PowerGuard 0800

for Safe Maintenance Areas

at Conductix-Wampfler Conductor Rail Systems Program 0812 & 0813

CONDUCTIX
wampfler

Table of Contents

PowerGuard 0800
System

System Description

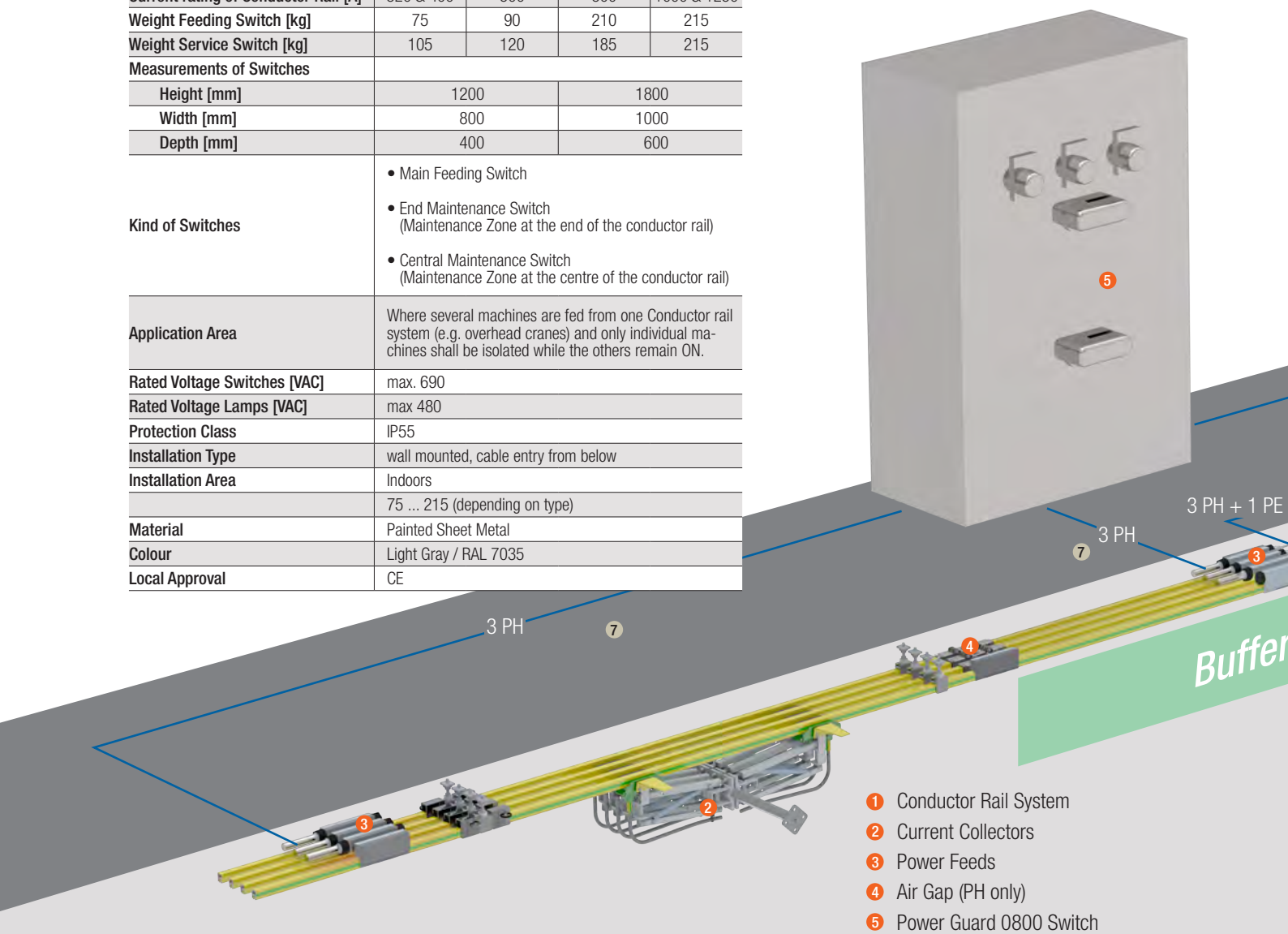
PowerGuard 0800 is a system to provide safe maintenance areas for servicing overhead cranes and other mobile equipment without having to shut down the whole runway. This specially engineered switch array is ideal for our 0812 or 0813 conductor rail programs.

