

Instructions to the EOR

Hillsborough County developed a Proprietary Product Certification (PPC) Application template to ensure consistency in documenting and justifying proprietary products for Traffic Operations. The instructions below describe how to fill out the Application inclusive of the required Florida Department of Transportation (FDOT) PPC Form; the PPC letter requesting the use of the proprietary products and their justifications, the Hillsborough County approved proprietary products letter for traffic control devices on Hillsborough County letterhead, and the manufacturer's data sheets for each product.

Step 1 (Attachment A):

Confirm with the Hillsborough County Project Manager that the Hillsborough County letterhead is current for the products list signed by the County Engineer (e.g., lists the correct County Commissioners and Officers).

Step 2 (Pages 2-3):

Complete and sign the FDOT Proprietary Product Certification form.

Step 3 (Page 4):

Complete the request letter:

Fill in all information enclosed in brackets ("<>").

Provide Company logos or letterhead which may be inserted in the header if desired.

Insert Company information in the footer if desired.

Address the letter to FDOT for state roads or to Hillsborough County for county roads.

Step 4 (Attachment A):

~~Strike through~~ all products not applicable to the project.

This page should not be altered in any form except striking through products that are not applicable.

Step 5 (Attachment B):

Remove all data sheets not applicable to the project.

Step 6:

Delete this instruction sheet.

Step 7:

Submit the completed Proprietary Product Certification request to the Hillsborough County Project Manager.

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

Proprietary Product Certification

To: _____
District or Turnpike Design Engineer

Date: <Month Day, Year> _____

Financial Project ID: _____

Federal Aid Number: _____

Project Name: _____

State Road Number: _____ Co. / Sec. / Sub.: _____

Begin Project MP: _____ End Project MP: _____

Attach justification and supporting documents.

Mark the appropriate certification (below):

"I, _____, _____, of the _____,
Print Name of Initiator *Position Title* *Name of Agency*
do hereby certify that the following condition(s) apply. Mark appropriately:

- ☐ that this patented or proprietary item is most compatible with existing highway facilities;
- ☐ that this patented or proprietary item provides greater flexibility with existing and/or future highway facilities;
- ☐ that this patented or proprietary item fosters innovation in highway transportation technology;
- ☐ that this patented or proprietary item satisfies Build America/Buy America (BABA) requirements;
- ☐ that this patented or proprietary item is included as FDOT Approved Products Listing (APL) Number _____;
- ☐ that no equally suitable alternative exists for this patented or proprietary item."

Signature

Date

For Department Use Only

"I, _____, _____
Print Name, District/Turnpike Design Engineer Signature

of the Florida Department of Transportation, do hereby approve this certification request made in accordance with the policies and procedures of the Department. Mark appropriately:

- ☐ that this patented or proprietary item is most compatible with existing highway facilities;
- ☐ that this patented or proprietary item provides greater flexibility with existing and/or future highway facilities;
- ☐ that this patented or proprietary item fosters innovation in highway transportation technology;
- ☐ that this patented or proprietary item satisfies Build America / Buy America (BABA) requirements;
- ☐ that this patented or proprietary item is included as FDOT Approved Products Listing (APL) Number _____;
- ☐ that no equally suitable alternative exists for this patented or proprietary item."

Identify any conditions and limitations:

Signature

Date

<Month Day, Year>

<Addressee Name>

<Addressee Title>

<Addressee Street Address>

<Addressee City, State Zipcode>

RE: Justification for Use of Proprietary Products for Traffic Signal and ITS Equipment by Hillsborough
County

Project Number: <Project Number>

Project: <Project Title>

Dear <Addressee Name>,

Hillsborough County requests the approval of the attached Proprietary Product Certification Form for the product(s) listed in Attachment A for use on the subject project to maintain product compatibility and uniformity with the current system installed throughout Hillsborough County. Cut sheets for the requested item(s) are included as Attachment B.

If you have any questions, please feel free to contact me.

