Kemro

OP 350/C-1100
Operating panel
Project engineering manual V2.00

Translation of the original instructions

KEBA
Automation by innovation.

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Record of Revision

Version	Date	Change in chapter	Description	changed by
V1.00	08-2008		Newly created	meis
V2.00	1-2009		Changes to the general document revision of all OP 3xx operating panels	sam

Table of Contents

1 Introduction

1.1 Purpose of the document

This document describes the structure, installation and connection of the operating panel OP 350/C-1100.

1.2 Target groups, pre-conditions

This document is intended for the following persons with corresponding pre-conditions:

Target group	Prerequisite knowledge and ability
Project engineer	Technical basic education (advanced technical education, engineering degree or corresponding professional experience), Knowledge about: ● the method of operation of a PLC, ● safety regulations, ● the application.
Start-up technician	Technical basic education (advanced technical education, engineering degree or corresponding professional experience), Knowledge about: ● safety regulations, ● the method of operation of the machine or system, ● fundamental functions of the application, ● system analysis and troubleshooting, ● the setting options at the operating devices.
Service technician	Technical basic education (advanced technical education, engineering degree or corresponding professional experience), Knowledge about: ● the method of operation of a PLC, ● safety regulations, ● the method of operation of the machine or system, ● diagnosis possibilities, ● systematic error analysis and troubleshooting

1.3 Intended use

The operating panel is designed for complex operating tasks in the industrial sector in conjunction with a control of the Kemro K2 product family from the KEBA AG. The typical applications areas include injection molding machines, robots, presses, machine tools. The operating panel may only be used for the applications described here.

The operating panel was developed, manufactured, tested and documented in accordance with the appropriate safety standards. Therefore, the products

do not pose any danger to the health of persons or a risk of damage to other property or equipment under normal circumstances, provided that the instructions and safety precautions relating to the intended use are properly observed.

1.4 Notes on this document

This manual is integral part of the product. It is to be retained over the entire life cycle of the product and should be forwarded to any subsequent owners or users of the product.

1.4.1 Contents of the document

- Device layout
- Mounting and installation
- Connection
- Configuration
- Operation
- Programming notes
- Disposal
- Technical data
- EC directives and standards

1.4.2 Not contained in this document

- Description of the mask creation
- Description of the kemro.view.standard visualization system.
- Key evaluations with functions from the IEC-library.

1.5 Weiterführende Dokumentation

Dok.Nr.	Bezeichnung	Zielgruppe
DE: 1000667 EN: 1000668	XE 010/A bis XE 010/H, XE 012/A USB-Modul Projektierungshandbuch	Projektierer, Inbetriebnehmer und Servicetechniker
DE: 1000725 EN: 1000726	XE 040/A, XE 040/B Ein- /Ausgabemodul Projektierungshandbuch	
DE: 65352 EN: 65353	K2-200 Automatisierungssystem Systemhandbuch	Inbetriebnehmer und Servicetechniker dürfen mit Hilfe dieser Handbücher ein K2-200 System installieren und warten.
DE: 1000311 EN: 1000315	Kemro.view.standard K2-beans Programmierhandbuch	Programmierer, die die Maskenerstellung für das Bedienpanel und die Tastenauswertung auf der Steuerung realisieren.

Dok.Nr.	Bezeichnung	Zielgruppe
DE: 1000193 EN: 1000197	Kemro.view.standard Visualisierung Schulungsunterlagen	
DE: 1000113 EN: 1000123	Kemro.view.standard Visualisierung Benutzerhandbuch	
DE: 1000114 EN: 1000196	Kemro.view.standard Visualisierung Installationshandbuch	
DE: 1000441 EN: 1000475	Kemro.view.standard Visualisierung Programmierhandbuch	

2 Safety notes

2.1 Representation

At various points in this manual you will see notes and precautionary warnings regarding possible hazards. The symbols used have the following meaning:

DANGER!

- **indicates an imminently hazardous situation which will result in death or serious bodily injury if the corresponding precautions are not taken.**

WARNING!

- **indicates a potentially hazardous situation which can result in death or serious bodily injury if the corresponding precautions are not taken.**

CAUTION!

- **means that if the corresponding safety measures are not taken, a potentially hazardous situation can occur that may result in property injury or slight bodily injury.**

CAUTION

- **CAUTION used without the safety alert symbol indicates a potentially hazardous situation which, if not avoided, may result in damage to property.**

- **This symbol reminds you of the possible consequences of touching electrostatically sensitive components.**

Information

Useful practical tips and information
on the use of equipment are identified by the “Information” symbol. They do not contain any information that warns about potentially dangerous or harmful functions.

2.2 General safety instructions

WARNING!

The following areas of application for the operating panel are expressly forbidden:

- **Use in areas where there is a risk of explosion or fire**
- **Use in the mining sector**
- **Use in the open air**

CAUTION

Destruction of the operating panel for improper handling!

- **Install or remove the operating panel only while the power supply is switched off!**
- **The device is defined as "open type" equipment (UL508) or as "offenes Betriebsmittel" (according to EN 61131-2) and must therefore be installed in a control cabinet or in a suitable housing. After mounting the front side rates as part of the final casing to a "type 1" indoor use (according to UL 508) or the protection type IP65 or IP 54 (according to EN) depending on operating panel version.**
- **In principle, the operating panel may not be opened since this results in loss of the warranty.**

  Exception:

  Excluded from this is maintenance work that is expressly allowed by KEBA.

  Any other manipulations to the operating panel will also result in loss of warranty.

2.3 Safety instructions for personal safety

WARNING!

Danger of personal injury due to electric shock!

- **Supply the device exclusively from power sources that have a safety extra-low voltage or protective low voltage (e.g. SELV or PELV according to EN 61131-2).**
- **Connect only voltages and power circuits to connections, terminals and interfaces up to 50 V rated voltage that have a secure disconnect for hazardous voltages (e.g. with sufficient isolation).**

WARNING!

The modules present on the operating panel are not designed for safety-relevant control tasks (e.g.: shutdown in case of an emergency). For safety-relevant control tasks and personnel security, additional external safety measures must be implemented to ensure the system remains in a safe operating condition even in the event of a fault. For further information, see EN ISO 13849-1.

CAUTION!

Fire hazard during module failure!

- **Provide suitable fuses for the 24 V DC power supply of the operating panel for the final application. The max. permitted fuse is 10A.**

3 Operating panel description

The operating panel is designed for operating and visualization tasks and for the operation on a KeControl PLC (CP).

The control can be connected to maximally one operating panel. The connection to the control occurs via the graphic interface (graphics) of the operating panel.

The operating panel consists of a housing with graphic display ready for installation, a front plate and has the following equipment:

Key features

- 48 membrane keys, some with LEDs and labeling strips
- 16 inputs (not EN 61131-2 conform), for the connection of external switching elements such as toggle switches etc.
- 5 pieces 22.5 mm openings for the installation of operating and signaling elements in the front plate
- Graphics interface (graphics) for the control with LVDS (**L**ow **V**oltage **D**ifferential **S**ignaling): Up to 10 m transmission range of the operating panel from the control.
- Display: 12.1“ TFT, 256,000 colors
- Touchscreen

The visualization on the control is realized by kemro.view.standard (no visualization runtime system on the operating panel required).

3.1 Operating panel enhancements

The range of functions of an operating panel can be enhanced with the KEBA components listed below. Separate manuals are available for these components.

Please observe the application area and the safety notes for these products in the separately available manuals.

Input/Output modules XE 040/A and XE 040/B

These modules make additional digital inputs/outputs available (not according to EN 61131-2). The connection to an operating panel is via a serial RS-485-A interface (SI0).

