

Short Title

Address

Section

Submittals

09/14/2015

# Short Title

## Table of Contents

### Section No

1. Telecommunications Contractor
2. Key Personnel
3. Minimum Manufacturer Qualifications
4. Test Plan
5. Products
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Full Title

Address

Submittal No. 1  
Spec Section: Section  
Definable Feature of Work: Telecommunications

Item No.	Submittal Type	Spec Ref	Description	Model/type/color	Part Number	Manufacturer	Comments
1	Document	36	Telecommunications Contractor				
2	Document	53.6	Key Personnel				
3	Document		Minimum Manufacturer Qualifications				
4	Document	65.45	Test Plan				
5	Product	6.5	Cable Guide	RediRail	SB13AL24FB	Cooper B-Line	
6	Product	4.69	Patch Panel	48 Port Patch Panel	OR-PHDHJU48	Ortronics	
7	Product		PDU	PDU and a really long empty sentence talking about nothing just trying to take up some space in order to see if excel expands	PDUMH20	TrippLite	
8	Document		Shop Drawings				

Short Title

Telecommunications  
Contractor

Section 1



94-480 Akoki Street #2  
Waipahu, HI 96797  
PH: (808) 585-7999  
FAX: (808) 536-7444  
Lic # C-29835

## **Telecommunications Contractor**

Date: 09/14/2015

Project: Short Title

BCS service offers installation of commercial and industrial grade cabling solutions. BCS installations include inside plant cabling of Category 5e/6, fiber optics, coaxial, security and control cabling. BCS also provides outside plant cabling for high pair copper, fiber optics, and coaxial. All projects are supported by a Registered Certified Distribution Designer (BICSI, RCDD) and Certified BICSI Installers to ensure strict adherence to industry standards and a successful design and construction team.

### **PROJECTS:**

- NOAA Pacific Regional Center, Main Facility
  - Provision and installation of approximately 2,000,000 feet of Category 6A cable serving 2,000 outlets. Provision and installation of 4, 12, 24, 48, 96 and 144, strand fiber optic horizontal and backbone cable. Cable systems were tested and certified per TIA/EIA standards. Completed October 2013.
- Fort Shafter, MP T-118 Renovation
  - Provision and installation of approximately 12,000 feet of Category 6 cable serving 40 outlets. Phased relocation of Military Police operations center to temporary trailer facility. Relocation of fiber optic data and telephony services. Test and re-test all outlets (copper and fiber) per I3A standards. Completed February 2012.
- Honolulu Police Department – Fiber Optic Upgrade
  - Provision and installation of approximately 10,000 feet of 12-strand and 24-strand single mode fiber optic cable to establish dual fiber “rings”. Fiber Optic cable was distributed and connected to 24 intermediate distribution frames. Completed April 2011.
- Fort Weaver Road Widening
  - Provision and installation of approximately 12,000 feet of 400 pair outside plant rated copper cable and 12,000 feet of 96-strand single mode fiber optic cable for the Army Signal Corps. Cable systems were tested and certified per I3A standards. Completed February 2011.

# Information Technology Systems

The designation of

**BICSI ITS TECHNICIAN**

is awarded to

*Ryan Yokoi*

by BICSI in recognition of having successfully completed  
BICSI's registration and examination requirements.



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BICSI President



---

BICSI Executive Director  
& Chief Executive Officer

11/17/2012

Issued

11/17/2015

Expires





The professional designation of  
**RCDD®**

Registered Communications Distribution Designer  
is awarded to

*David R Yokoi*

by BICSI® in recognition of having successfully completed  
BICSI's registration and examination requirements.

1/1/2013

Issued

12/31/2015

Expires



President, BICSI



BICSI Executive Director & Chief Executive Officer



Short Title

Key Personnel

Section 2





P.O. Box 1327  
Richmond, IN 47375-1327

Phone: 765.962.7561  
Fax: 765.983.7150

[www.Belden.com](http://www.Belden.com)

Date 8/15/2011

Belden has been manufacturing cable and connectivity products for over 100 years. We comply with all aspects of TIA/EIA for all structured cabling, fiber optics and apparatus, including TIA568-C.1, TIA/EIA-568-B.2 and TIA-568-C.3.

