

PORTS, MARINAS, SHIPYARDS & VESSELS



INDUSTRIAL PLUGS & SOCKET-OUTLETS

SAFE AND RELIABLE ELECTRICAL CONNECTIONS IDEALLY SUITED TO PORTS, MARINAS, SHIPYARDS & VESSELS

MARECHAL ELECTRIC offers a range of products suited to your applications.

The ports, marinas, shipyards & vessels industries require products that meet specific criteria and requirements. To satisfy the many needs linked to this activity, MARECHAL ELECTRIC provides you with a wide range of electrical connection solutions which reduce the time and means required for operations:

- Reliability
- Speed
- Flexibility
- Quality

... always with the goal to ensure safety for staff and equipment.



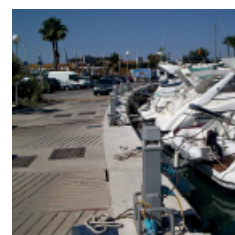


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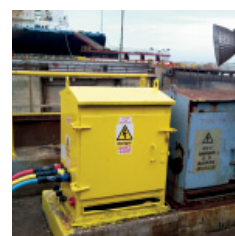
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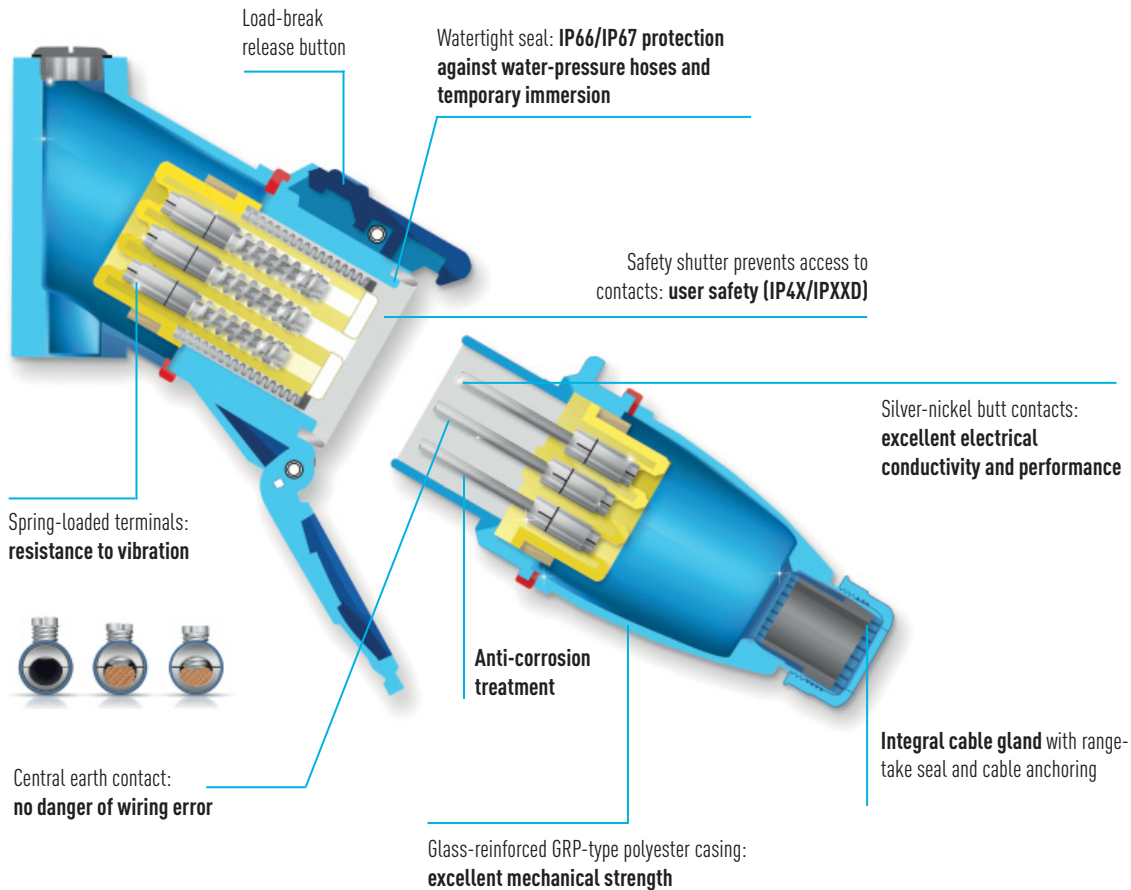


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MARECHAL ELECTRIC TECHNOLOGY

The MARECHAL® industrial electrical power socket has a built-in switching function called DECONTACTOR™. This technology makes it possible to connect and disconnect motors in absolute safety, with the ease of "Plug & Play". They provide unequalled strength over time and guarantee a fast and safe operation during maintenance work. They comply with the IEC EN 60309-1 standard and the European Low Voltage Directive.



DECONTACTOR™ technology: tested safety

- ▶ A socket with built-in switch in a compact unit.
- ▶ Simply pressing the button once cuts off the current and eliminates all risk of electrical arcing.
- ▶ The plugs then eject automatically and the appliance is off-load.
- ▶ The safety of users is guaranteed at all times.

Connection quality and life expectancy

MARECHAL® products are fitted with spring-loaded contacts providing a permanent and durable contact.