By splitting the conductor rail into different electrical sections using air gap insulation sections, the **PowerGuard 0800** can ensure that the current collectors from adjacent cranes will never accidently transfer live power into the maintenance area.
This is done by assigning a dedicated switch for the “Buffer Zone”, a section which isolates the “Maintenance Zone” from the energized runway. A third switch then grounds the Maintenance Zone to make sure the maintenance person is safe while working on the crane.

By this method an electrical bypassing is eliminated and other cranes can’t enter the area where maintenance works is carried out.

Technical Data & System Structure

PowerGuard 0800 [A]	400	630	800	1250
For Conductor Rail Program	0812	0813	0813	0813
Current rating of Conductor Rail [A]	320 & 400	500	800	1000 & 1250
Weight Feeding Switch [kg]	75	90	210	215
Weight Service Switch [kg]	105	120	185	215
Measurements of Switches				
Height [mm]	1200		1800	
Width [mm]	800		1000	
Depth [mm]	400		600	
Kind of Switches	• Main Feeding Switch • End Maintenance Switch (Maintenance Zone at the end of the conductor rail) • Central Maintenance Switch (Maintenance Zone at the centre of the conductor rail)			
Application Area	Where several machines are fed from one Conductor rail system (e.g. overhead cranes) and only individual machines shall be isolated while the others remain ON.			
Rated Voltage Switches [VAC]	max. 690			
Rated Voltage Lamps [VAC]	max 480			
Protection Class	IP55			
Installation Type	wall mounted, cable entry from below			
Installation Area	Indoors			
	75 ... 215 (depending on type)			
Material	Painted Sheet Metal			
Colour	Light Gray / RAL 7035			
Local Approval	CE			



