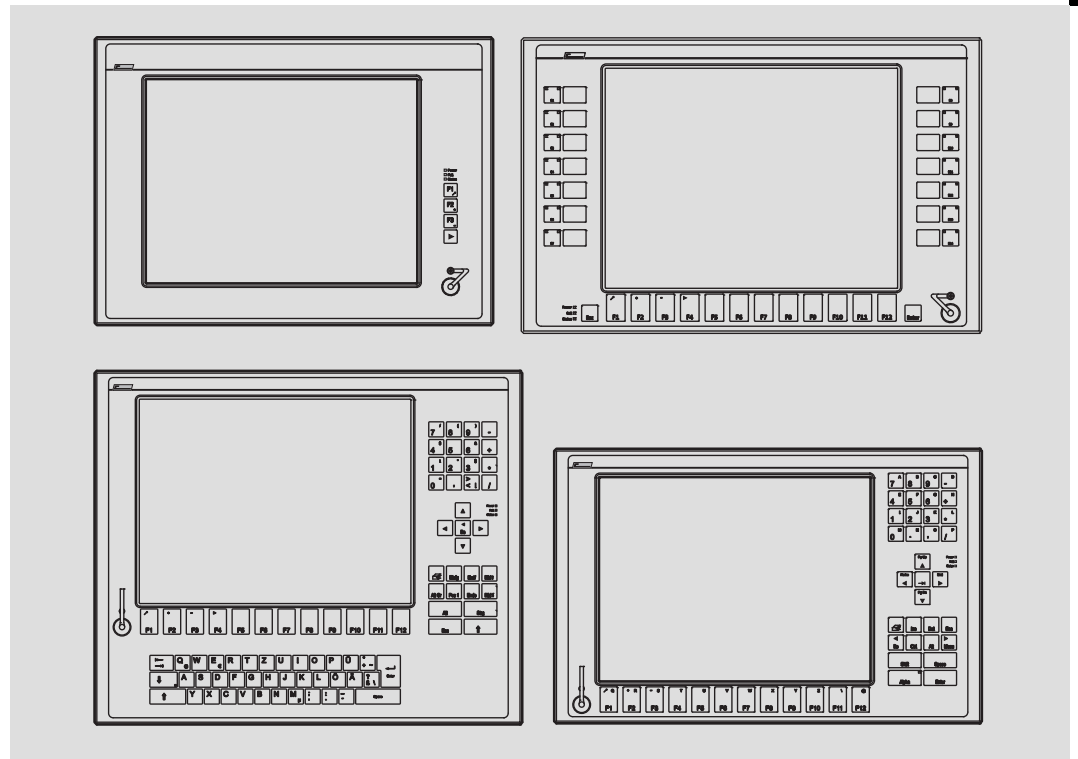


L-force Controls



Operating Instructions

Industrial PC



MP 800 DVI ... MP 9000 DVI

Monitor Panel (Embedded Line)



Please read these instructions before you start working!
Follow the enclosed safety instructions.

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1 About this documentation

Contents

This documentation provides you with information about the intended use of the monitor panel.

The present manual is part of the "Controller-based automation" or "PC-based automation" manual collection which you can find on the DVDs of the same name.

Target group

This documentation is directed at qualified skilled personnel according to IEC 60364.

Qualified skilled personnel are persons who have the required qualifications to carry out all activities involved in installing, mounting, commissioning, and operating the product.



Tip!

Information and auxiliary devices related to the Lenze products can be found in the download area at

<http://www.Lenze.com>

Validity

These instructions are valid for

- ▶ MP 800 DVI
- ▶ MP 1000 DVI, MP 1000s DVI
- ▶ MP 1050 DVI, MP 1050s DVI
- ▶ MP 2000 DVI
- ▶ MP 2050 DVI
- ▶ MP 5000 DVI
- ▶ MP 5020 DVI
- ▶ MP 5050 DVI
- ▶ MP 5070 DVI
- ▶ MP 9000 DVI

1 About this documentation







Document history

1.1 Document history

Material number	Version			Description
13457954	4.0	02/2014	TD06	New: <ul style="list-style-type: none">• UL notes (French language)• Notes RJ45 cable laying
13433085	3.0	03/2013	TD29	General revision
13392303	2.0	11/2011	TD29	Supplement of the note concerning the protection against direct solar radiation, as well as chapter "Repair"
13385511	1.0	07/2011	TD29	First edition

1.2 Conventions used

This documentation uses the following conventions to distinguish between different types of information:

Type of information	Identification	Examples/notes
Spelling of numbers		
Decimal separator	Point	In general, the decimal point is used. For instance: 1234.56
Warnings		
UL warnings		Given in English and French
UR warnings		
Text		
Program name	» «	PC software For example: »Engineer«, »Global Drive Control« (GDC)
Icons		
Page reference		Reference to another page with additional information For instance:  16 = see page 16
Documentation reference		Reference to another documentation with additional information For example:  EDKxxx = see documentation EDKxxx

1 About this documentation

Notes used

1.3 Notes used

The following pictographs and signal words are used in this documentation to indicate dangers and important information:

Safety instructions

Structure of safety instructions:






Danger!




(characterises the type and severity of danger)

Note



(describes the danger and gives information about how to prevent dangerous situations)

Pictograph and signal word	Meaning
 Danger!	Danger of personal injury through dangerous electrical voltage. Reference to an imminent danger that may result in death or serious personal injury if the corresponding measures are not taken.
 Danger!	Danger of personal injury through a general source of danger. Reference to an imminent danger that may result in death or serious personal injury if the corresponding measures are not taken.
 Stop!	Danger of property damage. Reference to a possible danger that may result in property damage if the corresponding measures are not taken.

Application notes

Pictograph and signal word	Meaning
 Note!	Important note to ensure troublefree operation
 Tip!	Useful tip for simple handling
	Reference to another documentation

Special safety instructions and application notes

Pictograph and signal word	Meaning
 Warnings!	Safety note or application note for the operation according to UL or CSA requirements.
 Warnings!	The measures are required to meet the requirements according to UL or CSA.

2 Safety instructions

2.1 General safety information

Scope

The following general safety instructions apply to all Lenze drive and automation components.

The product-specific safety and application notes given in this documentation must be observed!

For your own safety



Danger!

Disregarding the following basic safety measures may lead to severe personal injury and damage to material assets!

- ▶ Lenze drive and automation components ...
 - ... must only be used for the intended purpose.
 - ... must never be operated if damaged.
 - ... must never be subjected to technical modifications.
 - ... must never be operated unless completely assembled.
 - ... must never be operated without the covers/guards.
 - ... can - depending on their degree of protection - have live, movable or rotating parts during or after operation. Surfaces can be hot.
- ▶ For Lenze drive and automation components ...
 - ... only use approved accessories.
 - ... only use original manufacturer spare parts.
- ▶ All specifications of the corresponding enclosed documentation must be observed.
This is vital for a safe and trouble-free operation and for achieving the specified product features.
The procedural notes and circuit details provided in this document are proposals which the user must check for suitability for his application. The manufacturer does not accept any liability for the suitability of the specified procedures and circuit proposals.
- ▶ Only qualified skilled personnel are permitted to work with or on Lenze drive and automation components.
According to IEC 60364 or CENELEC HD 384, these are persons ...
 - ... who are familiar with the installation, assembly, commissioning and operation of the product,
 - ... possess the appropriate qualifications for their work,
 - ... and are acquainted with and can apply all the accident prevent regulations, directives and laws applicable at the place of use.

Transport, storage

- ▶ Transport and storage in a dry, low-vibration environment without aggressive atmosphere; preferably in the packaging provided by the manufacturer.
 - Protect against dust and shocks.
 - Comply with climatic conditions according to the technical data.

Mechanical installation

- ▶ Install the product according to the regulations of the corresponding documentation. In particular observe the section "Operating conditions" in the chapter "Technical data".
- ▶ Provide for a careful handling and avoid mechanical overload. During handling neither bend components, nor change the insulation distances.
- ▶ The product contains electrostatic sensitive devices which can easily be damaged by short circuit or static discharge (ESD). Thus, electronic components and contacts must not be touched unless ESD measures are taken beforehand.

