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Operating instructions and spare parts list

# OptiFlex A2 Control system (AS08 type)



Translation of the original operating instructions

## Documentation - OptiFlex A2 (AS08) Control system

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# General safety regulations

This chapter sets out the fundamental safety regulations that must be followed by the user and third parties using the OptiFlex A2 (AS08) control system.

These safety regulations must be read and understood in full before the OptiFlex A2 (AS08) control system is put into operation.

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## Safety symbols (pictograms)

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

**DANGER!**

Danger due to electrically live or moving parts. Possible consequences: death or serious injury

**WARNING!**

Improper use of the equipment could damage the machine or cause it to malfunction. Possible consequences: minor injuries or damage to equipment

**INFORMATION!**



Useful tips and other information

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## Proper use

1. The OptiFlex A2 (AS08) control system is built to the latest specification and conforms to the recognized technical safety regulations and is designed for the normal application of powder coating.
2. 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 the OptiFlex A2 (AS08) is to be used for other purposes or other substances outside of our guidelines then Gema Switzerland GmbH should be consulted.

3. Observance of the operating, service and maintenance instructions specified by the manufacturer is also part of conformity of use. The OptiFlex A2 (AS08) should only be used, maintained and started up by trained personnel, who are informed about and are familiar with the possible hazards involved.
4. Start-up (i.e. the execution of a particular operation) is forbidden until it has been established that the OptiFlex A2 (AS08) has been set up and wired according to the guidelines for machinery (2006/42 EG). EN 60204-1 (machine safety) must also be observed.
5. Unauthorized modifications to the OptiFlex A2 (AS08) exempt the manufacturer from any liability from resulting damage.
6. The relevant accident prevention regulations, as well as other generally recognized safety regulations, occupational health and structural regulations are to be observed.
7. Furthermore, the country-specific safety regulations also must be observed.

Explosion protection	Protection type	Temperature class
 	IP54	T6 (zone 21) T4 (zone 22)

## Product-specific safety measures

- Installation work performed by the customer must be carried out according to local regulations.
- Before starting up the plant a check must be made that no foreign objects are in the booth or in the ducting (input and exhaust air)
- All components must be grounded according to the local regulations before start-up.

### OptiFlex A2 Control system

The OptiFlex A2 (AS08) control system 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.




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**NOTE:**

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

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# About this manual

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## General information

This operating manual contains all important information which you require for the working with the OptiFlex A2 (AS08) control system OptiFlex-A2-de.doc. It will safely guide you through the start-up process and give you references and tips for the optimal use of your new powder coating system.

Information about the functionality of the individual system components - booth, gun control unit, manual gun or powder injector - should be referenced to their enclosed corresponding documents.



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### **DANGER:**

#### **Working without operating instructions**

**Working without operating instructions or with individual pages from the operating 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.
-





# Function description

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## Field of application

The OptiFlex A2 Control system with the Gema automatic powder guns was especially designed to meet the requirements of serial production in industry, where reliability in automated operation, easy to handle operation and security are the most projecting advantages for the user.

The flexible, modular structure of the OptiFlex A2 Control system is readily adaptable to any modifications in the installation.

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## Scope of delivery








The scope of delivery depends on the type and the number of installed control units (For additional information see chapter "OptiFlex A2 Control system - components").


