Operating instructions and Spare parts list

System control
MagicControl 4.0 (CM40)

Translation of the original operating instructions
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About these instructions

General information

This operating manual contains all important information which you require for the working with the MagicControl 4.0 (CM40). It will safely guide you through the start-up process and give you references and tips for the optimal use when working with your powder coating system.

Information about the functional mode of the individual system components should be referenced in the respective enclosed documents.

Keeping the Manual

Please keep this Manual ready for later use or if there should be any queries.

Safety symbols (pictograms)

The following warnings with their meanings can be found in the Gema instructions. The general safety precautions must also be followed as well as the regulations in the relevant instructions.

⚠️ DANGER
Indicates a hazardous situation which, if not avoided, will result in death or serious injury.

⚠️ WARNING
Indicates a hazardous situation which, if not avoided, could result in death or serious injury.

⚠️ CAUTION
Indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.

⚠️ ATTENTION
Indicates a potentially harmful situation. If not avoided, the equipment or something in its surrounding may be damaged.
Structure of Safety Notes

Every note consists of 4 elements:
- Signal word
- Nature and source of the danger
- Possible consequences of the danger
- Prevention of the danger

Software version

This document describes the operation of the control unit MagicControl 4.0 (CM40) with software version starting from CM40_1_01a.

Presentation of the contents

Figure references in the text

Figure references are used as cross references in the descriptive text.

Example:

“The high voltage (H) created in the gun cascade is guided through the center electrode.”
Safety

Basic safety instructions

– This product is built to the latest specification and conforms to the recognized technical safety regulations and is designed for the normal application of powder coating.

– Any other use is considered non-compliant. The manufacturer shall not be liable for damage resulting from such use; the user bears sole responsibility for such actions. If this product is to be used for other purposes or other substances outside of our guidelines then Gema Switzerland GmbH should be consulted.

– Start-up (i.e. the execution of intended operational tasks) is forbidden until it has been established that this product has been set up and wired according to the guidelines for machinery. The standard “Machine safety” must also be observed.

– Unauthorized modifications to the product exempt the manufacturer from any liability from resulting damage.

– The relevant accident prevention regulations, as well as other generally recognized safety regulations, occupational health and structural regulations are to be observed.

– Furthermore, the country-specific safety regulations also must be observed.

Product specific security regulations

– This product is a constituent part of the equipment and is therefore integrated in the system’s safety concept.

– If it is to be used in a manner outside the scope of the safety concept, then corresponding measures must be taken.

– The installation work to be done by the customer must be carried out according to local regulations.

– It must be ensured, that all components are earthed according to the local regulations before start-up.

For further security information, see the more detailed Gema safety regulations!
WARNING

Working without instructions
Working without instructions or with individual pages from the instructions may result in damage to property and personal injury if relevant safety information is not observed.

► Before working with the device, organize the required documents and read the section "Safety regulations".
► Work should only be carried out in accordance with the instructions of the relevant documents.
► Always work with the complete original document.
Product description

Intended use

This plant control unit is designed exclusively for monitoring, operating and controlling powder coating systems and associated components (see also the chapter entitled “Technical Data”).

The plant control is particularly suitable for the fully automatic coating of any parts.

![MagicControl 4.0](image)

Fig. 1

Observance of the operating, service and maintenance instructions specified by the manufacturer is also part of conformity of use. This product should only be used, maintained and started up by trained personnel, who are informed about and are familiar with the possible hazards involved.

Any other use is considered non-compliant. The manufacturer is not responsible for any incorrect use and the risks associated with such actions are assumed by the user alone!

For a better understanding of the interrelationships in powder coating, it is recommended that the operating instructions for all other components be read as well, so as to be familiar with their functions too.

A summary of the directives and standards

This product was built according to the current state of the art. The product is subject to the European directives and complies with the following standards.

The product is suitable for the intended purpose and can be used in the appropriate areas.
For further information, also refer to the enclosed Declaration of Conformity.

### European directives RL

<table>
<thead>
<tr>
<th>Directive</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>EG-RL 2006/42/EU</td>
<td>Machinery</td>
</tr>
<tr>
<td>EG-RL 2014/34/EU</td>
<td>Equipment and Protective Systems in Potentially Explosive Atmospheres (ATEX)</td>
</tr>
<tr>
<td>EG-RL 2014/30/EU</td>
<td>Electromagnetic compatibility</td>
</tr>
</tbody>
</table>

### EN European standards

<table>
<thead>
<tr>
<th>Standard</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>EN 50177</td>
<td>Stationary electrostatic application equipment for ignitable liquid coating material - Safety requirements</td>
</tr>
</tbody>
</table>
| EN 50050-2 | Electrostatic equipment for areas where there is danger of explosion – electrostatic hand-held equipment  
Part 2: Electrostatic hand-held spraying equipment |
| IEC/EN 60950 | Safety of information technology equipment |
| UL 61010-2-201 | Industrial controls, section "Requirements for the place of installation" |
| DIN EN 60529 | Degrees of protection provided by enclosures (IP Code) |
| NEMA 250-2003 | Enclosures for electrical equipment (1000 Volts maximum) |
| DIN EN 60898-1:2006-03 | Electrical accessories - Circuit-breakers for overcurrent protection for household and similar installations |
| EN 50178 | Electronic equipment for use in power installations |
| IEC/EN 61131-2 | Programmable controllers, Equipment requirements and tests |
| EN 12981 | Coating plants – spray booths for application of organic powder coating material - Safety requirements |

### Recognized safety-related regulations

<table>
<thead>
<tr>
<th>Regulation</th>
<th>Description</th>
</tr>
</thead>
</table>
| 764 / DGUV Information 209-052 | Electrostatic coating  
Trade Union information concerning health and safety during work (BGI) |
Reasonably foreseeable misuse

- Operation without the proper training
- Use in connection with unauthorized coating devices or components

Powder circuit

The control monitors and controls the powder circuit in coating plants. The powder circuit depends on the plant layout and configuration.

An overview of the effective powder circuit is shown in the enclosed wiring diagram.