Electrical installation

- ▶ Carry out the electrical installation according to the relevant regulations (e. g. cable cross-sections, fusing, connection to the PE conductor). Additional notes are included in the documentation.
- ▶ When working on live products, observe the applicable national regulations for the prevention of accidents (e.g. BGV 3).
- ▶ The documentation contains notes for the EMC-compliant installation (shielding, earthing, arrangement of filters and installation of the cables). The manufacturer of the system or machine is responsible for the compliance with the limit values required in connection with EMC legislation.
- ▶ For compliance with the limit values for radio interference emission at the site of installation, the components - if specified in the technical data - have to be mounted in housings (e. g. control cabinets). The housings have to enable an EMC-compliant installation. In particular observe that for example control cabinet doors preferably have a circumferential metallic connection to the housing. Reduce openings or cutouts through the housing to a minimum.
- ▶ Only plug in or remove pluggable terminals in the deenergised state!

Commissioning

- ▶ If required, you have to equip the system with additional monitoring and protective devices in accordance with the respective valid safety regulations (e. g. law on technical equipment, regulations for the prevention of accidents).

Maintenance and servicing

- ▶ The components are maintenance-free if the required operating conditions are observed.
- ▶ If the cooling air is polluted, the cooling surfaces may be contaminated or the air vents may be blocked. Under these operating conditions, the cooling surfaces and air vents must be cleaned at regular intervals. Never use sharp objects for this purpose!
- ▶ After the system has been disconnected from the supply voltage, live components and power connections must not be touched immediately because capacitors may be charged. Please observe the corresponding notes on the device.

Disposal

- ▶ Recycle or dispose of the product according to the applicable regulations.

2.2 Product-specific safety instructions

- ▶ Protect the device against direct solar radiation, since the housing may heat up strongly.
- ▶ The device is classified as a class A device and can cause radio interference in residential areas. In this case, the operator may have to take special measures. Any costs arising from these measures have to be paid by the operator.
- ▶ A touchscreen does not comply with the Ergonomics Directive ZH 1/618. This is why it is only designed for short-time inputs and monitoring functions. For longer inputs, connect an external keyboard.
- ▶ In the event of a fault, unplug the power connector immediately and send back the device to the manufacturer. The address can be found on the self-addressed envelope included in this documentation. Please use the original packaging to return the device!
- ▶ Printed circuit boards which might be damaged by short circuit or electrostatic discharge (ESD) must be handled appropriately.

2.3 Safety instructions for the installation according to UL**Original - English****Approval**

Underwriter Laboratories (UL), UL508 and CSA C22.2 No. 142-M1987, (UL File Number E236341)

Ratings

- ▶ Input 24 V DC, 65 W
- ▶ For use on an isolated power supply rated 24V DC 4A max.
- ▶ Max. ambient temperature 40°C
- ▶ Max. surrounding temperature 50 °C
- ▶ Optional communication ratings:
 - RS232-Connection (APL and DPL version only): max. 3 A
 - USB-Connection (DVI version only): max. 1 A
 - PS/2-Connection: max. 1 A
 - VGA-Connection (APL version only): max. 4 A
 - FBAS-Connection (APL version only): max. 4 A
 - DVI-Connector (DVI version only): max. 4 A
 - DPL-Connection (DVI version only): max. 4 A
 - External Power Supply for DVI/USB Extender: max. 4 A
 - Video-DSUB Connection for DVI/USB Extender: max. 4 A
 - Data-DSUB Connection for DVI/USB Extender: max. 4 A
- ▶ Environmental ratings: If these devices are mounted into a door or front cover of an enclosure: Type 1 Enclosure.

**Warnings!****Conditions of acceptability**

- ▶ These devices are for Type 1 front panel mounting only.
- ▶ The external power supply connection is suitable for field wiring. An isolated power supply rated 24 V DC, 4 A max. must be used.

Field Wiring Markings

Wiring Terminal MSTB 2,5/3-STF-5,08:

- ▶ Use Copper Wire only.
- ▶ AWG 18 ... AWG 12 (0.82 mm²... 3.3 mm²)
- ▶ Torque 5...7 lb-in (0.5 ... 0.6 Nm)

Original - French

Homologation

Underwriter Laboratories (UL), UL508 et CSA C22.2 n° 142-M1987, (n° de dossier UL E236341)

Caractéristiques assignées

- ▶ Entrée 24 V CC, 65 W
- ▶ Equipement destiné à une alimentation avec isolation galvanique de 24V CC, 4A maximum (tension assignée).
- ▶ Température ambiante maximale : 40°C
- ▶ Température ambiante maximale : 50 °C
- ▶ Caractéristiques de communication assignées (option) :
 - Port RS232 (versions APL et DPL uniquement) : maximum 3 A
 - Port USB (version DVI uniquement) : maximum 1 A
 - Port PS/2 : maximum 1 A
 - Port VGA (version APL uniquement) : maximum 4 A
 - Port FBAS (version APL uniquement) : maximum 4 A
 - Port DVI (version DVI uniquement) : maximum 4 A
 - Port DPL (version DVI uniquement) : maximum 4 A
 - Alimentation externe pour carte d'extension DVI/USB : maximum 4 A
 - Port vidéo DSUB pour carte d'extension DVI/USB : maximum 4 A
 - Port de données DSUB pour carte d'extension DVI/USB : maximum 4 A
- ▶ Evaluations environnementales : en cas de montage des équipements dans la porte ou le capot avant d'un coffret de protection : coffret de type 1.



Warnings!

Conditions of acceptability

- ▶ Ces équipements sont conçus pour un montage de type 1 sur panneau avant uniquement.
- ▶ Le raccord d'alimentation externe est adapté à un câblage à pied d'oeuvre. Utiliser impérativement une alimentation avec isolation galvanique de 24V CC, 4A maximum (tension assignée).

Marquage du câblage à pied d'oeuvre

Bornier de câblage MSTB 2,5/3-STF-5,08 :

- ▶ Utiliser exclusivement des conducteurs en cuivre.
- ▶ AWG 18 ... AWG 12 (0,82 mm²... 3,3 mm²)
- ▶ Couple de 5 à 7 lb-in (0,5 ... 0,6 Nm)

3 Product description

Scope of supply

3 Product description

3.1 Scope of supply

Quantity	Name
1	Monitor panel
	Screw clamp fixings
8	MP 800 DVI
8	MP 1000 DVI, MP 1000s DVI, MP 1050 DVI, MP 1050s DVI
4	MP 2000 DVI
6	MP 2050 DVI, MP 5000 DVI, MP 5020 DVI, MP 5050 DVI
5	MP 5070 DVI
6	MP 9000 DVI
1	Connection plug for voltage supply
1	DVI-D cable (length 2 m)
1	USB cable (length 2 m)
1	DVD "PC based Automation"
1	Test report
1	Device pass card



Note!

After receipt of the delivery, check immediately whether the items match the accompanying papers. We do not accept any liability for deficiencies claimed subsequently.

Claim

- ▶ visible transport damage immediately to the forwarder
- ▶ visible deficiencies/incompleteness immediately to your Lenze representative.

3.2 Application as directed

The monitor panel is used as intended if it is used solely for providing information in common industrial and commercial areas. Another use or any further use is not permissible.

A **use that is not intended** also includes a use harbouring fatal risks or dangers which, without the provision of exceptionally high safety measures, may result in death, injury or damage to material assets.

The monitor panel must in particular **not** be used ...

- ▶ in private areas.
- ▶ in potentially explosive atmospheres.
- ▶ in areas with harmful gases, oils, acids, radiation, etc.
- ▶ in applications where vibration and impact loads occur, exceeding the requirements of EN 50178.
- ▶ for performing safety functions, for instance
 - in air traffic control / in flight-control systems
 - for the monitoring/control of nuclear reactions
 - for the monitoring/control of means of mass transport
 - for the monitoring/control of medical systems
 - for the monitoring/control of weapon systems

Higher-level safety systems must be used to guarantee the protection of persons and material assets!

