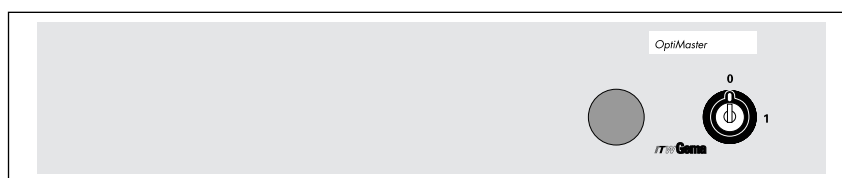


Operating Instructions and Spare Parts List

# OptiMaster-1

## Powder Master Control





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## OptiMaster-1 Powder Master Control

### 1. Description of the OptiMaster-1 Powder Master Control



Figure 1

### OptiMaster Interlocking control for the OptiMatic series

In order to control the operation of electrostatic powder coating plant it is absolutely necessary to have interlocking functions. The OptiMaster-1 controls all the interlocking functions : Control and non-potential contact permit individual adaptation to all plant specific requirements.

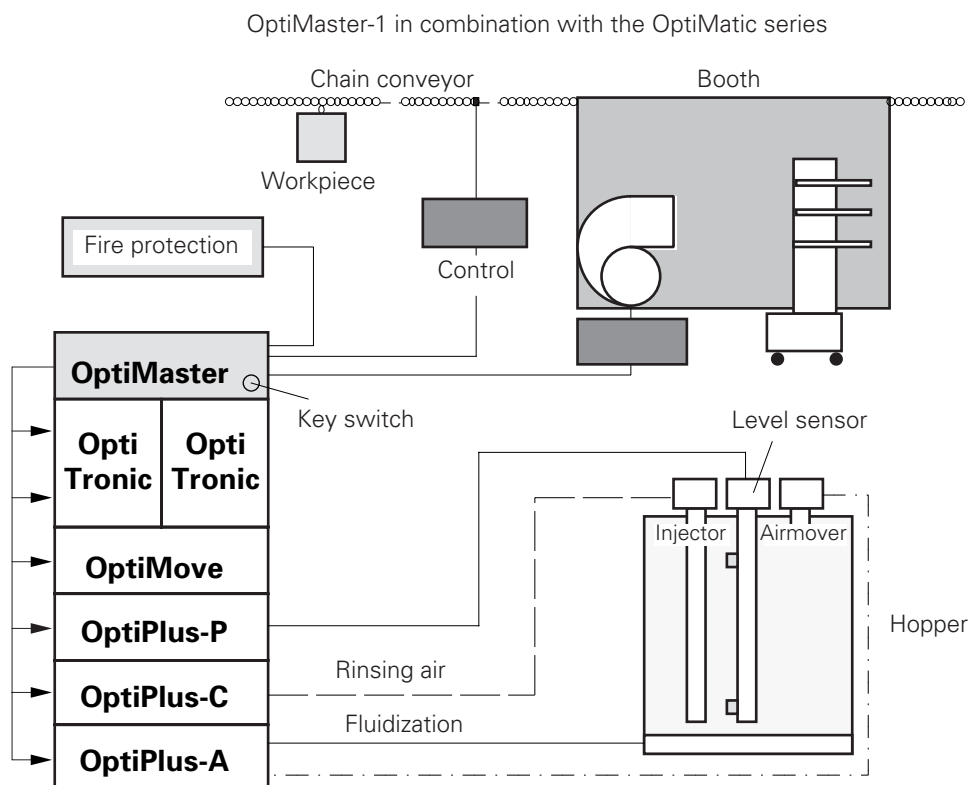


Figure 2

- The OptiMaster-1 is specially suitable for controlling the prefluidization, and fluidization of the powder hopper (See 1.1 Options).
- The OptiMaster-1 controls up to 32 OptiTronic Powder gun units, divided into four equal groups of eight (See also 2.1 The number of OptiMaster-1 Powder Master Control units which can be connected)

## **Interlocking signals from the OptiMaster-1**

- Conveyor.
- Powder recovery plant.
- Fire protection.
- Grounding control.

All OptiMatic components, including the OptiMove, can be switched on or off with the key switch of the OptiMaster-1 control unit (Operating main switch).

It is not permitted to switch off the power with the OptiMaster-1 key switch for maintenance purposes. The power must be switched off with the Mains switch on the OptiMatic control cabinet (The red handle on a yellow base, which should normally be locked with a small padlock ).