The silver-nickel tipped contacts at the end of the contacts provide exceptional connection quality and excellent resistance to wet and corrosive environments, even after years of use.



IP66/IP67 sealing

IP66/IP67 sealing is automatic as soon as the plug is inserted or once the socket lid is closed manually.

Endurance to over currents and 100% duty factor

DECONTACTOR™ plugs can carry significant overloads: 2 to 8 times more than it's required by the standard IEC 60309-1. It supports a voltage up to 1 000 V a.c. and up to 250 V d.c., permanent or alternating current without damages or overheating.

Marine certification of the DSN/DS/DXN/SP/SPeX ranges by Bureau Veritas



MARECHAL® connectors and plugs and sockets are already used in marine applications for more than 20 years, especially for navy and Oil&Gas projects.

FASTER, SAFER, EASIER.

Harsh environment: Salt corrosion, humidity, temperature changes and mechanical shocks lead to bad connection and overheating, and ultimately failure. While brass copper contacts suffer from oxidization in a humid and salty environment, our technology ensures you a high and continuous performance. Our design uses silver-nickel butt contacts which resist to corrosion. The DECONTACTOR™ is automatically IP66/IP67 watertight and resists to water jetting and temporary immersion. Our quality material allows high resistance to frequent mechanical shocks (IK08 / IK09) and temperature changes (-40 °C to +60 °C). Power supply is always available when needed, even after years in use.

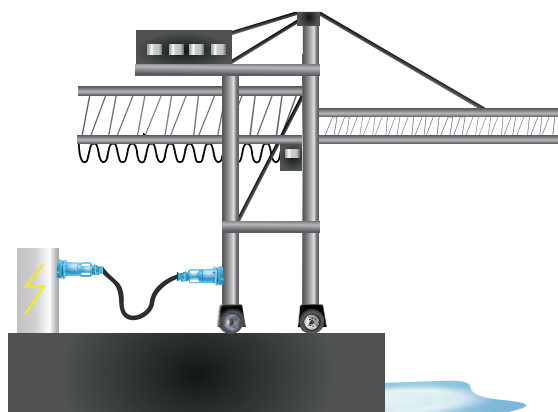
Crane connections: Process equipment such as a crane is frequently moved from one ship to another. The DECONTACTOR™'s integral load-breaking capability simplifies connection and disconnection procedures. It can be easily operated by one single person, saving time and money.

Economic solution: Thanks to its high resistance to shipyards conditions and handling several times per day, MARECHAL® plugs have a long lifetime and then cost saving.

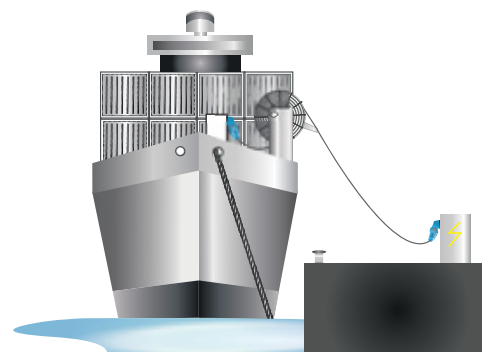
Simple and effortless: To connect or disconnect a standard plug and socket with 250 A or more needs much physical effort, especially when corrosion and overheating has deformed the sleeves in the socket. MARECHAL®'s butt-contact technology is used on DS4 plugs and sockets (up to 400 A), PF plugs and sockets (up to 600 A) and SP single pole connectors (up to 700 A and more). The technology and the superior materials used prevent heating and corrosion. Connection remains effortless even after years in use.



ENSURE LONG WORKING LIFE IN HARSH ENVIRONMENTS



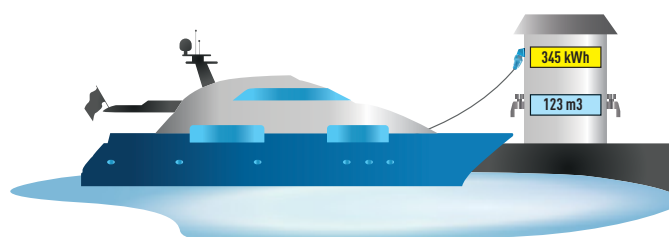
Crane connections



Ship-to-shore connections



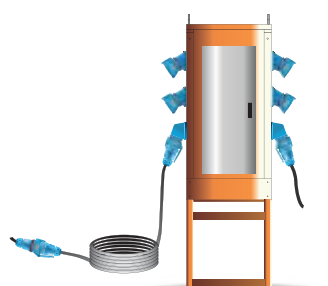
Conveyors



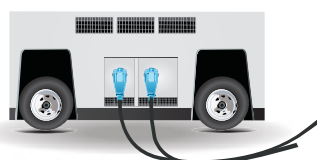
Marinas



Compressors



Distribution boxes



Converters



Pumps

DSN

WATERTIGHT DECONTACTOR™ PLUGS 20 A / 32 A / 63 A

Covering sizes from 20 to 63 A, DSN DECONTACTOR™ plugs are noted for their small footprint. The socket + plug combination is automatically IP66/IP67 as soon as the plug is inserted or once the cover is closed.

- ▶ Automatic IP66/IP67
- ▶ Built-in AC-22 and AC-23 switching capability
- ▶ Shock-resistant GRP casing

SPECIFICATION

Plug and socket-outlet with incorporated load-breaking capacity AC-22 / AC-23, IP66/IP67 without additional operation, safety shutter (socket IP4X/IPXXD) silver-nickel butt contacts and metallic braid.