Feel free to contact me for any additional information regarding the sale and use of Belden products.

Sincerely,

John Wojnicki  
Business Development Manager – Belden Vertical Markets

[John.wojnicki@belden.com](mailto:John.wojnicki@belden.com)



446 Old County Rd  
Suite # 100-126  
Pacifica, CA 94044  
T: 408-533-3358  
E :cswain@commscope.com  
www.commscope.com

To Whom it may concern,

CommScope is a manufacturer located in Hickory North Carolina and been in business since 1976. We comply with all aspects of TIA/EIA for all structured cabling, fiber optics and apparatus, including TIA-568-C.1, TIA/EIA-568-B.2 and TIA-568-C.3.

If you have any further questions, please contact me at the number above.

Best Regards,

Christian Swain

Territory Manager- Silicon Valley & Hawaii

509 W. Monroe Street  
Highland, IL 62249  
Phone: 618/654-2184  
Fax: 618/654-9114



August 15, 2011

To whom it may concern,

Cooper B-Line, a Division of Cooper Industries, is located in Highland, Il. Cooper B-Line has been in business since 1956. Cooper Industries was founded in 1833 and is headquartered in Houston, TX

Cooper B-Line is a global provider of innovative, labor-saving support systems and enclosure solutions for engineered facility subsystem applications and part of Cooper Industries plc (NYSE: CBE), operating facilities across the globe. Our products are used in a variety of settings for the commercial, industrial, utility and OEM markets. Cooper B-Line products are EIA-310-D, NEMA, NEBS GR-63, UL, IEC and ANSI/TIA/EIA-607 complaint were applicable.

Regards,

Robert Trimble, RCDD

Cooper B-Line - Western Regional Manager

8/4/2011

To Whom It May Concern:

Corning Cable Systems, part of the Corning Incorporated telecommunications segment, is a leading manufacturer of fiber optic communications system solutions for voice, data and video network applications worldwide. With headquarters in Hickory, NC; Corning Cable Systems has 32 global locations and employees over 10,000 people. Corning Incorporated has been mass producing fiber optics since 1970 and Corning Cable Systems has been manufacturing fiber optic communications systems since 1977.

Corning Cable Systems complies with all TIA/EIA standards for fiber optic structured cabling including TIA-568-C, TIA-568-C.1 and TIA-568-C.3.

For any other concerns, please contact me immediately.

Sincerely,

Michael Weare

Federal Accounts Manager – West/Asia Pacific  
562-522-0885

[Michael.weare@corning.com](mailto:Michael.weare@corning.com)



May 20, 2013

Legrand Ortronics  
155 Eugene O'Neill Dr  
New London, CT 06320

RE: Manufacturer's Qualifications

To Whom it May Concern:

Legrand Ortronics has been in the business of manufacturing, assembly, and testing of telecommunications hardware, components, and cabling equipment for over 30 years. All products meet or exceed ANSI/TIA-568-C.1, ANSI/TIA-568-C.2, ANSI/TIA-568-C.3.

Sincerely,

A handwritten signature in black ink, appearing to read 'Adam Murano', written over a horizontal line.

Adam Murano  
VP Engineering  
Legrand Ortronics



## CERTIFICATION of COMPLIANCE

---



125 Eugene O'Neill Drive,  
New London, CT 06320

July 17, 2012

To Whom it May Concern:

Legrand/Ortronics, a cabling, equipment and hardware manufacturer, exceeds the minimum qualification of 3 years experience in the manufacturing, assembly and factory testing of components which comply with ANSI/TIA-568-C.1, ANSI/TIA-568-C.2 and ANSI/TIA-568-C.3.