XE 040/A	XE 040/B
• 24 digital inputs • 8 digital outputs	• 16 digital inputs • 16 digital outputs

3.2 Front view

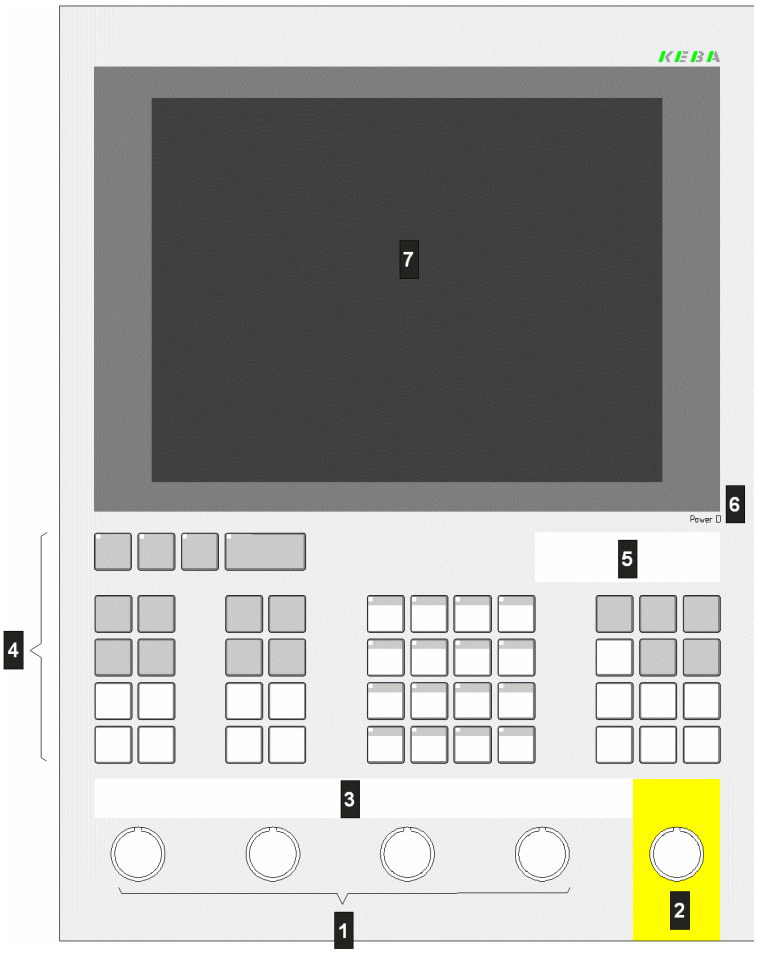

Fig.3-1: Device layout of the operating panel OP 350/C-1100

1 ... 4 openings for operating and signaling elements	2 ... Opening for an Emergency-Off button
3 ... View window for labeling strips	4 ... 48 membrane keys with embossing and tactile feedback.
5 ... View window for labeling strips (e.g. customer logo)	6 ... Power-LED
7 ... 12.1" TFT display (256,000 colors, SVGA, 800 x 600 pixel) with touch screen	

Key	Description
	Button which can be labeled using labeling strips.
	Button with red LED that can be labeled using labeling strips.

Key	Description
	Button already labeled in the delivery state of the panel. Depicted schematically in grey in the drawing.
	Button with red LED already labeled in the delivery state of the panel. Depicted schematically in grey in the drawing.

Tab.3-2: Button types on the operating panel

3.3 Rear view

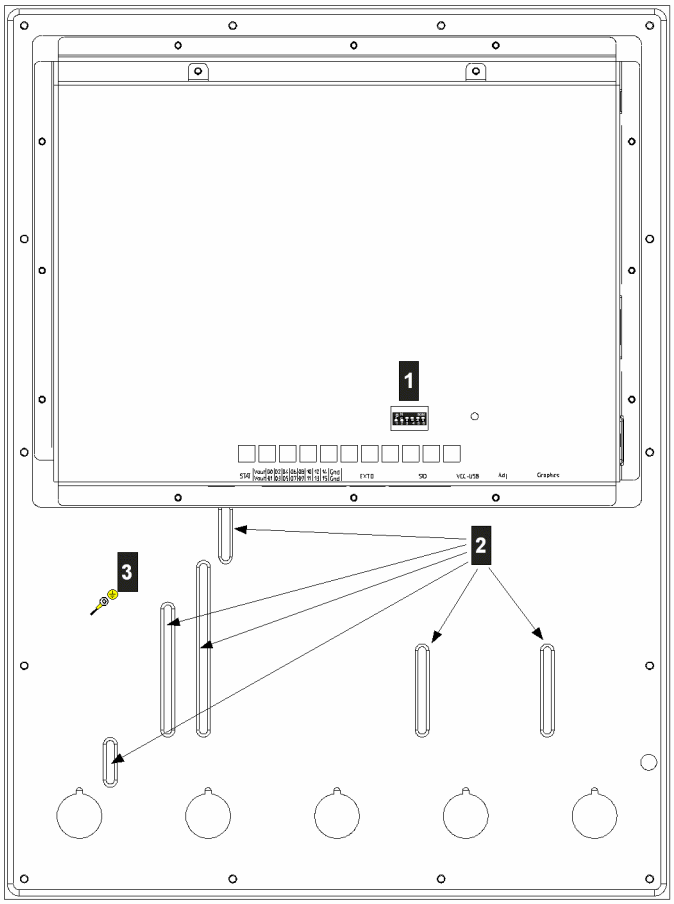

Fig.3-3: Device layout on the operating panel back side (shown without wiring)

1 ... DIP switch for the address setting of the operating panel	2 ... Slots for button labeling using labeling strips
3 ... Ground bolt for protective earthing	