MAIN FEATURES

Rated current (In)	20 A	32 A	63 A
Umax	500 V	690 V	1 000 V
AC-22 switching capability	20 A / 500 V	32 A / 690 V	63 A / 690 V
AC-23 switching capability	20 A / 400 V (5,5 kW)	32 A / 400 V (7,5 kW)	63 A / 400 V (18,5 kW)
Auxiliary contacts	-	2	4
Keying positions ⁽¹⁾	24 for all DSN		
IP protection lid closed	IP66/IP67 for all DSN		
IP protection connected plug	IP66/IP67 for all DSN		
Ambient temperature	-40°C to +60°C for all DSN		
Shock resistance	IK08 for all DSN		
Flexible wiring [min. – max.]	1 - 2,5 mm ²	2,5 - 6 mm ²	6 - 16 mm ²
Stranded wiring [min. – max.]	1,5 - 4 mm ²	2,5 - 10 mm ²	10 - 25 mm ²
Short circuit current [Icc]	10 kA for all DSN		

⁽¹⁾ To distinguish between different power supplies and applications.



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Alternative products in explosion-proof versions

DXN COMPACT ATEX DECONTACTOR™
From 20 A up to 63 A - 750 V

- ▶ **Ex** II 2 G D Ex de IIC
- ▶ IP66/IP67 water- and dust-tight
- ▶ Integrated load-break switch
- ▶ Robust and compact design
- ▶ High performance poly casing



DS

COMPACT DECONTACTOR™ PLUGS

30 A / 50 A / 90 A / 150 A / 250 A

DS DECONTACTOR™ is our widest range offering rated currents from 30 to 250 A. Polyester casings from 30 to 90 A and metal casings from 90 to 250 A, providing the user with many options (padlocking, auxiliary contacts ...).

- ▶ Safe load-breaking up to 250 A
- ▶ Safety shutter
- ▶ GRP or metal casing

SPECIFICATION

IP54/ IP55 Plug and socket-outlet with incorporated AC-22 / AC-23 load-breaking device, safety shutter (IP4X/IPXXD socket-outlet), silver-nickel butt contacts with metallic braid.



MAIN FEATURES

	DS1 GRP	DS3 GRP	DS6 GRP*	DS9 GRP*	DS2 METAL
Rated current (In)	30 A	50 A	90 A	150 A	250 A
Umax	690 V	1 000 V	1 000 V	1 000 V	1 000 V
AC-22 switching capability	16 A / 690 V	32 A / 690 V	63 A / 690 V	150 A / 400 V	250 A / 400 V
AC-23 switching capability	30 A / 400 V	50 A / 400 V	90 A / 400 V	100 A / 440 V	160 A / 440 V
Auxiliary contacts	2	4	4	6	7
Keying positions ⁽¹⁾	24	24	24	24	12
IP protection lid closed	IP55	IP55	IP55	IP66/IP67	IP55
IP protection connected plug	IP54	IP54	IP54	IP66/IP67	IP54
Ambient temperature	-40°C to +60°C for all DS				
Shock resistance	IK08	IK08	IK08	IK08	IK09
Flexible wiring [min. – max.]	2,5 - 6 mm ²	4 - 16 mm ²	10 - 25 mm ²	25 - 70 mm ²	70 - 95 mm ²
Stranded wiring [min. – max.]	2,5 - 10 mm ²	4 - 25 mm ²	10 - 35 mm ²	25 - 95 mm ²	70 - 120 mm ²
Short circuit current [Icc]	10 kA for all DS				

⁽¹⁾ To distinguish between different power supplies and applications

* A metal option is available.



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DN

ROBUST DECONTACTOR™ PLUGS 20 A / 30 A / 50 A / 90 A / 150 A

Its metal casings rugged design remains a favourite with industries requiring robust connections. Each DECONTACTOR™ size accepts a wide range of cable diameters. This makes the DN series very appropriate for shipyards applications.

- ▶ Automatic IP54/IP55 watertight
- ▶ Impact-resistant metal casing
- ▶ Suitable for harsh environments

SPECIFICATION

Metal-casing plug and socket-outlet with integral switching device AC-22, silver-nickel butt contacts with metallic braid.



MAIN FEATURES

	DN8*	DN1	DN3	DN6	DN9
Rated current (In)	20 A	30 A	50 A	90 A	150 A
Umax	500 V	500 V	500 V	500 V	415 V
AC-22 switching capability	20 A / 400 V	30 A / 400 V	50 A / 400V	90 A / 400 V	150 A / 400 V
Auxiliary contacts	-	-	-	4	-
Keying positions ⁽¹⁾	16	16	16	16	4
IP protection lid closed	IP55 for the whole range				
IP protection connected plug	IP54 for the whole range				
Ambient temperature	-40°C to +60°C for the whole range				
Shock resistance	IK09 for the whole range				
Flexible wiring [min. – max.]	1 - 6 mm ²	2,5 - 6 mm ²	2,5 - 16 mm ²	10 - 25 mm ²	16 - 50 mm ²
Stranded wiring [min. – max.]	1,5 - 10 mm ²	2,5 - 10 mm ²	2,5 - 25 mm ²	10 - 35 mm ²	16 - 70 mm ²

⁽¹⁾ To distinguish between different power supplies and applications

* DN8 is presented in the metal option. A GRP option is available.