## **Control signals of the OptiMaster-1**

- Clears the OptiTronic Powder gun control.
- Clears the main compressed air input.
- Clears the powder level monitoring.
- Clears the prefluidization / Fluidization.
- Clears the Airmover (Reserve connection possibility).
- Clears for rinsing at a conveyor stop (Option).
- Clears for rinsing at a gap in the workpieces on the conveyor (Option).

### **1.1 Options**

#### **Rinsing on Conveyor Stop (Option)**

When the OptiMaster-1 detects a Conveyor Stop, the guns are rinsed with air (when an OptiPlus-C Hose Rinsing control and a PI 2 injector are fitted)

The duration of rinsing is set with Relay K4.

Additional equipment requirement : Relay K4

#### **Rinsing at gaps between workpieces (Option)**

The time interval of the gaps between two workpieces being coated are detected using an object recognition unit (Light barrier).

When the time interval of the gap exceeds the set control time the powder hoses are rinsed and the powder spray command is locked until the next workpiece is detected.

The time interval of the gap is set with Relay K2.

The rinsing time is set with Relay K4.

Additional equipment required : Relay K2.

Relay K4.

Light barrier (See next page).

## Light barriers (In addition to the rinsing on Conveyor Stop option)

One-way system :  
Transmitter and receiver are separate.

Specially suitable for :

- detecting opaque, and reflecting objects.
- bad environmental conditions (dust, rain, contamination, etc).
- the accurate positioning, and detection of small objects.

Limitations :

- requires accurate setting.
- not suitable for detecting transparent objects.

The optical axes of the equipment facing each other must be aligned exactly.  
The transmitter and receiver must be fitted to stable structures.

## 2. Technical data of the OptiMaster-1 Powder Master Control :

Electrical data :

Selectable voltage :	100 V, 110 V, 120 V, 200 V, 220 V, 230 V or 240 V
Tolerance :	±10 %

Voltage selection is made inside of the electrical unit by resoldering the tag of the transformer. **The equipment is delivered for operation at the voltage required from the factory.**

Frequency :	50 / 60 Hz
Rated output of the solenoid valve :	24VAC
Fuse F1 :	1,25 AT
Type of protection :	IP 54
Temperature range :	+10 °C to +40 °C

Dimensions

Width :	435 mm
Depth :	300 mm
Height :	96 mm
Weight :	9.5 kg

### 2.1 Number of OptiTronic Powder Gun Control units which can be connected

**With a voltage setting other than 220 / 240 V the number of OptiTronic units which can be connected is reduced as follows :**

for 200 V :	Maximum 31 OptiTronic control units
for 120 V :	Maximum 18 OptiTronic control units
for 110 V :	Maximum 16 OptiTronic control units
for 100 V :	Maximum 15 OptiTronic control units

### 3. Setting the correct line voltage

The factory always sets the voltage to 220 V (See Fig. 3). If the local line voltage is not 220 V, the voltage setting of the transformer must be changed by a qualified specialist.

**ATTENTION: If the incoming voltage is  $\pm 10\%$  than the voltage selected damage may be done to internal components. If the incoming voltage is 10% or more below the selected setting then the unit may operate erratically or not at all.**

1. Pull out the control module from the control cabinet as far as it will go.
2. Open the eight quick-release screws holding the cover plate of the control unit. Carefully remove the coverplate.
3. Unsolder the connecting wire from the 220 V terminal post on the transformer and re-solder onto the desired voltage terminal post.

The connections on the transformer are numbered as follows :

- 1 = 0
- 2 = 100 V
- 3 = 110 V
- 4 = 120 V
- 5 = 200 V
- 6 = 220 V
- 7 = 230 V
- 8 = 240 V
- 9 = No connection

**Do not** unsolder the other wire (0) on the transformer.

4. Replace the cover plate and close the eight quick-release screws.
5. Push the module back into the housing until it locks back into place.