3.4 Device dimensions

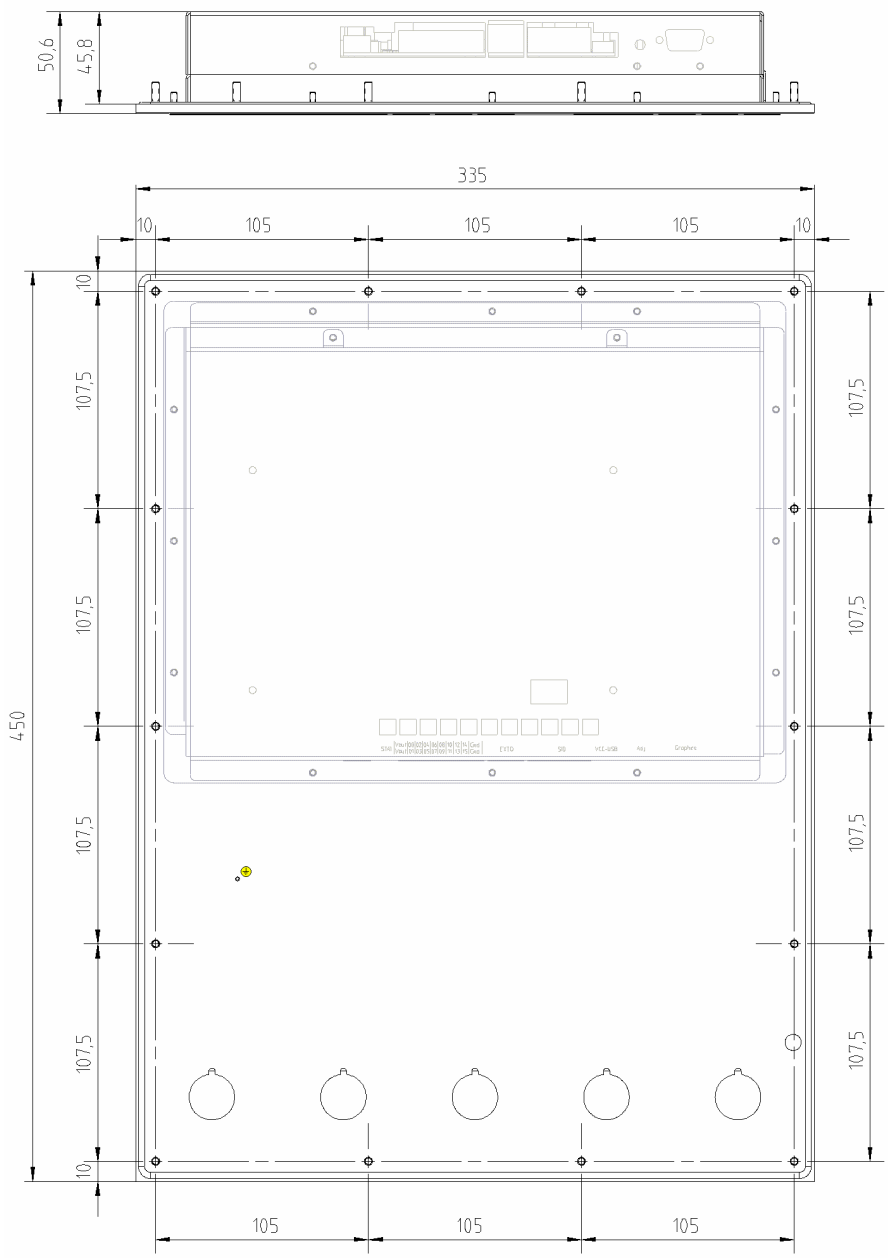

Fig.3-4: Dimensions of the operating panel (specifications in mm)

3.5 Operating elements and displays

3.5.1 Keypad and LED assignment

The following image shows the assignment of the KEY- and LED-Codes on the keypad. The KEY- and/or LED-Code is required to activate the keys and LEDs through the software.

Information

The LEDs of the membrane keys blink as long as no connection between the operating panel and control was established.

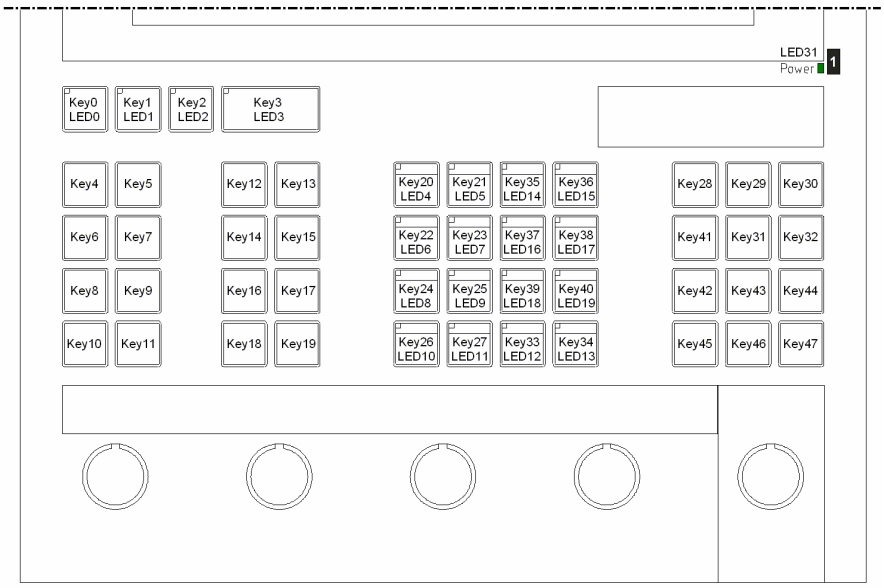

Fig.3-5: Button and LED codes of the operating panel

1 ... Power-LED

3.5.2 Power-LED

The green power LED is located on the front side of the operating panel. The activation of the power LED occurs via the firmware of the operating panel and is not parameterizable.

Power LED, green	Significance	Cause of fault/Remedy
Off	Operating panel not ready for operation.	• Firmware not present or damaged → Perform firmware update • Power supply not present → Check power supply.
Continuous light	Operating panel ready for operation → Connection to control ok and hardware started up.	-
flashing	Connection to the control failed.	Check connection to the control.
flashing slowly (2 s period duration)	Connection to the touch controller failed.	Internal error → Contact service technician
flashing quickly (1 s period duration)	Touch defect	Internal error → Contact service technician

3.5.3 Status LED (operating panel back side)

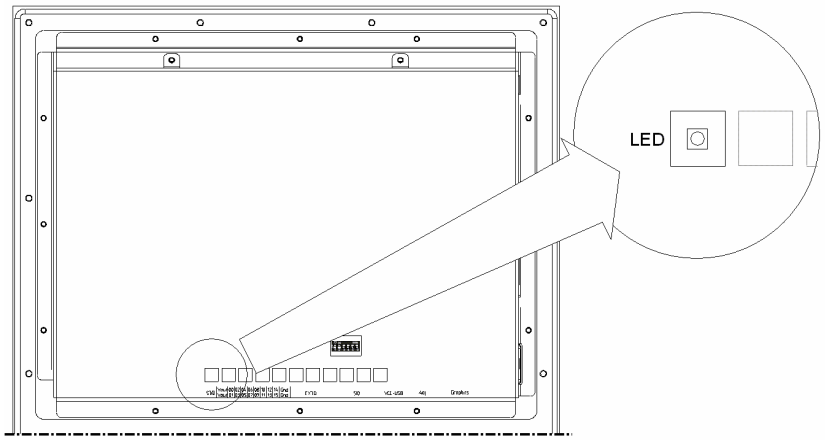

Fig.3-6: Status LED on the operating panel back side

There is a status LED in SMD design (surface-mounted device) on the main printed circuit board of the operating panel that is visible on the operating panel back side through a ventilation opening.

Status LED	Significance	Cause of fault/Remedy
red, continuous light	Operating panel not ready for operation.	Firmware not present or damaged → Perform firmware update.
green, continuous light	Operating panel ready for operation → Connection to control ok and hardware started up.	-
orange, continuous light	Connection to the control failed.	Check connection to the control.
	Connection to the touch controller failed.	Internal error → Contact service technician.
orange, blinking	Touch defect	Internal error → Contact service technician.

Start-up behavior

When the power supply is connected, the status LED only lights up red briefly and then immediately switches over to continuous orange light. If, however, the orange continuous light stage is not reached, the firmware is not started up and there is thus a firmware error. After successful establishment of the connection, the status LED lights up green.

3.5.4 Labeling strips for membrane keys

Since the buttons can be assigned with arbitrary functions, an individual labeling option of the buttons is also provided for. White drawing film is best suited for button labeling which can be provided with the desired icons in the specified visibility field.

For the labelling strips, we recommend the following materials from Folex:

Product description	Color	suitable for	Paper weight
X-360	wo (white opaque)	Color copier	125 µm
BG-68	wo (white opaque)	Color copier	125 µm
BG-32	wo (white opaque)	Ink-jet printer	100 µm

Information

When using paper strips ≤ 80 g/m², a film with max. 125 µm paper thickness can be also be inserted as a step-by-step inserting aid under the paper strip. Once the paper strip is completely inserted, the film is removed again. We recommend a paper with 160 g/m², however, no inserting aid may be used here.