Sincerely,

Signature: \_\_\_\_\_

Adam Murano  
V.P. Engineering  
Legrand/Ortronics



October 1, 2013

Superior Essex Communications LP  
6120 Powers Ferry Rd., Suite 150  
Atlanta, GA 30339

REF: Manufacturer Qualification Statement of Experience

To Whom It May Concern:

Superior Essex Communications LP has more than 55 years of experience as a telecommunications cable manufacturer. Superior Essex has grown to become a trusted name in wire and cable in North America as a cable supplier to most of the largest telecommunications service providers in the U.S. We have a broad portfolio of copper and fiber cable products used in outside plant and premises applications and we provide our products world-wide to support industry and government applications.

Superior Essex Communications LP has a minimum of 5 years of experience in the manufacturing, assembly and factory testing of cable products which comply with EIA/TIA-568-C.2, EIA/TIA-568-C.3, and previous revisions of these standards; also, ANSI/ICEA S-87-640, ANSI/ICEA S-98-688, ANSI/ICEA S-99-689 and ANSI/ICEA S-107-704.

For questions please contact us at 877-263-2818 or 800-551-8948. Specific product standards compliance may be viewed through our on-line catalog located at [www.superioressex.com](http://www.superioressex.com) and by selecting Communications Cable.

Sincerely,

A handwritten signature in black ink, appearing to read "L Allen".

Lindsay Allen  
Vice President – Marketing  
Superior Essex Communications LP



Short Title

Minimum Manufacturer  
Qualifications

Section 3



## **Test Plan**

Date: 09/14/2015

Project: Short Title

Testing the cabling infrastructure is performed by using an organized, systematic method to verify that the installation has been completed in accordance with all terms and conditions of the contract and industry standards per TIA-568-C.1, TIA-568-C.2 and TIA-568-C.3. See Spec Section 16050, Spec 3.02. This method is made up of three distinct phases which are:

- Phase 1 - Visual verification and inspection of cables
- Phase 2 - Performance cable testing with the various test equipment as required for each type of cable
- Phase 3 - Documentation

### **Phase 1**

The visual verification shall include an inspection of all pathways and spaces (where possible), telecommunications Closet and cables installed. Items to be inspected shall include:

- Infrastructure
- Cable placement
- Cable markings for UL or third party certification markings
- Cable termination to confirm to color code for T568A pin assignments per TIA-568-C.1, TIA-568-C.2, TIA-568-C.3
- Visual confirmation for Category 5e and CATV cables, marking of outlets, cover plates, outlet/connector and patch panels
- Grounding and bonding
- Compliance with codes, standards, and regulations

### **Phase 2**

Once the visual verification has been completed and all discrepancies corrected, performance testing shall be conducted with the necessary equipment required for each cabling type. Tests will be performed per Spec 16050, Section 3.02.A and Section 3.02.B and Section 3.02.C. The following is a list of field test parameters and equipment that will be used:

- Length
- Insertion Loss
- NEXT, PSNEXT, ELFNEXT, PSELFEXT
- Return Loss
- Propagation Delay
- Delay Skew

Equipment for testing:

- Fluke DTX-1800, Cable Analyzer

**Phase 3**

Documentation shall be provided showing tests performed are in compliance with TIA-568-C.1, C.2 and C.3