DS4

HIGH-CURRENT CONNECTORS

400 A / 1 000 V

The DS4 socket-outlet offers a compact solution for connections up to 400 A / 1000 V. It is equipped in standard with an easy inlet closing device made of stainless steel. The DS4 socket-outlets are especially suitable for cranes (e.g. in harbours).

- ▶ 2 pilot contacts as standard
- ▶ Electrical locking system
- ▶ Insertion mechanism



MAIN FEATURES

DS4	
Rated current (In)	400 A
Umax	1 000 V
Connectors without breaking capacity	
Pilot contacts for electrical interlock	2
IP protection	IP54 (IP66/IP67 optional)
Ambient temperature	-40°C to +60°C
Shock resistance	IK09
Flexible wiring [min. – max.]	70-150 mm ²
Stranded wiring [min. – max.]	70-185 mm ²
Mechanical interlock	
Inlet closing device in stainless steel	

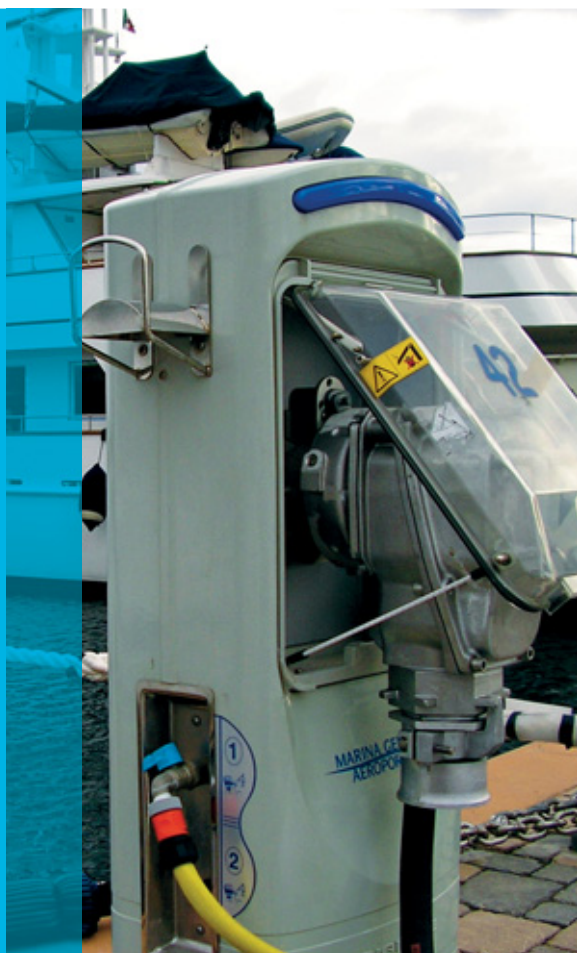


INFO +



DS4 boxes / 400 A up to 1000 V

The DS4 is also available as a complete box, equipped with a contactor, LED signal lights and ON/OFF emergency push button.



PF

HEAVY-DUTY PLUGS & SOCKETS

315 A / 400 A / 500 A / 600 A

Heavy-duty equipment and gensets power supply: in quarries, tunnel boring machines, port cranes, mining equipment...

- Up to 1 000 V
- Automatic IP66/IP67 protection
- Mechanical and electrical interlocking
- Up to 6 auxiliaries and 2 pilot contacts

SPECIFICATION

315 to 600 A, IP66/IP67 socket-outlets with separate connection of phases and pilots (pilots first), safety shutter (IP4X/IPXXD socket-outlet) solid silver butt-contacts.

MAIN FEATURES

	PFQ3	PFQ4	PFC4	PFC5	PFC6
Rated current (In)	315 A	400 A	400 A	500 A	600 A
Umax	690 V	690 V	1 000 V	1 000 V	1 000 V
Auxiliary contacts	6	6	2	2	2
Pilot contacts	2	2	2	2	2
Keying positions ⁽¹⁾	10	10	7	7	7
IP protection lid closed	IP66/IP67 for the whole range				
IP protection connected plug	IP66/IP67 for the whole range				
Ambient temperature	-40°C to +60°C for the whole range				
Shock resistance	IK10 for the whole range				
Flexible wiring [min. – max.]	95-185 mm ²	95-185 mm ²	95-240 mm ²	95-240 mm ²	95-240 mm ²
Stranded wiring [min. – max.]	95-185 mm ²	95-185 mm ²	95-240 mm ²	95-240 mm ²	95-240 mm ²

⁽¹⁾ To distinguish between different power supplies and applications





SP

SINGLE POLE POWER CONNECTORS 700 A / 1 000 V

Thanks to the butt-contact technology the SP single pole connector accepts a permanent current of 700 A / 1 000 V a.c. or 1500 V d.c. [connection with 70 to 400 mm² cable sections].