Sincerely,

<EOR>

<Title>

<Company>

<Company Street Address>

<Company City, State Zipcode>

P: <Phone Number>

E: <email>

Attachment A



Hillsborough County Florida

PO Box 1110, Tampa, FL 33601-1110
(813) 635-5400 | Fax: (813) 272-5811

BOARD OF COUNTY COMMISSIONERS

Chris Boles
Donna Cameron Cepeda
Harry Cohen
Ken Hagan
Christine Miller
Gwendolyn "Gwen" Myers
Joshua Wostal

COUNTY ADMINISTRATOR

Bonnie M. Wise

COUNTY ATTORNEY

Christine M. Beck

COUNTY INTERNAL AUDITOR

Melinda Jenzarli

May 7, 2025

ASSISTANT COUNTY ADMINISTRATOR

Kimberly A. Byer

Hillsborough County Traffic Management and Traffic Operations requests the use of the specific products identified below to maintain product compatibility and uniformity with the current system installed throughout Hillsborough County. These products are the standard items used in our traffic control system and are currently stocked in our warehouse. Our staff and maintenance technicians are fully knowledgeable of our systems and their maintenance needs and procedures.

Traffic Signal Cabinet:

- FDOT APL 620-002-009: ASCO Surge Protective Device 300 Series Model 340 (50Kva) and Additional 50Kva if Additional Disconnect.
- FDOT APL 671-016-015: Intelight/Q-Free Controller NEMA TS2-1 FDOT, must include features and functions compatible with Hillsborough County system.
- FDOT APL 676-023-004: 70006-TS2/FLPP32-E2-WCD8012400 Cubic/Trafficware Controller Cabinet ASSY, TS-2 P44x26x77, RK, PH, AUX, Side Cabinet APC.
- FDOT APL 678-016-010: MMU2-16LEip Trafficware Smart Monitor.
- FDOT APL 685-002-018: 8005-0123-APC-1300-BYP12: Uninterruptible Power Supply Online Double Conversion.
- Garmin GPS 16x.
- Corning Single-Panel Housing SPH-01P Single-Panel Housing (SPH) Wall-mountable, holds one CCH connector panel, black.
- Tripp-lite 12-Outlet Power Strip.

Traffic Signal - Detection System:

- FDOT APL 660-015-047: Miovision Core DCM + SmartView 360 Camera.
- FDOT APL 660-015-048: NoTraffic – Camera and Microwave.
- FDOT APL 660-018-004: Wavetronix Matrix with Expanse Arc, Cable and Junction Boxes.
- FDOT APL 665-003-011: Polara Piezo Raised Arrow Bulldog Pedestrian Buttons with Audio and No Visual Light.
- FDOT APL 665-004-012: Polara iNS2 APS.

Traffic Signal - Power System:

- FDOT APL 685-002-018: 8005-0123-APC-1300-BYP12: Uninterruptible Power Supply Online Double Conversion.

- APC XB102XX1XX SmartUPS Industrial Battery – 100 Ah 12VDC Non Spillable Gel Battery.
- Load Center QO MLO 240V 100A 1PH 6SP (Pay Item 639-1-122).
- Milbank U3505-XL-TG-HSP or TECO- approved w/Bypass (Pay Item 639-1-122).

Traffic Signal – CCTV:

- FDOT APL 682-001-002: CCTV WTI Positioner Camera (Side Winder); VS265-RE with WTI-POE-I-ALT, include cable and WTI pigtail.

Rectangular Rapid Flashing Beacon (RRFB):

- FDOT APL 654-001-012 Rectangular Rapid Flashing Beacon (RRFB) R920-F 4.5” Diameter Round Pole Mount, Bi-directional.

Network:

- FDOT APL 633-002-001: Single Model Altos Loose Tube, Gel-Free, All-Dielectric Cable with Fast Access.
 - 12-count drop cable.
 - 144-count trunk cable.
- FDOT APL 684-007-001: RUCKUS ICX 7150-24 (ICX7150—24-4X10GR) Switch, two (2) 1000BSX SFP Module MM LC Om High Temperature (E1MG-LX-OM-T), two (2) 10G-SFP+ Optic (LC), for up to 10Km over SMF, Layer 3 Features (OSPF, VRRP, PIM, PBR), Rack Mount Kit, and Console Cable RJ45-RJ45 with RJ-45-DB9 Adapter (for RJ-45 console port on ICX 7150) (CC-RJ45-DB9).
- Fiber Optic Managed Layer 3 Device:
 - Cisco IE-9320-26S2C-A.