## OptiFlex A2 Control system - components



**NOTE:**

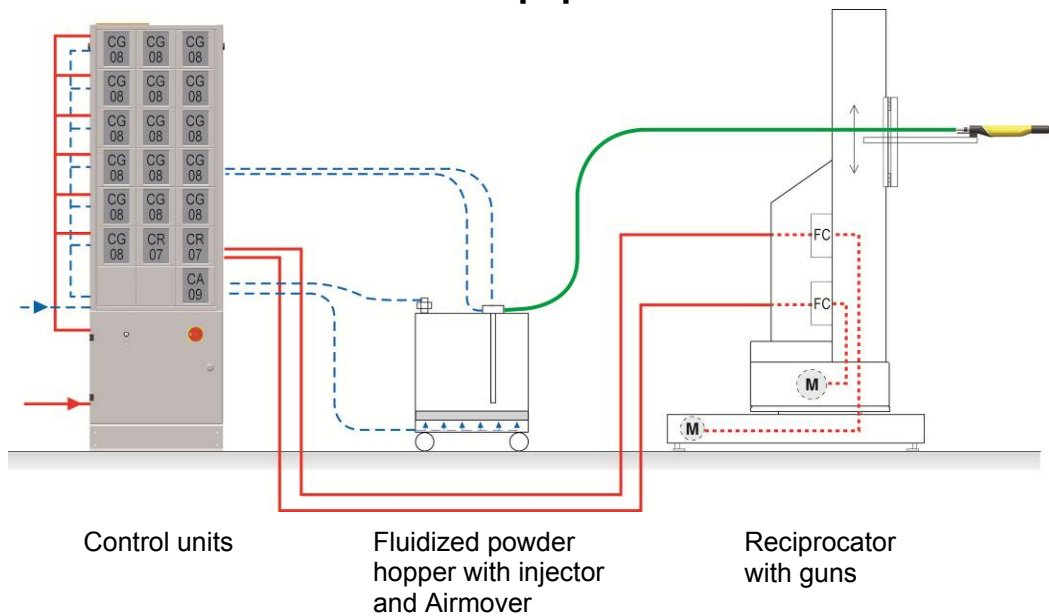
These components are assembled according to client's plant specifications. Further information about the components will be found in the corresponding operating manuals!

OptiFlex A2 control cabinet	Function
	<ul style="list-style-type: none"> <li>- Equipment main switch</li> <li>- Air supply</li> <li>- Max. 21 places for gun or axle control units per control cabinet</li> <li>- Option: Master control unit for the complete integration of the plant into the production process by CAN bus</li> </ul>
OptiStar CG08 Gun control unit	Function
	<ul style="list-style-type: none"> <li>- OptiStar CG08 standard gun control unit</li> <li>- Max. 250 stored programs possible</li> <li>- DVC (Digital Valve Control)</li> <li>- PCC (Precise Charge Control)</li> <li>- Option: CAN bus</li> </ul>
OptiMove CR07 Axis control unit	Function
	<ul style="list-style-type: none"> <li>- Axis control unit for ZA0x Reciprocator and XTxx Horizontal axis</li> <li>- Pendulum operating mode or sequence programs</li> <li>- Max. 255 stored positions possible</li> </ul>
Magic Control CM30 Plant control	Function
	<ul style="list-style-type: none"> <li>- Master control unit</li> <li>- Communication by CAN bus</li> <li>- 12" Touch Screen</li> <li>- Flash Card for programs and parameters</li> </ul>
OptiControl CM22 Master control unit	Function
	<ul style="list-style-type: none"> <li>- Master control unit</li> <li>- Communication by CAN bus</li> <li>- 5.7" Touch Screen</li> <li>- Flash Card for parameters</li> </ul>
OptiControl CM03 Integrated master control unit	Function
	<ul style="list-style-type: none"> <li>- Interlocking functions</li> <li>- Gap control</li> <li>- Monitoring the powder level in the powder hopper</li> </ul>
OptiAir CA09 Pneumatic-fluidizing unit	Function
	<ul style="list-style-type: none"> <li>- Automatic prefluidization</li> <li>- Airmover control unit</li> <li>- Fluidization in the powder hopper</li> </ul>

