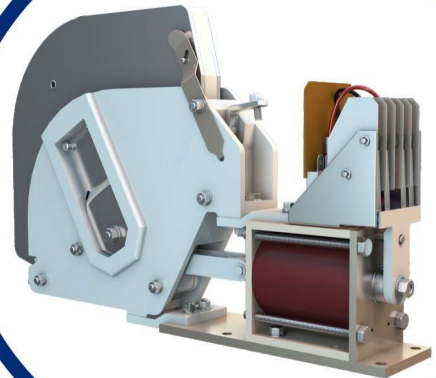
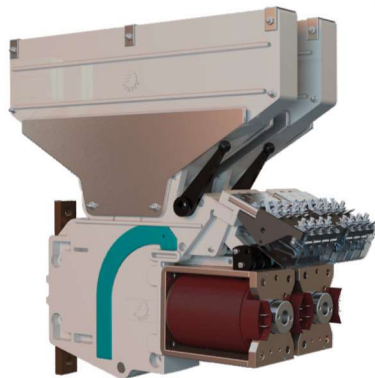
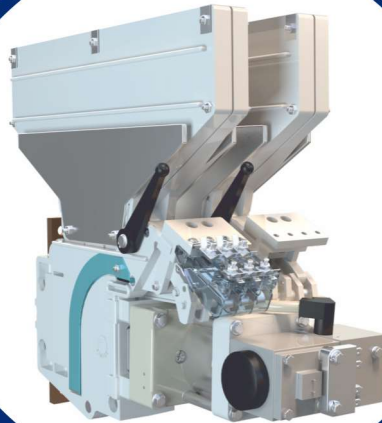


# AC/DC POWER CONTACTORS

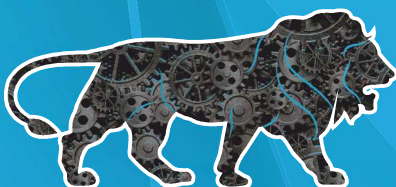
## FOR

### ROLLING STOCK AND INDUSTRY



**PPS International Private Limited**

([www.ppsinternational.in](http://www.ppsinternational.in))



"Make In India"

**IRIS**<sup>TM</sup>  
Certified



# ABOUT US

The vision of PPS International is "To manufacture Railway & Metro products" Indigenously with International specifications standards.

Our main objective is to manufacture/supply high tech equipments in India, which are not available in India or to do some value addition for ensuring safe and reliable journey of the passengers.

Our focus is to manufacture/supply components used in 3 phase technology propulsion equipment fitted rolling stock and infrastructure component used in 25 KV AC OHE traction or complete DC substations.

With consistent efforts, in introducing several cutting-edge technology oriented equipment in Indian Railways and Metros in last 15, years we have supplied several world class railway equipment.

We have setup our own state of the art manufacturing unit in Greater Noida, near Delhi- India, having more than 60,000 sq.ft area with all modern production facilities.

We started with only 2 Employees in 2003 and now grown to 150 in 2018.

Besides acquiring technology, our efforts continued to setup our own R&D to design & develop unique components with unique features.

## Current Product Range

### For Railways Infrastructure:-

- |                                                     |                                     |
|-----------------------------------------------------|-------------------------------------|
| ➔ OHE fittings                                      | Own Manufacturing                   |
| ➔ Aluminium cantilever                              |                                     |
| ➔ Current carrying droppers                         |                                     |
| ➔ PTFE Short Neutral Section Assembly               | Arthur Flury, Switzerland           |
| ➔ Light Weight Section Insulator Assembly           |                                     |
| ➔ Spring ATD C+                                     | Pfisterer , UK                      |
| ➔ DC Substation and Rectifiers                      | Pluton , Ukraine                    |
| ➔ Load Break Switch, Motorised and Manual Isolators | Rauscher & Stoecklin<br>Switzerland |