Other items:

- FDOT APL 700-026-016: RTC with a Guardian Board (AP22 Time Clock, 4G M2M Device 10-Year Service and Guardian Board).
- FDOT APL 705-000-002: Pexco Flex-Guide 300 UR.

If you have any questions or concerns, please contact Julie Scanlon, RSP1 (email: scanlonj@hcfl.gov, phone: (813) 635-5402) or George Aubel (email: aubelg@hcfl.gov, phone: (813) 612-9109).

Sincerely,

Michael J. Williams

Digitally signed by
Michael J. Williams
Date: 2025.05.13
14:52:13 -04'00'

Michael Williams, PE

County Engineer

P: (813) 307-1851

E: williamsm@hillsboroughcounty.org

W: HCFLGov.net Hillsborough County

601 E Kennedy Boulevard

Attachment B

ASCO, Surge Protective Device (SPD) for 120V or 120/240V wired, G-Series (ALRdu)

by ASCO, a Telnor Company, LLC (Manufacturer Website)

Model: Catalog #340; Formerly G-Series

APL Certification

- 620-002-009 (Approval Date: 5/12/2015) (SPD Life Expectancy:)
BABA Eligible: Eligible

Product Types

- Surge Protective Device for 120V or 120_240V wired

Resource Links

- [FDOT Standard Specifications for Road and Bridge Construction](#)
- [FDOT Standard Plans for Road and Bridge Construction](#)
- [Traffic Engineering & Research Laboratory](#)
- [Build America, Buy America Form](#)

Random Sampling Frequency

Thermal noise display.

Limitations

Thermal noise display.

Documents

Thermal noise display.

Comments

Approved only applies to products rated 50kA or higher.

Product Fabrications

Buy America Category: Eligible/Eligible, Exempt with FHWA Manufacturer's Waiver

Manufacturer Detail

ASCO, a Telnor Company, LLC

500 Major Drive

Suite 200

Fairfax, KY 41042

727-212-4460

Intelight/ ee Cont olle NEMA TS2 1 (APL P oduct)

b ee Ame ica, Inc. (Manufactu e Website)

Model: XN-1

APL Certification

- 671 016 015 (App oval Date: 6/13/2022) (Se vice Life Expectanc :)
BABA Eligible: Eligible

Product Types

- Cont olle NEMA TS2 T pe 1

Resource Links

- [DOT Standa d Specifications fo Road and B idge Const uction](#)
- [DOT Standa d Plans fo Road and B idge Const uction](#)
- [T affic Enginee ing & Resea ch Lab Mat ices](#)
- [Build Ame ica, Bu Ame ica o m](#)

Random Sampling Frequency

The e a e no items to displa .

Limitations

The e a e no items to displa .

Documents

The e a e no items to displa .

Comments

Evaluated with MaxTime ve sion 2.6.1

Product Fabrications

Bu Ame ica Catego : Elect ical/Elect onic, Exempt with HWA Manufactu ed P oduct waive

Manufacturer Detail

ee Ame ica, Inc.
3801 E. 34th St eet
Tucson AZ 85713
802 473 8674

Trafficware r Wired Cabinet Assembly TS-2 Size 6 (AP Pr d ct)

by C bic ITS Inc. (Trafficware) (Man fact rer Website)

Model: 70006-TS2/FL

APL Certification

- 676-023-004 (A r val Date: 9/14/2000) (Service life Ex ectancy:)
BABA Eligible: Eligible
Previ s AP N mbers
 - 67614561703011

Product Types

- Wired Cabinet Assembly TS-2 Size 6

Resource Links

- [FDOT Standard S ecificati ns f r R ad and Bridge C nstr cti n](#)
- [FDOT Standard Plans f r R ad and Bridge C nstr cti n](#)
- [Devel mental Design Standards \(DDS\)](#)
- [Devel mental Design S ecificati ns \(DDS\)](#)
- [Traffic Engineering & Research ab Matrices](#)
- [B ild America B y America F rm](#)

Random Sampling Frequency

There are n items t dis lay.