Short Title

Test Plan

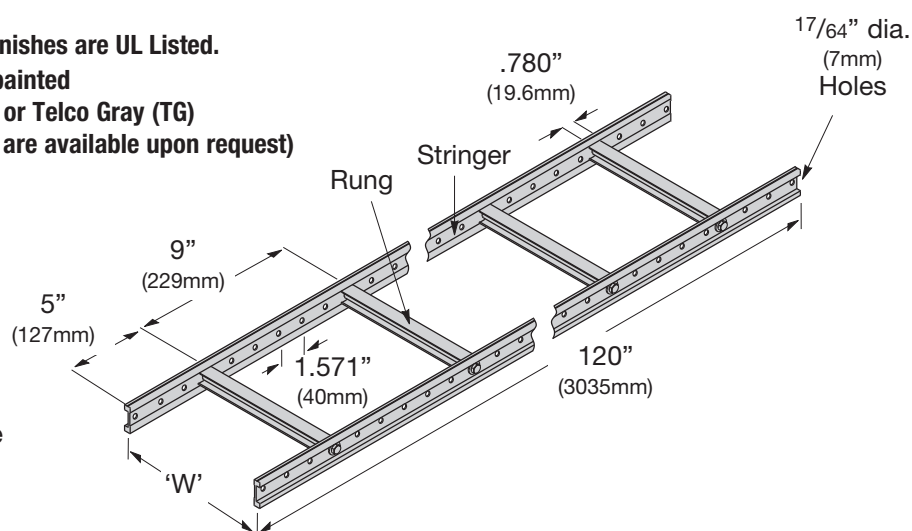
Section 4

## Redi-Rail™ Runway - 1 1/2"

- Lightweight design for ease of installation.
- Aluminum (unpainted) is UL Classified.
- Uses standard cable runway accessories.
- 6", 9", 12", 15", 18", 20", 24", 30" and 36" widths.
- 9" rung spacing.
- Rungs can be removed or repositioned to accommodate the specific project or buildings requirements.
- Material: Aluminum.
- Both aluminum and painted finishes are UL Listed.
- Finish \_\_\_\_: Aluminum, or painted  
Flat Black (FB) or Telco Gray (TG)  
(Other finishes are available upon request)



Note: For runway pans see pages 156 & 157



Series Number	Stringer Dimensions	Span		Load		Deflection Multiplier
		Ft.	(m)	Lbs./Ft.	(N/m)	
SB13AL		4	(1.22)	81	(1182)	0.0033
		5	(1.52)	51	(744)	0.0080
		6	(1.83)	35	(510)	0.0166
		7	(2.13)	26	(379)	0.0308
		8	(2.44)	20	(292)	0.0526

### UL Cross Sectional Area

0.60 in<sup>2</sup> (3.87 cm<sup>2</sup>)

### Design Factors for (1) Rail

Area = .318 in<sup>2</sup> (2.06 cm<sup>2</sup>)

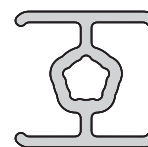
Sx = .116 in<sup>3</sup> (1.90 cm<sup>3</sup>)

Ix = .087 in<sup>4</sup> (3.65 cm<sup>4</sup>)

## SB13AL C-Channel - 1 1/2" (38mm) Stringers

Part Number	'W' Width		Weight	
	In.	(mm)	Lbs.	(kg)
SB13AL06__	6"	(152)	9.1	(4.1)
SB13AL09__	9"	(228)	9.8	(4.4)
SB13AL12__	12"	(305)	10.5	(4.7)
SB13AL15__	15"	(381)	11.2	(5.1)
SB13AL18__	18"	(457)	11.8	(5.4)
SB13AL20__	20"	(508)	12.3	(5.6)
SB13AL24__	24"	(609)	13.2	(6.0)
SB13AL30__	30"	(762)	14.6	(6.6)
SB13AL36__	36"	(914)	16.0	(7.2)

### Rung Profile



3/4" high x 25/32" wide

# Cable Runways & Accessories

## End Caps SB21\_

(see page 155 for chart & information)



## Hanger Rod Bracket 9ZNR\_

(see page 121 for chart & information)