![Diagram of a powder coating plant]

**Fig. 2: Example of a powder coating plant**

1. Booth  
2. Cyclone separator  
3. Sieve  
4. Dense phase conveyor  
5. After Filter  
6. Refuse container  
7. OptiCenter  
8. Automatic guns

Typical characteristics

- Powder coating in 2 operating modes  
- Cleaning in cleaning mode  
- User administration and language management  
- Recipe management / application data management  
- Configuration and parameter data management  
- Alarm handling  
- Diagnostic functions  
- Operating data acquisition  
- Control and regulation of height, length and depth detection  
- Storage of operating data (e.g.: running time of guns, axes, fans) on the SD cards  
- Data exchange with higher-level plant controls (option)  
- PC-based central control module for booths, gun controls, axes and powder supply
– Large-screen 15.6” display with symbols
– TFT color screen with touch screen function
– CAN bus technology
– Multilingual version
– Installation in control cabinet or on stands

<table>
<thead>
<tr>
<th>MagicControl CM40</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Monitor</td>
<td>15.6”</td>
</tr>
<tr>
<td>SD card</td>
<td>1</td>
</tr>
<tr>
<td>Number of guns</td>
<td>55</td>
</tr>
<tr>
<td>Number of stations</td>
<td>10</td>
</tr>
<tr>
<td>Number of axes</td>
<td>24</td>
</tr>
<tr>
<td>Axis type</td>
<td>from ZA04 from XT09</td>
</tr>
</tbody>
</table>

**Scope of delivery**

– SD card
– Operating manual
# Technical Data

## System

<table>
<thead>
<tr>
<th>MagicControl CM40</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Processor</td>
<td>ARM Cortex-A9 800 MHz</td>
</tr>
<tr>
<td>Internal memory</td>
<td>512 MB RAM, 1 GB SLC</td>
</tr>
<tr>
<td>Remanent memory</td>
<td>128 kB</td>
</tr>
</tbody>
</table>

## Electrical data

<table>
<thead>
<tr>
<th>MagicControl CM40</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominal voltage</td>
<td>24 VDC SELV, extra-low safety voltage</td>
</tr>
<tr>
<td>Voltage range</td>
<td>24 VDC acc. to DIN 19240</td>
</tr>
<tr>
<td></td>
<td>19.2 - 30.0 VDC effective</td>
</tr>
<tr>
<td>Reverse voltage protection</td>
<td>yes</td>
</tr>
<tr>
<td>Protection</td>
<td>yes (internal inaccessible melting fuse)</td>
</tr>
<tr>
<td>Electrical insulation</td>
<td>no</td>
</tr>
<tr>
<td>Current consumption</td>
<td>max. 21.6 W/24 VDC</td>
</tr>
<tr>
<td>Switch-on current max.</td>
<td>1 A²s</td>
</tr>
</tbody>
</table>

## Dimensions

<table>
<thead>
<tr>
<th>MagicControl CM40</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Mechanical dimensions</td>
<td>404 x 255 x 76 mm</td>
</tr>
<tr>
<td>Window</td>
<td>388 x 239 mm</td>
</tr>
</tbody>
</table>

## Display

<table>
<thead>
<tr>
<th>MagicControl CM40</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Technology</td>
<td>Projected Capacitive Touch (PCT)</td>
</tr>
<tr>
<td>Screen diagonal</td>
<td>15.6&quot;</td>
</tr>
<tr>
<td>Resolution</td>
<td>1366 x 768 pixels (WXGA)</td>
</tr>
<tr>
<td>Number of colors</td>
<td>≈ 16.7 million (color depth 24 Bit)</td>
</tr>
<tr>
<td>Display surface</td>
<td>344 x 194 mm</td>
</tr>
<tr>
<td>Operation</td>
<td>Multifinger touch</td>
</tr>
<tr>
<td>Front screen</td>
<td>anti reflex coated, scratch-proof</td>
</tr>
</tbody>
</table>
### Connections

<table>
<thead>
<tr>
<th>MagicControl CM40</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethernet 1</td>
<td>RJ-45 socket, 8-pin, 2 LEDs (CAT5e/6), LAN1, 10/100 Mbps</td>
</tr>
<tr>
<td>Ethernet 2</td>
<td>RJ-45 socket, 8-pin, 2 LEDs (CAT5e/6), LAN1, 10/100 Mbps</td>
</tr>
<tr>
<td>USB host</td>
<td>USB 2.0, not galvanically isolated, plug type A, full power (500 mA)</td>
</tr>
<tr>
<td>USB device</td>
<td>USB 2.0, not galvanically isolated, plug type B</td>
</tr>
<tr>
<td>COM1</td>
<td>RS-232, not galvanically isolated, SUB-D connector 9-pin</td>
</tr>
<tr>
<td>COM2</td>
<td>RS-485, not galvanically isolated, SUB-D connector 9-pin</td>
</tr>
<tr>
<td>CAN</td>
<td>CAN1, not galvanically isolated, SUB-D connector 9-pin</td>
</tr>
<tr>
<td>SD card slot</td>
<td>SDSC or SDHC according to SDA specification 2.0</td>
</tr>
</tbody>
</table>

### Environmental conditions

<table>
<thead>
<tr>
<th>MagicControl CM40</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Climate</td>
<td>0-50 °C, 10-95% relative humidity, not condensing</td>
</tr>
<tr>
<td>Vibration / shock / drop test</td>
<td>Vibration – IEC 60068-2-6</td>
</tr>
<tr>
<td></td>
<td>Shock – IEC 60068-2-27</td>
</tr>
<tr>
<td></td>
<td>Drop test – IEC 60068-2-31</td>
</tr>
</tbody>
</table>

### Rating plate

A rating place is attached to the back of the device for the purpose of identification. The rating place contains the following information:

- Type designation
- Version
- Required power supply
- Serial no.
- Arrangement of interfaces and operating elements

![Rating Plate Image]

*Fig. 3: Rating plate*
Design and function

Operating and display elements

<table>
<thead>
<tr>
<th>Designation</th>
<th>Description</th>
</tr>
</thead>
</table>
| 1 Display, touch sensor | Operating and display elements  
Acquisition of the actuation of the operating elements shown on the display.  
Operated by touch using fingers. |
| 2 SD card slot   | Slot for SD card                                                             |
| 3 CTRL button    | Exits the visualization program                                             |

Fig. 4: Front and back
### Connections and interfaces

**Fig. 5: Connections**

<table>
<thead>
<tr>
<th>Connection</th>
<th>Description</th>
</tr>
</thead>
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<tr>
<td>1</td>
<td>Ethernet 1</td>
</tr>
<tr>
<td>2</td>
<td>Ethernet 2</td>
</tr>
<tr>
<td>3</td>
<td>USB host</td>
</tr>
<tr>
<td>4</td>
<td>USB device</td>
</tr>
<tr>
<td>5</td>
<td>COM1</td>
</tr>
<tr>
<td>6</td>
<td>COM2</td>
</tr>
<tr>
<td>7</td>
<td>CAN</td>
</tr>
<tr>
<td>8</td>
<td>Power supply</td>
</tr>
<tr>
<td>9</td>
<td>SD card slot</td>
</tr>
</tbody>
</table>
Symbols

Fig. 6

1. Navigation bar
2. Plant overview
3. Information bar
4-7. Mode-dependent bar
8. Login status bar

Function keys

The function keys are distributed on the user interface.