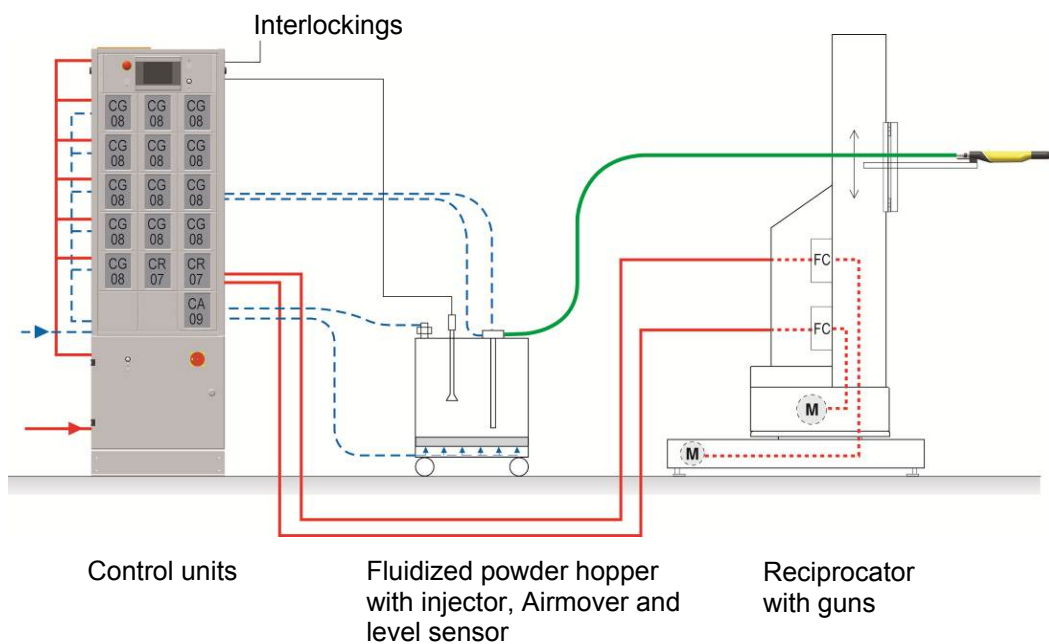
LM02 Level sensor	Function
	<ul style="list-style-type: none"> <li>- Level detection in the powder hopper</li> </ul>

## OptiFlex A2 Control system - possible configurations

### Automatic equipment



### Automatic equipment with superordinated control unit





# Technical data

## OptiFlex A2 Control system

### Electrical data

OptiFlex A2	
Main input voltage	3 x 400 VAC+N+PE 100-120 VAC (USA with transformer)
Device input voltage	100-240 VAC (for gun control units) 200-240 VAC (for axis control units)
Frequency	50/60 Hz
Input power value	40 VA per gun control unit 1.1 kVA per axes control unit
Temperature range (operation)	IP54
Protection type (control units)	10-40°C / 50-104 °F
Approval	ATEX zone 22

### Pneumatic data

OptiFlex A2	
Min. input pressure	6 bar / 87 psi
Max. input pressure	8 bar / 116 psi
Max. water vapor content of the compressed air	1.3 g/m <sup>3</sup>
Max. oil vapor content of the compressed air	0.1 mg/m <sup>3</sup>
Total air consumption	8 Nm <sup>3</sup> /h per gun (plus powder hopper air requirement)

### Control cabinet dimensions

OptiFlex A2	
Width	600 mm
Depth	697 mm
Height	max. 1931 mm

**ICS cabinet dimensions**

<b>OptiFlex A2</b>	
Width	1500 mm
Depth	700 mm
Height	1931 mm

**NOTE:**

**Further specifications will be found in the corresponding manuals of the components!**

# Commissioning

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## Set-up and assembly

### Assembly notes

After unpacking and installing the OptiFlex system, the control cabinet is to be fitted to the floor with the supplied steel bolts. The mounting holes are located in the control cabinet base.

The internal connections have already been made at the factory. The control unit connections to the external plant parts must be done at the start-up. The connection possibilities for the individual control units are found in the corresponding operating manuals.



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#### NOTE:

**When connecting, pay attention particularly to the length and the radii of the pneumatics hoses!**

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### Configuration

A maximum of up to 21 control units can be installed. OptiFlex A2 control cabinets can be laterally lined up without gap, and/or be set up at a wall.

Not used openings are covered with blind plates. These are screwed on and can be easily removed, when possible extension of the OptiFlex A2 Control system.