Limitations

There are n items t dis lay.

Documents

There are n items t dis lay.

Comments

Reviewed and a r ved A t matic Transfer Switch and enerat r C nnecti n n 5-25-2006

N te: Reviewed and A r ved A t matic Transfer Switch and enerat r C nnecti n n May 25 2006.

Reviewed and a r ved dated rinted circ it m d les s lid state relays ED lighting and nyl n r llers n 8-15-2014

Product Fabrications

B y America Categ ry: Electrical/Electr nic Exem t with FHWA Man fact red Pr d ct waiver

Manufacturer Detail

C bic ITS Inc. (Trafficware)
522 illingham ane
S gar and TX 77478
2395378877

Trafficware r Malf ncti n Management Unit Ty e 16 MMU2-16LEIP-TW (PL Pr d ct)

by C bic ITS Inc. (Trafficware) (Man fact rer Website)

Model: MMU2-16LEIP-TW

APL Certification

- 678-016-010 (r val Date: 9/22/2022) (Service Life Ex ectancy:)
B B Eligible: Eligible

Product Types

- Malf ncti n Management Unit Ty e 16

Resource Links

- [FDOT Standard S ecificati ns f r R ad and Bridge C nstr cti n](#)
- [FDOT Standard Plans f r R ad and Bridge C nstr cti n](#)
- [Devel mental Design Standards \(DDS\)](#)
- [Devel mental Design S ecificati ns \(DDS\)](#)
- [Traffic Engineering & Research Lab Matrices](#)
- [B ild merica B y merica F rm](#)

Random Sampling Frequency

There are n items t dis lay.

Limitations

There are n items t dis lay.

Documents

There are n items t dis lay.

Comments

Eval ated with firmware versi n 01-7.4

Product Fabrications

B y merica Categ ry: Electrical/Electr nic Exem t with FHW Man fact red Pr d ct waiver

Manufacturer Detail

C bic ITS Inc. (Trafficware)
522 illingham Lane
S gar Land TX 77478
2395378877

Corning, Apollo Tub , G -Fr , A -Di c ric Cab wi h Fa Acc ® T chno ogy (AP Produc)

by FDOT Produc va ua ion, mai : Produc . va ua ion@do . a .f.u (Manufac ur r W b i)

APL Certification

- 633-002-001 (Approva Da : 8/15/2024) (S rvic if xp c ancy:)
BABA igib : igib

Product Types

- Fib r Op ic Cab

Resource Links

- [FDOT S andard Sp cifica ion for Road and Bridg Con ruc ion](#)
- [FDOT S andard Plan for Road and Bridg Con ruc ion](#)

Random Sampling Frequency

Th r ar noi m o di pay.

Limitations

Th r ar noi m o di pay.

Documents

Th r ar noi m o di pay.

Comments

Approv d for Proj c 448985-1 on y.

Product Fabrications

Buy Am rica Ca gory: Con ruc ion Ma ria - Op ica Fib r

Manufacturer Detail

FDOT Produc va ua ion, mai : Produc . va ua ion@do . a .f.u
605 Suwann S ., MS 75
Ta aha F 32399-0450
850-414-4353

1U Rack-Mount Power Strip, 120V, 15A, 5-15P, 12 Right-Angle 5-15R Outlets (6 Front-Facing, 6 Rear-Facing), 15 ft. (4.57 m) Cord

MODEL NUMBER: RS-1215-RA



Delivers 120V power to rack-mount equipment in your network closet or server room.

Features

12-Outlet Power Strip for Your Rack Equipment

This 120V power strip is a versatile all-metal cabinet with 12 NEMA 5-15R outlets — six in front and six in back. The outlets are widely spaced to accommodate bulky transformers without blocking any outlets. Unfiltered electrical pass-through makes the RS-1215-RA ideal for distributing alternate waveform UPS or generator power in your data center or network closet's rack enclosure. The outlets are oriented at a right angle with the ground pin at the bottom.