<table>
<thead>
<tr>
<th>Function Key</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="Automatic operation mode" /></td>
<td>Automatic operation mode</td>
</tr>
<tr>
<td><img src="image" alt="Manual operation mode" /></td>
<td>Manual operation mode</td>
</tr>
<tr>
<td><img src="image" alt="Plant - OFF" /></td>
<td>Plant - OFF (Press and hold 2 seconds)</td>
</tr>
<tr>
<td><img src="image" alt="Powder management" /></td>
<td>Powder management</td>
</tr>
<tr>
<td><img src="image" alt="Guns ON/OFF (= powder)" /></td>
<td>Guns ON/OFF (= powder)</td>
</tr>
<tr>
<td><img src="image" alt="Floor blow-off ON/OFF" /></td>
<td>Floor blow-off ON/OFF</td>
</tr>
<tr>
<td><img src="image" alt="Axes move to reference position" /></td>
<td>Axes move to reference position</td>
</tr>
<tr>
<td><img src="image" alt="Safety grid (access release ON/OFF)" /></td>
<td>Safety grid (access release ON/OFF)</td>
</tr>
<tr>
<td><img src="image" alt="Cleaning operation mode" /></td>
<td>Cleaning operation mode</td>
</tr>
<tr>
<td><img src="image" alt="Main menu" /></td>
<td>Main menu</td>
</tr>
<tr>
<td><img src="image" alt="Cyclone" /></td>
<td>Cyclone</td>
</tr>
<tr>
<td><img src="image" alt="Filter ON/OFF or High/Low frequency" /></td>
<td>Filter ON/OFF or High/Low frequency</td>
</tr>
<tr>
<td><img src="image" alt="Squeegee ON/OFF" /></td>
<td>Squeegee ON/OFF</td>
</tr>
<tr>
<td><img src="image" alt="Guns-External cleaning ON/OFF" /></td>
<td>Guns-External cleaning ON/OFF</td>
</tr>
<tr>
<td><img src="image" alt="Axes ON/OFF" /></td>
<td>Axes ON/OFF</td>
</tr>
<tr>
<td><img src="image" alt="Reference axes Start/Cancel" /></td>
<td>Reference axes Start/Cancel</td>
</tr>
</tbody>
</table>
Meaning of the colors

**System components**

- **Background color Grey**
  = present, but not active

- **Border color Orange**
  = active state
  e.g. fan running, powder management system is ready

- **Border color Red**
  = Error

**Guns and axes**

- **black/grey**
  = present, but not active

- **orange**
  = active state
  e.g. gun sprays powder, axis running

- **red**
  = Error
Operating modes

The plant can be operated in the 3 operating modes **automatic (AUTO), manual (MAN) and cleaning (CLN)**. The operating modes are selected using the navigation bar on the operating panel.

### Automatic operating mode (AUTO)

Predefined programs are processed in the main operating mode AUTO. All axes and work processes are controlled by the program. The operating mode supports gap control.

**Automatic operation is only possible if object recognition and a pulse generator are present.**

- The guns and axes start automatically, based on the feedback from the object recognition
- Dynamic positioning of guns and axes by object recognition
- Coating process is interrupted when the conveyor stops
- Guns can be selected or deselected
- Object changes are carried out manually or automatically
- Daily correction of the powder output can be modified
- Status display of object recognition

### Manual operating mode (MAN)

MAN is the manual operating mode for operating simple plants without gap control or object recognition and for testing and running-in the application.

- Guns and axes are individually controlled manually by the user
- Manual positioning of guns and axes by user
- Coating process is interrupted when the conveyor stops
- Guns can be selected or deselected
- Object change is carried out manually
- Daily correction of the powder output can be modified
- Status display of object recognition

### Cleaning operating mode (CLN)

This operating mode allows the user to clean the booth and other plant components.

- Cleaning procedures for guns, axes and booth
- Cleaning procedures for powder management system are released

Utilization of this operating mode:

- After switching on the equipment, if very high quality is required on initial coating application
- Before every color change
- Before switching off the plant

The higher the requirement for cleanliness, the higher the time expenditure will be.

The cleaning of the components is partially automated, however, some of them must be cleaned manually.

**During cleaning, no objects may be present in the booth and no objects may enter the booth.**

---

**User levels and access**

The plant control offers the possibility to define the access rights of the different users. Access is only possible after entering the appropriate password. Certain functions are available depending on the user level, which is defined in advance.

The software has 5 user levels as standard predefined by Gema:
- User level 0 (admin)
- User level 1 (Gema service)
- User level 2 (user 1)
- User level 3 (user 2)
- User level 4 (user 3)

These user levels are pre-programmed and cannot be changed.

The functions available depending on the user level are explained below.

**Functions available at user level**

<table>
<thead>
<tr>
<th>User level</th>
<th>Admin</th>
<th>Gema Service</th>
<th>user 1</th>
<th>user 2</th>
<th>user 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>User groups</td>
<td>Adminis</td>
<td>Service</td>
<td>Supervis</td>
<td>Operator</td>
<td>Painter</td>
</tr>
<tr>
<td>The panel can be used without any limitation</td>
<td>•</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Level for specialized Gema staff</td>
<td>•</td>
<td>•</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Configuration possible</td>
<td>•</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Plant parameters can be modified</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Correction values can be modified</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Sequence control programs can be modified</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Application parameters can be modified (axes, guns, pretravel/overtravel, daily correction)</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>–</td>
</tr>
<tr>
<td>The user can rename or copy the existing application data</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>–</td>
</tr>
<tr>
<td>The user can activate the existing application data</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
</tr>
</tbody>
</table>
### Operating data management (LM)

With its integrated statistics, trend tools and monitoring of wearing parts, the plant control offers the user the possibility to analyze important production information and thereby support future system optimizations.

Machine utilization statistics give the user insight into usage and performance of the plant, powder consumption and the total area of the coated parts.

The software-based timer in the control unit gives information about how long the control unit has been in operation, or how long it has been operated with this control unit.

With the system diagnostics, the user has an overview of the remaining service duration of components and can better plan for maintenance intervals and spare parts.

Individual operating times can be read in the corresponding screens.

### Daily correction

The control offers the possibility to correct the powder output for all guns per station in percent.

The output values can be corrected without modifying the programmed values. The daily correction has the same effect on all guns and can be changed in the range of 50%...150%. This means that 50%..150% of the programmed powder quantity is conveyed without influencing the total air volume.