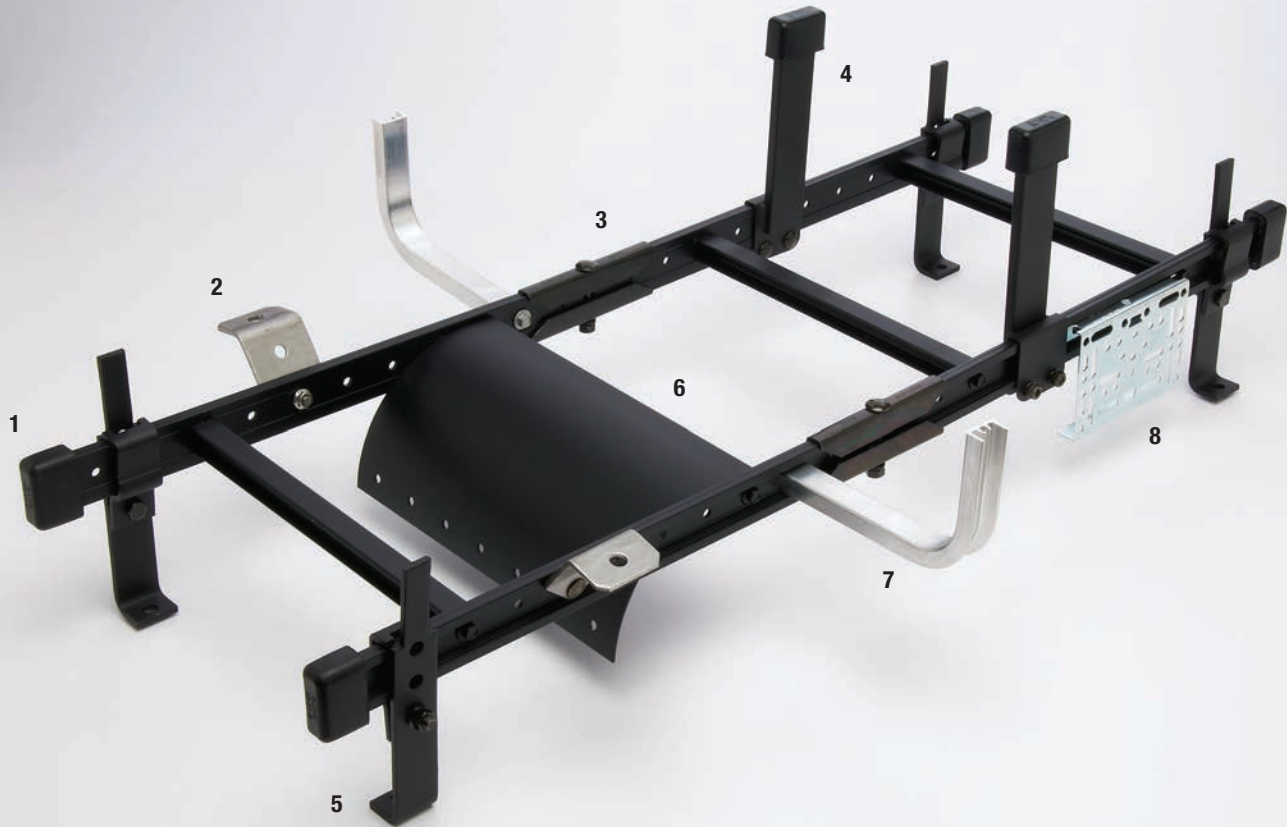
## Butt-Splice Clamp SB2107\_BZ

(see page 122 for chart & information)



## Cable Retaining Post SB126\_FB

(see page 160 for chart & information)



CABLE RUNWAYS  
& ACCESSORIES



## Stand-Off Bracket SB227\_FB

(see page 138 for chart & information)



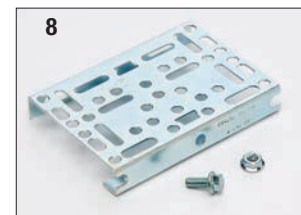
## Drop Out SB13ALDO\_FB

(see page 154 for chart & information)



## Outboard Rung 9A-SR0\_

(see page 121 for chart & information)



## Mounting Bracket 9ZN-MB1-4

(see page 121 for chart & information)

## Hanger Rod Bracket

- Wall Studded bracket bolts to Redi-Rail™ holes.
- For 3/8" ATR.
- Loading is 1,000 lbs. (4.45kN), per pair, safety factor 3.
- Finish: Zinc Plated

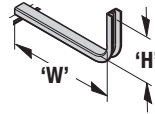
Support ATR Size	Part No.
3/8"	9ZN-R238
1/2"	9ZN-R250



## Out Board Rungs

- Formed aluminum rung with attachment screw.
- Field installs as required.
- Torque rung fasteners to 6 ft/lbs.
- Uniform load capacity on rung: 10 lbs.