Features Safety Standards and Versatile Installation Options

A lighted power switch with snap-in switch guard confirms on/off status at a glance and helps prevent accidental shutdowns. A 15A circuit breaker protects connected equipment. Detachable mounting brackets allow installation on a wall, under a counter or in 1U of space in an EIA-standard 19-inch rack. The 15-foot (4.6-meter) power cord with NEMA 5-15P plug connects to a compatible AC outlet.

Specifications

OVERVIEW	
UPC Code	037332099402
INPUT	
Nominal Input Voltage(s) Supported	120V AC
Recommended Electrical Service	15A 120V
Voltage Compatibility (VAC)	120
Input Plug Type	NEMA 5-15P
Input Cord Length (ft.)	15

Highlights

12 NEMA 5-15R outlets are spaced apart to accommodate bulky transformers

Lighted on/off switch with plastic cover is protected against accidental turn-off

15 ft. cord with NEMA 5-15P plug is long enough to reach distant AC outlet

Versatile installation on wall, under counter or in 1U of rack space

Package Includes

RS-1215-RA 1U Rack-Mount Power Strip

Owner's manual



Powering Business Worldwide

TRIPP-LITE
by **EATON**

Right-Angle Plug	No
Input Cord Length (m)	4.57
Integrated Cord Clip	No
OUTPUT	
Frequency Compatibility	50 / 60 Hz
Output Receptacles	(12) 5-15R
Circuit Breaker (amps)	15
Transformer Accommodation	(9) Yes
Outlet Orientation	6 front-facing / 6 rear-facing, all with ground pin oriented to the bottom (when viewed in 1U rackmount configuration)
Right-Angle Outlets	Yes
USER INTERFACE, ALERTS & CONTROLS	
Switches	Lighted 2 position switch controls power to all outlets
Locking Switch Cover	Transparent locking switch cover prevents accidental shutoff
PHYSICAL	
Color	Black
Material of Construction	Metal
Power Cord Color	Black
Form Factors Supported	1U rackmount, wall-mount and undercounter installation supported
Housing Color	Black
Included Mounting Accessories	Rackmount flanges
Mounting Holes or Slots	No
Outlets Measurement (Center to Center)	Distance between Front outlets = 2.03 in.; Distance between Rear outlets = 2.79 in.
Receptacle Color	Black
Shipping Dimensions (hwd / in.)	9.30 x 2.25 x 20.30
Shipping Dimensions (hwd / cm)	23.62 x 5.72 x 51.56
Shipping Weight (lbs.)	5.32
Shipping Weight (kg)	2.41
Unit Dimensions (hwd / in.)	1.750 x 19.000 x 4.000
Unit Dimensions (hwd / cm)	4.445 x 44.45 x 11.4
Unit Weight (lbs.)	4.6
Unit Weight (kg)	2.09
ENVIRONMENTAL	
Operating Temperature Range	32° to 113°F (0° to 45°C)

FEATURES & SPECIFICATIONS	
Rotatable Outlets	No
Antimicrobial	No
Built-In Circuit Breaker	Yes
Grounding	Back panel nut and bolt grounding lug
STANDARDS & COMPLIANCE	
Product Certifications	cUL Listed; UL 1363; UL Listed
Product Compliance	RoHS
WARRANTY & SUPPORT	
Product Warranty Period (Worldwide)	Lifetime limited warranty

1000 Eaton Boulevard
Cleveland, OH 44122
United States
<https://tripplite.eaton.com>

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are the property of their respective owners.

Miovision Cor CM artVi w 360 Ca ra (APL Product)

by Miovision Technologies, Inc. (Manufacturer Website)

Model: NA-MIO-CTM-DCM-V1

APL Certification

- 660-015-047 (Approval Date: 5/23/2022) (Service Life Expectancy:)
BABA Eligible: Eligible

Product Types

- Vehicle Detector - Video

Resource Links

- FOTD Standard Specifications for Road and Bridge Construction
- FOTD Standard Plans for Road and Bridge Construction
- Developmental Sign Standards ()
- Developmental Sign Specifications ()
- Traffic Engineering & Research Lab Matrics
- Build America, Buy America For

Random Sampling Frequency

There are no items to display.

