

### Characteristics Defined by the CEI70-1—IEC144—UTE C 20-010—DIN40050 Standards

**Table 1**

First Digit—Protection against persons—touching and ingress of solid foreign objects			Second Digit—Protection against the penetration of liquids								
			IP_0	IP_1	IP_2	IP_3	IP_4	IP_5	IP_6	IP_7	IP_8
Non protected											
IP_0		Without protection	<b>IP 00</b>								
IP_1		Protection against touching with the hand and solid objects greater than 50 mm dia.	<b>IP 10</b>	<b>IP 11</b>	<b>IP 12</b>						
IP_2		Protection against touching with the finger and solid objects greater than 12 mm dia.	<b>IP 20</b>	<b>IP 21</b>	<b>IP 22</b>	<b>IP 23</b>					
IP_3		Protection against touching with tools, wires, etc. more than 2.5 mm thick and solid objects greater than 2.5 mm dia.	<b>IP 30</b>	<b>IP 31</b>	<b>IP 32</b>	<b>IP 33</b>	<b>IP 34</b>				
IP_4		Protection against touching with tools, wires, etc. more than 1 mm thick and solid objects greater than 1 mm dia.	<b>IP 40</b>	<b>IP 41</b>	<b>IP 42</b>	<b>IP 43</b>	<b>IP 44</b>				
IP_5		Unlimited protection against contact with live parts and damaging deposits of dust	<b>IP 50</b>				<b>IP 54</b>	<b>IP 55</b>			
IP_6		Unlimited protection against contact with live parts and any penetration of dust	<b>IP 60</b>					<b>IP 65</b>	<b>IP 66</b>	<b>IP 67</b>	<b>IP 68</b>

In some countries a third digit (for mechanical security) is added.

**Table 2**

NEMA designation	Intended Use and Description	Construction Requirements
3	Outdoor use primarily to provide a degree of protection against rain, sleet, windblown dust and damage from external ice formation.	Splashproof (IP44)
4	Indoor and outdoor use primarily to provide a degree of protection against windblown dust and rain, splashing water, hose-directed water and damage from external ice formation.	Watertight (IP67)
4X	Indoor and outdoor use primarily to provide a degree of protection against corrosion, windblown dust and rain, splashing water, hose-directed water and damage from external ice formation.	Watertight (IP67)
6	Indoor and outdoor use primarily to provide a degree of protection against hose-directed water, and the entry of water during occasional temporary submersion at a limited depth and damage from external ice formation.	Watertight (IP67)
12, 12X	Indoor use primarily to provide a degree of protection against circulating dust, falling dirt, and dripping non-corrosive liquids.	Splashproof (IP44)

This information is provided only as a general guide. No specific recommendation is intended. As each application may vary, testing should be conducted by the user in the intended environment.

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## IEC International Connections

### Installation Information

**Table 1 — Cable and Conductor Strip Length**

		Device Rating			
North American International		20A 16A	30A 32A	60A 63A	100A 125A
Outer Jacket Strip Length	inch	2	2½	3	4
	mm	50	63	76	102
Conductor Strip Length	inch	½	½	¾	1½
	mm	12	12	19	28
Pilot Conductor Strip Length	inch			7/16	5/8
	mm			11	16

**Table 2 — Maximum Torque applied to terminal screws**

		Device Rating			
North American International		20A 16A	30A 32A	60A 63A	100A 125A
Torque Terminal Screw	lb.-in.	7.1	7.1	17.6	35.3
	N-m	0.8	0.8	2	4
Torque Pilot Screw	lb.-in.			7.1	7.1
	N-m			0.8	0.8

**Table 4 — Metric and AWG/MCM conductor size equivalents**

Conductor Size		Amperage (A)
mm²	AWG/MCM	
1,0	18	0-8
1,5	16	8-12
2,5	14	12-15
2,5	12	15-20
4,0	10	20-25
6,0	10	25-32
10	8	32-50
16	6	50-65
25	4	65-85
35	3	85-100
35	2	100-115
50	1	115-130
50	1/0	130-150
70	2/0	150-175
95	3/0	175-200
95	4/0	200-225
120	250	225-250
150	300	250-275
185	350	275-300
185	400	300-350
240	500	350-400