![Tageskorrektur](image)

Fig. 7:

The day correction is used:

- In injector plants as compensation for wearing parts.
- In plants with always equal parts as correction factor of the powder mixture.
- For different colors as a correction of the application, without adjusting the basic program.
- To compensate for differences in ambient conditions (summer/winter).
Assembly / Connection

Mounting instructions

The plant control is installed either in a control cabinet or as a stand-alone unit on a stand. Please contact Gema for other installation possibilities.

Fig. 8: Possibilities of installation
Inserting the SD card

The SD card contains the actual operating system and all important application information. In order for the operating panel to function properly, the SD card must be inserted before the plant is started.

The slot for inserting the SD card is located on the side of the operating panel.

**ATTENTION**

Data loss

A voltage drop or removal of the SD card while it is being written to can lead to data loss or destruction of the SD card.

- Only insert the SD card into the operating panel with the power switched off.
- Avoid writing data on to the SD card when there is also a drop in voltage.
- Only remove the SD card from the operating panel with the power switched off.
- Before switching off, make sure that no software is writing data on to the SD card.

Inserting SD card

SD cards are protected against incorrect insertion.
1. Do not use force when inserting.
2. Push the SD card into the slot until it clicks into place.

Removing SD card

1. Push the SD card all the way into the SD card slot.
2. Pull the SD card out of the SD card slot.
3. Store the SD card in its packaging for protection.
Start-up

Preparation for start-up

Basic conditions
When starting up the plant control, the following general conditions impacting the coating results must be taken into consideration:

– Gun control units, axes and all other system components correctly connected
– Guns correctly connected
– Corresponding power and compressed air supply available
– Powder preparation and powder quality

General information
The plant control is pre-parameterized, configured and tested at the Gema factory. This allows faster commissioning, since fewer parameters need to be set on site.

The application data in the laboratory report (if available) provides additional help, and can be used as the basic setting for guns and axes.

The control can be subsequently adjusted and extended.

Changes of correction values may only be made by Gema trained personnel.

Some of the configurations or settings can be made during operation, for everything else refer to the "Technical Manual".

Job-related object and process data are managed in the "Coating programs" menu and in the corresponding submenus.

Depending on the access level of the user who is logged on, parameters can be edited or only displayed. Some parameters are reserved exclusively for Gema Service.
CAN bus

General

The plant control is a CAN master system. Together with CAN slave participants, it forms the network.

The wiring and topology of the CAN network is specified in the electrical diagram.

The following data can be accessed via the CAN network:

– All desired values (process data)
– All actual values (process data)
– All control values
– All system parameters (except Baud rate and CAN address)
– All error messages
– All special parameters such as software version, daily correction, powder output correction etc.
Operation

During the initial commissioning of the device, the functional check is to be performed without powder!

Starting the plant

1. Turn the main switch to the ON position.

   The plant control starts the operating system, the PLC control and the operating software to the start page.

   Fig. 9: Start page

2. Touch the screen

   The screen switches to the main page:
3. Press the **Select** key to log in with your user name and password

4. Select the desired user profile and confirm by pressing the ✅ key

5. Press the **Password** key

6. Enter password and confirm by pressing **RET**
7. Press the key.
   - The following screen is displayed:

8. Turn the key switch to turn on the control voltage.
   - The indicator lamp lights up.
9. Press the key
- Axes are referenced

10. Select operating mode:
- Automatic operation mode
- Manual operation mode
- Cleaning

11. Put all other plant components, e.g. powder management system, into the correct operating mode (for more information, see the relevant operating manual)
- If some plant components are not yet ready for operation, a message will be displayed.

**Automatic operation mode**

1. Press the key to select automatic operation mode

![Fig. 15: Automatic operation mode](image)

2. Press the symbol to load coating objects (for more information, see below)
Fig. 16: Coating programs

1. Confirm program selection
2. Copy data
3. Insert data
4. Exit screen
5. Scroll bar
6. Delete entry in search field
7. Data search by alphanumeric entry
8. Data search by program number entry:
   - The topmost entry is set to the number searched for
9. Currently selected line
10. Currently loaded object that is available for editing

3. Select coating program and confirm selection

The plant control is now ready for production.

Plants with program change per station (internal or external)

For plants with internal or external program change, proceed as follows:

1. For external program changes, the number in the middle must be checked according to the plant specific solution
Fig. 17: Program change per station

- The plant is ready for production

2. For internal program changes, the number must be entered in the input field

- The plant is ready for production

Gap control

A pulse generator must be installed and be functioning for the displacement measurement.

In automatic mode, objects are detected by the existing object recognition and the control switches the guns and the axes on and off according to their configured functions.

If no parts pass through the object recognition, the motor power is throttled in automatic mode on plants with a controlled after filter (with frequency converter = FC). In ECO mode, the guns are also switched off.

ECO mode is not exited until parts pass through the object recognition:

- The motor is switched to the operating mode (operating power)
- The gun controls are switched on again

Manual mode

1. Press the key to select manual operation mode
Fig. 18: Manual operation mode

2. Load the desired coating program (See chapter "Load coating programs" on page 44.)

The plant control is now ready for production.

3. Axes and guns can be switched on/off manually by the user.

Guns start independently from the conveyor

Axes and guns can be switched on/off both in automatic and manual mode independently of object recognition. If the conveyor stops, the coating procedure is interrupted.

The active conveyor can be simulated:
– In systems without pulse generator
– For testing purposes
– If the pulse generator is defective
– If the conveyor is not yet ready for operation.

**ATTENTION**

Collision or faulty coating!

By simulating an active conveyor, the control is given a physically active conveyor. This can result in an offset of the effective position which is entered in the control. This can lead to collision or faulty coating without due care and consideration.

► This function may only be used by trained personnel.

1. Press the key

   The key turns orange and the activated conveyor is simulated.

---

**Setting the daily correction**

The powder output is corrected in percent for all guns per station.

<table>
<thead>
<tr>
<th>Setting values/range</th>
<th>Default</th>
</tr>
</thead>
<tbody>
<tr>
<td>50 - 150%</td>
<td>100%</td>
</tr>
</tbody>
</table>
This means that the current powder output value is multiplied by the correction value.

The correction value is not saved and must be reset after each restart.