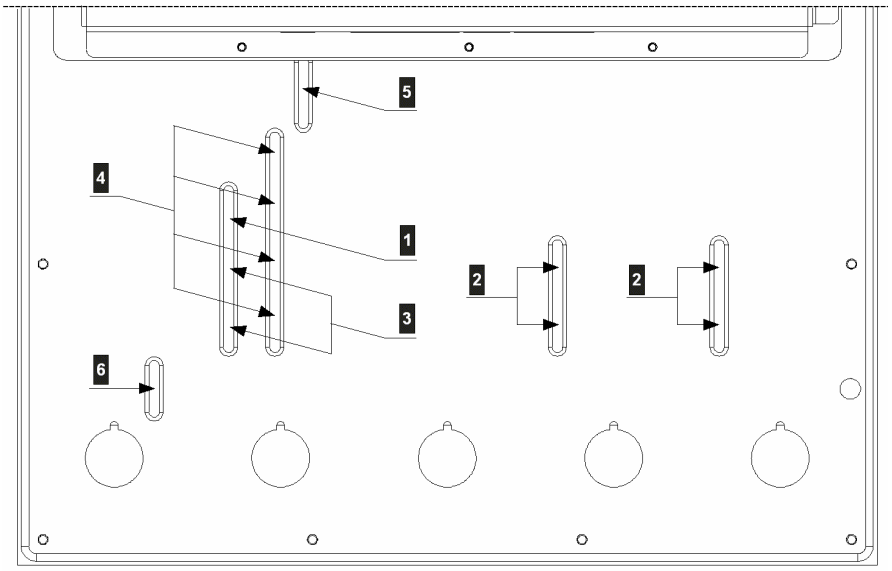

Fig.3-7: Arrangement of the labeling strips

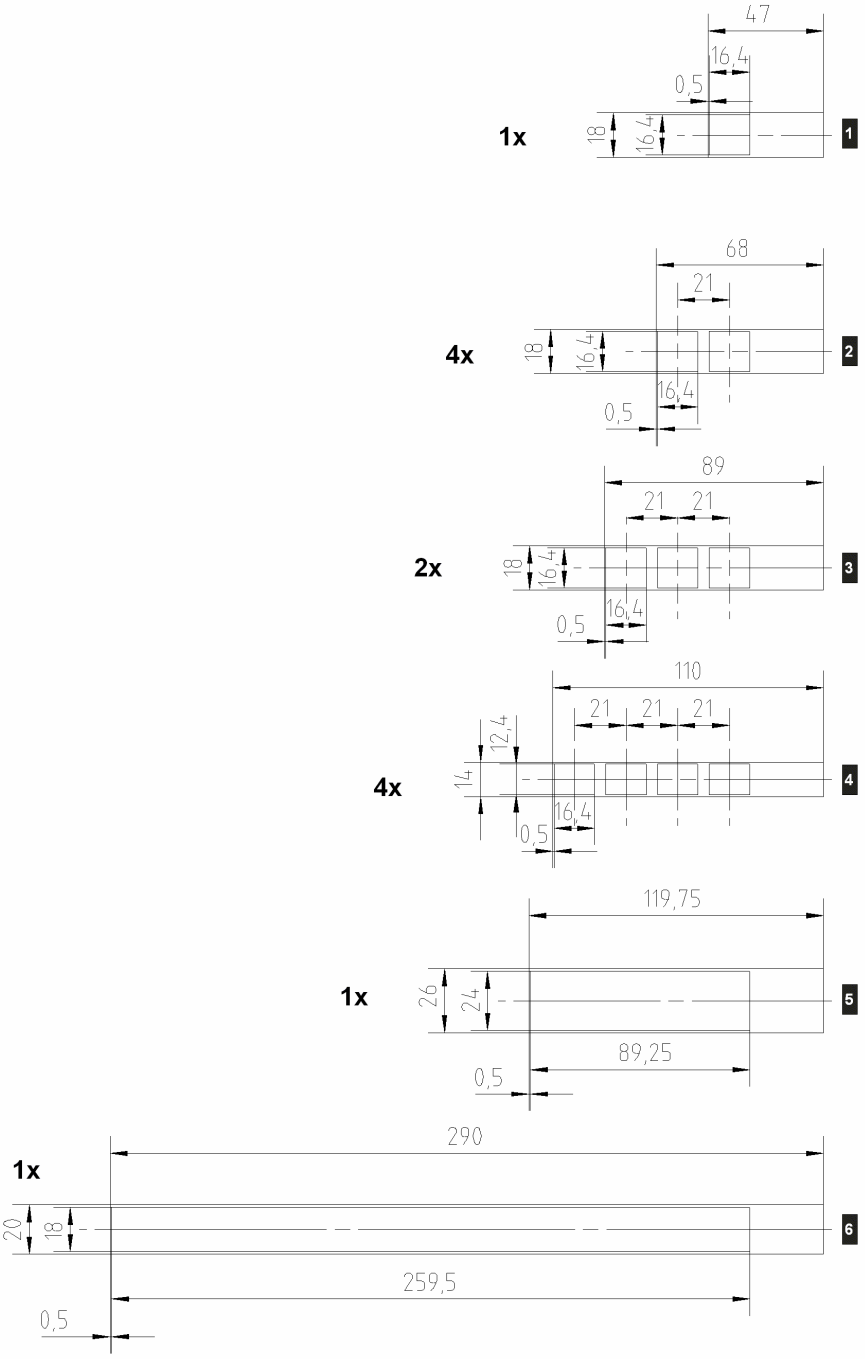

Fig.3-8: Dimensions of the labeling strips (specifications in mm)

3.6 Ordering information

3.6.1 Ordering information legend

Abbreviation	Significance
OP	Operating panel (**O**perating **P**anel)
CP	CPU module of the Kemro K2 control

Abbreviation	Significance
LVDS	**L**ow **V**oltage **D**ifferential **S**ignaling
PL	**P**anel **L**ink

3.6.2 Operating panel

Description	Designation	Comment	Order number
Operating panel	OP 350/C-1100	-	75058

3.6.3 Accessories

The following accessories are available for the operating panel.

3.6.3.1 General cable (for PL and LVDS)

Description	Designation	Comment	Order number
RS-485-A cable (for SI0)	XW 030-010	1 m	65560
RS-485-A cable (for SI0)	XW 030-050	5 m	65157
Connecting cable CP - OP (for graphics)	XW 041-040	4 m, not oil-resistant	69182
Connecting cable CP - OP (for graphics)	XW 041-050	5 m, not oil-resistant	69189
Connecting cable CP - OP (for graphics)	XW 041-070 *)	7 m, not oil-resistant	76487
Connecting cable CP - OP (for graphics)	XW 041-100 *)	10 m, not oil-resistant	69220

*) For LVDS up to incl. display size 12.1" (e.g. OP 350)

3.6.3.2 Connector

Description	Designation	Comment	Order number
Y-Adapter	XW 042-002	For connection cable to CP 23x	72080
20-pole female connector	-	For 16 inputs for the connection of external switching elements such as toggle switches etc.	72262
2-pole plug	-	For OP power supply (0V | 24V DC)	67613
Plug set XT 120/A	-	• 20-pole female connector and • 2-pole plug	72236

4 Mounting and installation instructions

4.1 General instructions

CAUTION

- **Damage to the operating panel when mounting to unsuitable mounting surface!**
- **For reasons of stability and also for tightness reasons, the back side of the device must be fitted to a completely closed bearing surface (door of switch cabinet).**
- **The operating panel and touch screen could be damaged if the mounting surface is not level (depending on the operating panel version). Therefore the mounting surface should neither be bent or warped.**
- **The mounting surface must have an evenness of 1mm. This evenness must be given during operations, as well as during mounting and storage.**

4.2 Preparation

- Getting the required materials (e.g. mounting nuts) and tools (e.g. wrench) ready.
- Produce mounting holes and openings.

CAUTION

Before installing the operating panel, check the surrounding seal (on the operating panel back side) for damage. Only with an undamaged caulking strip is the front-side protection class ensured.

4.3 Space requirement

Please see the device dimensions for the space requirement to the rear (= installation depth). The following dimensions are recommended for the mounting holes and the opening of the operating panel.