**Table 3 — Cable and Conductor Range**

Amps		Poles and Wires	From AWG	To Type	Cord Grip Range						
					From Type	To AWG	With Cable Gland		With Cable Sleeve		
							North American	International	North American	International	
16	20	2P3W	16	S	10	S	inch	0.275-0.530	0.275-0.530	0.275-0.675	0.275-0.675
							mm	7-13.5	7-13.5	7-17	7-17
							inch	0.395-0.825	0.275-0.630	0.315-0.800	0.315-0.800
30	32	3P4W	16	S	10	S	mm	10-21	7-16	8-20	8-20
							inch	0.395-0.825	0.275-0.630	0.315-0.800	0.315-0.800
							mm	10-21	7-16	8-20	8-20
60*	63*	2P3W	12	S	8	S	inch	0.395-0.825	0.395-0.825	0.590-0.950	0.435-0.950
							mm	10-21	10-21	15-24	11-24
							inch	0.650-1.10	0.395-0.825	0.590-0.950	0.435-0.950
100*	125*	3P4W	12	S	8	S	mm	16.5-28	10-21	15-24	11-24
							inch	0.650-1.10	0.395-0.825	0.590-0.950	0.435-0.950
							mm	16.5-28	10-21	15-24	11-24
60*	63*	4P5W	8	S	4	S or W	inch	0.650-1.50	0.650-1.50	0.635-1.30	0.600-1.30
							mm	16.5-38	16.5-38	16-33	15-33
							inch	0.650-1.50	0.650-1.50	0.635-1.30	0.600-1.30
100*	125*	2P3W	6	S or W	2/0	S or W	mm	16.5-38	16.5-38	16-33	15-33
							inch	0.950-1.90	0.950-1.90		
							mm	24-48	24-48		
100*	125*	3P4W	6	S or W	2/0	S or W	inch	0.950-1.90	0.950-1.90		
							mm	24-48	24-48		
							inch	0.950-1.90	0.950-1.90		
100*	125*	4P5W	6	S or W	2/0	S or W	mm	24-48	24-48		
							inch	0.950-1.90	0.950-1.90		
							mm	24-48	24-48		

\* Pilot conductor 16 to 18 AWG

### Performance - Electrical

Dielectric Voltage Withstand	3000 Volts for 1 minute (fixed devices) 2200 Volts for 1 minute (portable devices)
Maximum Working Voltage	600VAC/250VDC (minimum creepage and clearances per UL 840)
Current Interrupting/Load Breaking	Tested to 150% of full rated current for circuit interrupting
Temperature Rise	Maximum 30°C rise at full rated current after 50 cycles overload at 150% rated load at 0.75-pf
Horsepower Ratings	Per NEC 430-151b reference for non-interrupting ratings
Endurance with Load Per IEC 309-1 Clause 21	20 Amp: 5000 cycles; Load only 30 Amp: 1000 cycles - Alternating load 60 Amp: 1000 cycles - Alternating load 100 Amp: 250 cycles - Alternating load

### Performance - Mechanical

Cold (-25°C) Impact Resistance	Per UL 1682 Section 34 and IEC 309-1 Clause 24
Cable O.D. Accommodation	Round portable service cord from 0.57" O.D. through 1.79" O.D.
Terminal Identification	In accordance with UL 1682 standards and IEC 309-1: as L1-L2-L3-N-G
Cable Pull-Out Force	Per UL 1682 Section 33 and IEC 309-1 Clause 23
Product Identification	Molded-in product trademark(s) and UL approved product label