Example:
Powder output value PA% = 50
Daily correction value = 60 %
New powder output value = 50 x 0.6 = 30

Fig. 19:
1. Press the corresponding station key
   – If several stations are present, press + to enlarge the window
2. Enter desired value (max. 150, min. 50)
3. Press the RET key to confirm

Cleaning operation mode

1. Press the key
The following page is displayed:
Booth floor cleaning works with increased cleaning frequency

2. Close the booth doors (if available)
   - For automatic closing doors, press the arrow key
   - Otherwise close the doors manually

Fig. 20:
   - Axes move into the cleaning positions and the guns are cleaned from the outside

3. Put the powder management system into cleaning mode

4. Press the key
   - The outside cleaning of the guns is started and the key turns orange.
   - External cleaning of the gun can be repeated as often as required by pressing this key

5. Follow the cleaning steps of the respective powder management system (MagicCenter, OptiCenter or Powder Center)

6. After cleaning the inside of the hose, the guns and nozzles can be cleaned manually if necessary
7. Press the key to fully extend the guns from the booth.

8. Press the key to move the guns into the booth.

9. Continue to follow the cleaning steps of the powder management system

10. Open cabin doors and close flaps (if present)

11. Booth floor cleaning is still in progress

Fig. 21:

12. Select the operating mode and coat or

13. End production and switch off the plant

**Safety grid function**

1. Press the key
   - The safety grid door is released:
     If the door is opened, the axes are disconnected from the power supply.

2. After the cleaning/maintenance work has been completed, press the key
   - The safety grid is locked again.

3. Press the key
   - Axes are ready for operation again.

4. Select the operating mode and coat or

5. End production and switch off the plant
Working interruptions or coating breaks
If the coating process is interrupted for a longer period of time, the system should be brought into an economical state.

Switching off the plant
1. Clean the plant, See chapter "Cleaning operation mode" on page 36.

2. To exit Cleaning mode, press and hold the key for 2 seconds.

Fig. 22:
3. The display changes to this screen

Fig. 23:
4. Turn the key switch to 0 to turn off the control voltage.

– The indicator lamp goes out.
5. Press and hold the key for a further 2 seconds

![Image of MagicControl 4.0]

Fig. 24: Start page

6. Turn the main switch to the OFF position

![Image of main switch]

**Application data**

**Edit gun values, select or deselect**

1. Press the key
   - The following page is displayed:

![Image of gun editing interface]
Fig. 25: Application data – Guns

1. Station
2. Gun activated/deactivated
3. Powder output
4. Total air
5. High voltage
6. Spray current
7. Electrode rinsing air
8. Pretravel = gun ON in front of the object
   (values values are set in the configuration menu)
9. Overtravel = gun OFF after the object
   (values values are set in the configuration menu)
10. Gun sprays/does not spray powder
11. Program that is being edited
12. Access to gun parameters
13. Access to axes parameters
14. Access to all coating programs
15. Save changes
16. Exit current page without saving, any changes are discarded
17. Changes per station or all stations
18. Error description

2. Press the corresponding gun key (2)
   – The key turns orange and the gun is selected or activated
   – Only guns which are activated can be switched on.
3. Touch the corresponding input field to change the parameters of the respective gun

Edit axis values, select or deselect axes

1. Press the key
   The following page is displayed:
Fig. 26: Application data – Axes

1. Station
2. Axis activated/deactivated
3. Upper reversing point – fix position. **Caution: Collision danger!**
4. Lower reversing point
5. Speed
7. Pretravel = axis ON in front of the object (values values are set in the configuration menu)
8. Overtravel = axis OFF after the object (values values are set in the configuration menu)
9. Reference axis
   - **Manual operation mode:** The symbol changes to ON/OFF after referencing.
   - **Automatic operation mode:** The symbol is no longer visible after referencing.
10. Current position or error number
11. Current program
12. Access to gun parameters
13. Access to axes parameters
14. Access to all coating programs (object data administration)
15. Save changes
16. Exit current page without saving, any changes are discarded
17. Changes per station or all stations
18. Error description
19. **Auto:** Axis moves according to object recognition and spray distance
   **Manual:** Axis moves to the specified position

2. Press the corresponding axis key
The key turns orange and the axis is selected.

- Only selected axes can be started.

3. Press the key
   - Start axes

4. Press the key
   - Stop axes

5. Touch the input field to change the position of the respective axis

**Coating programs**

1. Press the symbol to load coating programs

![Coating programs](image)

**Fig. 27: Coating programs**

1. Confirm program selection
2. Copy data
3. Insert data
4. Exit screen
5. Scroll bar
6. Delete entry in search field
7. Datasearch by alphanumeric entry
8. Data search by program number entry:
   - The topmost entry is set to the number searched for
9. Currently selected line
10. Currently loaded object that is available for editing
Load coating programs

1. Press the symbol

2. Select coating program

3. Press the key
   - The selected program is loaded

Creating coating programs

If the error message “Program not available” is displayed when copying or loading coating programs, this means that no coating programs have been created and that the program must be created again.

1. Copy any existing program, preferably a related similar one, so that you do not have to make many changes
2. Insert
3. Load
4. Edit coating programs

Copy and insert coating programs

1. Select coating program
Fig. 29:

2. Press the key
   - Data is copied to the clipboard

3. Select the coating program to which the data shall be copied from the clipboard

Fig. 30:

4. Press the key

5. The following security prompt is displayed:

   Would you like to overwrite the program?

   ✓  ❌

Fig. 31:

6. Confirm
   - Data is copied to the current coating program

Fig. 32:

7. Naming a coating program
Naming coating programs

1. Touch the desired table entry.
   – The line is highlighted.

   Only lines which are highlighted can be changed, clicking on another line only moves the selection.

2. Touch the highlighted line again.
   – A keyboard opens to name the coating program.

Fig. 33: Naming coating programs

3. Enter object name
4. Press the RET key to confirm

Search coating programs

Search by name

1. Press the search field (7)
   – A keyboard opens to search for coating programs by alphanumeric entry.

Fig. 34:
– Only coating programs that match the search are listed.

**Pay attention to upper and lower case as well as spaces!**

**Search by numbers**

1. Press the number field (8)
   - A keyboard opens to search for coating programs by numerical input.
   - The number searched for is displayed at the top of the list.

---

**User administration**

**Status display**

The log-in status is displayed in the corresponding bar:

- ![User logged in](image)
- ![User logged out](image)

**Login**

The user can log in in two ways:

- When starting the plant (See chapter “Starting the plant” on page 29.)
- By clicking on the symbol in the log-in status bar ![User logged in](image), if another user has previously logged off

![Diagram](image)

**Fig. 35: Login**

1. Log in by user selection
2. Log in by entering user name
3. Enter user password
Log-in procedure

1. Press the **Select** key

![Fig. 36: Log-in – Main page (not logged in)](image)

2. The screen switches to the next page:

![Fig. 37: Log-in – User selection](image)

3. Select the desired user profile and confirm by pressing the ✔ key

Alternatively, the user can enter their name directly by pressing the **User** key
Fig. 38: Log-in – User input

4. Enter user name and confirm by pressing RET

5. Press the **Password** key

Fig. 39: Log-in – Password input

6. Enter password and confirm by pressing RET

Fig. 40:

7. Press the ✔ key.
   - The following screen is displayed:
Log-out
The user can log out in two ways:
– By switching off the plant (See chapter "Switching off the plant" on page 39.)
– By pressing the symbol in the log-in status bar
  • User is logged off

Change user
The user change takes place by logging out and in.