### Rolling Stock components:-

- |                                                                  |                      |
|------------------------------------------------------------------|----------------------|
| ➔ Power Contactors up to 3000 Volt & 1500 Amp, both EM & EP type | Own<br>Manufacturing |
| ➔ Circular & Data Connector                                      |                      |
| ➔ Master Controller for 3 Phase Locomotives                      |                      |
| ➔ AC Earthing Switch for Loco VCB                                |                      |
| ➔ PA/PIS and CCTV Systems                                        |                      |
| ➔ Cable Harness for Locos, Metro Coach & EMU                     |                      |

## Type designation

### Actuation

- electromagnetic
- electropneumatic

### Rated voltage (Un)

1500 V 15  
3000 V 30

### Rated current (In)

600 A 06  
800 A 08  
1000 A 10  
1200 A 12  
1500 A 15

### Holding Mechanism

E

### Number of poles

1 pole /1  
2 poles /2

(EM) 15 08 E /2

(EM)  
(EP)

## Control Voltage for coil

The control voltage of the actuating mechanism is 110 V DC  
The number of auxiliary contacts (e.g. 4)

values can be selected as required by connecting the devices in series or parallel. Depending on the application, actuation of the moving contact can be done electropneumatically or electromechanically.

### 1. General

These highly compact AC/DC contactors can be employed as polarity-independent circuit breaker in electric traction vehicles.

They are used in the main and auxiliary circuits as tapping contactors, load contactors, isolating contactors as well as for heating equipments.

These contactors have been specially designed for use under extreme harsh operating conditions encountered with electric traction vehicles.

The modular construction permits the implementation of multi-pole models. This type of contactor can also be used in heavy-duty equipment for the mining and steel industries.

### 2. Contactor types

The contactor type EM/EP are used with rated voltages between 1500 V and 3000 V and rated currents between 600 A and 1500 A. The base design of contactor is 1500 V & 600 A and thereafter the desired rated

### 3. Construction

All contactor models are of the same basic construction and they consist of the following mechanism.

Main Contact unit  
Actuating mechanism  
Arc chute  
Auxiliary contacts  
Housing

#### Main contact unit

The contact pair in the contact unit are spring mounted and upon actuation, it gets closed with a special gliding movement which has a cleaning effect on the contact surfaces.

The contacts are fitted with a silver-tin oxide plating tips.



## Actuating mechanism

Actuating mechanism for the moving contact can be either compressed air via an electropneumatic valve or through a solenoid plunger together with an actuating lever.

Both the electropneumatic valve and the solenoid valve are designed for continuous duty.

## Arc-chute

The arc-chute incorporates a De-ion copper grid which breaks the arc up into a series of shorter arcs thus facilitating effective cooling. Additionally, two blow-out coils ensure rapid and reliable extinction of the arc.

With electro pneumatic actuation, the exhaust air from the cylinder is passed over the opening pair of contacts to assist the electro- magnetic blow-out.

## Auxiliary contacts

The standard version has 4 auxiliary contacts which can be selected as normally open and / or normally closed.

If required, and depending on the contactor type, additional contact units can be added.

The auxiliary contacts are activated via cam plates which is fastened to the actuating shaft.

## 5. Control Circuit

### Actuation

|                     |                    |
|---------------------|--------------------|
| Rated voltage $U_n$ | 12 V DC - 220 V DC |
| Operation Voltage   | 0.7 - 1.25 $U_n$   |
| Operating Pressure  | 0.4 - 1.0 Mpa      |

### Auxiliary contacts

|               |          |
|---------------|----------|
| Rated Voltage | 220 V DC |
| Rated current | 20 A     |

## Housing

The housing is made of SMC material in line with the latest ecological findings. The material is non-flammable, non-toxic, environmentally-friendly and conforms to international standards for fire safety.

## 4. Installation

The contactor are installed with the arc chute facing upward. The thermal lift thus assists the effect of the electromagnetic blow-out.

If the contactors are mounted in blocks, it is possible to actuate up to 4 contactors using a single control valve and drive.