PowerGuard 0800
System

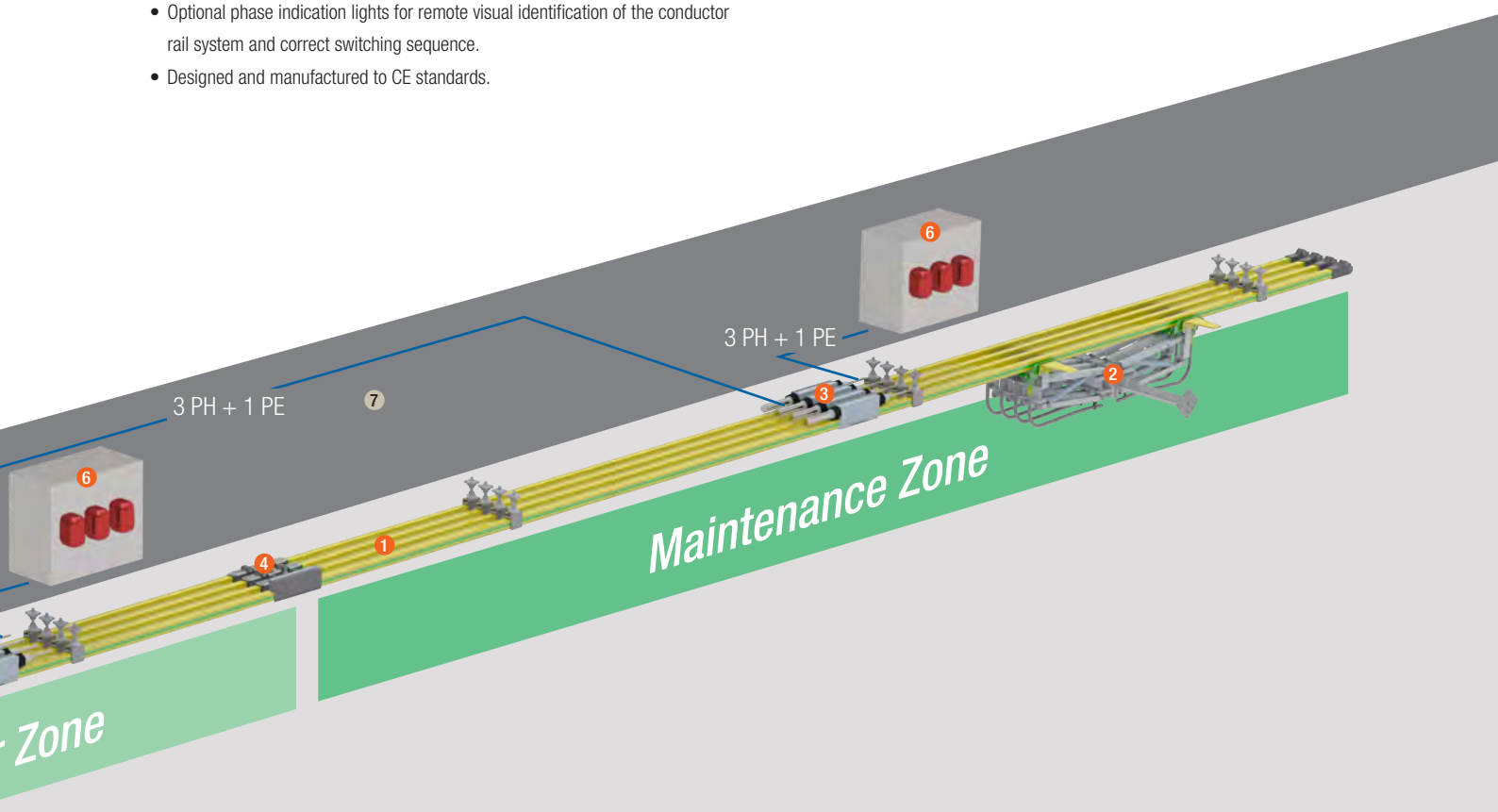
System Advantages

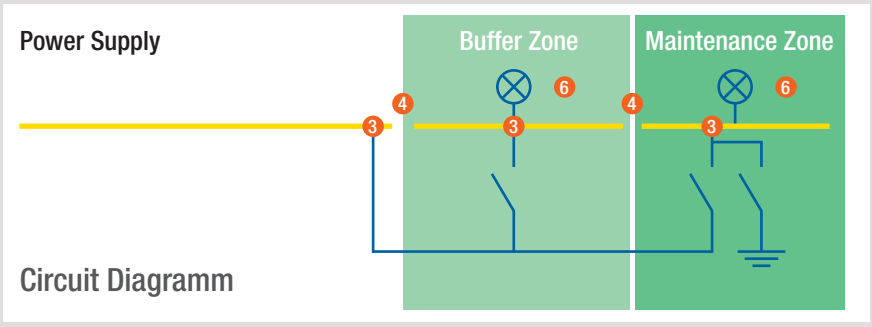
Features

- Robust and well-tested industrial design.
- Easy to implement for retrofits as well for new installations.
- True isolation of Maintenance Zone via Buffer Zone, also if units are powered via arrays of multiple current collectors.
- Simple standard component selection.
- Easy use via simple switch operation.
- Two switches in one housing to disconnect separately the power from the Buffer Zone and Maintenance Zone.
- Interlocking concept with key switches to ensure a correct switching sequence.
- Switches with padlocks provision to lock the switch against reclosure.
- Integrated Earthing / Grounding Function of the Maintenance Zone.
- Maintenance Zone can be re-energized (e.g. for testing purpose) while the Buffer Zone remains OFF.
- Optional phase indication lights for remote visual identification of the conductor rail system and correct switching sequence.
- Designed and manufactured to CE standards.