User profile
Depending on user rights, individual functions and settings may not be accessible and are locked.
– See chapter "Functions available at user level" on page 22.

Create user
1. Press the key
   The following page is displayed:
Fig. 42:

2. Press the \(\text{key}\) — The following page is displayed:

Fig. 43: Settings

3. Press the \(\text{key}\) — The following page is displayed:

Fig. 44:

4. Press the “User” key
A keyboard opens to enter the name of the new user.

Fig. 45:
5. Enter user name
6. Press the RET key to confirm
7. Press the “Groups” key
   – A corresponding dialog opens.

Fig. 46:
8. Assign the desired user group to the new user from the list of available user groups:
   – Select the desired group using the arrow keys (<<, <, >, >>).
   – Press the MARK key: the selected group is marked with *
   – Press the RET key to confirm
9. Press the “New password” key
   – A keyboard opens to enter a password for the new user.
Fig. 47:
10. Enter password
11. Press the RET key to confirm
12. Press the “Confirm password” key
   – A keyboard opens and the password for the new user must be entered again.

Fig. 48:
13. Press the RET key to confirm
14. Press the key

The new user now appears in the list of available users and can be deleted or changed at any time.

Delete users

1. In the Settings menu, press the key
   – The following page is displayed:
Fig. 49:

2. Press the **User** key
   - A keyboard opens to enter the user name to be deleted.

Fig. 50:

3. Enter the user name to be deleted
4. Press the RET key to confirm
   **OR**
5. Press the “···” key
   - A corresponding dialog opens.

Fig. 51:
6. Select the user to be deleted using the arrow keys (<<, <, >, >>).
7. Press the RET key to confirm.
8. Press the key.
   
   The following page is displayed:

![Fig. 52: Change user password](image)

**Change user password**

1. In the **Settings** menu, press the key.

   The following page is displayed:

![Fig. 53:](image)

   2. Press the **Password** key.
      
      A keyboard opens to enter the last password used.
Fig. 54:

3. Enter the last password used
4. Press the RET key to confirm
5. Press the “New password” key
   – A keyboard opens.
6. Enter the new password
7. Press the RET key to confirm
8. Press the “Confirm password” key
   – A keyboard opens and the new password must be entered again.
9. Press the RET key to confirm
10. Press the key

**Search users**

This function is used to display all created and active users.

1. Press the key

The following page is displayed:

Fig. 55:
2. Press the key
   – The following page is displayed:

![Fig. 56:]

3. Press the key
   – The following page is displayed:

![Fig. 57:]

**User language**

The user language is part of the user profile and can be changed to one of the pre-installed languages if required.

The selected language is loaded each time you log in.

1. Press the key
   The following page is displayed:
2. Press the key – The following page is displayed:

Fig. 59:

3. Press the LANGUAGE key – The following page is displayed:

Fig. 60:

4. Select desired language – The change takes effect immediately and the control switches to the previous page
Maintenance / Repairs

General information

The product was designed for a maintenance-free operation.

Periodic checks

The periodic checks include examining all connecting cables.

The corresponding parts should be replaced immediately if any damage to cables is discovered.

All plugs must be properly tightened.

If an error message or maintenance message occurs, the causes must be examined and remedied promptly.

Cleaning and maintenance

The operating panel is maintenance-free. However, the following work may be necessary:

– Cleaning the screen if it becomes dirty.
– Recalibrating the capacitive screen if it no longer responds correctly to touch.

Touch-sensitive screen

If dirty:

ATTENTION

Pointed, sharp objects or corrosive liquids can damage the screen

Cleaning the screen

► Do not use any pointed or sharp objects (e.g. knife).
► Do not use any aggressive or abrasive cleaning agent or solvent.
► Ensure liquids do not enter the operating panel (risk of short circuit) and no damage is caused to the operating panel
► Clean the touch screen surface carefully with a clean, soft, damp cloth.
Battery
The built-in battery for buffering the real-time clock is maintenance-free and designed for a buffer time with the power switched off while maintaining the ambient conditions of typically 10 years at 25 °C (77 °F).

Repairs
For repairs, please contact Gema Technical Support.

<table>
<thead>
<tr>
<th>ATTENTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Destruction of the operating panel</td>
</tr>
<tr>
<td>The operating panel may only be opened by the manufacturer or an authorized body.</td>
</tr>
<tr>
<td>► Operate the operating panel only with the housing completely closed.</td>
</tr>
</tbody>
</table>

Use appropriate packaging when transporting.

Storage and transport

<table>
<thead>
<tr>
<th>ATTENTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>UV light</td>
</tr>
<tr>
<td>Plastics become brittle under the influence of UV light. This artificial aging reduces the service life of the operating panel.</td>
</tr>
<tr>
<td>► Protect the operating panel from direct sunlight or other sources of UV radiation.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ATTENTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Risk of short-circuit</td>
</tr>
<tr>
<td>In the event of climatic fluctuations (ambient temperature or humidity), moisture may be deposited on or inside the operating panel. If the control panel is subjected to condensation, there is a risk of short-circuit.</td>
</tr>
<tr>
<td>► Never switch on the operating panel when condensation is present.</td>
</tr>
<tr>
<td>► If condensation is present and the operating panel has been exposed to climatic fluctuations, allow the operating panel to adjust to room temperature before commissioning.</td>
</tr>
<tr>
<td>► Do not expose the operating panel to direct heat radiation from heaters.</td>
</tr>
</tbody>
</table>

Observe the ambient conditions when transporting and storing the operating panel.

The maximum ambient temperature for storage and transport must not exceed the specified value:
Climatic ambient conditions

<table>
<thead>
<tr>
<th>Condition</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air pressure (operation)</td>
<td>795 - 1080 hPa</td>
</tr>
<tr>
<td></td>
<td>max. 2000 m ü. NHN</td>
</tr>
<tr>
<td>Temperature (operation)</td>
<td>± 0 – +50 °C (+32 – +122 °F)</td>
</tr>
<tr>
<td>Temperature (storage / transport)</td>
<td>-20 – + 60 °C (-4 – +140 °F)</td>
</tr>
<tr>
<td>Air humidity</td>
<td>Relative air humidity 10 - 95 %</td>
</tr>
<tr>
<td>Condensation</td>
<td>Non-condensing</td>
</tr>
</tbody>
</table>

Whilst the operating panel has a robust design, the built-in components are sensitive to excessive vibrations and/or shocks.