3.3 Device features

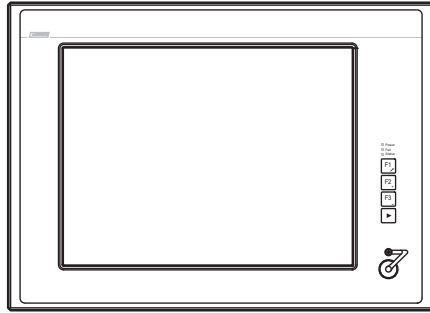
	MP 800 DVI ... MP 9000 DVI
Design	<ul style="list-style-type: none"> ● PC housing of sheet steel ● Front frame of anodised and etched aluminium ● Front made of polyester foil
Mounting	<ul style="list-style-type: none"> ● For installation in control cabinets, machine enclosures, and control boards
Electrical supply	<ul style="list-style-type: none"> ● 24 V DC voltage supply
Interfaces	<ul style="list-style-type: none"> ● 1 x DVI ● 2 x USB type A (V 2.0) ● 1 x USB type B (V 2.0)

Accessories

- ▶ DVI/USB extender

Overview

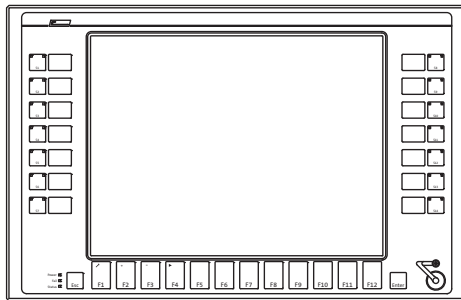
Monitor panel MP 800 DVI / MP 1000 DVI / MP 1000s DVI / MP 2000 DVI / MP 5000 DVI / MP 9000 DVI



CS57x0-026

- MP 800 DVI: VGA touchscreen 20.3 cm (8")
- MP 1000 DVI: VGA touchscreen 26.4 cm (10.4")
- MP 1000s DVI: SVGA touchscreen 26.4 cm (10.4")
- MP 2000 DVI: SVGA touchscreen 30.7 cm (12.1")
- MP 5000 DVI: XGA touchscreen 38.1 cm (15")
- MP 9000 DVI: SXGA touchscreen 48.3 cm (19")
- 3 freely assignable function keys

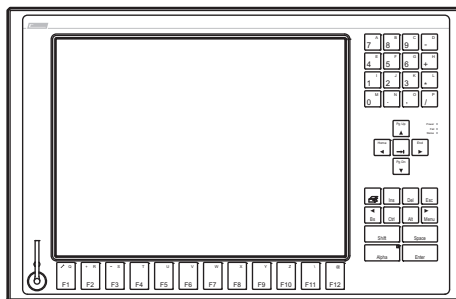
Monitor panel MP 5020 DVI



ELx7xx-002

- XGA touchscreen 38.1 cm (15")
- 12 freely assignable function keys
- 14 freely assignable special keys

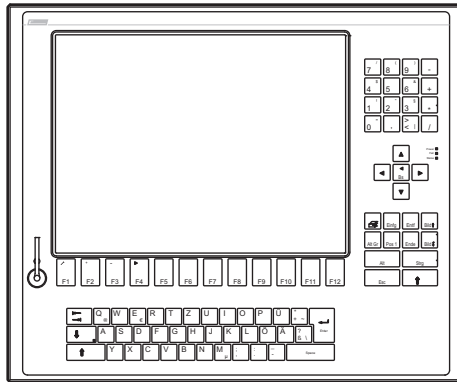
Monitor panel MP 1050 DVI / MP 1050s DVI / MP 2050 DVI / MP 5050 DVI



CS57x0-028

- MP 1050 DVI: VGA touchscreen 26.4 cm (10.4")
- MP 1050s DVI: SVGA touchscreen 26.4 cm (10.4")
- MP 2050 DVI: SVGA touchscreen 30.7 cm (12.1")
- MP 5050 DVI: XGA touchscreen 38.1 cm (15")
- 12 freely assignable function keys
- Numeric keypad, control keys, level switch-over Alpha

Monitor panel MP 5070 DVI



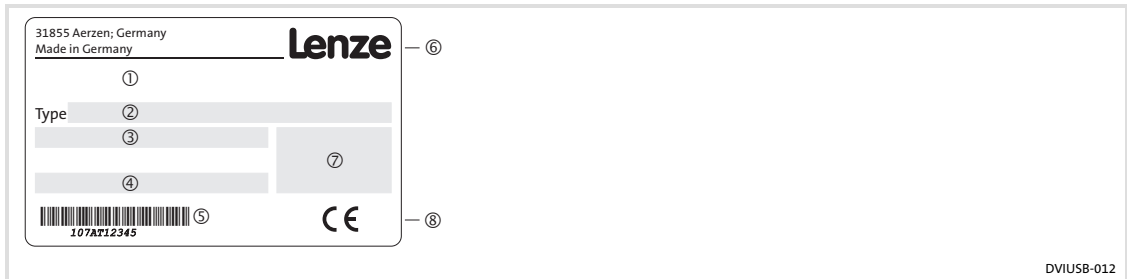
CS57x0-029

- XGA touchscreen 38.1 cm (15")
- 12 freely assignable function keys
- MF2 keyboard

3 Product description

Identification

3.4 Identification



- ① Type designation
- ② Type code (catalogue/order no.)
- ③ Technical data
- ④ Customised material number
- ⑤ Bar code with serial number
- ⑥ Manufacturer address
- ⑦ Certification
- ⑧ CE mark

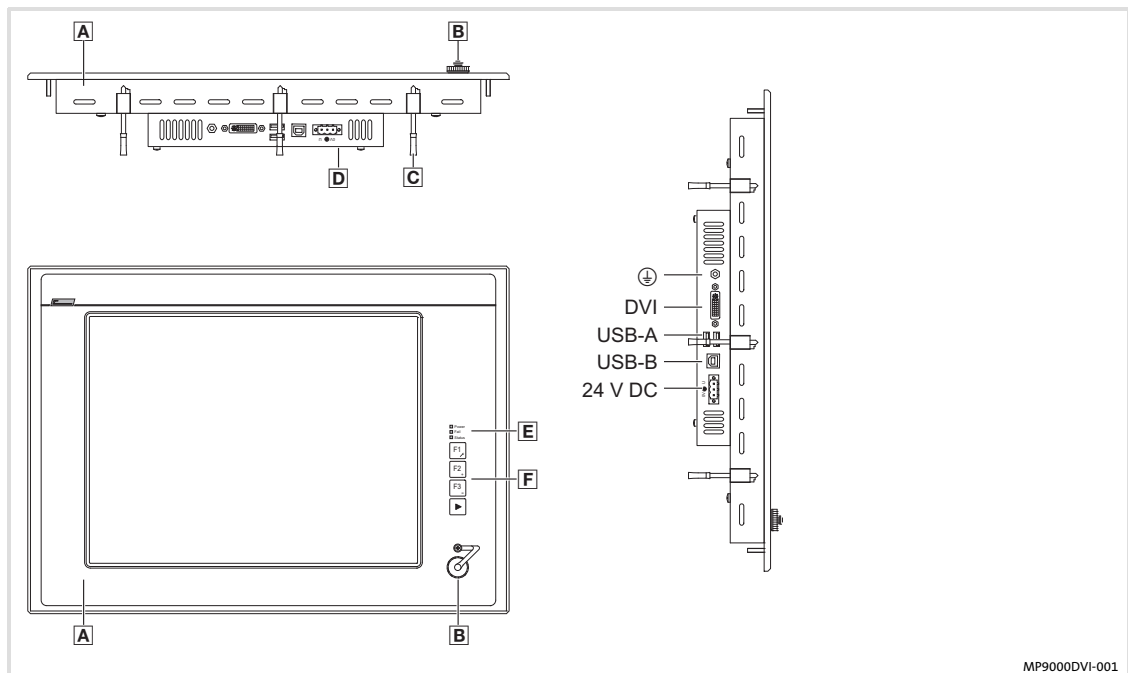
Type code

- 5201 = MP 1000 DVI
- 5202 = MP 1000s DVI
- 5203 = MP 2000 DVI
- 5204 = MP 5000 DVI
- 5205 = MP 9000 DVI
- 5206 = MP 5020 DVI
- 5207 = MP 1050 DVI
- 5208 = MP 1050s DVI
- 5209 = MP 2050 DVI
- 5210 = MP 5050 DVI
- 5211 = MP 5070 DVI, keyboard layout German
- 5212 = MP 5070 DVI, keyboard layout English
- 5213 = MP 800 DVI

Front face USB socket
 0 = without
 1 = with (IP65)

②			
xxxx	2	x	1

3.5 Controls and displays



Pos.	Description
A	Monitor panel (here MP 5000 DVI)
B	Front face USB port (option)
C	Screw clamp fixings
D	Nameplate
E	Status LEDs (Power, Fail, Status)
F	Front face control and display elements



Note!