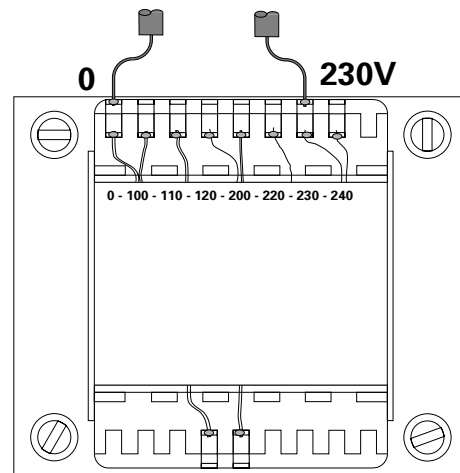
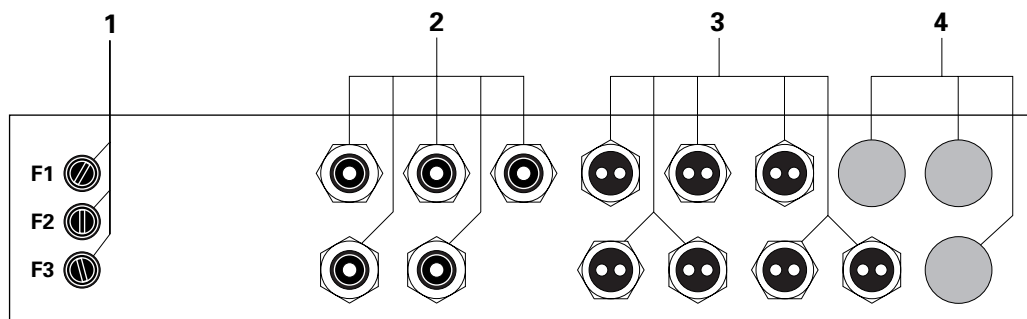


Figure 3



## 4. Starting up the OptiMaster-1 Powder Master Control unit

Rear panel



1. Fuse holders
2. Lead-through (ø 11 mm hole grommet)
3. Lead-through (ø 5 mm double-hole grommet)
4. Screw plug

Figure 4

The cable inputs/outputs are found on the rear panel of the OptiMaster-1. The lead-through fittings are prepared for cables of ø 5-8 mm. Some fittings have a single hole (2) and the remaining fittings have a double hole (3). **Cable fittings which are not used must be sealed completely.** The number of fittings can vary according to customer requirements.

Also fitted on the rear panel (at the left-hand side) are three fuse holders, F1, F2, and F3 (1), one above the other.

The fuseholder - F1 is the Mains fuse and is rated at 1.25 AT (for 200 - 240 V).

The fuseholder - F2 is by-passed.

In countries where primary fuses are required the bridge must be removed (See wiring diagram).

The fuseholder - F3 is for the low voltage supply (24 V) for operating the OptiMaster-1 unit and is rated at 4 AT.

## 5. Relays (see also corresponding Wiring diagram)

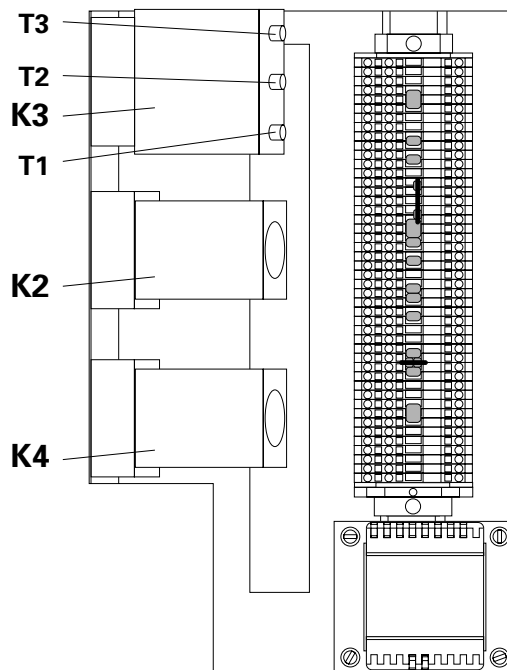


Figure 5

It is not permitted to switch off the power with the OptiMaster-1 key switch for maintenance purposes. The power must be switched off with the Mains switch on the OptiMatic control cabinet (The red handle on a yellow base, which should normally be locked with a small padlock ).

### Relay K2 : Gap rinsing (Option)

The duration of a gap between two workpieces being coated is determined by an object recognition unit (Light barrier). When the time delay between two workpieces set on the relay K2 is exceeded the spray operation is stopped and the powder hoses are rinsed with air (Spray time setting - Relay K4). The OptiTronic Powder Gun Control remains switched off until a workpiece is detected by the object recognition unit.

- The time delay of the gap is set with Relay K2.
- The spray time is set with Relay K4.