Limitations

There are no items to display.

Documents

There are no items to display.

Comments

Evaluated with Firmware Version 50.6.

Re-evaluated on 12/06/22 with artVi w Approach Camera Firmware 2.0

Product Fabrications

Buy America Category: Electrical/Electronic, Exempt with FHWA Manufactured Product waiver

Manufacturer Detail

Miovision Technologies, Inc.

137 Glasgow Street

Suite 110

Kitchener Ontario N2G 4X8

519-513-2407

Detection Site (PL Product)

by NoTraffic

Model: .0

APL Certification

- 660-015-048 Approval Date: 10/26/2023) Service Life Expectancy :)
B B Eligible: Eligible

Product Types

- Vehicle Detector - Video

Resource Links

- [FDOT Standard Specification for Road and Bridge Construction](#)
- [FDOT Standard Plan for Road and Bridge Construction](#)
- [Developmental Design Standard \(DDS\)](#)
- [Developmental Design Specification \(DDS\)](#)
- [Traffic Engineering & Research Lab Matrice](#)
- [Build America, Buy America For](#)

Random Sampling Frequency

There are no items to display.

Limitations

There are no items to display.

Documents

There are no items to display.

Comments

Tested with firmware version 1.0. Evaluated for top bar/presence and advance detection.

Product Fabrications

Buy America Category : Electrical/Electronic, Except with FHW Manufactured Product waiver

Manufacturer Detail

NoTraffic

Yigal Ion St. 53,

Floor 6,

Tel Aviv-Yafo 6706206

2028001890

Wavetroni e icle Detector - Microwave (APL Product)

by [Wavetroni LLC \(Manufacturer Website\)](#)

odel: **SS225 SmartSensor Matrix**

APL Certification

- 660-018-004 (Approval Date: 12/8/2010) (Service Life Expectancy:)
BABA Eligible: Eligible
Previous APL Numbers
 - 66013653209011

Product Types

- e icle Detector - Microwave

Resource Links

- [FDOT Standard Specifications for Road and Bridge Construction](#)
- [FDOT Standard Plans for Road and Bridge Construction](#)
- [Developmental Design Standards \(DDS\)](#)
- [Developmental Design Specifications \(DDS\)](#)
- [Traffic Engineering & Research Lab Matrices](#)
- [Build America Buy America Form](#)

Random Sampling Frequency

There are no items to display.

Limitations

There are no items to display.

Documents

[1139 Assembly Cut Sheet \(PDF 819 KB\)](#)

[4171 Assembly Cut Sheet \(PDF 438 KB\)](#)

[Matrix & Advance Installation.pdf \(PDF 913 KB\)](#)

[Download the Adobe Reader](#)

Comments

Re-evaluated with Click 600 (smaller form factor including Power Supply and Sensor Communication Interface) and Click 650 (smaller form factor including Power Supply SDLC and Ethernet Interface)

Re-evaluated with Click 104 4-Channel Contact Closure Module for TS-1 controller cabinets

Re-evaluated with Click 656 (including Power Supply SDLC Ethernet Interface connectivity and surge protection for up to six SmartSensors)

3/12/2019: Re-evaluated for span-wire mounting using Pelco hangers SP-4171

Approved with Pelco SP-1139-FL mounting assembly

12/18/2023: Tested with Firmware version 23.3 Arc 2/5/6 Firmware: 23.3 and SmartSensor Matrix Firmware 22.1.

Re-evaluated with Arc 2 (102-0439) and SmartSensor Surge (102-0525); re-evaluated with Arc 5 (102-0563) Arc 6 (102-0594) and SmartSensor Surge v2 (102-0562).