Further information on the control and display elements can be gathered from the chapter "Operation" (32).

4 Technical data

General data and operating conditions

4 Technical data

4.1 General data and operating conditions

General data

Conformity and approval		
Conformity		
CE	EN 61000-6-4 EN 61000-6-2	EMC Directive Class A, industrial premises
Approbation		
UR	UL 508 CSA C22.2	Programmable Controllers (File-No. E236341)
Other		
RoHS	-	Products lead-free in accordance with CE Directive 2011/65/EU

Protection of persons and equipment		
Safety	VDE0805 (EN60950), VDE0870, UL	
Enclosure	EN 60529	IP65 (front) / IP20 (back)
	UL 508 (NEMA 250)	Type 1 enclosure
Class of protection		3

EMC			
Noise emission	EN 61000-6-4	Class A (industrial premises)	
Noise immunity zone B	EN 61000-6-2	Industrial premises	
		EN 61000-4-2	ESD; severity level 3, i. e. 8 kV for air discharge, 4 kV for contact discharge
		EN 61000-4-3	RF interference (housing) 80 MHz ... 1000 MHz, 10 V/m 80 % AM (1 kHz)
		EN 61000-4-4	Burst, severity level 3
		EN 61000-4-5	Surge, severity level 1 *
		EN 61000-4-6	RF cable-guided 150 kHz ... 80 MHz, 10 V/m 80 % AM (1 kHz)

* Due to the high-energy single current pulses, surges require suitable external wiring with lightning protection elements like for example lightning conductors and overvoltage arresters.

Operating conditions

Mounting conditions		
Place of installation		In the control cabinet, screen protected against direct solar radiation
Mounting position		Connections at the bottom
Ambient conditions		
Climatic		
Storage		-10 ... +60 °C
Transport		-10 ... +60 °C
Operation		+5 ... +45 °C
Relative humidity		10 ... 90 %, non-condensing
Site altitude		
Storage/Transport		< 12000 m amsl
Operation		< 3000 m amsl
Chemical resistance		
Decor film	DIN 42115	
Touch/display		
Mechanical load capacity		
Decor film	DIN 42115	max. 100 N
Touch/display		
Switching element		

4 Technical data

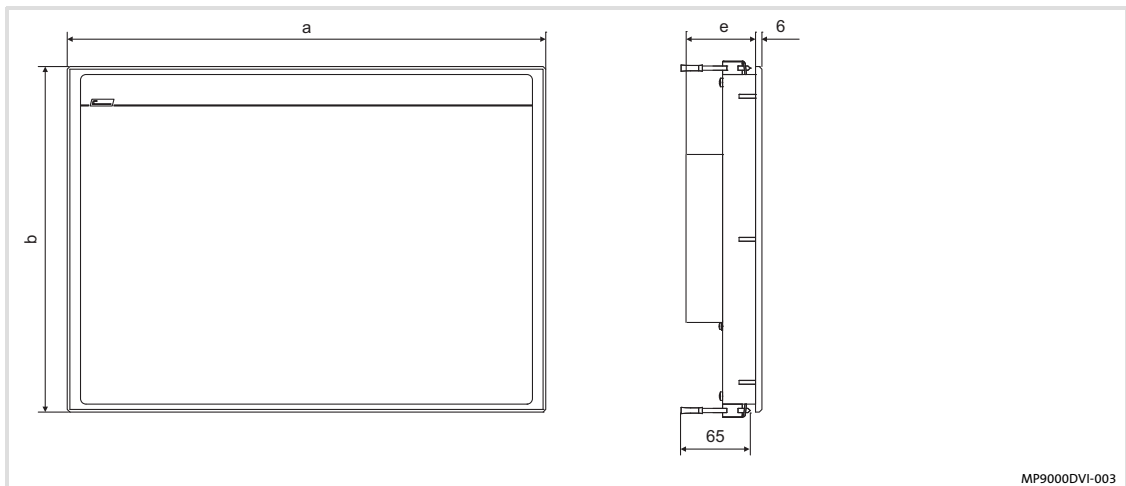
Electrical data

4.2 Electrical data

	Supply		Screen						
	Voltage [V DC]	Current at 24 V [A]	Visible size [cm]	Aspect ratio	Resolution [pixels]	Brightness [cd/m ²]	Contrast	MTBF [h]	
MP 800 DVI	24 (+18 ... 30)	0.4	20.3 (8")	4:3	640 x 480	400	1 : 250	50 000	
MP 1000 DVI MP 1050 DVI			26.4 (10.4")				1 : 300	40 000	
MP 1000s DVI MP 1050s DVI			30.5 (12.1")				400	1 : 500	50 000
MP 2000 DVI MP 2050 DVI		0.7			300	1 : 200			
MP 5000 DVI MP 5020 DVI MP 5050 DVI MP 5070 DVI		0.9			38.1 (15")	1024 x 768	250	1 : 550	
MP 9000 DVI		1.4	48.3 (19")		5:4	1280 x 1024	300	1 : 2000	50 000

4.3 Mechanical data

Versions and weights			
	Front frame / housing	Touchscreen	Mass [kg]
MP 800 DVI	Aluminium/sheet steel	Polyester foil	3.0
MP 1000 DVI			4.2
MP 1000s DVI			4.2
MP 1050 DVI			4.6
MP 1050s DVI			4.6
MP 2000 DVI			5.4
MP 2050 DVI			5.6
MP 5000 DVI			6.2
MP 5020 DVI			6.4
MP 5050 DVI			6.4
MP 5070 DVI			7.2
MP 9000 DVI			10.2



All dimensions in millimetres.

Dimensions			
	a	b [mm]	e
MP 800 DVI	265	200	59
MP 1000 DVI	325	240	
MP 1000s DVI			
MP 1050 DVI	365	300	
MP 1050s DVI			
MP 2000 DVI	390	310	
MP 2050 DVI	425	325	
MP 5000 DVI	483	310 (7 U)	
MP 5020 DVI		399 (9 U)	
MP 5050 DVI			
MP 5070 DVI	490	400	69
MP 9000 DVI			

5 Mechanical installation

Important notes

5 Mechanical installation

5.1 Important notes

The installation must be carried out by qualified, skilled personnel familiar with the applicable national standards.



Stop!

Sensitive front frame gasket

During mounting, the gasket of the front frame is exposed and can be damaged.

Possible consequences:

- ▶ The degree of protection provided by the enclosure mentioned in the technical data is not attained.

Protective measures:

- ▶ Handle the gasket with care during mounting.
- ▶ Protect the gasket against ultraviolet rays.
- ▶ Each time before you mount the device, check whether the gasket is intact.



Stop!

Sensitive touchscreen surface

The touchscreen foil is very sensitive to external forces and can be damaged by improper handling.

Possible consequences:

- ▶ The touchscreen foil becomes damaged, scratched or dull.

Protective measures:

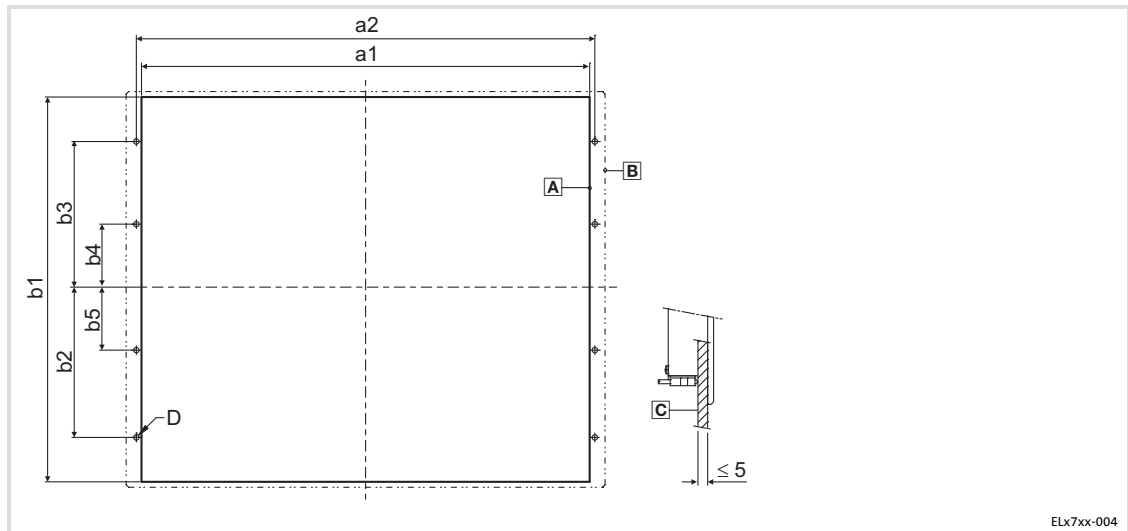
- ▶ Avoid contact of the touchscreen foil with pointed or hard objects.
- ▶ Always use a touch pen or your fingers to operate the touchscreen. Never use objects such as ballpoint pens, pencils, etc.
- ▶ When removing dirt and fingerprints, observe the notes given in the chapter "Cleaning" (📖 38).