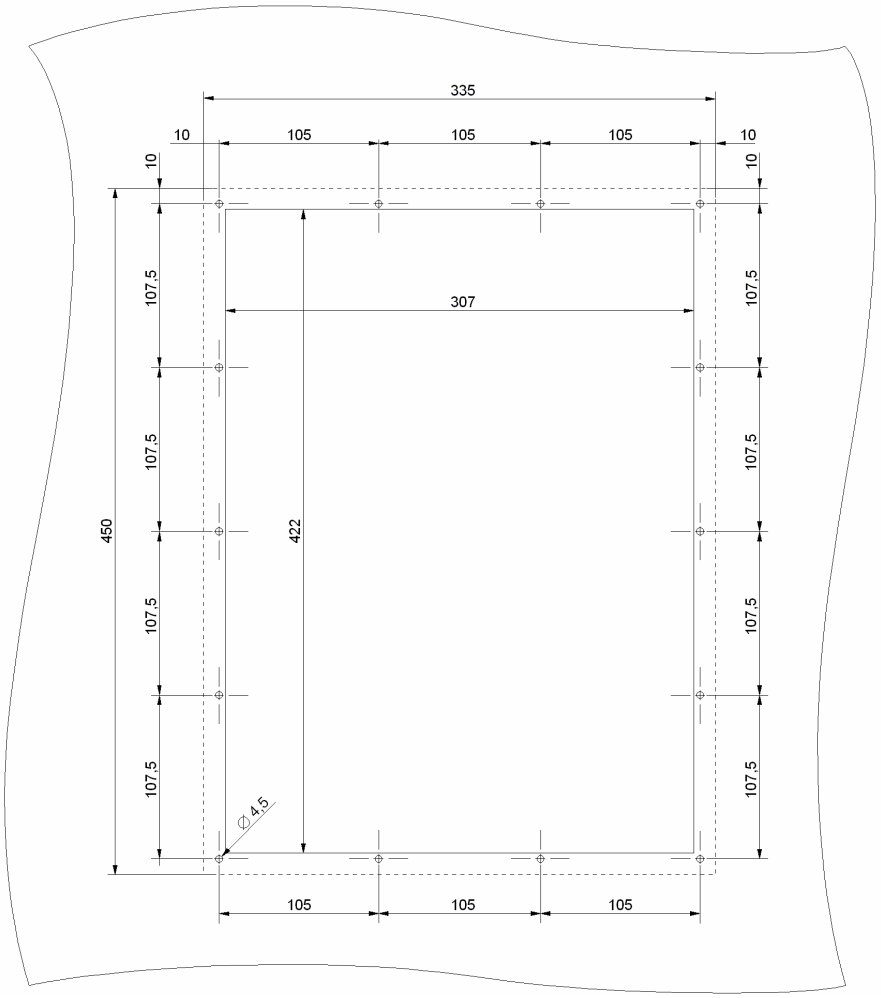

Fig.4-1: Opening dimensions and mounting holes for the operating panel (specifications in mm)

4.4 Mounting the operating panel

After the mounting holes have been drilled, the operating panel is mounted as follows:

1) Unpack the operating panel.
2) Mount the operating panel using mounting nuts.

CAUTION!

Risk of injury when mounting the operating panel!

- **When screwing on the operating panel, observe that it is well fastened and does not tilt forward out of the mounting opening.**

The operating pane is not completely mounted.

4.5 Removing the operating panel

1) Disable the power supply.
2) Remove all electrical plugs from the operating panel.
3) Disconnect the ground cable from the ground bolt.
4) Loosen the mounting screws.

The operating pane is not ready for removal from the opening.

4.6 Air conditioning, ventilation

The operating panel has ventilation slots for heat dissipation. If the permissible ambient temperature is not exceeded, no external fan will be needed. Make sure that the ventilation holes are not covered.

CAUTION

High ambient temperature can destroy the operating panel!

- **The temperature inside the control cabinet may not be higher than the maximum permitted operating temperature of the operating panel. Please refer to the technical data for this. If this cannot be guaranteed through natural heat dissipation, an air conditioning of the control cabinet must be provided.**

4.6.1 Use of air filters

Information

The operating panel must be installed in an appropriate housing to guarantee that no degree of soiling greater than 2 according to EN 61131-2 occurs.

It is recommended to install the module in a dustproof, closed control cabinet. Fan openings of the control cabinet must be equipped with air filters. The filter elements must be cleaned or replaced regularly.

4.7 Sealing

To ensure protection type IP54 (front side), the back side of the operating panel must be fitted with a seal (not included in the delivery of KEBA). The operating panel with seal must be installed flush on the mounting surface.

CAUTION

- **All unused openings must be covered by appropriate blind covers (not included in KEBA delivery). Otherwise, the tightness cannot be guaranteed.**
- **Before installing the operating panel, check the surrounding seal for damage. Only with an undamaged seal is the front-side protection class IP 54 ensured.**

5 Connections and wiring

5.1 Pin assignment

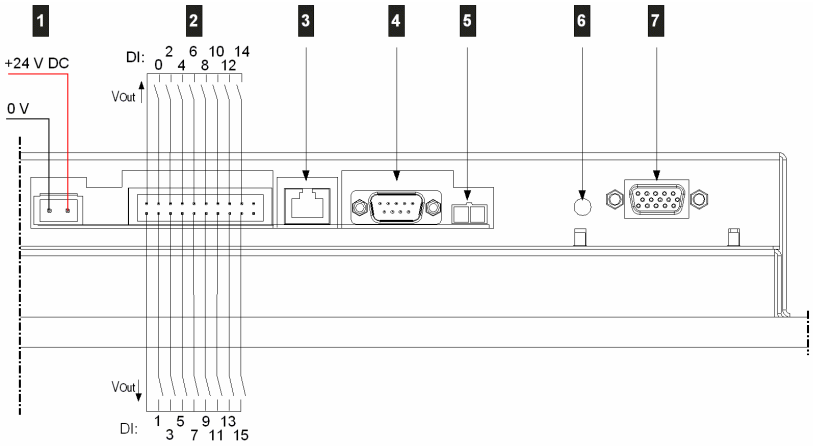

Fig.5-1: Position of the connection

1 ... 0V | 24 V: Power supply operating panel (24 V DC, 2-pole	2 ... Digital inputs (16), for the connection of external switching elements such as toggle switches etc.
3 ... EXT0: External interface, exclusively for the connection of an RFID module.	4 ... SI0: RS-485-A interface
5 ... VCC_USB: USB module supply +12V DC exclusively for the KEBA USB modules	6 ... Adj.: Adjust equalizer (setting for transmission range), only for operating panels with PL.
7 ... Graphics: Graphics interface for the control	

The interface cables that can be ordered from KEBA are in the *chapter 3.6 "Ordering information" on page 19* for further information.

5.2 Power supply operating panel (0V | 24V)

The operating panel is supplied by 24 V DC.

WARNING!

Please observe the safety-relevant information in the *chapter 2.3 "Safety instructions for personal safety" on page 11*.

5.2.1 Connection diagram

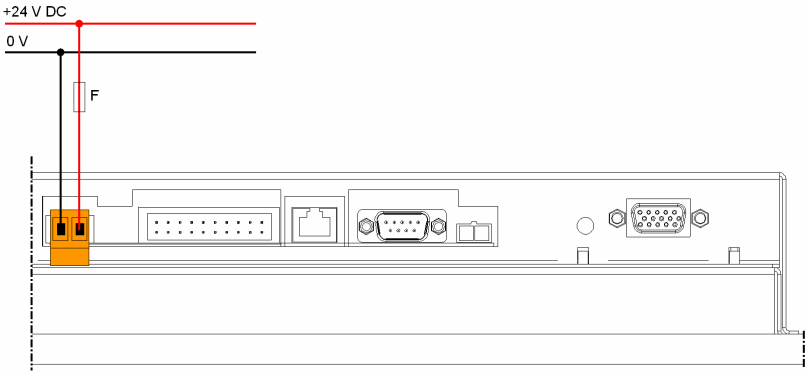

Fig.5-2: 24 V DC connection diagram

5.2.2 Plug specification

Connection terminals: 2-pin male connectors (Weidmüller SL-SMT 5.08). The necessary female connectors are not included in the scope of delivery of KE-BA.