- ▶ Up to 700 A / 1 000 V
- ▶ Automatic IP66/IP67 protection
- ▶ Electromechanical interlocking system



■ MAIN FEATURES

	SP
Rated current [In]	700 A For higher currents, contact us
Maximum a.c. voltage	1 000 V
Maximum d.c. voltage	1 500 V
Keying positions	mechanical [5] and visual
IP protection lid closed	IP66/IP67
Ambient temperature	-40 °C to +60 °C
Shock resistance	IK08
Flexible wiring [min. – max.]	50 - 400 mm ²
Short circuit current [Icc]	20 kA for 250 ms
Number of operations	2000
Pre-wired pilot circuit	6 A / 250 V



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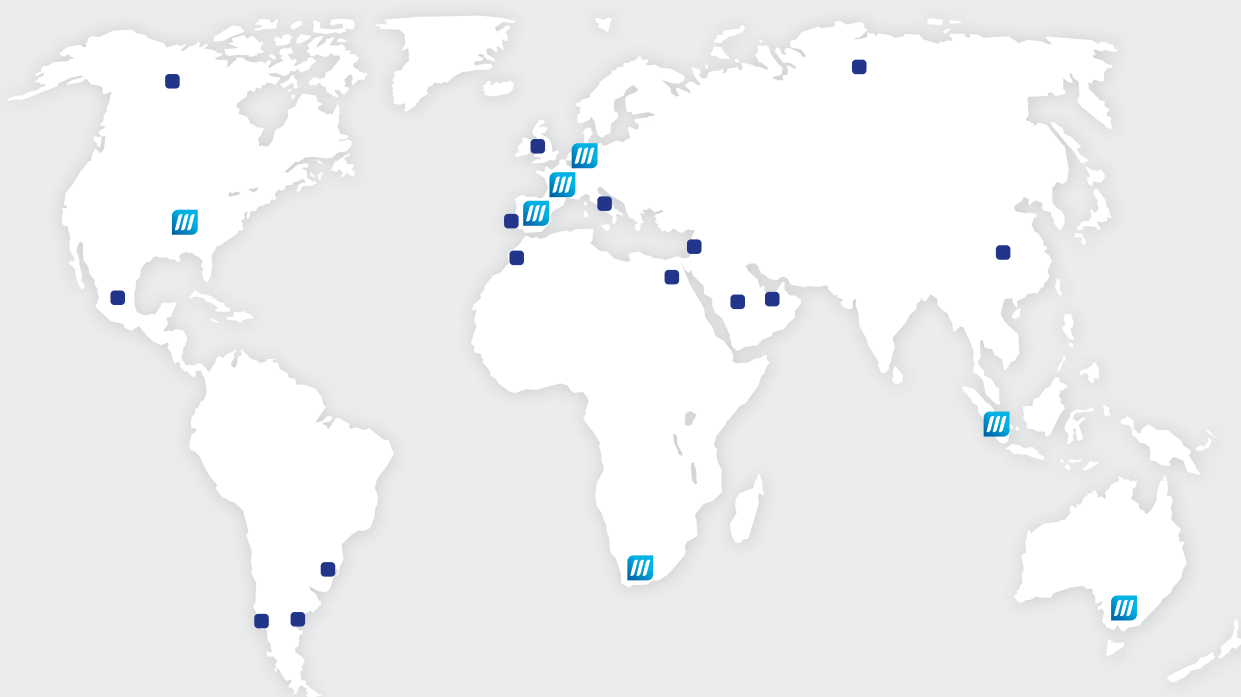
Alternative products in explosion-proof versions

SPeX EXPLOSION-PROOF SINGLE POLE POWER CONNECTOR - 680 A - 1 000 V

- ▶ II2 G D Ex e IIC
- ▶ IP65/IP66 water- and dust-tight
- ▶ Electromechanical interlocking system
- ▶ Mechanic and visual keying



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 **MARECHAL**
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MINES & QUARRIES

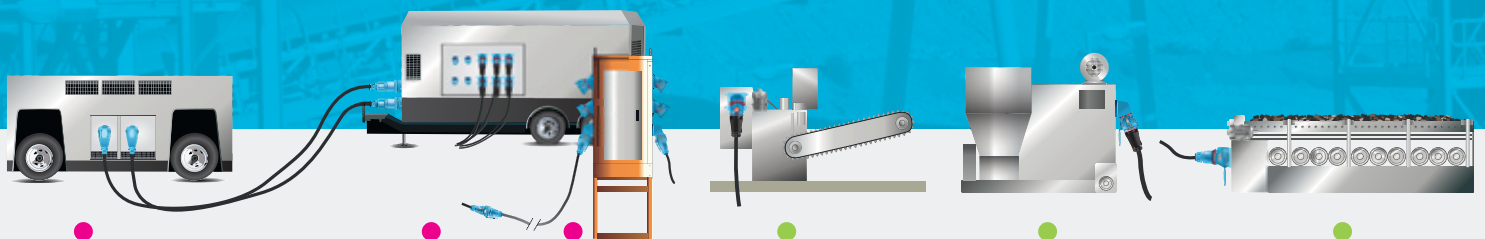


INDUSTRIAL PLUGS, SOCKET-OUTLETS,
& BOXES

Connectors designed specifically for your operations

Your electrical plugs and socket-outlets must not only comply with strict quality and safety standards, they must also deliver high performance and flexibility – and be robust enough to withstand daily exposure to harsh conditions like dust, mud, and humidity.

At MARECHAL®, we offer a unique portfolio of DECONTACTOR™ plugs, socket-outlets, and multi-contact connectors that meet the demanding requirements inherent to mine and quarry operations. With our proprietary systems, you can be assured of safe, reliable power connections at every step of your process: power supply, extraction, and processing.