Note!

When selecting the place where the PC is to be installed, pay attention to an ergonomic positioning of the screen and to the incidence of light which might cause reflections on the screen.

5.2 Mounting cutout



- A** Mounting cutout
- B** Outline of front panel
- C** Control board

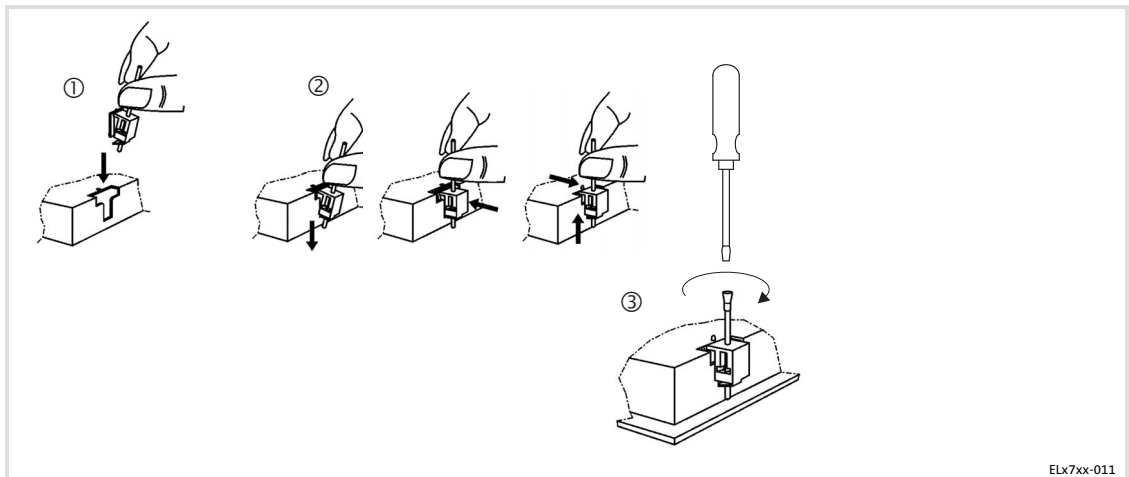
All dimensions in millimetres.

Dimensions								
	a1	a2	b1	b2	b3	b4	b5	D
	[mm]							
MP 800 DVI	246	-	188	-	-	-	-	-
MP 1000 DVI	305.0	-	228.0	-	-	-	-	-
MP 1000s DVI								
MP 1050 DVI	343.0	-	228.0	-	-	-	-	-
MP 1050s DVI								
MP 2000 DVI	340.0	351.0	288.0	122.0	122.0	0.0	-	6 x Ø5.5
MP 2050 DVI	375.0	386.0	288.0	122.0	122.0	0.0	-	
MP 5000 DVI	400.0	411.0	313.0	134.5	134.5	0.0	-	
MP 5020 DVI	452.0	462.4	299.0	104.9	104.6	15.7	-	
MP 5050 DVI								
MP 5070 DVI	452.0	462.4	388.2	149.3	149.3	15.9	-	
MP 9000 DVI	438.0	451.0	386.0	172.0	172.0	60.0	60.0	8 x Ø4.5

5.3 Mounting steps**5.3.1 MP 1000(s) DVI / MP 1050(s) DVI**

How to perform the installation:

1. Cut the mounting cutout into the control board (📖 25).
2. Check that the gasket under the front panel is located correctly.
3. Place the device in the mounting cutout and secure it against falling-down with one hand.
4. Fit all screw clamp fixings as explained below:



ELx7xx-011

- Insert the screw clamp fixing into the slot in the housing of the device (see above figure).
 - Press the screw clamp fixing downwards, tilt it towards the housing and check that it has firmly snapped into place.
 - Tighten the screw clamp fixing hand-tight with a screwdriver.
5. Check that the device is securely located in the mounting cutout and that the front panel gasket is located correctly.
 - If necessary, realign the device/gasket.
 - If the gasket is not located correctly, protection class IP65 is not achieved on the front of the device!

5.3.2 MP 2xxx DVI / MP 5xxx DVI / MP 9xxx DVI

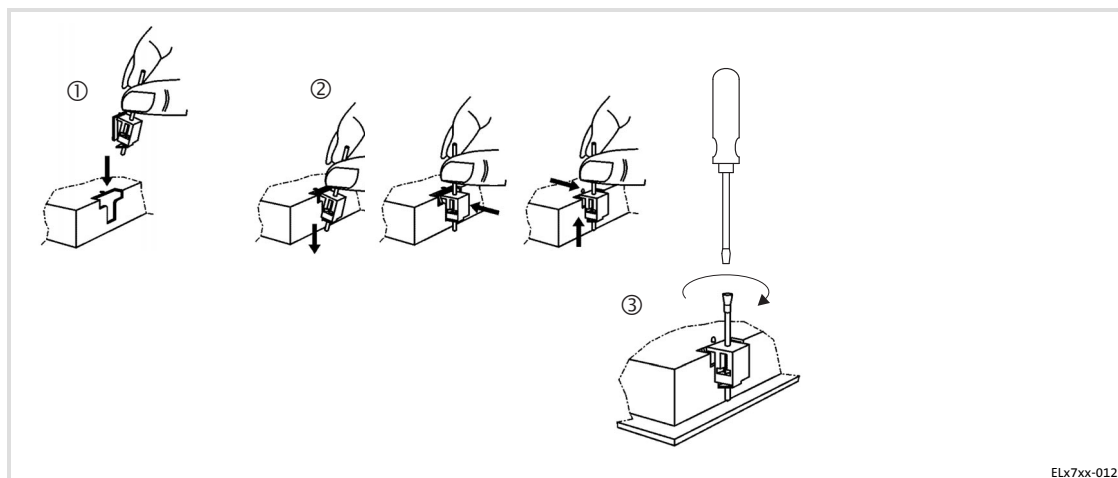
**Note!**

Types MP 5020 DVI, MP 5050 DVI, and MP 5070 DVI can be installed in any control panel and in 19" mounting racks in accordance with DIN 41494.

Control board mounting

How to perform the installation:

1. Prepare the control board by cutting the mounting cutout and drilling the mounting holes into it (see 25).
2. Check that the gasket under the front panel is located correctly.
3. Place the device in the mounting cutout, secure it by hand against falling down and screw the nuts and washers onto the threaded bolts.
4. Fit all screw clamp fixings as explained below:



- Insert the screw clamp fixing into the slot in the housing of the device (see above figure).
 - Press the screw clamp fixing downwards, tilt it towards the housing and check that it has firmly snapped into place.
 - Tighten the screw clamp fixing hand-tight with a screwdriver.
5. Check that the device is securely located in the mounting cutout and that the front panel gasket is located correctly.
 - If necessary, realign the device/gasket.
 - If the gasket is not located correctly, protection class IP65 is not achieved on the front of the device!

19" mounting rack installation (only MP 5020 DVI, MP 5050 DVI, and MP 5070 DVI)

How to perform the installation:

1. Remove the set screws from the back of the front frame.
2. Drill through the blind holes at the back of the front frame using a 6.5 mm drill.
3. Place the device in the 19" mounting rack and screw it.

6 **Electrical installation**

6.1 **Important notes**

The installation must be carried out by qualified, skilled personnel familiar with the applicable national standards.



Stop!

Short circuit and static discharge

The device contains components which are endangered in the case of short circuit or static discharge.

Possible consequences:

- ▶ The device or parts of it will be destroyed.