Benefits

- **Workers' safety – PowerGuard 0800 supports the 5 Electrical Safety Rules.**
- **High uptime by enabling safe maintenance on mobile units without having to shut down the whole runway.**
- **Ease of use via simple switch operation.**





PowerGuard 0800
General Instructions

Application Area

This product is intended for an individual isolation of single mobile consumers on a shared conductor rail system. The system is available up to 1250 A and voltages up to 690 V. Target applications are overhead crane systems and other similar applications.

The main feeding switches are used to feed and isolate the overall conductor rail system.

End maintenance switches are used to isolate the Buffer and Maintenance Zones at the end of a conductor rail system.
Central maintenance switches are used when the maintenance area is in the centre. This is for example the case, when there are three or more cranes on the same runway.

Before using the system in critical environmental conditions such as very dusty or dirty areas, galvanizing plants, pickling plants, compost works and locations with high concentrations of chemicals (e.g. solvents, aromatics, benzols, etc.), please contact us.

Dimensioning and Layout

There are several factors in the selection and layout of Isolation Switches. One main characteristic is the current load which occurs during operation in the designated area. Here normally the selected conductor rail determines the switch size. The additional cabling to and from the switch is adding a certain voltage drop to the overall systems and shall be evaluated.

As the current loading in the Maintenance Zone is limited to only one equipment which is normally not operating under full load, this additional voltage drop has normally no or only little impact to the sizing of the overall conductor rail system. Anyhow, an evaluation case by case is required.

Electrical Safety

PowerGuard 0800 is designed according to applicable international standards and guidelines and meets today‘s requirements for the general safety of electrical equipment. In particular, PowerGuard 0800 meets the general requirements for classification and evaluation defined in DIN EN 60204-32:2009-03 - Electrical requirements for hoisting machines.

Approvals & Certificates

PowerGuard 0800 comes with CE and meets the product parameters required for international use for these products and has been developed in accordance with the IEC/EN standards and guidelines in the EU and the important industrial markets.

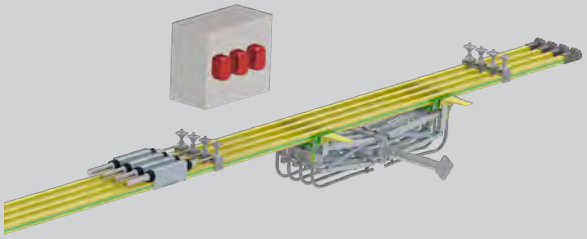
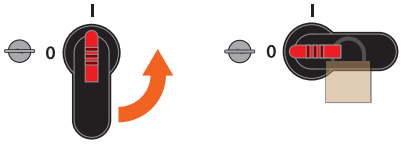
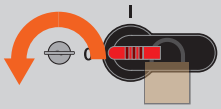
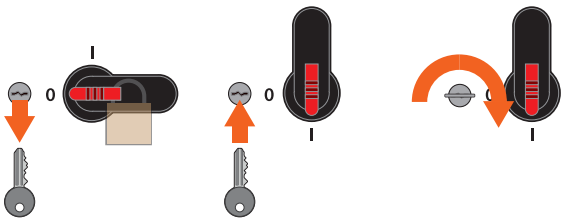
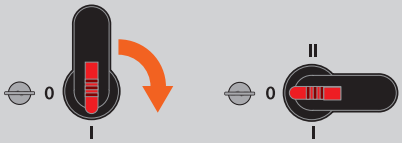
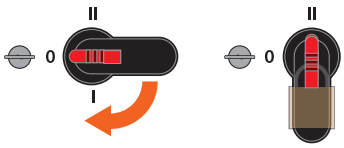
For UL/CSA systems we refer to the PowerGuard solutions from Conductix-Wampfler Americas.

Outdoor Use

PowerGuard 0800 is designed only for indoor use. For outdoor applications consult Conductix-Wampfler.

