Max-Gard® interconnection systems

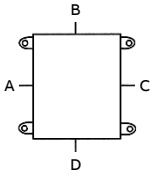
400 A standard service

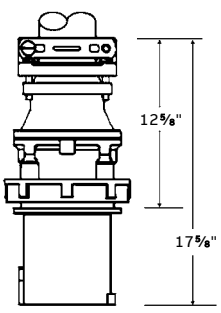
Device ratings and polarizations

Pole	Wire	Conductor placement	Voltage 60 hz	Cat. no. ▼	Standard bushing I.D.† (in.)	Cat. no. ▼	Standard bushing I.D.† (in.)
Product type				**Male plug††**		**Female connector**	
2	3		277	DS4**104**MPØØØ	2¾	DF4**104**FPØØØ	2¾
			125	DS4**107**MPØØØ		DF4**107**FPØØØ	
2	3		480	DS4**204**MPØØØ		DF4**204**FPØØØ	
			250	DS4**207**MPØØØ		DF4**207**FPØØØ	
			600	DS4**214**MPØØØ		DF4**214**FPØØØ	
			208	DS4**216**MPØØØ		DF4**216**FPØØØ	
3	4		277/480	DS4**304**MPØØØ	3	DF4**304**FPØØØ	3
			125/250	DS4**307**MPØØØ		DF4**307**FPØØØ	
			120/208	DS4**316**MPØØØ		DF4**316**FPØØØ	
3	4		3Ø 480	DS4**404**MPØØØ		DF4**404**FPØØØ	
			3Ø 250	DS4**407**MPØØØ		DF4**407**FPØØØ	
			3Ø 600	DS4**414**MPØØØ		DF4**414**FPØØØ	
			3Ø 208	DS4**416**MPØØØ		DF4**416**FPØØØ	
			3Ø 440	DS4**421**MPØØØ		DF4**421**FPØØØ	
4	5		3ØY 277/480	DS4**504**MPØØØ	3¼	DF4**504**FPØØØ	3¼
			3ØY 347/600	DS4**514**MPØØØ		DF4**514**FPØØØ	
			3ØY 110/208	DS4**516**MPØØØ		DF4**516**FPØØØ	
			3ØY 250/440	DS4**521**MPØØØ		DF4**521**FPØØØ	

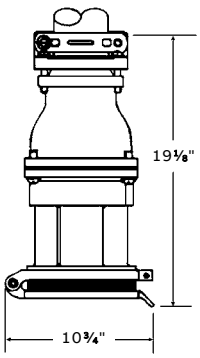
Maximum 600 V AC or 250 V DC.
** If receptacle is desired with a straight adapter instead of standard angle adapter, substitute "S" for the "A" in the catalog number of the receptacle with angle adapter or adapter and box.
† Standard cable bushings shown; see page 32 for other sizes available at no extra cost if specified on order.
†† Always furnished with screw collar. We recommend cup cap with male plug; order catalog number DS4CC.
▼ Control contacts for plug/receptacles: Use "K" where noted. Ex: DS4104MP00K. For adapters, junction boxes and accessories, see pages 32–35.

Dimensions





Male plug



Female connector

Max-Gard® interconnection systems

Pin and sleeve plugs, receptacles and systems

1.0 Scope

1.1 This document covers multi-contact pin and sleeve, industrial grade, arc-quenching, circuit interrupting-rated electrical plugs, motor plugs, connectors, receptacles, mechanically interlocked receptacles and assorted accessories. Usable in dry, damp, wet, marine and/or hazardous locations for electrical power circuits. Devices are to be rated 30, 60, 100, 200 and/or 400 amperes at 600 V AC, 50–400 Hz and 250 V DC maximum. Devices are also rated for continuous use in temperatures from -40 °C to +130 °C. These devices must provide internal environmental seals for marine and extreme wet applications and can be electrically interlocked.