Cross section according to manufacturer specifications:

Connectable conductor	Cross-section
Clamping range min.	0.13 mm²
Clamping range max.	3.31 mm²
AWG, min.	26
AWG, max.	12
single-wire, min. H05(07) V-U	0.2 mm²
single-wire, max. H05(07) V-U	2.5 mm²
finely-stranded, min. H05(07) V-K	0.2 mm²
finely-stranded, max. H05(07) V-U	2.5 mm²
with wire sleeves according to DIN 46 228/1. min.	0.2 mm²
with wire sleeves according to DIN 46 228/1. max.	2.5 mm²
with AEH with collar DIN 46 228/4 min.	0.2 mm²
with AEH with collar DIN 46 228/4 max.	2.5 mm²

Ordering data, see *chapter 3.6.3.2 "Connector" on page 20*.

5.2.3 Cable specification

Cable type: Unshielded cable

Cross-section

The actual permissible wire cross-section is specified by the electrical conditions of the connected equipment an the female connectors used:

- Max. load current and required heat dissipation through the connected wire at maximum ambient temperature.
- Permissible voltage drop for error-free operation of the connected equipment.

5.3 Protective earthing

If required for reasons of electrical safety for the end usage, the metal parts of the operating panel must be grounded via the grounding bolt (M4) that is located on the operating panel back side (yellow grounding point).

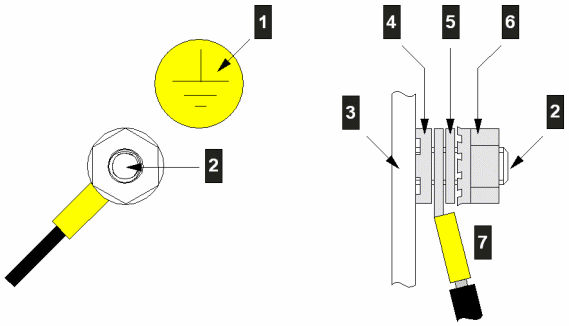

Fig.5-3: Ground bolt on the operating panel back side

1 ... Yellow grounding point (adhesive label)	2 ... Ground bolt
3 ... Front panel	4 ... Grounding washer
5 ... Washer	6 ... Hexagon nut with toothed washer
7 ... Cable lug with protective ground cable	

Material

Ground bolt: Steel 8.8, galvanized, colorless passivated.

5.4 Digital inputs

The operating panel offers a 20-pole plug bar block e.g. for connection of 16 external toggle switches.

Information

These digital inputs are not EN 61131-2 conforming and may not be utilized for machine/system functions that require the EN EN 61131-2 conforming digital inputs. For such cases, use the conforming digital inputs of the control.

Information

For the selection of the switching elements, the chapter 10 "Technical data" on page 39 specifications in section "Digital inputs" are to be taken into account.

WARNING!

The digital inputs are not designed for safety-relevant control tasks (e.g. shut-down in emergency). For safety-relevant control tasks or for personnel security, additional external safety measures must be realized to ensure the system remains in a safe operating condition even in the event of a fault. For additional information, please see *chapter 2.3 "Safety instructions for personal safety" on page 11*.

The digital inputs may only be used for the integration of switches and buttons or switching elements exclusively. The connection of sensors and other equipment is not allowed.

The nominal voltage of the switch element must amount to 24 V DC. 5 mA is typically applied by the switching element for closed contact. This is to be taken into account for the selection of the switching element (e.g. minimal required current for elements with silver contacts).

The digital inputs may only be supplied with the intended power supply on the operating panel of 24 V DC "V_{Out}", an external supply of the digital inputs is not allowed.

Additional digital inputs are made available through the connection of an input/output module XE 040/x. Please refer to the project engineering manual "XE 040/A, XE 040/B, input/output module" for a precise description.

5.4.1 Plug specification

Connection terminals: 20-pole male connector (Weidmüller SL-SMT 5.08). The necessary female connectors are not included in the scope of delivery of KEBA.

Cross section according to manufacturer specifications:

Connectable conductor	Cross-section
Clamping range min.	0.08 mm²
Clamping range max.	1 mm²
AWG, min.	28
AWG, max.	18
single-wire, min. H05(07) V-U	0.2 mm²
single-wire, max. H05(07) V-U	1 mm²
finely-stranded, min. H05(07) V-K	0.2 mm²
finely-stranded, max. H05(07) V-U	1 mm²
with wire sleeves according to DIN 46 228/1, min.	0.13 mm²
with wire sleeves according to DIN 46 228/1, max.	0.34 mm²
with AEH with collar DIN 46 228/4, min.	0.13 mm²
with AEH with collar DIN 46 228/4, max.	0.34 mm²

5.4.2 Cable specification

Cable type: Unshielded cable

Cross-section

The actual permissible wire cross-section is specified by the electrical conditions of the connected equipment an the female connectors used:

- Max. load current and required heat dissipation through the connected wire at maximum ambient temperature.
- Permissible voltage drop for error-free operation of the connected equipment.

5.5 External interface (EXT0)

The external interface EXT0 is used exclusively for the connection of an RFID module XE 020/A. This is used for touchless identification of the user at the operating panel. If the operating panel is equipped with an RFID module, it is connected on leaving the factory via a shielded connecting cable to the EXT0 interface of the operating panel.

5.5.1 Cable specification

The connecting cable for the RFID module XE 020/A is also available as replacement part, see *chapter 3.6.1 "Ordering information" on page 19*.

5.6 RS-485-A interface (SI0)

When using a CPU module as RS-485-A master, the SI0 interface for the connection for max. 3 RS-485-A slave participants, such as Input/Output module (OI 3xx) or keypad module (XE 040/x) etc. can be used. For multiple bus participants, the bus terminating resistor for the last participant must be activated.

The activation of the but terminating resistor is done using DIP switch or termination bracket.

But termination via DIP switch

If the operating panel is the last participant, the bus terminating resistor for the RS-485-A interface is to be activated. To do this, the DIP switch is set to ON or the termination bracket is to be realized (see *chapter 5.6.1 "Cable specification" on page 29*).

Addressing

An addressing occurs via the DIP switches 1 and 2 on the back side of the operating panel. The operating panel used the address 0x10h in the delivery state. Other devices connected to this interface cannot be operated with this address.

Connection example for the addressing and bus termination

In the following connection example, the input/output module XE 040/x is the last bus participant and must be configured with an active terminating resistor. In this case, the terminating resistor of the operating panel must be deactivated since it is not the last participant (DIP switch 6=OFF).