PowerGuard 0800
System

Operational Sequence

1.	Drive and stop the crane into the Maintenance Zone.	
2.	Isolate the Buffer Zone with the Buffer Zone Switch (upper switch) by switching from Position “I” to “0”. a. If needed, secure the switch in position “0” with a padlock.	
3.	Turn the key to lock the position of Buffer Zone Switch.	
4.	Remove the key and enter it into the lower lock. By turning the key, the lock of the Maintenance Switch opens.	
5.	Isolate the Maintenance Zone by turning the corresponding switch (lower switch) from position “I” to position “0”.	
6.	Turn the switch into position “II”. This is connecting the Maintenance Zone to ground. • Any faulty energizing of the Maintenance Zone would create a short circuit, triggering the fuses. This is protecting people and the system from further harm. a. If needed, secure the switch in position “II” with a padlock. b. The key can’t be removed as long the switch is in Position “II” or “0”.	
7.	In case the equipment in the Maintenance Zone needs power for certain testing or commissioning procedures, re-activate the Maintenance Switch. An accidental mix-up with the Buffer Zone Switch is not possible, as this swich can’t be operated as it is locked. In this switching sequence it is not possible for any other crane to enter the buffer or Maintenance Zone, as the Buffer Zone is still isolated.	
8.	When maintenance is finished, bring the crane in reverse order back into operation.	

PowerGuard 0800
System Components

Main Switch

The Main Switches are used to feed and isolate the complete conductor rail system.

Cable entry from below via universal gland plate.
The maximal allowed voltage is 690 VAC.

Order No.	Designation	Nominal current [A]	Dimensions H x L x D [mm]	Weight [kg]
080611-12	PowerGuard Main Switch 400A	400	1200 x 800 x 400	75
080611-13	PowerGuard Main Switch 630A	630	1200 x 800 x 400	90
080611-14	PowerGuard Main Switch 800A	800	1800 x 1000 x 600	210
080611-16	PowerGuard Main Switch 1250A	1250	1800 x 1000 x 600	250

End Maintenance Zone Switch

End Maintenance Switches are used to feed and isolate the Buffer and Maintenance Zones of the conductor rail system at the end of the runway. Normally, these switches are installed at both ends to service one or several cranes at the far ends, while the other cranes can remain active.

Cable entry from below via universal gland plate.
The maximal allowed voltage is 690 VAC.

Order No.	Designation	Nominal current [A]	Dimensions H x L x D [mm]	Weight [kg]
080611-22	PowerGuard Service Switch End 400A	400	1200 x 800 x 400	105
080611-23	PowerGuard Service Switch End 630A	630	1200 x 800 x 400	120
080611-24	PowerGuard Service Switch End 800A	800	1800 x 1000 x 600	185
080611-26	PowerGuard Service Switch End 1250A	1250	1800 x 1000 x 600	215

Central Maintenance Zone Switch

Central Maintenance Switches are used to feed and isolate the Buffer and Maintenance Zones anywhere in the centre of the of the conductor rail system. The difference from the End Switches is that the Maintenance Zone must be isolated to both directions. Normally, additional Central Maintenance Switches are used when there are three or more cranes on one runway.

Cable entry from below via universal gland plate.
The maximal allowed voltage is 690 VAC.

Order No.	Designation	Nominal current [A]	Dimensions H x L x D [mm]	Weight [kg]
080611-32	PowerGuard Service Switch Central 400A	400	1200x800x400	105
080611-33	PowerGuard Service Switch Central 630A	630	1200x800x400	120
080611-34	PowerGuard Service Switch Central 800A	800	1800x1000x600	185
080611-36	PowerGuard Service Switch Central 1250A	1250	1800x1000x600	215

PowerGuard 0800
System Components

Phase Indication Lights

The optional Phase Indication Lights are used to provide visual feedback of the switching sequence in direct proximity to the conductor rail system. The light turns ON and OFF with the switching. In doing so, it adds an extra safety layer to the system to protect personnel. The lamps are based on LED technology for low maintenance.

- **Note:** These lamps are not fail-safe and do not replace the mandatory check for the absence of voltage at the conductor rail before starting maintenance works.

The max allowed voltage is 480 VAC.