The operating panel must be protected from mechanical loads outside its intended use.

The operating panel may only be transported in the appropriate packaging and in the correct manner.

**Before recommissioning**

During storage and transport in cold weather, and in the event of extreme temperature differences, ensure that no moisture is deposited on or inside the unit (condensation).

If condensation is present, the unit may only be switched on after it is fully dry.

---

**Operating data management (LM)**

The display shows the hours (h) with a definition of 1/100 h = 0.6 mins.

1. Press the ⌚ key

   The following page is displayed:

   ![Operating data management](image)

   **Fig. 61:**

   **Machine utilization**

   1. Press the ⌚ key
The following page is displayed:

![Gema Computer Interface]

**Fig. 62:**

<table>
<thead>
<tr>
<th>Overall equipment effectiveness</th>
<th>Display of operating times and coating results of the plant</th>
</tr>
</thead>
<tbody>
<tr>
<td>Powder coating</td>
<td>Total productive coating time based on spray and axis movement times</td>
</tr>
<tr>
<td>Color change</td>
<td>Total time in color change mode</td>
</tr>
<tr>
<td>Auxiliary process time</td>
<td>Total time takes into account conveyor stop, object gaps, waiting states, maintenance times</td>
</tr>
<tr>
<td>Overall equipment effectiveness</td>
<td>The overall equipment effectiveness is defined by the duty cycle and coating time, expressed as a percentage. Overall equipment effectiveness = coating time x 100 / duty cycle</td>
</tr>
<tr>
<td>Coating area</td>
<td>Calculated area [m²] based on the area output and triggering times of the guns.</td>
</tr>
<tr>
<td>Powder consumption</td>
<td>Trend towards powder consumption [kg] based on output volume and average transfer efficiency</td>
</tr>
<tr>
<td>Color change</td>
<td>Number of color changes</td>
</tr>
</tbody>
</table>

**System diagnosis**

Display of wearing parts status and maintenance time

1. **Press the key**

The following page is displayed:
Fig. 63:

1. Wearing part
2. Status  100% = As new
            Min.% = lowest value of individual parts
            Max.% = highest value
            < 10% = Warning status (red)
3. Maintenance
4. Time remaining until the next maintenance date, expressed in %
   → see profile for maintenance interval
5. Min.% value
6. Max.% value
7. Leave current page or return to main menu

2. Press the ► key

The following page is displayed:

Fig. 64:

1. Injector safety nozzle
2. Powder hoses
3. Electrode holder
Gun nozzles

Next page

Gun group selection

Gun

Desired, input values for the service life in hours:
- Injector safety nozzle: Input range 1 - 200
- Powder hose: Input range 1 - 3000
- Gun electrode: Input range 1 - 700
- Gun nozzle: Input range 1 - 700

Individual value input or per group if gun group is selected (orange)

Countdown, shows the remaining hours to change wearing parts

Reset, reset to 100% after change of wearing parts

Key for individual or per group reset

Back to the main menu

Leave current page or return to main menu

– Value can be edited in User Level 2

Customer profile

1. Press the key

The following page is displayed:

Fig. 65:

Input of specific basic data

Average max. powder output of all guns

Percentage of sprayed powder on the component

Average area output of the guns

Date input of the next maintenance date due
SD card – data backup
The contents of the SD card can be saved on another medium in order to be able to copy them back in case of card damage or data loss. Further information can be found in the "Technical Manual".

Some operating systems do not display individual files. This is often the case with “autoexec.bat” files, for example.

- When copying the data, make sure that all data is visible and copied.
- If in doubt, contact your IT department.

Inserting the SD card: See chapter "Inserting the SD card" on page 26.

Powder output/powder hose correction

The settings in the following example are carried out for each gun individually!

Powder output corrections are made at the first start-up, after a service work, after the solution of application problems, or by using different hose diameters!

It is recommended to create a table with input fields (see "Example table for powder output/powder hose correction"), so that, if a possible system reset takes place, an access to these data can take place.

**Powder output correction – procedure**

1. Press the key
   The following page is displayed:

   ![Fig. 66](image)

2. Press the key
   The following page is displayed:
3. Press the key
The following page is displayed:

Fig. 68: Powder output/powder hose correction

1. Station
2. Gun (activated/deactivated)
3. Powder output
4. Total air
5. Minimum powder output
6. Powder hose correction
7. Changes per gun or all guns at the same time
8. Exit current page

4. Set the total air to 4.0 (Nm³/h) on the (4) display. Set the powder output to 0 (%) on the (3) display

5. Check the correction value for minimum powder output C0 on the (5) display, and set it to 1.8 (Nm³/h) if necessary
6. Check the correction value for maximum powder output **C1** on the (6) display, and set it to **100 (%)** if necessary

For the next steps a measuring bag is necessary, for weighing the powder output.
- Do not forget to note the dead weight of the measuring bag.

7. Put the measuring bag over the gun nozzle and fasten it.
8. Press the gun key (2) to switch on the gun for 60 seconds
9. After this time has elapsed, switch off the gun, remove the measuring bag and weigh it. The powder output should be between 10-15 gr
10. If no powder is expelled from the gun, increase the minimum powder output value **C0** (range 0.5-3.0 Nm³/h)
11. If too much powder is expelled from the gun, decrease the minimum powder output value **C0** (range 0.5-3.0 Nm³/h)
12. Repeat steps 7 and 8, until the powder output amounts to 10-15 g. Annotate the adjusted minimum powder output value **C0** in the table

**Powder hose correction – procedure**

1. Set the powder output value to **80 (%)** on the (6) display
2. Put the measuring bag over the gun nozzle and fasten it. Switch on the gun for 60 seconds
3. Switch off the gun after 60 seconds, remove the measuring bag and weigh it
4. Annotate the powder output in **g/min** in the table

Calculate the powder output correction according to following formula:

\[
C1 (%) = \frac{\text{smallest powder output}}{\text{measured powder output}} \times 100
\]

5. Annotate the calculated values (**C1**) for each individual gun in the table and enter the values to the control unit (therefore, repeat the steps 2 and 3)