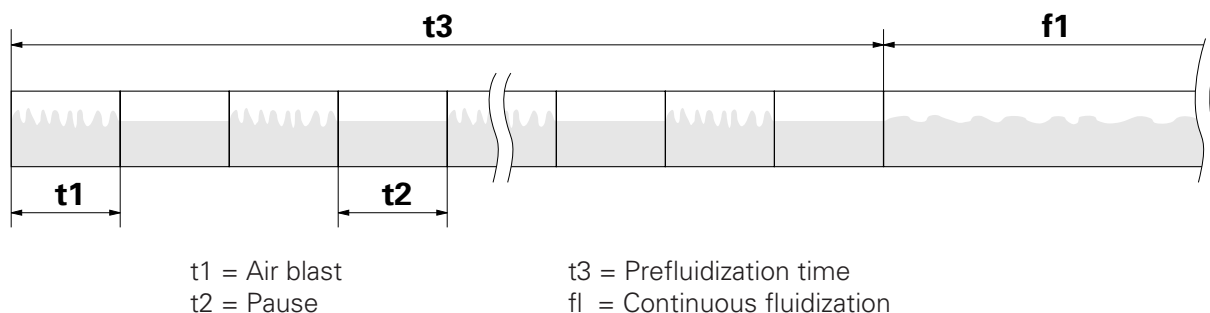
Relay K3 : This relay is used to control the prefluidizing of the powder hopper (Fig. 5)

The fluidization of the powder in the powder hopper depends on the characteristic of the powder, the humidity, and the ambient air temperature. For this reason the fluidization system comprises the prefluidization and the continuous fluidization.

When the OptiMaster-1 Powder Master Control is switched on the prefluidization is automatically switched on after the interlocking requirements (Booth, Powder recovery - "ON", etc) have been fulfilled.

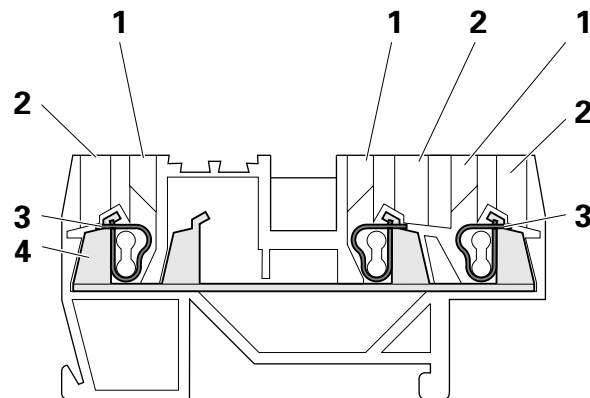
In order to set a relay the three setting knobs t1, t2, and t3 should be set to the value 2 on the scale 1-10. These values can be corrected and adjusted to the fluidization characteristics of the powder later.

- Potentiometer **t1** - sets the air blast time between 0.15 and 0.7 seconds.  
(Compressed air blows into the fluidizing bed)
- Potentiometer **t2** - sets the pause duration (no air) between 0.2 and 0.8 seconds.
- Potentiometer **t3** - sets the total prefluidization time between 10 and 420 seconds.



Relay K4 : (Option) This relay is used to set the powder hose rinsing duration. Depending on the length of the hose the rinsing time can be set between 3-30 seconds.

## 6. Fitting cables to the terminal clamps



- |                 |                    |
|-----------------|--------------------|
| 1. Square hole. | 3. Contact spring. |
| 2. Round hole.  | 4. Contact strip   |

Figure 6

If it is necessary to change or reconnect a cable to the central terminal block in the OptiMaster-1 unit the following procedures should be followed :

To remove a cable :

1. Make a note of the contact numbers (at each end of the cable) to be removed to avoid connecting a cable to the wrong contact. Contact is only made with the contact on the opposite side of the terminal element.
2. Place a small screwdriver with a strong, tapered blade (maximum  $\varnothing$  3 mm) into the square hole (1) in the terminal element (See Fig. 7).
3. Push the screwdriver blade down until the contact spring (3) rests on the stop (See Fig. 8).
4. Carefully remove the cable and then pull out the screwdriver (See Fig. 9).