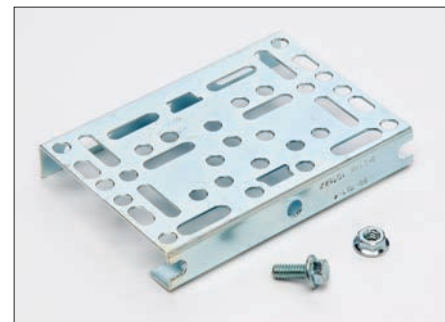
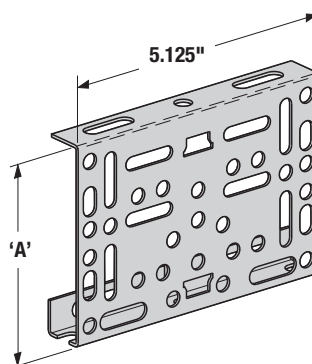
Part No.	Fill Depth 'H'		Fill Width 'W'	
	in	(mm)	in	(mm)
9A-SR0406	4	(101)	6	(152)
9A-SR0409	4	(101)	9	(226)
9A-SR0506	5	(127)	6	(152)
9A-SR0509	5	(127)	9	(226)



## Mounting Bracket

- Furnished with 1/4" mounting hardware.
- EIA/TIA panel mounting holes - both sides.
- Mounting holes with NEMA outlet/junction boxes.
- Zinc plated steel.

Part No.	'A'	
	in	(mm)
9ZN-MB1-4	3 5/8"	(92)





## HDJ series 48 port unloaded flat panel

OR-PHDHJU48



48 port unloaded flat panel for rear loading HDJ series of jacks and accessories. Includes rear management bar and straps. Occupies 1 rack unit of space, 1.75" x 19".

### features & benefits

- **High density design:** Maximizes use of rack/cabinet real estate.
- **HDJ jacks and adapters mount quick, easily and securely:** Speed of install and reliability.
- **Rear management bar and straps included:** Supports good cabling practices.

### specifications

#### General Info

Color: Black  
Product Series: Clarity  
Type: Patch Panels

#### Listing Agencies/Third Party Information

CUL Listing No: E131600  
cUL Standard: Yes  
UL Listing No: E131600  
UL Standard: Yes

#### Construction Information

Component2: Flat Patch Panel  
Component3: Rear cable management bar  
Finish Plating1: Powder coat black  
Material1: 14 gauge cold rolled steel  
Material2: .125" x .320" round edge flat steel

**Dimensions**

Depth Metric: 163.83 mm

Depth U S: 6.45"

Height Metric: 43.92 mm

Height U S: 1.73"

Width Metric: 482.6 mm

Width U S: 19.00"

Rack Units: 1

Height: 1.75"

**Technical Information**

Category Rating: Cat 5e, Cat 6, Cat 6a

Performance Rating: Cat6



**Tripp Lite**  
1111 W. 35th Street  
Chicago, IL 60609 USA  
Telephone: 773.869.1234  
www.tripplite.com

## 1.92kW Single-Phase Metered PDU, 120V (12 5-15/20R), L5-20P / 5-20P, 110-127V Input, 15ft Cord, 1U Rack-Mount

MODEL NUMBER: **PDUMH20**



### Highlights

- Metered single phase 20A 120V PDU
- 1U horizontal rackmount; digital current meter
- NEMA 5-20P / L5-20P input; 15 ft. / 4.5m line cord
- 12 NEMA 5-15/20R outlets
- Reversible housing; 4.5 in. / 11.4cm depth

### Package Includes

- PDUMH20 Metered rackmount PDU
- L5-20R to 5-20P plug adapter
- Owner's manual with warranty information

### Description

Tripp Lite Metered PDU / Power Distribution Units offer real-time local reporting of load level in amps via built-in digital meter. Enables visual current monitoring of PDU output current to prevent circuit overloads as additional equipment is added. Offers reliable rackmount multi-outlet power distribution from any protected UPS, generator or mains input power source. High quality design includes rugged all-metal housing and secure rackmount installation with included mounting accessories.