Order No.	Designation	Dimensions H x L x D [mm]	Weight [kg]
080611-40-1	PowerGuard 3 x Phase Indication Lights Red	300 x 250 x 150	5.5

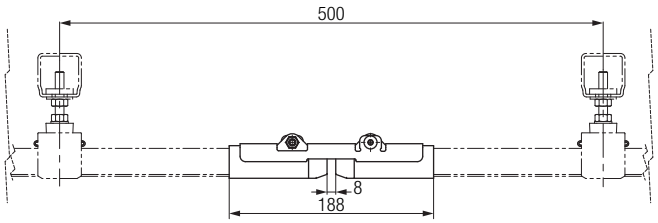
PowerGuard 0800
Conductor Rail Components Program 0812

Air Gaps Program 0812

Air Gaps are used for the galvanic isolation of the energized runway and the “Buffer Zone”, and of the “Buffer Zone” and the “Maintenance Zone”. That means, for each maintenance zone entry two Air gaps are needed to avoid power carryover through the Current Collectors.

Part No.	Designation		Weight [kg]
081294-2	Air Gap	Stainless Steel	0.040

Please note: Air Gaps are delivered as an assembly set (not pre-assembled).



Power Feed Connectors Program 0812

Power feed connectors are required to connect the conductor rail system with the switches. Usually, normal rail connectors are replaced with Power Feed connectors. Power Feed Connectors can also be installed at any other point, but then the rail must be cut.

Part No.	Designation		Weight [kg]
081251-4*	Connectors for aluminum / Copper**ECO** II rails	Stainless Steel	0.21
081251-5*	Power feed connector for copper rails		0.22
081251-6	Power feed connector for stainless steel rails		0.25

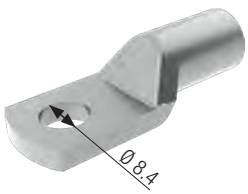
* Standard range | the standard parts of the connectors are in stainless steel

Note:
- Tightening torque max. 9.75 Nm
- Max. outer cable diameter 17.5 mm
- Use contact grease 080021

Tubular Cable Lug M8 for Power Feed LineProgram 0812

Part No.	Cross section [mm²]	Weight [kg/1000]
080051-006	6	6
080051-010	10	7
080051-016	16	11
080051-025	25	14
080051-035	35	20
080051-050	50	32
080051-070	70	51
080051-095	95	60

Material: Copper, tin-plated Order lot size 10 pcs. per size Standard range



Note: Other materials not listed here, such as cables and cable laying materials and cable trays

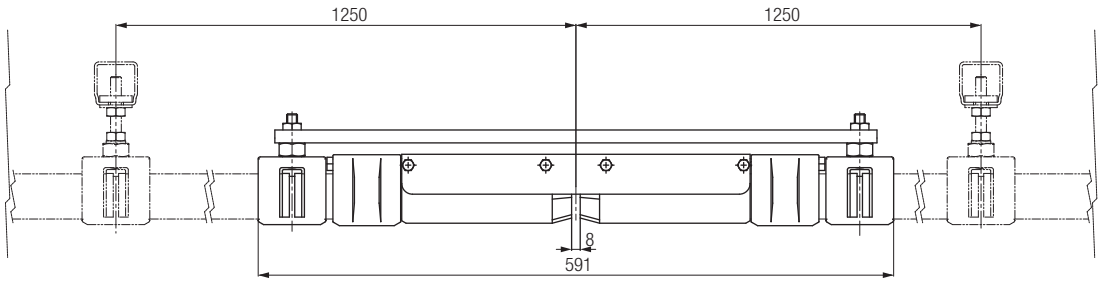
PowerGuard 0800
Conductor Rail Components Program 0813

Air Gaps Program 0813

Air Gaps are used for the galvanic isolation of the energized runway and the “Buffer Zone”, and of the “Buffer Zone” and the “Maintenance Zone”. That means, for each maintenance zone entry two Air gaps are needed to avoid power carryover through the Current Collectors.