Protective measures:

- ▶ Always switch off the voltage supply when working on the device. This particularly applies:
 - Before connecting / disconnecting connectors.
 - Before plugging in / plugging out modules.
- ▶ All persons handling printed circuit boards have to take account of ESD measures.
- ▶ Contacts of plug connectors must not be touched.
- ▶ Printed circuit boards may be touched only at places free from electrical contacts and may be placed only on appropriate materials (e.g. on ESD packaging or conductive foam material).
- ▶ Printed circuit boards may only be transported and stored in ESD packaging.

6.2 Wiring according to EMC

General notes	<ul style="list-style-type: none"> ● The electromagnetic compatibility of the system depends on the type and accuracy of the installation. Please especially note the following: <ul style="list-style-type: none"> – Structure – Shielding – Earthing ● In the case of a differing installation it is required for evaluating the conformity to the EMC Directive to check the system with regard to compliance with the EMC limit values. This for instance applies to: <ul style="list-style-type: none"> – The use of unshielded cables ● The end user is responsible for compliance with the EMC Directive. <ul style="list-style-type: none"> – If you observe the following measures, you can be sure that no EMC problems will occur during operation and that the EMC Directive or the EMC law is met. – If devices which do not meet the CE requirement with regard to noise immunity EN 61000-4-2 are actuated near the system, these devices can be affected electromagnetically by the system.
Structure	<ul style="list-style-type: none"> ● Connect device to the earthed mounting plate: <ul style="list-style-type: none"> – Mounting plates with an electroconductive surface (zinc-coated or stainless steel) allow for continuous contacting. – Coated plates are not suitable for an EMC-compliant installation. ● If you use several mounting plates: <ul style="list-style-type: none"> – Connect mounting plates to each other on a large surface and in a conductive manner (e.g. by means of copper strips). ● When installing the cables, observe a spatial separation of signal and mains cables. ● Route the cables as near to the reference potential as possible. Freely suspended cables act like aerials.
Shielding	<ul style="list-style-type: none"> ● Preferably only use cables with a braid. ● The coverage of the shield should be more than 80%. ● In the case of data lines for a serial coupling, always use metallic or metallised plugs. Connect the shield of the data line on the connector shell.
Earthing	<ul style="list-style-type: none"> ● Earth all metallically conductive components by the use of corresponding cables from a central earthing point (PE rail). ● Comply with the minimum cross-sections defined in the safety instructions: <ul style="list-style-type: none"> – With regard to EMC, however, not the cable cross-section, but the surface of the cable and of the extensive contacting is decisive.

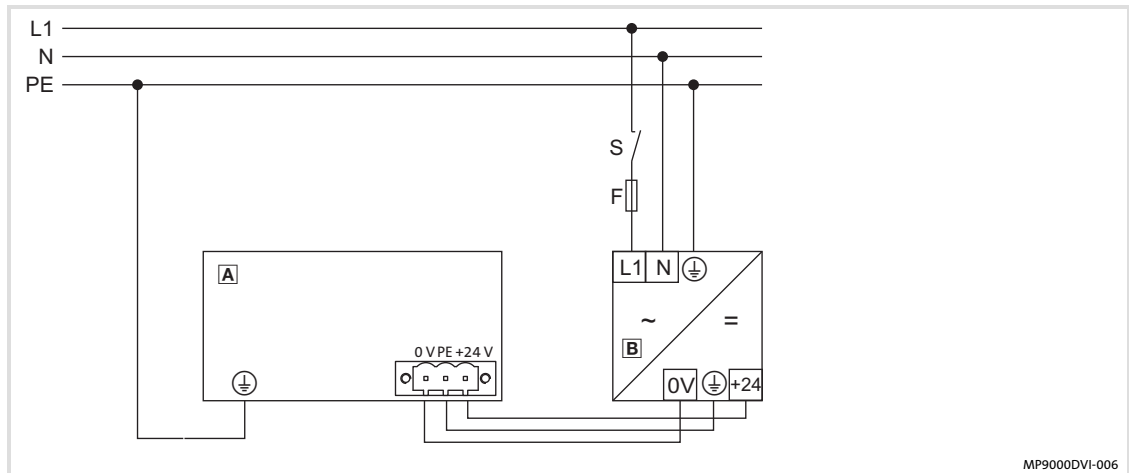
6

Electrical installation

Connecting the supply and peripheral devices
Terminal diagram supply

6.3 Connecting the supply and peripheral devices

6.3.1 Terminal diagram supply



- A** Monitor panel
- B** Power supply unit



Note!

Observe the max. permissible input voltage.

Professionally fuse the device on the input side against voltage variations and voltage peaks.

6.3.2 24 V connection

	Description	Connection type	Cable type
<p>IPC001</p>	DC 24 V connection	3-pole Phoenix Combicon socket	Cable (conductor cross-section max. 2.5 mm ²) with Phoenix Combicon plug, MSTB 2.5 / 3-STF-5.08
<p>IPC001</p>	PE connection	M4 threaded bolt	Separate earthing conductor (min. 2.5 mm ²) with ring cable lug

6.3.3 DVI interface




Note!

Only use the DVI cable from the scope of supply or one of the DVI cables specified in the following table, featuring a maximum length of 2 m. Otherwise a faultless signal transmission is not guaranteed.


Greater distances can be covered with the following Lenze accessories:


2 ... 5 m: "DVI/USB" cable set

5 ... 35 m: DVI/USB extender V4

	Description	Connection type	Cable type
 IPC001	DVI interface	DVI-D socket	DVI-D single link (18+1) DVI-D double link (24+1)

6.3.4 USB interface

	Description	Connection type	Cable type
 IPC001	USB 2.0 host connection Max. load: 5 V/500 mA	USB-A socket	USB cable with USB-A plug

	Description	Connection type	Cable type
 DVI/USB-010	USB device connection	USB-B socket	USB cable with USB-B plug

6.3.5 USB interface on the front face (option)

	Description	Connection type	Cable type
 EL100-013	USB 2.0 host connection with IP 65 cover Max. load: 5 V/500 mA	USB-A socket	USB cable with USB-A plug



Note!

If you use USB interfaces routed to the outside, the data integrity cannot be guaranteed. On the "PC based Automation" DVD you'll find the "FM Tool" software which can be used to deactivate the front USB interface if it is not needed.



Stop!

Sensitive touchscreen surface

The touchscreen foil is very sensitive to external forces and can be damaged by improper handling.

Possible consequences:

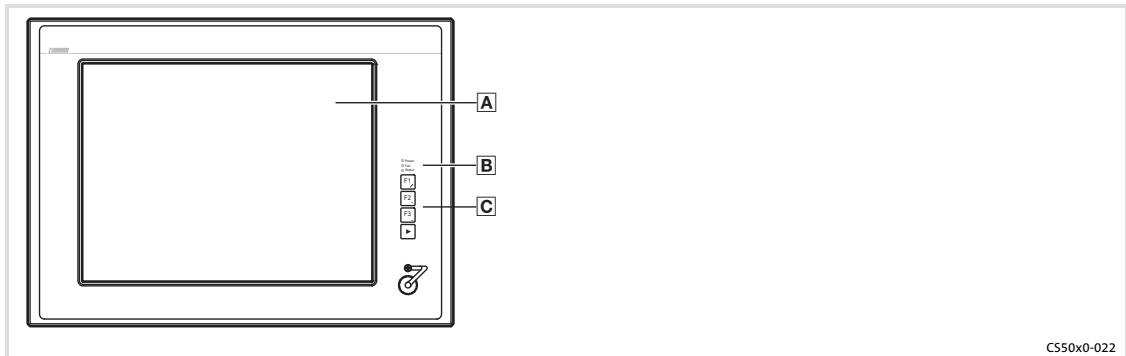
- ▶ The touchscreen foil becomes damaged, scratched or dull.

Protective measures:

- ▶ Avoid contact of the touchscreen foil with pointed or hard objects.
- ▶ Always use a touch pen or your fingers to operate the touchscreen. Never use objects such as ballpoint pens, pencils, etc.
- ▶ When removing dirt and fingerprints, observe the notes given in the chapter "Cleaning" (📖 38).