With electromagnetically actuated contactors, each must be fitted with its own solenoid.

In this type of block arrangement, all the contact actuating levers are mechanically connected to each other to ensure simultaneous, closing and opening.

The contactors can be mounted on insulator or on special mounting plates or on bus bars, depending upon the application and space

## 6. Additional technical data

|                       |                      |
|-----------------------|----------------------|
| Operating temperature | -40 C to + 40 C (EM) |
|                       | -25 C to + 40 C (EP) |

|                     |                              |
|---------------------|------------------------------|
| Switching frequency | max. 2 switchings per second |
|---------------------|------------------------------|

|                          |                 |
|--------------------------|-----------------|
| Mechanical life duration | $5 \times 10^6$ |
|--------------------------|-----------------|

|                        |                     |
|------------------------|---------------------|
| Standard specification | IEC:60077           |
|                        | IEC:60947-4-1       |
|                        | IS:11731(Part I&II) |

# CONTACTORS WITH ELECTROPNEUMATIC ACTUATION



## Main Technical Data

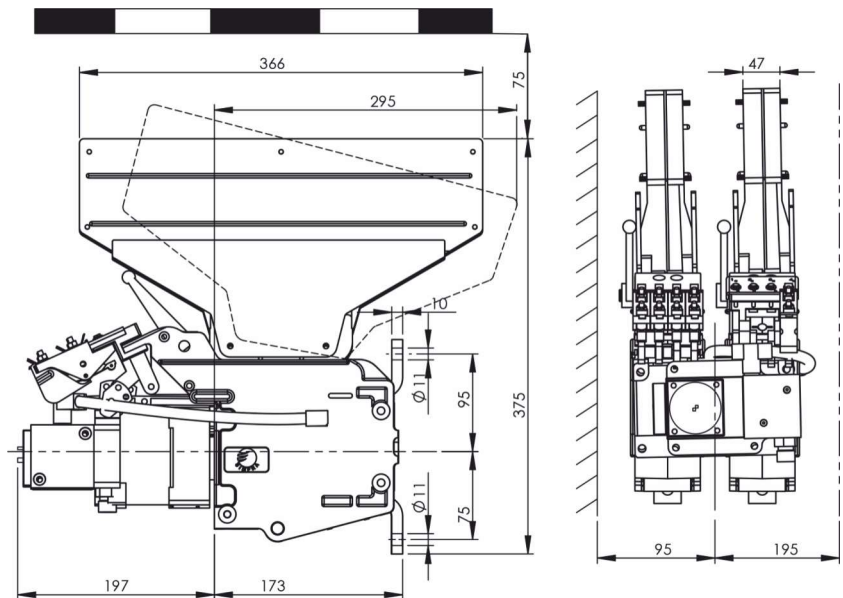
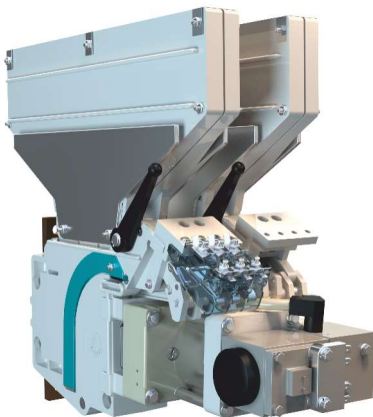
| Type     | DC Rated Voltage<br>$U_n$ | Rated current**<br>$I_n$ | No. of Poles | Auxiliary contacts | Weight<br>kg |
|----------|---------------------------|--------------------------|--------------|--------------------|--------------|
| 30.06    | 3000 V                    | 600 A                    | 1            | Up to 8            | 20.5         |
| 15.15c/2 | 1500 V                    | 1500 A                   | 2            | Up to 8            | 35.5         |