Part No.	Designation	Weight [kg]
081394-2	Air Gap	2.50
081395-2	Air Gap for aluminum rails 1000 A and Copper**ECO** III rails 1000 A	2.49

Please note: Air Gaps are delivered as an assembly set (not pre-assembled).



Power Feed Connectors Program 0813

Power feed connectors are required to connect the conductor rail system with the switches. Usually, normal rail connectors are replaced with Power Feed connectors. Power Feed Connectors can also be installed at any other point, but then the rail must be cut.

Part No.	Designation		Weight [kg]
081351-2*	Connector for aluminum rails/Copper**ECO** III rails	Galvanized	1.0
081351-3*	Power feed connector for copper rails		1.6
081351-4	Connector for aluminum rails/Copper**ECO** III rails	Stainless Steel	1.0
081351-5	Power feed connector for copper rails		1.6

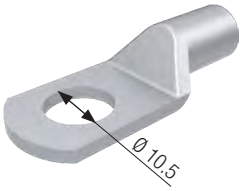
* Standard range

Note:
- Tightening torque max. 31 Nm
- Max. outer cable diameter 25 mm
- Use contact grease 080021

Tubular Cable Lug M10 for Power Feed LineProgram 0813

Part No.	Cross section [mm²]	Weight [kg/1000]
080054-035	35	21.3
080054-050	50	30.8
080054-070	70	45.4
080054-095	95	54.0
080054-120	120	65.7
080054-150	150	76.2
080054-185	185	117.5

* Standard range Material: Copper. tin-plated Order lot size 10 pcs. per size



or ducts are not included in the scope of Conductix-Wampfler and must be sourced locally.

PowerGuard 0800
Dimensioning and Layout of Conductor Rail System

Length of Buffer Zone

The length of the Buffer Zone is based on the length of the current collector assembly and the required safe stopping distance. The Buffer Zone must have at least the length that the current collector assembly is not able to bypass the Buffer Zone under any circumstances.

The Buffer Zone must be as well long enough that the crane or machine is not able to enter under any circumstances the maintenance area when the crane is losing power. This would happen, if the crane is accidentally driven into the Buffer Zone and the crane is losing power and would stop due to power loss with an emergency stop.

The length is normally rounded-up to the next full rail length to use the normal rail joints.

The total length of the Buffer Zone is therefore application specific and must always be identified on site.

Positioning of Switches

The switches should be positioned close to the Maintenance Zone and where the normal access during service is. There should be always free view from the switch to the crane and its conductor rail system. Also the cable pathing should be considered when selecting the switch position.

Length of Maintenance Zone

The length of the Maintenance Zone is normally the length of the crane(s) (buffer to buffer), parked in the Maintenance Zone during service.
The length is normally rounded-up to the next full rail length to use the normal rail joints.

The total length of the Buffer Zone is therefore application specific and must always be identified on site.

Conductor Rail Components

The components for the conductor rails (Power Feed Connectors and Air Gaps) must be installed at the above determined positions. It is preferred to install the components at the next rail connector (up rounded). The normal rail connectors can be replaced with Power Feed Connectors or Air Gaps. As these components are normally installed at the ends, the rails can normally be pushed out a little bit. If required, specially for central Air Gaps, the conductor rails can be cut on site to any required length. Please check the Installation manual for further details.

Positioning of Phase Indication Lamps (optional)

To identify the correct conductor rail system and to supervise the switching sequence, Conductix-Wampfler can supply optional Phase Indication Lamps. These are LED lamps connected close to the Buffer Zone and Maintenance Zone directly to the conductor rail system and are under normal conditions constantly ON.

There must be free view from the switch to these lamps. With the switching at the electrical cabinet these lamps must go OFF. By this method, the person operating the switch can identify that he/she switches the correct conductor rail system and the correct zone. This is particular useful when there are several levels of conductor rail systems installed above each other.

Please note the lamps are not fail safe. A defect lamps is also OFF but does not proof there is no power on the Conductor Rail System.