1.2 The devices described shall be Thomas & Betts/Russellstoll® Max-Gard catalog numbers as specified.

2.0 Product classifications (features)

2.1 **Gated deadfront** – All receptacles and connectors must have a rotating disk on the face of the interior, which provides live contact isolation and environmental separation.

2.2 **Delayed action arc containment** – All devices upon disconnect under load shall have provision so the arc is contained and extinguished within the insulation cavity, making it impossible to withdraw a live plug.

2.3 **Flap cover or screw cover option** – Flap cover option must provide weathertight capability by utilizing a spring actuated self-closing flap. Watertight capability shall be obtained by using a gasketed screw cap.

2.4 **Polarization** – All devices shall be factory polarized for amperage, voltage, frequency and phase; thus providing a single voltage rating, single interface system.

2.5 **Grounding** – The grounding of the device shall be accomplished through a separate center ground (earth) make-first and break-last pole on all devices for complete system grounding.

2.6 **Pole capabilities** – All devices shall accommodate up to four power pins plus a separate center ground pin and they shall be integral with the connector bodies (five pins total).

2.7 **Interior type** – Interiors must be male (pin type) or female (sleeve type). Pins and sleeves shall also be self-aligning and self-wiping/self-cleaning.

2.8 **Control contacts** – All devices must have an option for two control contacts, which shall be make-last and break-first for use in electrical interlocks and/or control circuits. See table below.

2.9 **Conductor terminals** – Pin and sleeve connections shall employ solderless pressure-type screw terminals and be sized to accept stranded or solid copper conductors in AWG sizes (max. O.D.s as noted). The screw terminals shall also have socket heads to ensure proper torquing of wires.

2.10 **Environmental seals** – Each device must have an environmental seal or O-ring around all interiors and around each pin and sleeve to prevent water and contaminants from entering the wiring compartment. This provides waterproof capability, even when not mated.

2.11 **Hazardous location** – All standard plugs 30, 60 and 100 A shall be UL® and CSA listed for hazardous location class I division 1, groups C and D; class II division 1, groups F and G. A hazardous location circuit breaker-protected interlock shall also be applicable to the same environments and possess all the same product features as outlined above. Enclosures shall meet NEMA 8 hazardous outdoor-duty classifications and shall meet shipboard use above deck in accordance with the Department of Transportation (USCG “Green Water”).

Rating for pilot/control contacts

Thermal continuous current amps	Maximum current amps								Max. volt ampere	
	120 V		240 V		480 V		600 V			
	Make	Break	Make	Break	Make	Break	Make	Break	Make	Break
10 (#12 AWG)	60	6	30	3	15	1.5	12	1.2	7200	720

Contact rating code designation A-600, Table 119.1 – UL 508 heavy pilot duty load (720 VA/600 V AC) maximum

Max-Gard® interconnection systems

Pin and sleeve plugs, receptacles and systems

2.12 **Lockout devices –** Plug connection lockout is achieved by a padlock through plug sleeve housing hole provided for this purpose. On Hazardous location/explosion proof interlock receptacles, lockout shall additionally be achieved by separate lockout accessory available from the factory. On standard interlocks, lockout accessory/ construction is available from the factory.

3.0 Materials requirements

3.1 **Housings –** Plug, motor plug, receptacles, connectors and interlock housings, associated covers and caps, screw collars, and clamp holders shall be made of copper-free cast aluminum (max. 0.004% copper).

3.2 **Finish –** All external surfaces except those that provide means of grounding shall be epoxy powder coated to resist corrosion.

3.3 **Hardware –** All hardware, external and springs, shall be stainless steel. Cable clamps shall be stainless steel or epoxy powder coated, copper-free cast aluminum.

3.4 **Insulators –** All device body insulators shall be molded from glass-reinforced high-strength thermoset polyester, minimum of UL® 94-V0 flammability rated.

3.5 **Contacts –** Contacts base material shall be made of a conductive copper alloy (brass CDA485) to prevent dezincification. Accessory material of the contacts shall be made of a compatible corrosion resistant material.