\* Maximum operating voltage:  $1.2 U_n$

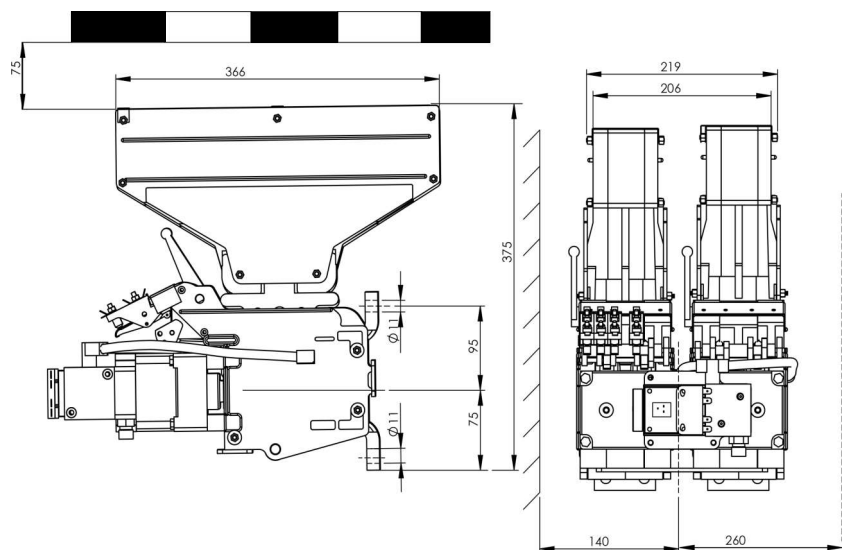
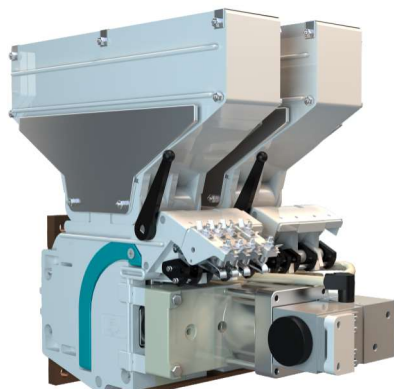
\*\* Direct current and alternating current in the range 16 Hz to 60 Hz.

## Main Dimension

**Type CONT-2-EP-30-06**  
3000 V & 600 A



**Type CONT-2-EP-15-15**  
1500 V & 1500 A 2 pole





# CONTACTORS WITH ELECTROMAGNETIC ACTUATION

## Main Technical Data

| Model | DC Rated Voltage<br>$U_n$ | Rated current**<br>$I_n$ | No.Poles | Auxiliary contacts<br>0 to | Weight<br>kg |
|-------|---------------------------|--------------------------|----------|----------------------------|--------------|
| 15.10 | 1500 V                    | 1000 A                   | 1        | 4                          | 22.8         |
| 15.15 | 1500 V                    | 1500 A                   | 1        | 8                          | 25.3         |

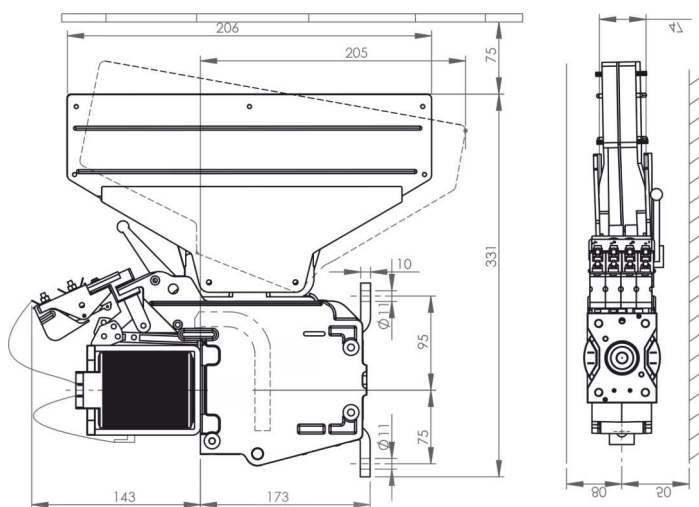
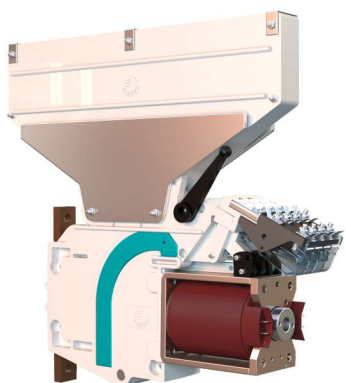
\* Maximum operating voltage : 1.2  $U_n$