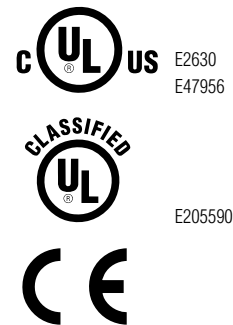
### Performance - Environmental

Moisture Resistance	Per IEC 309-1; Watertight flap/screw cover on IP67 devices or splashproof flap cover on IP44 devices
Flammability	All components V1 or better per UL94, V0 product ratings available
Operating Temperatures	Maximum Continuous 90°C/194°F, Minimum -25°C/-13°F
Chemical Resistance	Resists standard industrial hydrocarbons, acids, bases and solvents
Corrosion Resistance	All metallic components stainless steel or nickel plated brass Sleeve pressure rings of zinc plated steel

### Materials

Housing	Valox®
Contact Carriers	Valox®
Cable Gland Nut	Valox®
Cable Bushing	Solid neoprene, onion ring type
O-Ring, Seals & Gaskets	Solid neoprene
Pins & Sleeves	Nickel plated brass
Sleeve Pressure Ring	Zinc plated steel
Terminal Screws	Nickel plated steel
Flap/Screw Cover Springs	Stainless steel
EZ Cliik™ Spring	Stainless steel
Mounting Flanges	Valox®
Cast Enclosures/Adapters	2 Layer electrostatic epoxy coated, copper-free aluminum enclosures (Euro style nonmetallic Valox® also available)

(Valox® is a registered trademark of GE)



# Russellstoll®

## International Amperages—UniGard™ Series Specifications

### Performance - Electrical

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Dielectric Voltage Withstand	3000 Volts for 1 minute per IEC 309-1, Clause 19
Maximum Working Voltage	690VAC/250VDC (minimum creepage and clearances per IEC)
Current Interrupting/Load Breaking	Tested to 125% rated current at 110% rated voltage per IEC 309-1 clause 20.
Temperature Rise	Maximum 50°C rise at rated current per IEC 309-1 Clause 22, Table 8
Endurance with Load Per IEC 309-1 Clause 21	16 Amp: 5000 cycles; Load only 32 Amp: 1000 cycles - Alternating load 63 Amp: 1000 cycles - Alternating load 100 Amp: 250 cycles - Alternating load

### Performance - Mechanical

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Cold (-25°C) Impact Resistance	Per IEC 309-1 Clause 24; (-25°C) with 75cm drop
Cable O.D. Accommodation	Round portable service cords from 14.5mm O.D. through 50mm O.D.
Terminal Identification	In accordance with IEC 309-1 standards; as L1-L2-L3-N-G
Cable Pull-Out Force	In accordance with IEC 309-1, Clause 23
Product Identification	Molded-in product Trademark(s) and CE Mark on packaging

### Performance - Environmental

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Moisture Resistance	Per IEC 309-1; Watertight flap/screw cover on IP67 devices or flap cover on IP44 devices
Flammability	Per IEC 695-2-1; Housing glow wire tested to 650°C; Contact carrier insert tested to 850°C
Operating Temperatures	Maximum Continuous 90°C/194°F, Minimum -25°C/-13°F with impact
Chemical Resistance	Resists standard industrial hydrocarbons, acids, bases and solvents
Corrosion Resistance	All metallic components stainless steel or nickel plated brass Sleeve pressure rings of zinc plated steel
UV Resistance	External Thermoplastic components are UV stabilized IP67 Series 2 is suitable for outdoor use

### Materials

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Housing	Valox®
Contact Carriers	Valox®
Cable Gland Nut	Valox®
Cable Bushing	Solid neoprene, onion ring type
O-Ring, Seals & Gaskets	Solid neoprene
Pins & Sleeves	Nickel plated brass
Sleeve Pressure Ring	Zinc plated steel
Terminal Screws	Nickel plated steel
Flap/Screw Cover Springs	Stainless steel
EZ Cliik™ Spring	Stainless steel
Mounting Flanges	Valox®
Cast Enclosures/Adapters	2 Layer Electrostatic epoxy coated, copper-free aluminum enclosures (Euro style nonmetallic Valox® available)



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