Product Fabrications

Buy America Category: Electrical/Electronic Exempt with FHWA Manufactured Product waiver

Manufacturer Detail

Wavetroni LLC

1827 W 650 N

Springville UT 84663

407-520-0708

Polara Engineering Piezo Transducer BDL3 Series Piezo Pushbutton (APL Product)

by Polara Engineering LLC (Manufacturer Website)

Model: BDL3 Series Piezo Pushbutton

APL Certification

- 665-003-011 (Approval Date : 6/2/2011) (Service Life Expectancy:)
BABA Eligible : Eligible
Provide APL Number
◦ 66513902018061

Product Types

- Standard Piezo Transducer

Resource Links

- [FDOT Standard Specification for Roadway Bridge Construction](#)
- [FDOT Standard Plan for Roadway Bridge Construction](#)
- [Traffic Engineering & Research Lab Matrix](#)
- [Buy America Buy America Form](#)

Random Sampling Frequency

There are no items to play.

Limitations

Impedance button includes a visual indication a latching controller PBCU requires.

Documents

There are no items to play.

Comments

There are no items to play.

Product Fabrications

Buy America Category: Electrical/Electronic Exempt with FHWA Manufacturer Product waiver

Manufacturer Detail

Polara Engineering LLC
1497 CR 2178
Grainville, TX 75402
(903) 366-0300

iNS (iNaviGate) i e Central Control System (APL Product)

by Polara Enterprises, LLC ([Manufacturer Website](#))

Model: Polara iNS2 Pushbutton Station, iCCU-S2 Central Control Unit

APL Certification

- 665-004-01 (Approval Date: 5/ 9/ 0 0) (Service Life Expectancy: BABA Eligible: Eligible)

Product Types

- Accessible (Audible/Tactile Pedestrian Detect)

Resource Links

- [FDOT Standard Specifications Road and Bridge Construction](#)
- [FDOT Standard Plans Road and Bridge Construction](#)
- [Traffic Engineering & Research Lab Materials](#)
- [Build America, Buy America Form](#)

Random Sampling Frequency

The e a e n items t display.

Limitations

The e a e n items t display.

Documents

The e a e n items t display.

Comments

The e a e n items t display.

Product Fabrications

Buy America Category: Electrical/Electronic, Exempt with FHWA Manufacturer Product Waiver

Manufacturer Detail

Polara Enterprises, LLC

1497 CR 178

Geenville TX 7540

(903) 366-0300

Smart-UPS

trial Online UPS 1300W (APL Product)

by APC by Schneider Electric (Manufacturer Website)

Model: XU1K3LLXXRCC

APL Certification

- 685-002-018 (Approval Date: 12/22/2020) (Service Life expectancy:)
BABA Eligible: Eligible

Product Types

- Uninterruptible Power Supply

Resource Links

- FDOT Standard Specification for Roadway Bridge Construction
- FDOT Standard Plan for Roadway Bridge Construction
- Traffic Engineering & Research Lab Matrices
- Buy America, Buy America Form

Random Sampling Frequency

There are no items to display.

Limitations

There are no items to display.

Documents

There are no items to display.

Comments

UPS use 4 50 Ah batteries for TS device . UPS use 4 100 Ah batteries for Traffic Signal .

Product Fabrications

Buy America Category: Electrical/ Electronic, exempt with FHWA Manufacturer Product waiver

Manufacturer Detail

APC by Schneider Electric
800 Federal Street
Andover MA 01810
4017924545

Contact

Product data sheet

Specifications



SmartUPS Industrial Battery 100Ah 12VDC Extended Temperature Shelf Mount

XB102XX1XS

Overview

Lead time	Usually in Stock
-----------	------------------

Main

Product or Component Type	Battery
Battery Type	Gel Cell
Provided Equipment	User Manual

Batteries & Runtime

Battery blocks per string	4
Battery Slots Empty	0
Included Battery Modules	0
Device mounting	Stand alone battery stack
Battery Voltage	12 V

Physical

Height	8.6 in (21.8 cm)
Width	6.8 in (17.3 cm)
Depth	13.0 in (33 cm)
Net Weight	68.41 lb(US) (31.03 kg)
Mounting Mode	Not rack-mountable

Conformance

Product Certifications	UL Recognized
marking	CE Mark

Environmental

Ambient Air Temperature for Operation	-4.0000000000...131.0000000000 °F (-20...55 °C)
Ambient Air Temperature for Storage	-4.0000000000...122.0000000000 °F (-20...50 °C)

Ordering and shipping details

GTIN	731304322221
Country of origin	US

Disclaimer: This documentation is not intended as a substitute for and is not to be used for determining suitability or reliability of these products for specific user applications