\*\* Alternating current with frequency in the range 16 2/3 Hz to 60Hz.

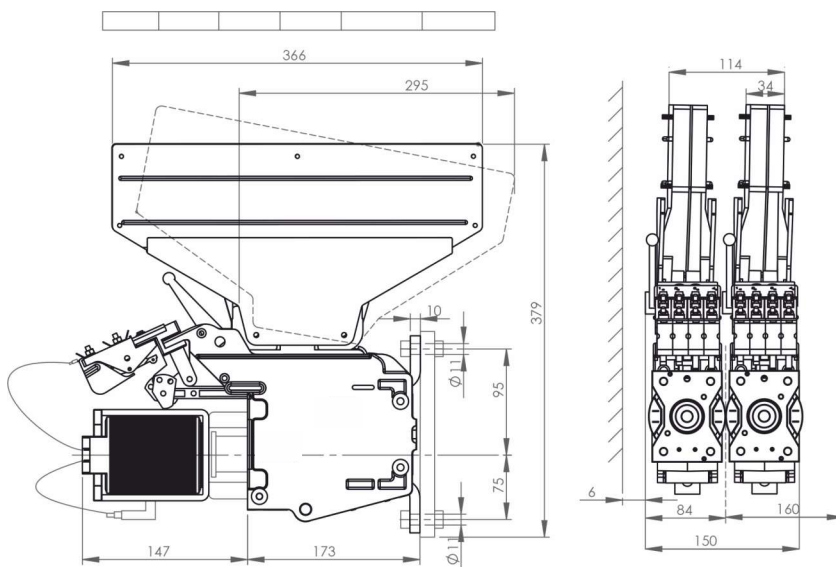
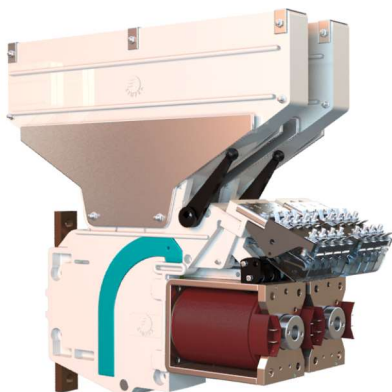
\*\*\* Other models on request

## Main Dimension

**Type CONT-1-EM- 15-10**  
1500V & 1000A



**Type CONT-2-EM- 15.15**  
1500V & 1500A



## Main Technical Data

### General

|                          |                                                     |
|--------------------------|-----------------------------------------------------|
| Weight                   | Type SM: 6.1 kg                                     |
| Mounting                 | Vertically on wall or scaffold                      |
| Ambient temperature      | -40°C - +40°C                                       |
| Switching frequency      | max. 2 switch per second                            |
| Mechanical life duration | min. 5 x 10 <sup>6</sup> switchings                 |
| Standard specifications  | IEC:60077<br>IEC:60947-4-1<br>IS:11731(Part I & II) |

### Main circuit

|                         |                                         |
|-------------------------|-----------------------------------------|
| Number of poles,        | 1 normally                              |
| Nature of contact       | open                                    |
| Rated voltage           | 3000 V                                  |
| Max. operating voltage  | 4500 V                                  |
| Suitable supply         | AC from 16 <sup>2</sup> / Hz up to 60Hz |
| Rated current           | 50 A                                    |
| 1 hour rated current    | 55 A                                    |
| 5 minutes rated current | 75 A                                    |