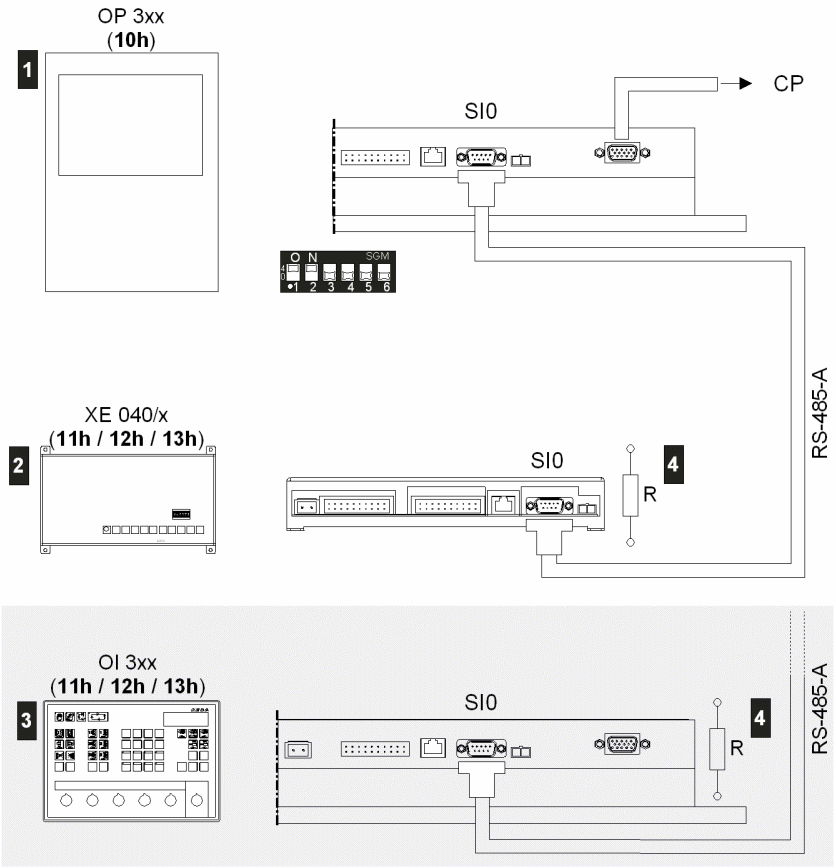

Fig.5-4: Connection example for the RS-485-A interface

1 ... Operating panel OP 3xx, schematic representation (address: 10h)	2 ... Input/Output module XE 040/x (address: 11h, 12h or 13h)
3 ... Instead of the XE 040/x, a keypad module OI 3xx is also possible (address: as with XE 040/x)	4 ... Terminating resistor

5.6.1 Cable specification

Cable type: shielded, twisted pair data cables with a characteristic impedance of 100 - 120 Ω. The connector casing must be completely conductive. The cable shielding must connect surface-to-surface with the shield cover of the plug.

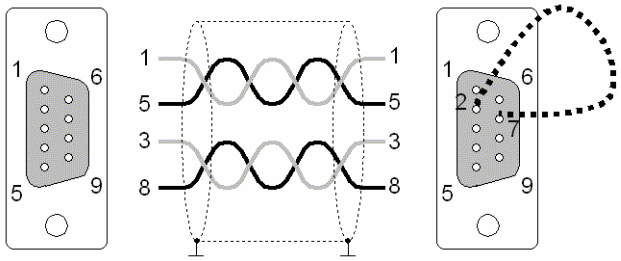

Fig.5-5: PIN assignment (on the cable both sides 9-pole DSUB female connector)

PIN no.	Signal designation
1	GND
2	Termination bracket (bus termination on the device)
3	RS485_B
4	n.c.
5	GND
6	n.c.
7	Termination bracket
8	RS485_A
9	n.c.

Tab.5-6: Signal designations of the PINs

For further information (wiring guidelines) please refer to the configuration manual of the Kemro K2 automation-system -> Connections and wiring -> Interfaces -> RS-485/422.

Bus termination using termination bracket

Alternatively to the DIP switch, the bus termination of the RS-485-A interface can also occur by soldering up a termination bracket. The bracket is to be soldered on the connector of the last bust participant between pins 2 and 7.

5.7 USB module supply (VCC-USB)

The VCC USB interface serves exclusively for the power supply for a USB module XE 010/x. If the operating panel is equipped with a USB module, then the supply cable for the USB module XE 010/x is already connected to the operating panel and to the USB module in the delivery state.

5.7.1 Cable specification

The supply cable is also available as replacement part, see *chapter 3.6.1 "Ordering information" on page 19*.

5.8 Graphic interface (Graphics)

The graphic interface Graphics (15-pole DSUB female connector) is used to connect the operating panel via a connection cable XW 041-xxx to the control.

5.8.1 Cable specification

Only cables from KEBA are to be used. Connecting cable, type: XW 041-xxx (graphic/RS-485-A cable).

Ordering data, see *chapter 3.6.3.2 "Connector" on page 20*.

5.8.1.1 Maximum cable lengths

Maximum cable length

Operating panel	Graphic interface (Graphics)	Length (resolution)
OP 350/C-1100	LVDS	10 m (SVGA, 800 x 600)

5.9 Connection example (CP - OP)

There is the option of operating the operating panel with different CP modules (e.g. CP 2xx or CP 03x).

When using the CP23x , a 15-pole DSUB cable is used (XW 041-xxx) is used as connecting cable. A Y-adapter cable (XW 042-002) is additionally required.

When using the CP 25x, CP 03x,... , a 15-pole DSUB cable is used (XW 041-xxx) as connecting cable.

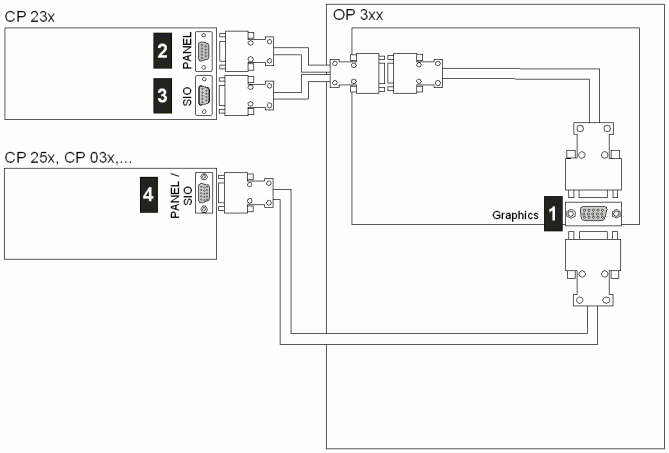

Fig.5-7: Operating panel OP 3xx either with CP 23x, CP 25x, CP 03x,...

1 ... 15-pole DSUB female connector	2 ... 9-pole DSUB female connector
3 ... 9-pole DSUB female connector	4 ... 15-pole DSUB female connector

Information

Only cables recommended by KEBA may be used! These cables are available in different lengths (order numbers, see chapter 3.6.1 "Ordering information" on page 19).

6 Configuration

6.1 Address setting for the operating panel

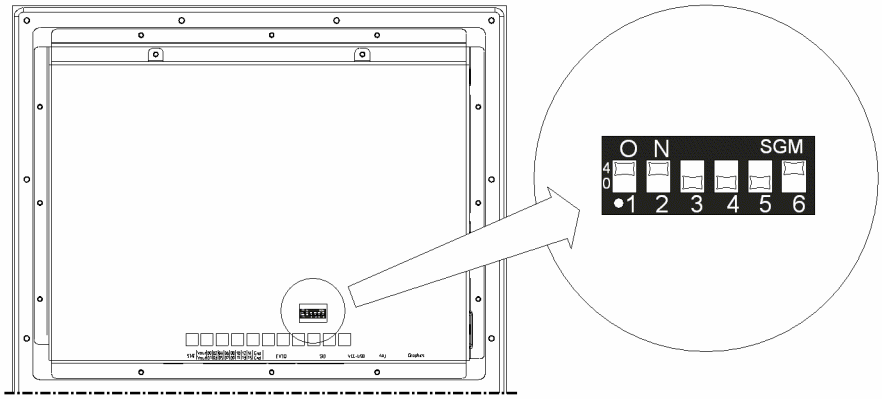

Fig.6-1: Position and setting of the DIP switch on delivery (schematic representation)

The following table shows the possible settings of the DIP switch located on the back side of the operating panel. The DIP switch setting printed in bold depict the delivery state.

DIP-Switch	Function
1=OFF, 2=OFF	13h
1=OFF, 2=ON	12h
1=ON, 2=OFF	11h
1=ON, 2=ON	**10h**
3-5	no meaning
6=ON	Terminating resistor for RS-485-A interface **running**

7 Operation and handling

7.1 Removing the display protective film

1) Loosen the protective film from the display at a corner.