3.6 **Environmental seals –** Environmental gaskets and O-rings shall be made of Neoprene material.

4.0 Design and construction requirements

4.1 **circuit interrupting rating –** All devices 30, 60, 100 and 200 A shall be tested to be interrupted at 150% of rated current. Additionally, all devices shall be designed and tested to interrupt 100% of rated current.

4.2 **Wiring –** All devices shall be wired from the rear requiring no disassembly of the pins and/or sleeves from the insulated body.

5.0 **Applicable documents (compliances)**

5.1 **Underwriters Laboratories (UL) –** The devices specified herein shall be listed in applicable sections of UL Standards 1010, 231, 1682 and 1686, File Nos. E2630, E57324, E68085, E123752.

5.2 **Canadian Standard Association (CSA) –** The devices specified shall be listed in the applicable sections of CSA C22.2-182.1, File Number LR14096.

5.3 **International Electro-Technical Commission (IEC) –** The 30-, 60- and 100 A devices specified shall have been tested and comply with IEC 309-1.

5.4 **Federal Department of Transportation –** Refrigerated National Shipboard location devices shall meet and comply with Federal Register volume 47, number 68, subpart 111.79.

5.5 **Standards –** The devices specified shall comply with Military Standards MIL-STD-105 and 1344; ASTM Standards D570 and D2565: NEMA Standard PR4-1983; and OSHA regulations when installed in accordance with the National Electrical Code® (NEC®).

5.6 NEMA 250 enclosures standard

NEMA 1 – General Purpose for indoor use; guards against contact with equipment.

NEMA 3R – Outdoor use primarily to protect against rain, sleet, wind-blown dust and damage from external ice formation.

NEMA 4 – Indoor or outdoor use to protect against windblown dust and rain; splashing and hose-directed water.

NEMA 4X – Watertight, dust-tight corrosion-resistant for indoor or outdoor applications.

NEMA 6 – Watertight, casual/ temporary immersion.

NEMA 7 – Class I (Hazardous) for indoor use in Class I areas, per NEC.

NEMA 8 – Class I (Hazardous) for indoor use in Class I, oil-immersed equipment.

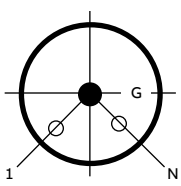
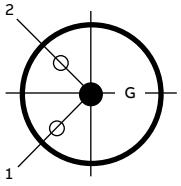
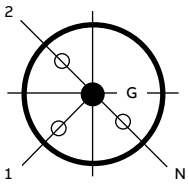
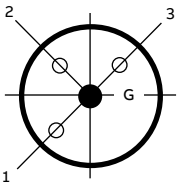
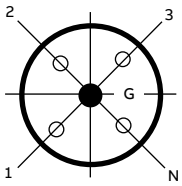
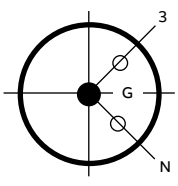
NEMA 9 – Class II (Hazardous) for indoor use in Class II areas, per NEC.

NEMA 12 – Industrial use, dust-tight for indoor use to protect against dust, falling dirt and dripping non-corrosive liquids.

Max-Gard® interconnection systems

Single polarization/multiple service* assigned voltages and wiring systems

Single polarization/multiple service* assigned voltages and wiring systems

N-R1-G		R1-S2-G		N-R1-S2-G		R1-S2-T3-G		N-R1-S2-T3-G		2P+G(DC)		
												