Closing current limit 250 A

Interrupting current limit (ohmic)

|    |              |
|----|--------------|
| DC | 4500 V 80 A  |
|    | 3600 V 100 A |
|    | 1800 V 150 A |

AC 3600 V 200 A

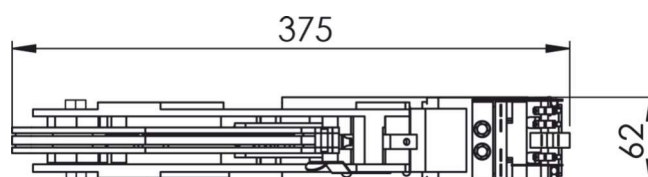
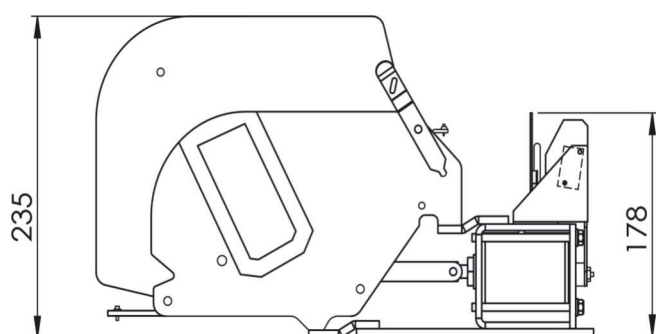
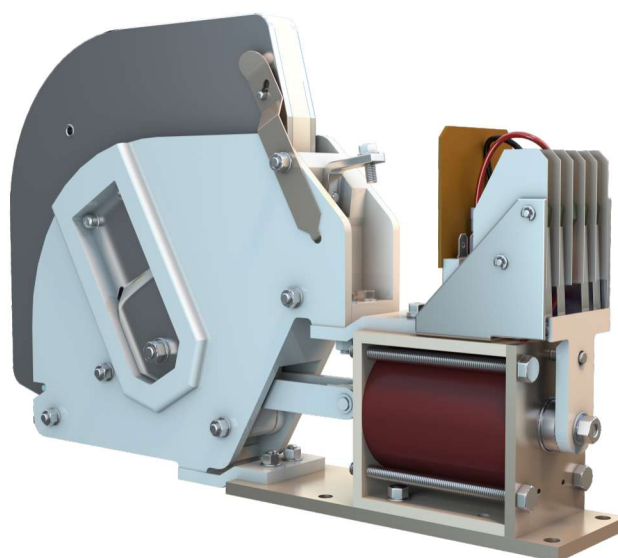
Closing time ( $t_H$ ) approx. 100ms

## Contactor circuit

|                            |                                     |
|----------------------------|-------------------------------------|
| Actuation                  |                                     |
| Construction               | electromagnet with resetting spring |
| Rated voltage $U_n$        | 12 V DC - 220 V DC                  |
| Operating voltage          | 0.7 - 1.25 $U_n$                    |
| Power consumption at $U_n$ | approx. 20 W                        |

|                                     |                  |
|-------------------------------------|------------------|
| Auxiliary contacts                  |                  |
| Number of poles, nature of contacts | 4 N/O and/or N/C |

|                          |             |
|--------------------------|-------------|
| Rated voltage            | 220 V DC    |
| Rated current            | 6 A         |
| Closing current max.     | 25 A        |
| Interrupted current max. |             |
| DC                       | 48 V 1 A    |
|                          | 100 V 0.3 A |
| AC                       | 220 V 3 A   |



# UNIT-1 Corporate Office



# UNIT-2 Factory



# UNIT-3 Factory



**PPS International Private Limited**

([www.ppsinternational.in](http://www.ppsinternational.in))

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UP- 201306

Unit 3 :-  
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