Power supply

- Generators
- Motor signal and control
- Electrical enclosures and boxes

Because we combine robust materials with a proven butt contact technology, our connectors are sturdy, durable, and innovative.

- Resistant to spikes of up to 8-10 times rated current, for continued operation during motor start-ups
- Built-in load-breaking capacity
- Allow control signals to be transmitted without the risk of corrosion
- IP66/IP67 watertightness
- IK08/IK10 shock resistance

Extraction

- Saws, cutters, and shearers
- Loaders
- Conveyors

The DECONTACTOR™'s built-in switching system allows for enhanced flexibility and mobility, as well as greater operator safety and easier equipment maintenance.

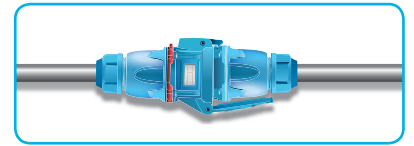
- Fast, safe connection and disconnection from a power supply, even at high currents
- Compliant with all safety regulations
- Keying systems for sealing off and locking out socket-outlets and connectors

Save time and cut costs with the DECONTACTOR™

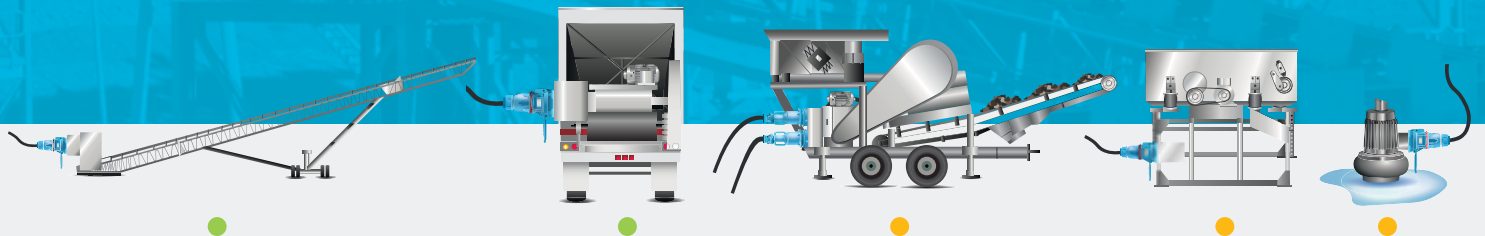
With the DECONTACTOR™ – a proprietary MARECHAL® technology – you can quickly, easily, and above all safely connect and disconnect equipment from a live power supply.

This means you can hook up and remove machines on load, thereby:

- Shortening maintenance and repair time and minimising downtime
- Facilitating both preventive and corrective maintenance
- Reducing your costs



DECONTACTOR™ = Plug + Socket-Outlet + Switch



Processing

- Crushers and grinders
- Sieves and screens
- Pumps

The silver-nickel tips butt contacts and high-power single-pole connectors, coupled with our proven DECONTACTOR™ technology, ensure that your connections are safe, reliable, and easy to handle.

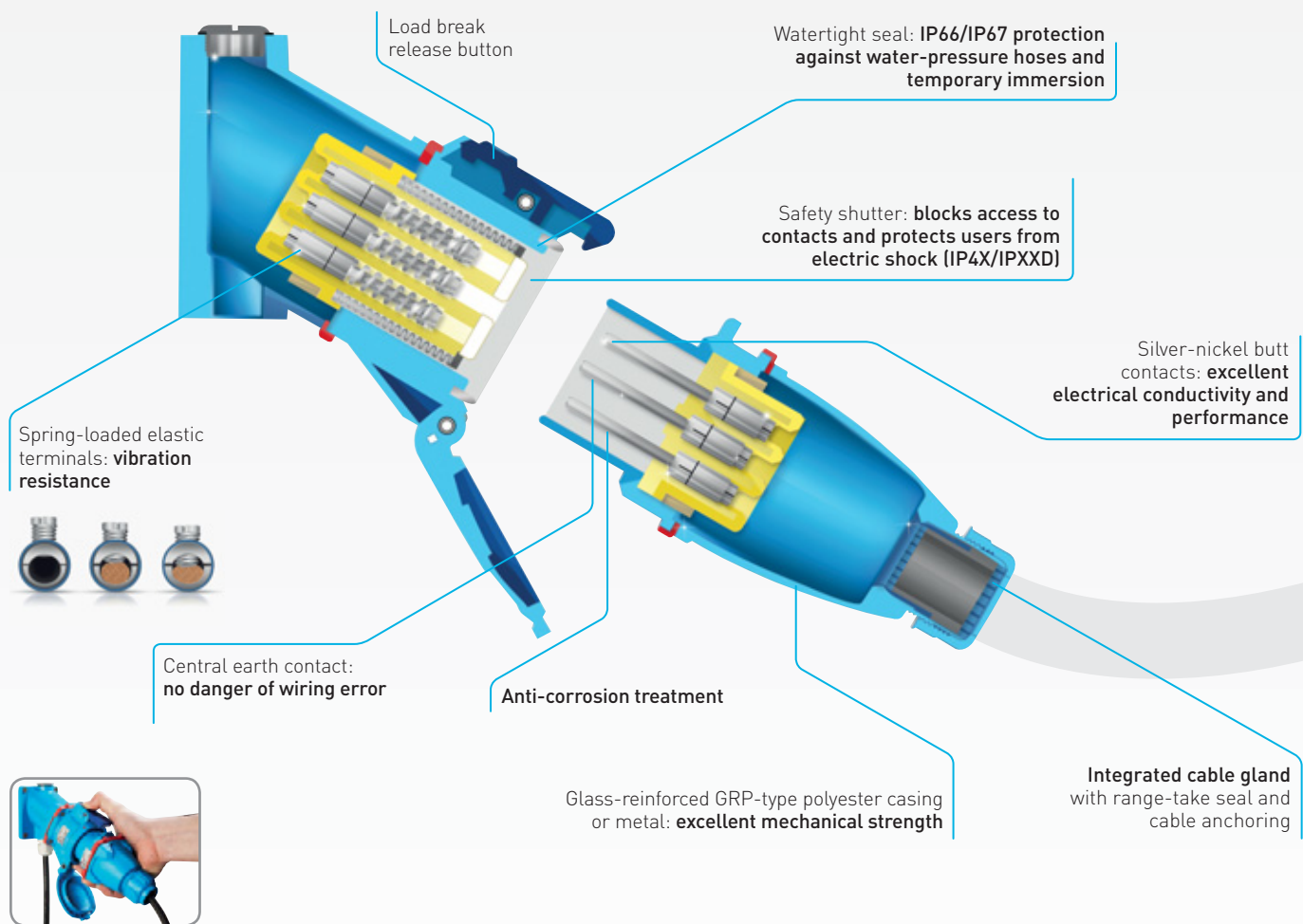
- Can support currents from 1 A to 700 A and voltages of up to 1,000 V, while remaining easy to connect and disconnect
- Excellent conductivity and reliability, even in harsh conditions
- Visible load breaking switches directly on the motor (in compliance with the EU Machinery Directive)