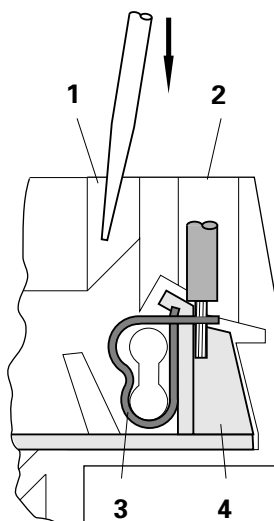


Figure 7

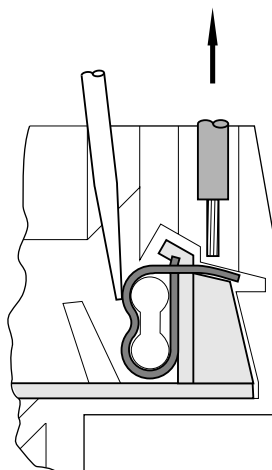


Figure 8

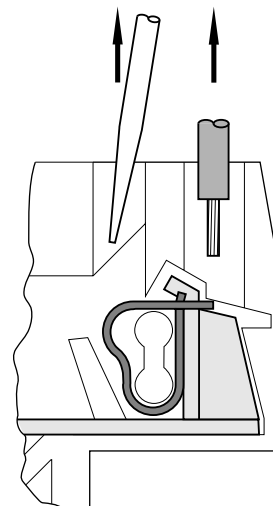


Figure 9

To replace a cable :

1. Make sure that the cable has 4-6 mm of the insulating material stripped from the end to be connected. Twist the wires neatly together if they are frayed out.
2. Before continuing, check that the cable will be connected to the correct contact. Contact is only made with the contact on the opposite side of the terminal element.
3. Place a small screwdriver with a strong, tapered blade (maximum  $\varnothing$  3 mm) into the square hole **(1)** in the terminal element (See Fig. 10).
4. Push the blade down until the contact spring **(3)** rests on the stop (see Fig. 11).
5. Insert the cable into the round hole **(2)**, making sure that the cable is seated in the hole of the contact spring, carefully remove the screwdriver from the square hole (See Fig. 12). Check that the wire is securely clamped.

Only **one** cable should be fitted **per hole** .

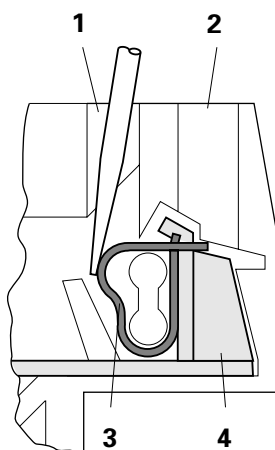


Figure 10

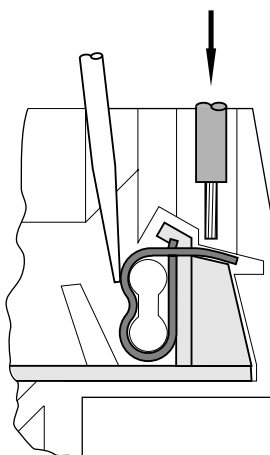


Figure 11

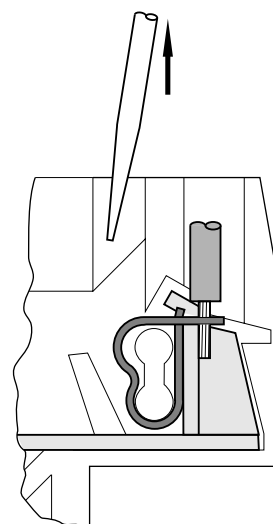


Figure 12

**The above-mentioned procedures are valid only for the central terminal contact block, the other contacts are conventional screw type clamps !**

## Notes

## Spare Parts List

### Ordering Spare Parts

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

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

Example:

**1. Type** OptiMaster-1, **Serial no:** 8001 1496

**2. Order no:** 201 618, 5 pieces, fuse - 1.25 AT

When ordering cable or hose material the length required must also be given.  
The spare part numbers of this yard/metre ware is always marked with an \*.

The spare part number of yard/metre ware always begins with 1.. ... .

All wear parts are marked with a #.

All dimensions of plastic hoses are given as external and internal diameters :  
e.g.  $\varnothing 8 / 6$  mm = 8 mm outside diameter (o/d) / 6 mm inside diameter (l/d).

**OptiMaster-1 Powder Master Control**

1	Pulse relay	305 278
2	Timer relay - 24V AC	238 902
3	Timer relay	238 457
	Relay socket - 11 pole	227 552
5	Bulbholder block	203 637
6	Pilot light cover (green)	203 564
6.1	Bulb - 24V/2W	201 278#
7	Key switch block	201 294
8	Key switch	203 521
9	Contact block	201 243
11	Screw plug	204 439
12	Lock nut	204 412
13	Grommet (1 hole)	204 366
15	Terminal plate	238 368
16	Resistor block	343 650
17	Grommet (2 holes)	204 374
18	Earthing terminal (green/yellow)	241 652
19	Transformer	238 899
20	Fuse holder	200 131
21	Fuse F1 - 1.25 AT	201 618#
22	Fuse F2 (not used)	
23	Fuse F3 - 4.0 A	200 182#
24	Wire bridge	241 806
25	Contact bridge (single)	238 392
26	Contact bridge (double)	241 679
27	End plate	241 660
28	End plate	242 179
29	Contact plate	238 929
30	Contact plate (grey)	241 636
31	Cover plate	339 490
32	Quick-release screw	210 625
33	Sealing strip - 9 x 6 mm	100 269*