PowerGuard 0800

Typical Bill of Material

For a typical installation following material is required. The example is for a retrofit project for a 0812/320A Aluminum conductor rail system with two cranes. Therefore, two End Maintenance Switches at both ends are required to allow service on each crane without switching OFF the other one.

Order No.	Designation	Quantity	Note
080611-22	PowerGuard Service Switch End 400A	2	one for each end = 2
080611-40-1	PowerGuard 3x Phase Indication Lights Red	4	one for the Buffer Zone and one for the Maintenance Zone = 2 for 2 ends = 4
081251-4	0812 Power Feed Connectors Aluminum	22	3 x 3 pieces for the phase rails = 9 plus 2 for Protective Earth = 11 (1 for switch+lamps and 1 for lamps only) for 2 ends = 22
081294-2	0812 Air Gaps	12	2 x 3 pieces for each phase rails = 6 for 2 ends = 12
080051-095	Notch-type Cable Lug for Power Feed Line 95 mm²	20	for wiring of the switches 3 x 3 PH + 1 x PE = 10 for 2 ends = 20
080051-006	Notch-type Cable Lug for Power Feed Line 6 mm²	16	for the wiring of the lamps 2 x 3 PH + 2 x PE = 8 for 2 ends = 16

Note: Required cables and cable trays are not part of delivery and need to be sourced by third party.

Your Applications – our Solutions

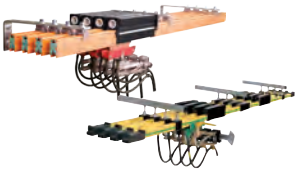
The solutions we deliver for your applications are based on your specific requirements. In many cases, a combination of several different Conductix-Wampfler systems can prove advantageous. You can count on Conductix-Wampfler for hands-on engineering support together with the optimum solution to safely meet your needs.

Cable and Hose Reels

Motor driven and spring driven reels by Conductix-Wampfler provide energy, data and media over a variety of distances, in all directions, fast and safe.

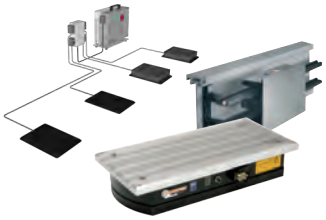
Festoon Systems

Conductix-Wampfler cable trolleys can be used in virtually every industrial application. They are reliable, robust and available in an enormous variety of dimensions and designs.



Conductor Rails

Available as enclosed or multiple unipole systems, Conductix-Wampfler conductor rails reliably move people and material.



Inductive Power Transfer IPT®

The no-contact system for transferring energy and data. For all tasks that depend on high speeds and absolute resistance to wear. Flexible installation when used with Automated Guided Vehicles.

Non-insulated Conductor Rails

Robust, non-insulated aluminum conductor rails with stainless steel cap provide the ideal basis for power supply of people movers and transit networks.

Radio Remote Controls

Safety remote control solutions customized to meet our customer needs with modern ergonomic design.

Reels, Retractors and Balancers

Available for hoses and cables, as classical reels or high-precision positioning aids for tools, we offer a complete range of reels and spring balancers.

Jib Booms

Complete with tool transporters, reels or an entire media supply system – safety and flexibility are key to the completion of difficult tasks.

Slip Ring Assemblies

Whenever things are really “moving in circles”, the proven slip ring assemblies by Conductix-Wampfler ensure the flawless transfer of energy and data. Here, everything revolves around flexibility and reliability!

Mobile Control Systems

Mobile control solutions for your plant – wether straightforward or intricate. Control and communication systems from LJU have been tried and tested in the automotive industry for decades.

ProfiDAT

This data transfer system is a compact slotted waveguide and furthermore can be used as Grounding rail (PE) as well as positioning rail at the same time.

www.conductix.com

Conductix-Wampfler
has just one critical mission:
To provide you with energy and data transmission systems that will keep your operations up and running 24/7/365.

To contact your nearest sales office, please refer to:
www.conductix.contact

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