The right industrial connector for your mining equipment needs:

- Massive rock mining
- Alluvial mining
- Underground and open pit mining

The DECONTACTOR™, a MARECHAL® exclusive

The DECONTACTOR™ is a plug and socket-outlet system with an integrated power switch, allowing you connect and disconnect motors in absolute safety – with plug-and-play-like simplicity. This proprietary technology also makes equipment maintenance fast and safe. With our exceptionally robust system, you can be sure that your industrial electrical connections deliver long-lasting performance and comply with the latest regulations (like IEC EN 60947-3 for switches, IEC EN 60309-1 and the EU Low Voltage Directive).



DECONTACTOR™ technology: proven safety

- A socket-outlet with a built-in switch, all in a single, compact unit
- Just press the button once to cut the current and eliminate the risk of electric shock; the plugs then eject automatically, disconnecting the appliance
- Personnel safety is guaranteed at all times

Reliable, long-lasting electrical connections

MARECHAL® connectors are fitted with spring-loaded contacts providing continuous, durable connections. The silver-nickel tipped contacts deliver exceptional connection quality and superior resistance to humidity and corrosion – even after years of use.

Mechanical lock-outs for enhanced user safety

An optional lock-out system can prevent current from unexpectedly reaching equipment while maintenance is being performed, and can be seamlessly incorporated into your seal-off procedures. After safely unplugging the DECONTACTOR™, you can mechanically seal off the two separated parts.



IP66/IP67 sealing

IP66/IP67 sealing is automatic as soon as the plug is inserted or once the socket lid is closed manually.



Wastewater treatment

Mines and quarries need to pump a lot of water, for equipment cleaning and as part of wastewater and surface runoff treatment processes. With our DECONTACTOR™ plugs and socket-outlets, you can easily hook up and remove pumps on the fly – without having to wait for a maintenance technician. The connections are IP66/IP67 watertight, meaning they are automatically protected against any accidental contact with water.



DSN / DS

DECONTACTOR™

20 A / 30 A / 32 A / 50 A / 63 A /
90 A / 150 A / 250 A

The DSN/DS range spans currents from 20 A to 250 A, making it our largest and most complete DECONTACTOR™ range.

Socket-outlets and connectors are available in glass-reinforced polyester for currents from 20 A to 90 A and in metal for currents above 50 A, and offer a large array of options like keying systems and auxiliary contacts.



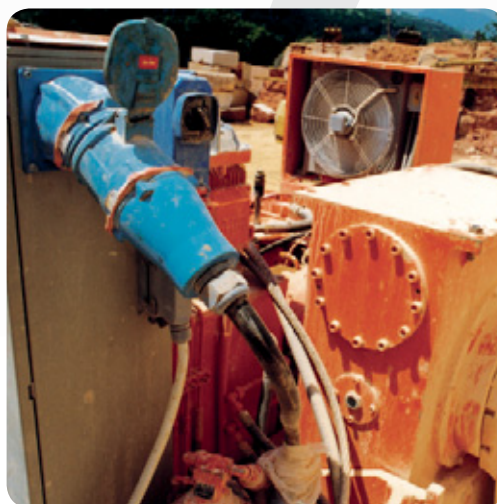
DN

DECONTACTOR™

20 A / 30 A / 50 A / 90 A / 150 A

The metal casing on this range is designed for industries where robust connectors are crucial.

DN DECONTACTOR™ can accommodate a wide range of cable diameters, making them perfect for the long cables used in mining and tunnel digging.