Voltage assign. no.	**Voltage**	**Voltage assign. no.**	**Voltage**	**Voltage assign. no.**	**Voltage**	**Voltage assign. no.**	**Voltage**	**Voltage assign. no.**	**Voltage**	**Voltage assign. no.**	**Voltage**	**Index**
101	220 V–50 Hz	**201**	380 V–50 Hz	**301**	220/380 V–50 Hz	**401**	380 V–50 Hz	**501**	220/380 V–50 Hz	–		01
103	127 V–50 Hz	**203**	220 V–50 Hz	**303**	220/127 V–50 Hz	**403**	220 V–50 Hz	**503**	220/127 V–50 Hz	–		03
104	277 V–60 Hz	**204**	480 V–60 Hz	**304**	277/480 V–60 Hz	**404**	3Ø 480 V–60 Hz	**504**	3ØY 277/480 V–60 Hz	–		04
105	250 V–50 Hz	**205**	440 V–50 Hz	**305**	250/440 V–50 Hz	**405**	3Ø 440 V–50 Hz	**505**	3Ø 250/440 V–50 Hz	–		05
107	125 V–60 Hz	**207**	250 V–60 Hz	**307**	125/250 V–60 Hz	**407**	3Ø 250 V–60 Hz	**507**	3ØY 125/250 V–60 Hz	–		07
108	220 V–60 Hz	**208**	380 V–60 Hz	**308**	220/380 V–60 Hz	**408**	3Ø 380 V–60 Hz	**508**	3Ø 220/380 V–60 Hz	–		08
109	100 V–60 Hz	**209**	220 V–60 Hz	**309**	100/220 V–60 Hz	**409**	3Ø 220 V–60 Hz	**509**	3Ø 100/220 V–60 Hz	–		09
111	115 V–400 Hz	**211**	220 V–400 Hz	**311**	220/115 V–400 Hz	**411**	220 V–400 Hz	**511**	220/115 V–400 Hz	–		11
	–		–		–	–	–	**513**	230 V DC	**613**	250 V DC	13
114	347 V–60 Hz	**214**	600 V–60 Hz	**314**	347/600 V–60 Hz	**414**	3Ø 600 V–60 Hz	**514**	3ØY 347/600 V–60 Hz	–		14
115	100 V–50 Hz	**215**	220 V–50 Hz	**315**	100/220 V–50 Hz	**415**	3Ø 220 V–50 Hz	**515**	3Ø 100/220 V–50 Hz	–		15
116	120 V–60 Hz	**216**	208 V–60 Hz	**316**	120/208 V–60 Hz	**416**	3Ø 208 V–60 Hz	**516**	3ØY 120/208 V–60 Hz	–		16
117	120 V–400 Hz	**217**	208 V–400 Hz	**317**	120/208 V–400 Hz	**417**	3Ø 208 V–400 Hz	**517**	3Ø 120/208 V–400 Hz	–		17
–	–	–	–	–	–	–	208 V		–	**618**	28 V DC	18
–		–	–	–	–	–	–		–	–		20
–	–	**221**	440 V–60 Hz	**321**	250/440 V–60 Hz	**421**	3Ø 440 V–60 Hz	**521**	3ØY 250/440 V–60 Hz	–		21
–	–	–	–	–	–	–	250 V		Reserved	–		22
–	–	–	–	–	–	–	480 V		Reserved	–		23
–	–	–	–	–	–	–	600 V		Reserved	–		24

Max-Gard receptacles and plugs may be furnished in any of the above voltage and phasing systems.
To order any device in a voltage and phasing not shown in the preceding catalog pages, substitute the Voltage Assignment Number in the above chart for that portion of the listed catalog number appearing in boldface type.
Example: 200 A weathertight receptacle with flap cover, angle adapter and junction box for 3Ø 480 V (3-pole and ground) is DF2404FRAB0.
To change to 3Ø 208 V, the catalog number becomes DF2416FRAB0.
Note: All devices may be furnished with two control contacts. Add "K" to the end of the catalog number, in place of last position Ø.
* Dual-voltage or multiple-service applications (for any given polarization number) – Example: A factory installation may consist of all receptacles specified and wired at polarization 507. This is a 3-phase. Y–125/250 V–60 Hz supply. However, all circuit requirements "below" 507 ie 407,307,207 and 107 can also all be met. For instance, a 207 plug can draw power from a 507 receptacle. See chart above.
For non-interrupting polarizations at 45, 90, 150, 300, 600 A ratings, consult Technical Services.