## OptiFlex A2 Control system

Optionally:

- Max. 21 CG08 Gun control units or mixed with:
- CR07 Axis control unit
- CA09 Pneumatic-fluidizing unit
- MagicControl CM30 Master control unit
- OptiControl CM22 Master control unit



*OptiFlex A2 Control system - set-up*

## OptiFlex A2 Control system with MagicControl CM30



*OptiFlex A2 Control system with MagicControl CM30*



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## Start-up

### General information

These general information serves to obtain an overview of the possible OptiFlex A2 system combinations.

Detailed information will be found in the corresponding operating manuals!

### Power supply

- The power supply is dependent on the type and the number of control units:  
**Stand alone** - 1x100-230V / 50/60 Hz  
**Full extension** - 3x400V+N+PE / 50/60 Hz
- The input power value is plant-specific and evident in the provided wiring diagram
- All electrical components are implemented in accordance to IP54 protection type regulations



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#### NOTE:

**The OptiFlex A2 powder coating control system may can be switched on only if the booth is in operation!**

**If the booth switches off, the control system must also switch off!**

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### Compressed air

- The OptiFlex A2 Control system just requires a connection to the main compressed air system
- The compressed air values are evident in the technical data section

#### ***Air requirement with increased powder output***

The control system offers the possibility to work with increased powder output in sufficiently dimensioned compressed air systems. The pressure regulator on the filter unit is preset by factory to **5.5 bar** with an air flow of **5 m<sup>3</sup>/h per control unit**. If another value is set on the pressure regulator, then the **system parameter 2** on each **OptiStar Control unit** needs to be adjusted according to the following instructions:

**Compressed air setting - parameter setting  
OptiStar CG08 automatic gun control unit**

Conversion bar-psi

5,5 bar = 80 psi

6,0 bar = 87 psi

6,5 bar = 94 psi



**NOTE:**

**In order to achieve the largest accuracy, the air pressure is to be set during operation by average compressed air consumption!**

# Spare parts list

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## 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** OptiFlex A2 (AS08)  
**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)



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**WARNING!**

**Only original Gema spare parts should be used, because the explosion protection will also be preserved that way. The use of spare parts from other manufacturers will invalidate the Gema guarantee conditions!**

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## OptiFlex A2 control cabinet - spare parts list