### Features

- 20A single phase 120V Metered Power Distribution Unit / PDU(Agency de-rated to 16A continuous)
- Built-in 2 digit visual meter continuously reports PDU load level in amps
- Attached NEMA L5-20P 20A 120V input plug with 15 ft. / 4.5m line cord
- Includes 5-20P 20A 120V plug adapter
- 1U horizontal rackmount format installs in one rack space
- 12 NEMA 5-15/20R outlets
- Mounting flanges support installation in 2 and 4 post racks, with additional support for wall-mount and under-counter installation formats
- Mounting ears are reversible for front or rear facing rackmount installation
- Optional [PDUSIDEBRKT](#) enables 0U vertical rackmount in compatible racks
- Back panel grounding lug

## Specifications

OVERVIEW	
PDU Type	Metered
OUTPUT	



**Tripp Lite**  
1111 W. 35th Street  
Chicago, IL 60609 USA  
Telephone: 773.869.1234  
www.tripplite.com

Output Capacity Details	1.92kW (120V), 2.03kW (127V), 1.6kW (100V); 20A maximum (Agency de-rated to 16A continuous)
Frequency Compatibility	50 / 60 Hz
Output Receptacles	(12) 5-15/20R
Output Nominal Voltage	100-127V nominal, single phase
Overload Protection	20A breaker
Outlet Type	NEMA 5-15R, NEMA 5-20R
Individual Outlet Switching	No
<b>INPUT</b>	
PDU Input Voltage	100; 120; 127
Recommended Electrical Service	20A 120V
Maximum Input Amps	20
Maximum Input Amps Details	Agency de-rated to 16A continuous
PDU Plug Type	NEMA 5-20P; NEMA L5-20P
Input Cord Length (ft.)	15
Input Cord Length (m)	4.57
Input Phase	Single-Phase
<b>USER INTERFACE, ALERTS &amp; CONTROLS</b>	
Front Panel LCD Display	Digital display reports total PDU output current in amps
Switches	n/a
<b>PHYSICAL</b>	
Shipping Dimensions (hwd / in.)	2.25 x 20.5 x 10
Shipping Dimensions (hwd / cm)	5.7 x 52.1 x 25.4
Shipping Weight (lbs.)	3.6
Shipping Weight (kg)	1.6
Unit Dimensions (hwd / in.)	1.75 x 17.5 x 4.5
Unit Dimensions (hwd / cm)	4.45 x 44.5 x 11.4
Unit Weight (lbs.)	3
Unit Weight (kg)	1.4
Material of Construction	Metal
Form Factors Supported	1U rackmount, 0U vertical rackmount, wall-mount, and under-counter installation
PDU Form Factor	Horizontal (1U, 2U, etc)
Outlets Measurement (Center to Center)	30.20mm



**Tripp Lite**  
1111 W. 35th Street  
Chicago, IL 60609 USA  
Telephone: 773.869.1234  
[www.tripplite.com](http://www.tripplite.com)

ENVIRONMENTAL	
Storage Temperature Range	5 to 122F (-15 to 50C)
Relative Humidity	5-95% non-condensing
Operating Elevation (ft.)	0-10,000
Operating Elevation (m)	0-3000
SPECIAL FEATURES	
TVSS Grounding	Back panel grounding lug
CERTIFICATIONS	
Certifications	Tested to UL60950-1 (USA) and CAN/CSA C22.2 No. 60950-1-03 (Canada), RoHS Compliant
WARRANTY	
Product Warranty Period (Worldwide)	2-year limited warranty

© 2015 Tripp Lite. All rights reserved. All product and company names are trademarks or registered trademarks of their respective holders. Use of them does not imply any affiliation with or endorsement by them. Tripp Lite has a policy of continuous improvement. Specifications are subject to change without notice. Tripp Lite uses primary and third-party agencies to test its products for compliance with standards. See a list of Tripp Lite's testing agencies:

<http://www.tripplite.com/products/product-certification-agencies>

# Short Title

## Products

## Section 5

Short Title

Shop Drawings

Section 6