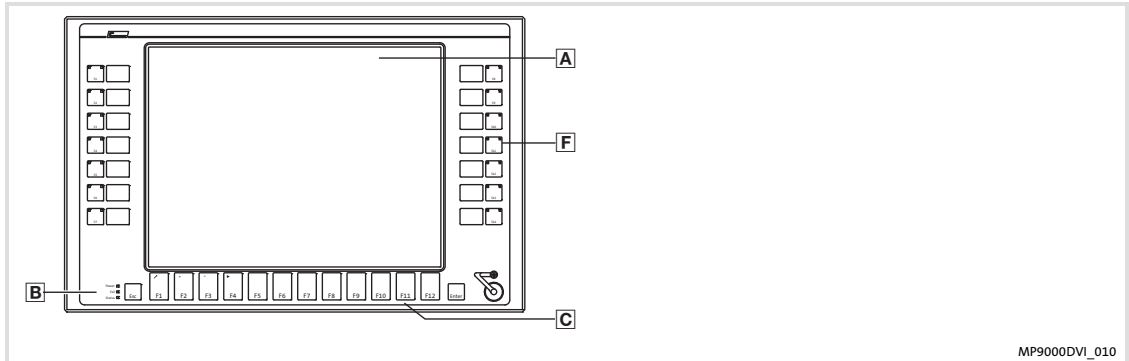
7.2 Controls and displays

7.2.1 Monitor Panel MP 800 DVI / MP 1000 DVI / MP 1000s DVI / MP 2000 DVI / MP 5000 DVI / MP 9000 DVI



Pos.	Designation	Function	
		Standard mode	Service mode
	Switch on mode:		Press "▶" for 4 s
	Switch off mode:		Press "▶" or wait for 35 s
A	Display	Application-dependent	
B	Status LEDs	Power (green): ● Is ON when the supply voltage is present. Fail (red): ● Is On when a power supply failure has occurred. ● Is blinking when the screen signal is missing. Status (yellow): ● Application-dependent	
C	Function keys	F1 ... F3: Send key code for Shift-F1 ... Shift-F3	Tool: Application-dependent +: Increase screen brightness -: Reduce screen brightness

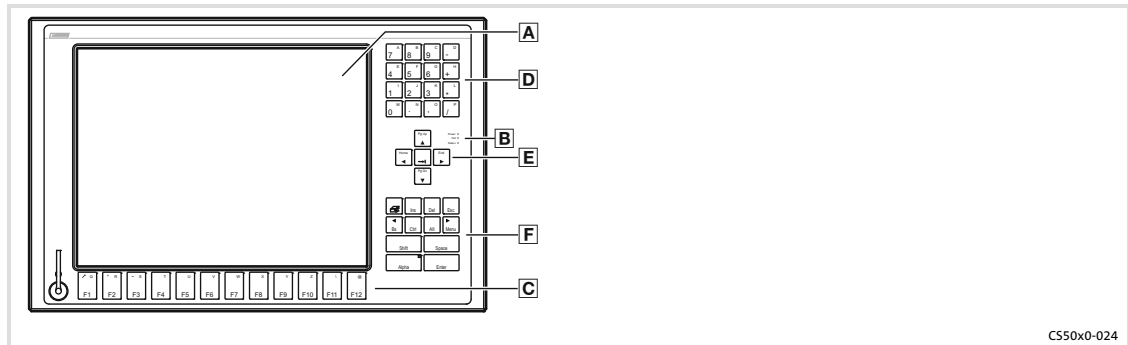
7.2.2 Monitor Panel MP 5020 DVI



Pos.	Designation	Function	
		Standard mode	Service mode
	Switch on mode:		Press "▶" for 4 s
	Switch off mode:		Press "▶" or wait for 35 s
A	Display	Application-dependent	
B	Status LEDs	Power (green): <ul style="list-style-type: none"> ● Is ON when the supply voltage is present. Fail (red): <ul style="list-style-type: none"> ● Is On when a power supply failure has occurred. ● Is blinking when the screen signal is missing. Status (yellow): <ul style="list-style-type: none"> ● Application-dependent 	
C	Function keys	F1 ... F12: Send key code for F1 ... F12	Tool: Application-dependent +: Increase screen brightness -: Reduce screen brightness
F	Special keys	S1 ... S7: Send key code for shift-F1 ... shift-F7 S8 ... S14: Send key code for ctrl-F1 ...ctrl-F7	

7.2.3

Monitor Panel MP 1050 DVI / MP 1050s DVI / MP 2050 DVI / MP 5050 DVI

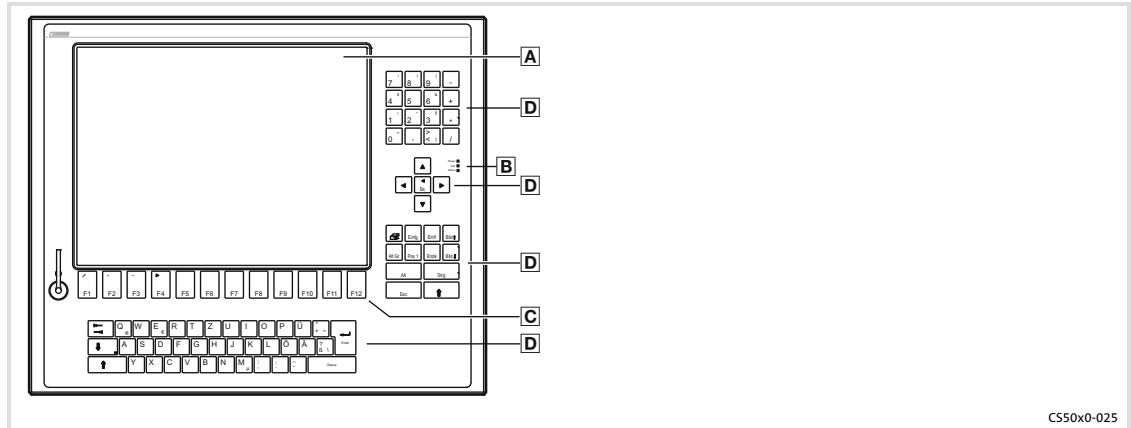


C550x0-024

Pos.	Designation	Function		
		Standard mode	Alpha mode	Service mode
	Switch on mode:		Press "alpha key" (LED is on)	Press "menu key"
	Switch off mode:		Press "alpha key" (LED is off)	Press "menu key" or wait for 35 s
A	Display	Application-dependent		
B	Status LEDs	Power (green): <ul style="list-style-type: none"> ● Is ON when the supply voltage is present. Fail (red): <ul style="list-style-type: none"> ● Is ON when a power supply failure has occurred ● Is blinking when the screen signal is missing. Status (yellow): <ul style="list-style-type: none"> ● Indicates access to a storage medium. 		
C	Function keys	F1 ... F12: Send key code for Shift-F1 ... Shift-F12	F1 ... F12: Send key codes for "Q" ... "@"	Tool: Application-dependent + : Increase screen brightness - : Reduce screen brightness
D	Numeric keypad	Send key codes for "0" ... "9" and calculation operators	Send key codes for "A" ... "P"	Functionality same as in standard/alpha mode
E	Cursor keys	Without "Shift" key: Move cursor/marker in steps and set tab With "Shift" key: Move cursor/marker to the beginning/end or page by page		Functionality same as in standard/alpha mode
F	Control keys	Standard functions of a MF2 keyboard (For "alpha" and "menu" see "Switch on/off mode")		Functionality same as in standard/alpha mode

7.2.4

Monitor Panel MP 5070 DVI



CS50x0-025

Pos.	Designation	Function	
		Standard mode	Service mode
	Switch on mode:		Press "► (F4)" for 4 s
	Switch off mode:		Press "► (F4)" or wait for 35 s
A	Display	Application-dependent	
B	Status LEDs	Power (green): <ul style="list-style-type: none"> ● Is ON when the supply voltage is present. Fail (red): <ul style="list-style-type: none"> ● Is ON when a power supply failure has occurred. ● Is blinking when the screen signal is missing. Status (yellow): <ul style="list-style-type: none"> ● Indicates access to a storage medium. 	
C	Function keys	F1 ... F12: Send key code for Shift-F1 ... Shift-F12	Tool: Application-dependent + : Increase screen brightness - : Reduce screen brightness
D	MF2 keys	Standard function of a MF2 keyboard	

8 Maintenance



Stop!

Short circuit and static discharge

The device contains components which are endangered in the case of short circuit or static discharge.

Possible consequences:

- ▶ The device or parts of it will be destroyed.