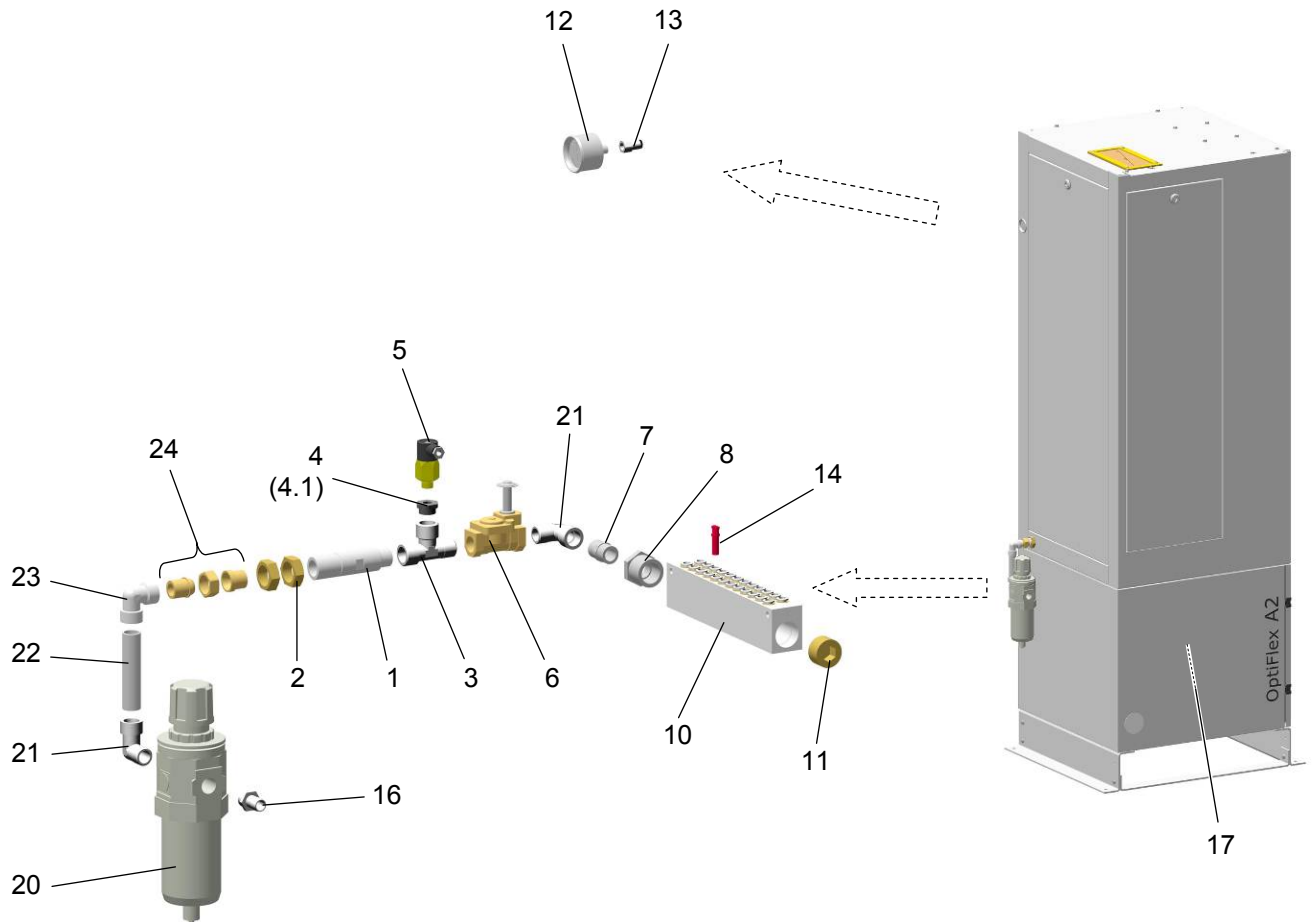
1	Adapter	1008 828
2	Hexagon nut – 3/4"	1002 348
3	T-piece - 1/2"a-1/2"i-1/2"i	223 301
4	Plug cap - 1/2"a	1004 203
(4.1)	Adapter nipple - 1/4"i-1/2"a	1001 754
5	Pressure switch - 1-10 bar, 1/4"-PG7 (optionally - according to order)	233 757
6	Solenoid valve - 1/2", NW 13.5 mm (without pos. 6.1)	1005 120
6.1	Valve coil - 230 VAC (not shown)	1005 117
	Valve coil - 110 VAC (not shown)	1005 116
	Valve coil - 24 VDC (not shown)	1005 119
7	Double nipple - 1/2"a-1/2"a	243 540
8	Adapter nipple - 1"a-1/2"i	252 875
10	Compressed air distributor – 24-fold	1006 649
11	Plug cap - 1"a	258 679
12	Pressure gauge	1003 300
13	Connection sleeve - 1/8"i-Ø 6 mm	233 412
14	Plug - Ø 8 mm	238 023
16	Hose connector - Ø 17 mm, 1/2"a	223 069
17	Mounting plate, system-dependent – see enclosed wiring diagram	
	Pressure regulating unit - complete, pos. 20-24	1010 402
20	R/F unit- 0.5-8.5 bar, 1/2"i	1005 841
21	Elbow joint - 1/2"a-1/2"i	223 166
22	Pipe nipple - 1/2"a, 90 mm	1008 807
23	Elbow joint - 1/2"i, 1/2"i	252 867
24	Double nipple - 1/2"a-1/2"a, divisible	243 582



**NOTE:**

**Further specifications will be found in the corresponding manuals and spare parts list of the components!**

# OptiFlex A2 control cabinet - spare parts



OptiFlex A2 control cabinet - spare parts