\* Indicate length required  
# Wear parts



## OptiMaster-1 Powder Master Control

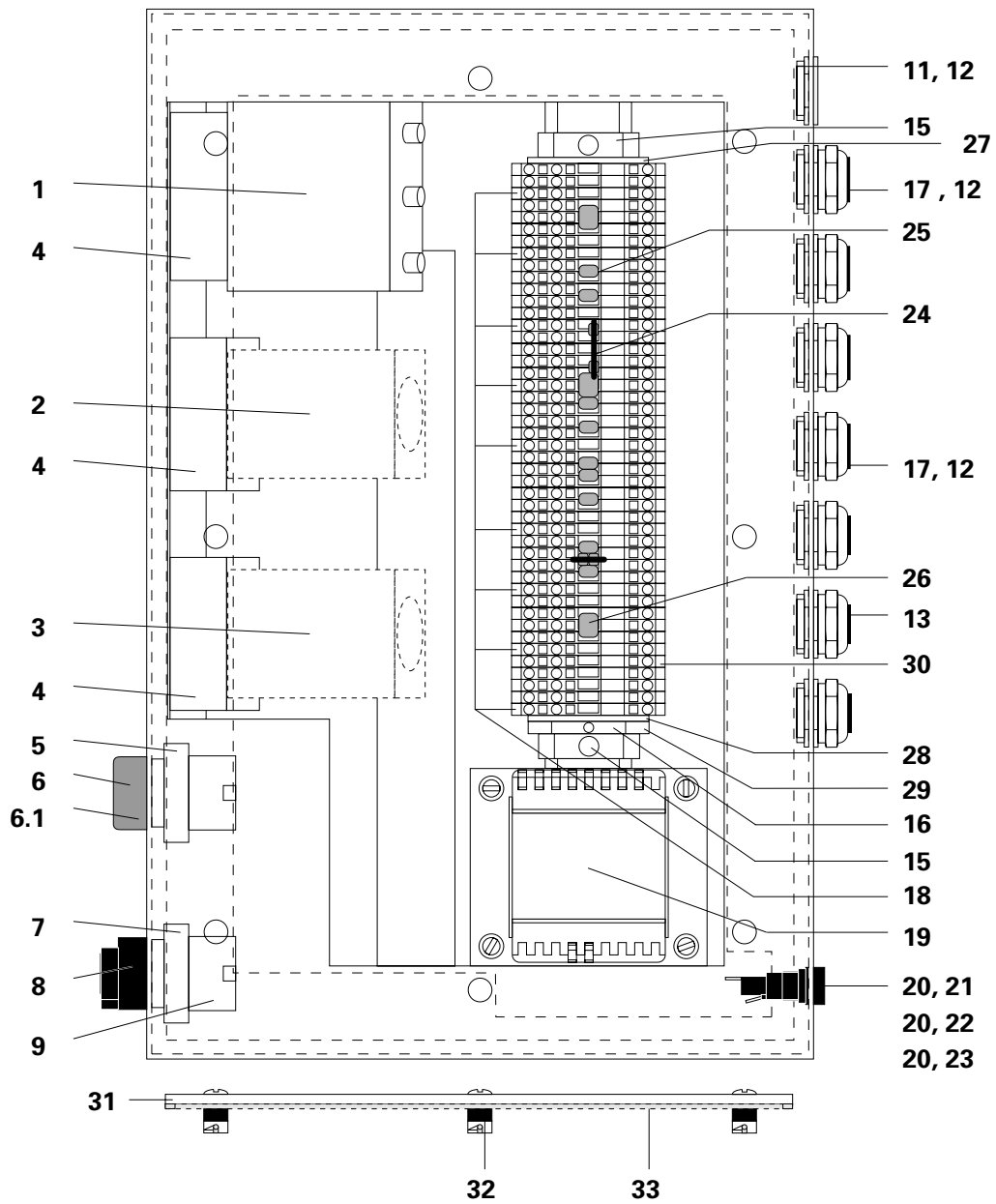


Figure 13

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