Fig.7-1: Detailed diagram 1: Remove the protective film

2) Pull off the film at an angle of approx. 180° (see following image).

Fig.7-2: Detailed diagram 2: Remove the protective film

Information

On operating panels with touch screen, the protective film may not be pulled off upwards at an angle of 90° because this will lead to an unallowed mechanical loading and possible damage of the touch screen.

After the protective film has been pulled off, it should not be applied again to the display since it can no longer adhere evenly.

7.2 Software

7.2.1 Software

No application has been stored in the operating panel. It is activated directly through the control system. The device will not trigger any error messages.

It is possible to perform firmware updates.

See *chapter 8.1 "Firmware update" on page 36*.

7.2.2 Programmierhinweise

Es wird empfohlen, die Programmierung der Visualisierung in Kemro.view.standard (siehe dazu gleichnamiges Programmierhandbuch) zu realisieren. Die Laufzeitumgebung ist in der Steuerung integriert. Auf das Bedienpanel muss keine Applikation installiert werden.

Wesentliche Merkmale:

- Eine Applikation für verschiedene Bediengeräte
- Umfangreiche Service- und Diagnosefunktionen
- Mächtige Standard-Systemfunktionen
- Optimierte Touch-Bedienung
- Online-Einheitenumschaltung
- Integrierte Hardcopy-Funktionalität
- Flexibles Online-Hilfesystem auf HTML-Basis
- Intuitive, grafische Ablaufprogrammierung
- Programmierschnittstelle für Kundenerweiterungen

8 Maintenance

The device will not trigger any error messages. Faulty devices must be exchanged and shipped to KEBA for repair.

8.1 Firmware update

New firmware versions can be loaded via the RS-485-A interface (SI0) or via the graphic interface (graphics). The procedure is described in the installation manual of the control systems.

CAUTION

Defective operating panel by interruption of the power supply during firmware update!

- **The power supply may not be interrupted during the update!**

  During the firmware update, the firmware is written to the flash storage of the operating panel within seconds. If the update procedure is interrupted exactly during this period, the operating panel will be rendered inoperable and must be sent to KEBA for repair.

8.2 Packaging, shipment

The device is wrapped into protective packaging material for shipment. For reasons of environmental protection KEBA appreciates receiving the original packaging material for multiple use.

The protective packaging does not qualify as adequate transport packaging and hence is not suited for transportation via carrier haulage or airplane. Appropriate transportation packaging is required for these types of shipment.

8.3 Cleaning the touch screen

The surface should be cleaned with a moist, clean, soft cloth and glass cleaner. The glass cleaner should be sprayed onto the cloth and not directly onto the surface.

The surface coating of the touch screen is resistant to the following solvents:

Solvent

Heptan	Alcohol	Toluene
Acetone	Methyl ethyl ketone	Unleaded gasoline
Hydrochloric acid	Turpentine	Gear oil
Oil SAE	Diesel	
Antifreeze	Isopropanol	

Exception

40 percent sodium hydroxide causes slight white discolorations.

9 Operating panel disposal

CAUTION

Please observe the regulations regarding disposal of electric appliances and electronic devices!

- The symbol with the crossed-out waste container means that electrical and electronic devices including their accessories must not be disposed of in the household garbage.
- The materials are recyclable in accordance with their labeling. You can make an important contribution to protecting our environment by reusing, renewing and recycling materials and old appliances.

10 Technical data

10.1 Operating panel OP 350/C-1100

10.1.1 In general

Nominal supply voltage:	24 V DC (voltage limits according to EN 61131-2)
Max. switch-on current:	10 A
Maximum power consumption:	30 W
Power consumption own consumption:	12 W
Max. power consumption (USB module):	14 W at 12 V DC (optional)
Max. power consumption (RFID module):	1 W at 12 V DC (optional)
Max. power consumption (digital inputs):	3 W at 24 V DC (optional)
Programming language:	kemro.view.standard
Display:	12.1“ TFT, 256,000 colors
● Resolution:	800 x 600 pixel (SVGA)
Touchscreen:	Yes
● Functional principle:	analog resistive
Membrane keypad:	48 membrane keys with embossing and tactile feedback, some with LEDs and labeling strips.
	1 Power LED

10.1.2 Environmental conditions

Operating temperature:	+5 °C to +55 °C
Storage temperature:	-40 °C to 70 °C
Relative humidity of air:	5 % to 95 % (non condensing)
Vibration resistance:	According to EN 61131-2
Shock resistance:	According to EN 61131-2
Equipment class:	III (according to EN 61131-2)
Protection class:	● IP 54 front side (if installed correctly)
	● IP 20 back side

10.1.3 Digital inputs

Number of inputs:	16 (DI0-DI15) (not EN 61131-2 compliant)
Rated voltage:	24 V DC
Applied contact current:	5 mA (supply exclusively by Vout)
Galvanic isolation:	No
Status display:	None
Min. update cycle:	60 ms

10.1.4 Interfaces

Serial interface:	
● Type:	RS-485-A
● Baud rate:	115 kbit/s

Graphic interface:	
• Type:	LVDS (**L**ow **V**oltage **D**ifferential **S**ignaling)
• Transmission range of the operating panel from the control:	up to 10 m

10.1.5 Mechanical properties

External dimensions:	
• Width:	335 mm
• Height:	450 mm
• Depth:	50.6 mm
Front:	
• Front plate:	Aluminium
• Decor film:	Polyester
• Seal:	Circumferential round cord
Housing:	Metal
Weight:	3.5 kg

11 EC directives and standards

11.1 Operating panel OP 350/C-1100

11.1.1 EC Directives

Guideline 2004/108/ EG	EC directive on the electromagnetic compatibility

Information

This product was developed for the use in industrial areas and can cause radio interference when used in residential areas.

11.1.2 Declaration of conformity

KEBA

EC Declaration of Conformity

CE

KEBA AG
Gewerbepark Urfahr
4041 Linz
AUSTRIA

Document No.: **75385/CE/3**

We declare that the following product(s)

Name of product: **Operating Panel OP 3xx**

Variants: **OP 330/A-0000 ; OP 330-LD/A-0000 ;**
OP 331/C-1100 ; OP 331/R-1100 ;
OP 340/C-1100 ; OP 340/R-1100 ;
OP 341/Y ; OP 341/C-1100 ; OP 341/R-1100 ;
OP 350/A-0103 ; OP 350/C-1100 ; OP 350/R-1100 ; OP 350/X ;
OP 362-LD/W-5200 ; OP 362-LD/W-6200

is/are in conformity with the essential requirements of the following European Council Directive(s):

- **EC-Directive relating to electromagnetic compatibility 2004/108/EC**

Conformity to the directive 2004/108/EC is assured by the compliance with the applicable parts of the following harmonized european standards:

- **EN 61131-2:2003**

Important notes:

Any modification on the product(s), that is performed without KEBA's consent will render this declaration invalid.

This declaration certifies the conformity with the directives mentioned, but does not imply any warranty of the features of the product(s).

The safety instructions contained in the documentation supplied with the product(s) must be followed.

Linz, 03.02.2009

Dipl.-Ing. Gerhard Ensinger
Head of Development Center

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11.1.3 Standards

The conformity with the regulations of the Directive 2004/108/EG is verified by the adherence to the following harmonized European norms:

EN 61131-2:2003	Programmable Controllers – Part 2: Equipment requirements and tests (EN 61131-2:2003); electromagnetic compatibility requirements (chapter 8).

11.1.4 Standards for the American market

For the American market, the following standard was also taken into account:

11.1.4.1 UL test for industrial control equipment

UL 508, 2001	Industrial Control Equipment