MULTICONCONTACT Crimp mounting CONNECTORS

5 to 37 contacts; 5 A to 30 A

Low currents: 4 mA to 20 mA, 16 A

Our multicontact connectors can hook up equipment to a power supply and transmit data. The silver-nickel alloy used for the butt contacts provides exceptional conductivity and longevity (can withstand several thousands of operations).

The casing is available in glass-reinforced polyester or metal to ensure excellent resistance – even in harsh conditions. And because the contacts are crimped, the connectors can be mounted and demounted quickly and easily, giving you a robust, cost-effective system.



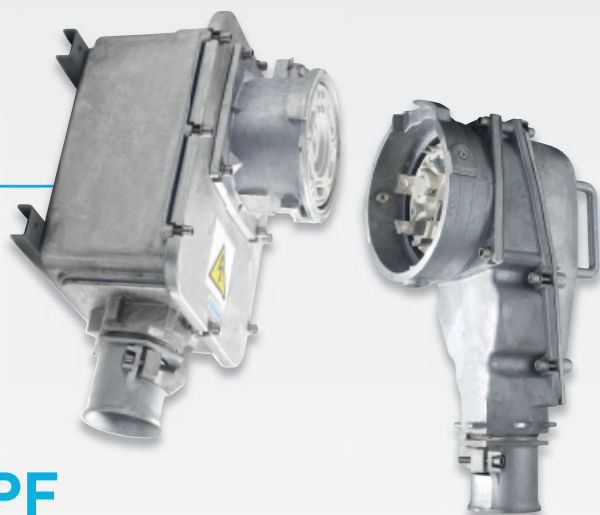
DS4

HIGH-CURRENT CONNECTORS

Up to 400 A and 1,000 V

Our DS4 range offers compact plug and socket-outlet systems for connections up to 400 A and 1,000 V. The sturdy metal box means that the system will continue to work reliably even in harsh conditions. DS4 connectors come standard with two pilot contacts that can be used to electrically lock out the system and a steel insertion mechanism – making them suitable for digging and tunnelling equipment, cranes, generators, quarries, and electrical enclosures.





PF

HIGH-CURRENT PLUGS AND SOCKET-OUTLETS

315 A / 400 A / 500 A / 600 A - 1,000 V

Our PF range can accommodate up to six auxiliaries and two pilots, is IP66/IP67 watertight (standard), and has an electromechanical lock-out system, for maximum safety and water protection.

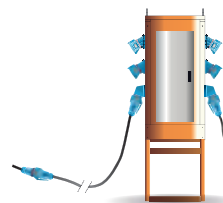
The metal casing offers IK10 shock resistance and is well-suited to connections for heavy equipment and generators for mining and tunnel-digging operations.



INFO +

Electrical enclosures

Mining and quarry equipment is often located far from a power supply, so high-capacity extension cables are usually needed.



CS1000 / SP

SINGLE-POLE POWER CONNECTORS

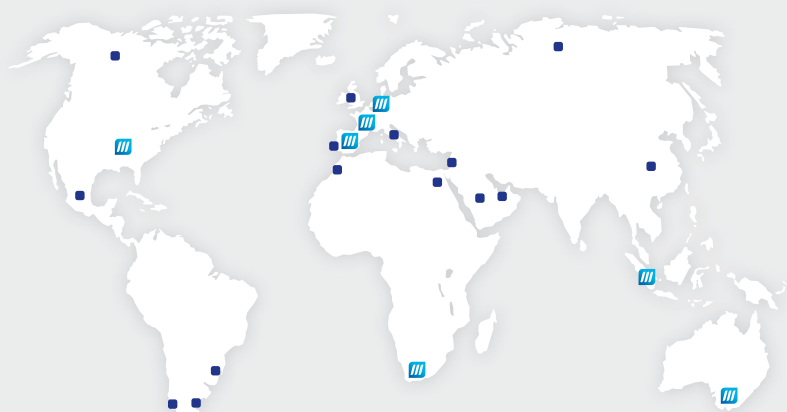
Up to 700 A and 1,000 V

Thanks to a unique butt contact mechanism, our CS1000 and SP single-pole connectors can be used with currents of 400 A or 700 A and voltages of 1,000 V AC or 1,500 V DC.

They are IP66/IP67 watertight and have a mechanical lock-out system and keying ring (on the CS1000) or an electromechanical lock-out system with a pilot circuit for each contactor (on the SP), preventing accidental disconnections.



MARECHAL ELECTRIC GROUP



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Mining & quarry industry customers

South Africa

- Kumba Sishen - Iron-ore
- Hotazel - Manganese mine
- Black Rock - Manganese mine
- Koffiefontein - Diamond mine
- RPM - Platinum mine
- AngloGold Ashanti - Gold mine

Zambia

- KCM - Copper mine
- Mopani - Copper mine

France

- Les Ardoisières - Ardoise quarry
- Salins du midi - Salt producer
- Carrières Plo - Granite quarries
- ROCAMAT - Natural stone quarries
- SETP - Comblanchien quarries
- PRORoch - Dressed stone quarries
- Carrières de Provence - Limestone quarries
- Tunnel du Violay - Tunnel digging
- Tunnel du Perthuis - Tunnel digging

Spain

- Cobre las Cruces - Copper extraction site

Morocco

- Groupe Managem - Silver and other metal mines

Chile

- Escondida - Copper mine

Thailand

- Chatree North Gold Mine