Protective measures:

- ▶ Always switch off the voltage supply when working on the device. This particularly applies:
 - Before connecting / disconnecting connectors.
 - Before plugging in / plugging out modules.
- ▶ All persons handling printed circuit boards have to take account of ESD measures.
- ▶ Contacts of plug connectors must not be touched.
- ▶ Printed circuit boards may be touched only at places free from electrical contacts and may be placed only on appropriate materials (e.g. on ESD packaging or conductive foam material).
- ▶ Printed circuit boards may only be transported and stored in ESD packaging.

8.1 Regular checks

The device is free of maintenance. Nevertheless, visual inspections should be carried out at regular intervals which must not be too long, depending on the ambient conditions.

Please check the following:

- ▶ Does the environment of the device meet the operating conditions specified in the Technical data?
- ▶ Is the heat dissipation of the device not impeded by dust or dirt?
- ▶ Are the mechanical and electrical connections o.k.?

**Stop!****Sensitive surfaces and components**

The device can be damaged if it is not appropriately cleaned.

Possible consequences:

- ▶ The housing or the screen gets scratched or dull if you use alcoholic, solvent-containing or scouring cleaning agents.
- ▶ Electrical components can be damaged ...
 - by a short circuit caused by humidity.
 - by static discharge.

Protective measures:

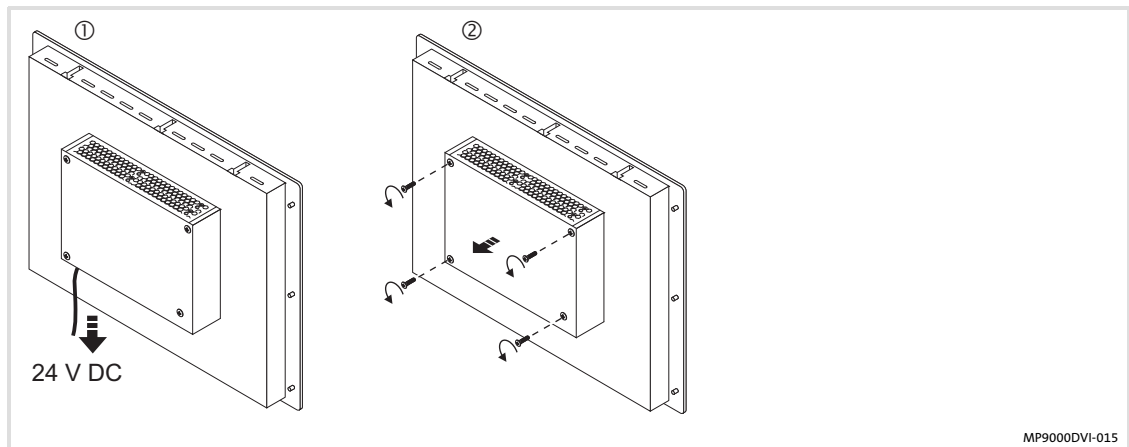
- ▶ Observe the following notes.
- ▶ Before cleaning, disconnect the device from the power supply as otherwise unintentional commands may be activated via the touchscreen, for example a response of the control.
- ▶ Clean the device front (screen and frame) as follows:
 - Use a clean, lint-free and soft cloth.
 - Moisten the cloth with the detergent. Do not spray the detergent directly on the device.
 - Only use water with a fluid addition as detergent or a detergent declared especially for flat screens.
- ▶ Clean the rear side of the device with a clean, lint-free and soft cloth. Do not use liquid or foaming detergent since it may enter the housing or terminals.

8.3 Repair

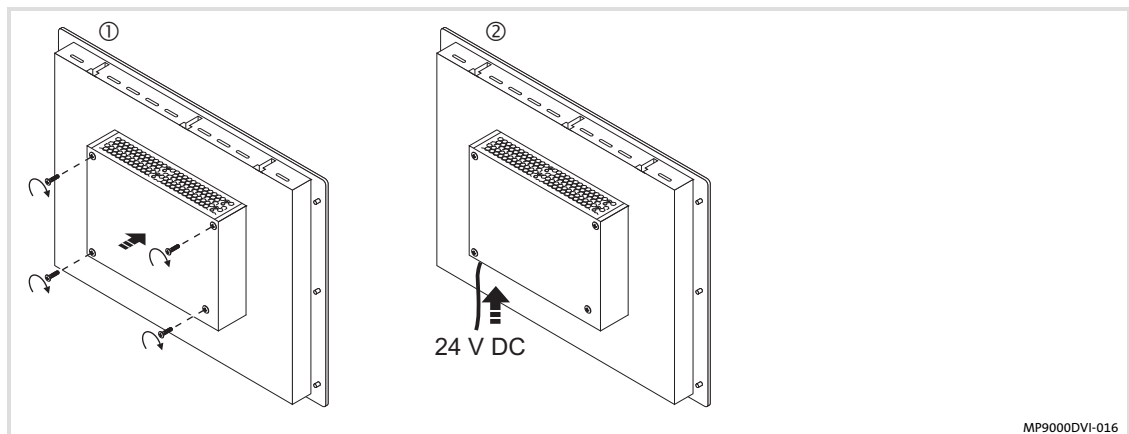
For the repair of the monitor panel, its housing has to be removed.

8.3.1 Removing and mounting the housing

Dismounting



Mounting



8.3.2 Fuse change

**Stop!****Damage of the device by non-permissible fuse possible**

The baseboard in the device is protected by a fuse which will be damaged if the supply voltage applied is too high.

Possible consequences:

- ▶ The device can be damaged if a non-approved fuse is installed.

Protective measures:

- ▶ The fuse may only be replaced by an approved type.

Approved types:

- ▶ Wickmann No. 181, 4 A, 250 V DC

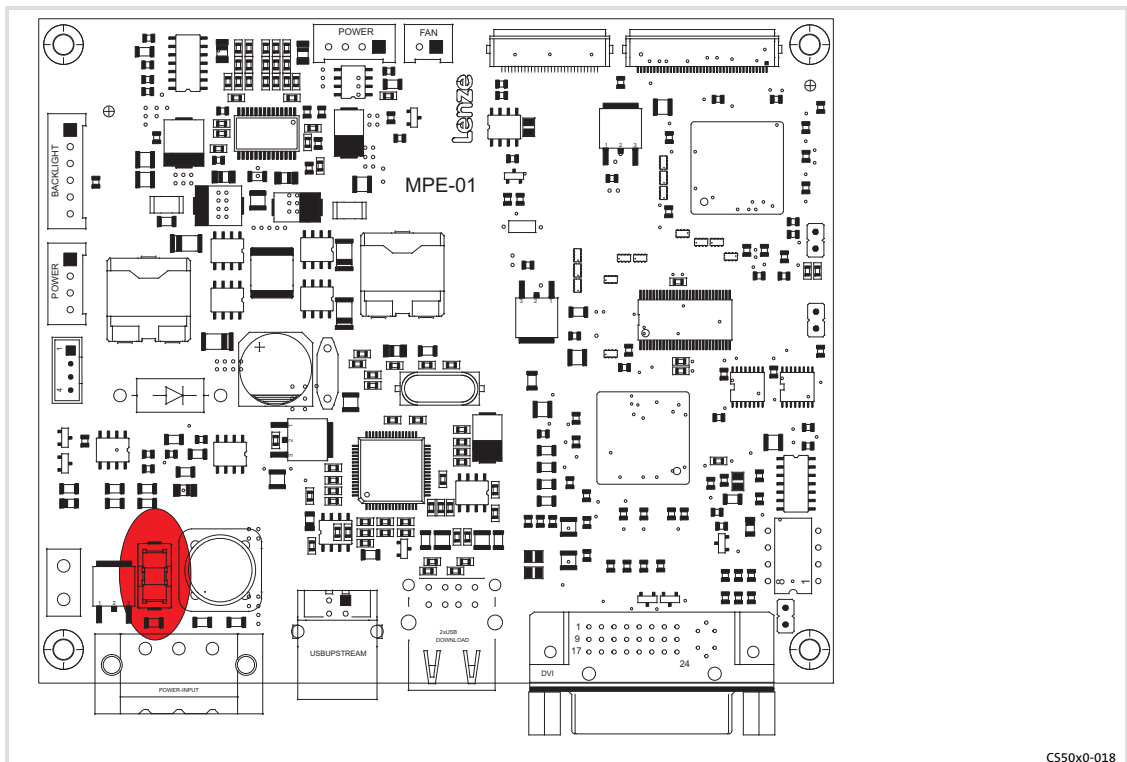


Fig. 8-1 Position of the fuse on the baseboard

CS50x0-018

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