**Example table for powder output/powder hose correction**

<table>
<thead>
<tr>
<th>Gun No.</th>
<th>Powder output correction C0</th>
<th>Before correction</th>
<th>After correction</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>C0=1.8 Nm³/h</td>
<td>20 g</td>
<td>C0=1.7 Nm³/h</td>
</tr>
<tr>
<td>2</td>
<td>C0=1.8 Nm³/h</td>
<td>10 g</td>
<td>C0=1.8 Nm³/h</td>
</tr>
<tr>
<td>3</td>
<td>C0=1.8 Nm³/h</td>
<td>0 g</td>
<td>C0=2.6 Nm³/h</td>
</tr>
<tr>
<td>etc.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Gun No.</th>
<th>Powder hose correction C1</th>
<th>Before correction</th>
<th>After correction</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Correction factor – diagram

**Impact of the powder hose correction**  
(powder hose 11 mm x 12 m)

<table>
<thead>
<tr>
<th></th>
<th>Powder output [g/min]</th>
<th>Powder setting [%]</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>C1=100 %</td>
<td>200 g</td>
</tr>
<tr>
<td>2</td>
<td>C1=100 %</td>
<td>250 g</td>
</tr>
<tr>
<td>3</td>
<td>C1=100 %</td>
<td>280 g</td>
</tr>
<tr>
<td>etc.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Fig. 69: Correction factor – diagram**

![Diagram showing the impact of powder hose correction](image)

The hose length correction factor is chosen in such a way, that no powder is visible, if the powder portion is 0%, by increasing the value, the powder becomes visible then.

- This behavior depends on the hose length and the hose diameter.

---

### Repair work

In the event of malfunctions or faults, the product must be checked and repaired by an authorized Gema service workshop. The repairs must only be performed by an authorized specialist.

Improper tampering can result in serious danger for user and equipment.
Fault clearance

Main page error display

1. Touch information bar
   – The following screen is displayed:

Fig. 70: Error display

- Selected error message
- Error description
- Error number
- Display error history
- Delete error history (keep pressed for 2 seconds)
- Acknowledge error
- Exit current page
- Help codes list
## Faults

<table>
<thead>
<tr>
<th>Fault</th>
<th>Cause</th>
<th>Corrective action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control voltage indicator lamp does not light up</td>
<td>Safety circuit not OK</td>
<td>Check and correct any errors, see enclosed wiring diagram</td>
</tr>
<tr>
<td></td>
<td>Lamp defective</td>
<td>Replace</td>
</tr>
<tr>
<td>Axes cannot be referenced</td>
<td>The reference key is not displayed:</td>
<td>Check control voltage. On the diagnostics page, check which axes are not accessible via CAN bus (see also Operating Manual or the respective axis). Switch off the control voltage and switch it on again after 10 seconds, otherwise restart the plant.</td>
</tr>
<tr>
<td></td>
<td>- Axes are already referenced</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Not all axes are detected on the CAN bus</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Control is in an undefined state</td>
<td></td>
</tr>
</tbody>
</table>

### Diagnostic

1. Press the ⬤ key

The following page is displayed:

![Diagram](image)

**Fig. 71:**

2. Press the ⬤ key

The following page is displayed:
Fig. 72:

1. General information: Light grids, axes, guns, objects
2. Gun settings
3. Digital inputs and outputs
4. CAN bus addresses
5. Interfaces
6. Application pumps
7. Exit screen
Decommissioning / Storage

Shutdown

1. End the coating procedure
2. Switch off the control unit

The adjustments for high voltage, powder output volume and electrode rinsing air remain stored.

Storage conditions

Hazard notes
There is no danger to personnel or the environment if the unit is stored properly.

Type of storage
For safety reasons, the product should only be stored in a horizontal position

Storage duration
If the physical conditions are maintained, the unit can be stored indefinitely.

Space requirements
The space requirements correspond to the size of the product.
There are no special requirements concerning distance to neighboring equipment.

Physical requirements
Storage must be inside a dry building at a temperature between +5 and +50 °C. Do not expose to direct sunlight!
Maintenance during storage

Maintenance schedule
No maintenance schedule is necessary.

Maintenance works
During long-term storage, periodically perform a visual check.
Disposal

Introduction

Requirements on personnel carrying out the work

The disposal of the product is to be carried out by the owner or operator. When disposing of components that are not manufactured by Gema, the instructions in the respective manufacturer’s documentation must be observed.

Disposal regulations

The product must be disassembled and disposed of properly at the end of its service life.

► When disposing of the product, the applicable local and regional laws, directives and environmental regulations must be complied with!

Materials

The materials must be sorted according to material groups and taken to the appropriate collection points.

⚠️ WARNING

Risk of explosion: Lithium battery

If improperly handled, there is a risk of explosion due to the lithium battery installed in the operating panel.

► Ensure the operating panel is disposed of properly.

The recyclable materials should be taken to your local recycling center.

Operating panels that are no longer required must be disposed of properly in accordance with local regulations.
Disassembly of component groups

<table>
<thead>
<tr>
<th>WARNING</th>
</tr>
</thead>
<tbody>
<tr>
<td>Live components</td>
</tr>
<tr>
<td>Risk of fatal injury from electric shock if touched</td>
</tr>
<tr>
<td>► Only trained, authorized staff may open the electrical compartment</td>
</tr>
<tr>
<td>► Observe the safety symbols</td>
</tr>
</tbody>
</table>

1. Disconnect the mains supply and supply cables.
2. Remove all product covers.

The product is now prepared for disassembly.
Spare parts list

**Ordering spare parts**

When ordering spare parts for powder coating equipment, please indicate the following specifications:

- Type and serial number of your powder coating equipment
- Order number, quantity and description of each spare part

**Example:**

- **Type** OptiGun GA03 automatic powder gun  
  Serial number 1234 5678  
- **Order no.** 203 386, 1 piece, Clamp – Ø 18/15 mm

When ordering cable or hose material, the required length must also be given. The spare part numbers of this bulk stock is always marked with an *.

Wearing parts are always marked with a #.

All dimensions of plastic hoses are specified with the external and internal diameter:

**Example:**

Ø 8/6 mm, 8 mm outside diameter (o/d) / 6 mm inside diameter (i/d)

**ATTENTION**

Use of non-original Gema spare parts

When using the spare parts from other manufacturers the explosion protection is no longer guaranteed. If any damage is caused by this use all guarantee claims become invalid!

- Only original Gema spare parts should be used!
## MagicControl CM40 – complete

<table>
<thead>
<tr>
<th></th>
<th>Description</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Micro Touch Panel 15.6” – complete (without pos. 2)</td>
<td>1015 320</td>
</tr>
<tr>
<td>2</td>
<td>SD card – 4 GB</td>
<td>on request</td>
</tr>
</tbody>
</table>

![MagicControl CM40](image)

*Fig. 73: MagicControl CM40*
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