Packing Units

Unit Type of Package 1	PCE
Number of Units in Package 1	1
Package 1 Height	11.0 in (27.9 cm)
Package 1 Width	14.02 in (35.6 cm)
Package 1 Length	8.0 in (20.3 cm)
Package 1 Weight	70.00 lb(US) (31.75 kg)

Contractual warranty

Warranty	2 years repair or replace
----------	---------------------------

Product availability: Stock - Normally stocked in distribution facility



Main

Product	Load Center
Marketing Trade Name	QO
Cover type	Surface cover

Complementary

Load Center Type	Main lugs
Line Rated Current	100 A
Number of spaces	6
Short Circuit Current Rating	10 kA
Maximum Number of Single Pole Circuits	12
Maximum Number of Tandem Breakers	6
Number of Phases	1 phase
Voltage Rating	120/240 V AC
Wire Size	AWG 8...AWG 1 aluminium/copper
Electrical Connection	Lugs
Grounding Bar	Grounding bar (ordered separately)
Electrical connection	Lugs
Wiring configuration	3-wire
Busbar Material	Tin plated aluminium busbar
Enclosure Material	Welded galvanized steel
Cover Finish	Baked enamel grey
Box number	2R
Height	12.64 in (321 mm)
Width	8.90 in (226 mm)
Tightening torque	5.65 N.M (50 lbf.in) AWG 8) 5.65 N.m (50 lbf.in) AWG 6...AWG 1/0)

Environment

Enclosure Rating	NEMA 3R outdoor
Ambient air temperature for operation	23 °F (-5 °C) 104 °F (40 °C)
Product certifications	UL listed

Ordering and shipping details

Category	00101 - QO 1PH LC,2-8CKT,NEMA 1,3R
Discount Schedule	DE3A
GTIN	00785901785590
Package weight(Lbs)	4.38 kg (9.65 lb(US))
Returnability	Yes
Country of origin	MX

Offer Sustainability

Sustainable offer status	Green Premium product
California proposition 65	WARNING: This product can expose you to chemicals including: Lead and lead compounds which is known to the State of California to cause Carcinogen & Reproductive harm. For more information go to www.p65warnings.ca.gov
REACH Regulation	REACH Declaration
REACH free of SVHC	Yes
EU RoHS Directive	Compliant EU RoHS Declaration
Toxic heavy metal free	Yes
Mercury free	Yes
RoHS exemption information	Yes
China RoHS Regulation	China RoHS Declaration
Environmental Disclosure	Product Environmental Profile
Circularity Profile	No need of specific recycling operations

Contractual warranty

Warranty	18 months
----------	-----------

Sustainability

Green Premium™ label is Schneider Electric’s commitment to delivering products with best-in-class environmental performance. Green Premium promises compliance with the latest regulations, transparency on environmental impacts, as well as circular and low-CO₂ products.

[Learn more about Green Premium >](#)



Transparency RoHS/REACH

Well-being performance

✓ Toxic Heavy Metal Free	
✓ Mercury Free	
✓ Rohs Exemption Information	Yes

Certifications & Standards

Reach Regulation	REACH Declaration
Eu Rohs Directive	Pro-active compliance (Product out of EU RoHS legal scope) EU RoHS Declaration
China Rohs Regulation	China RoHS declaration Pro-active China RoHS declaration (out of China RoHS legal scope)
Environmental Disclosure	Product Environmental Profile
Circularity Profile	End of Life Information

U3505-XL-TG-HSP



Catalog Number	U3505-XL-TG-HSP
Marketing Product Description	5 Terminal Ringless Small Closing Plate Triplex Ground Lever Bypass Stainless Steel Hasp
UPC	784572292727
Length (IN)	4.844
Width (IN)	10
Height (IN)	18.5
Brand Name	Milbank
Type	Ringless Meter Socket
Application	Meter Socket
Standard	UL Listed; Type 3R
Voltage Rating	600 Volts Alternating Current
Amperage Rating	125 Continuous Ampere
Phase	1 Phase
Frequency Rating	60 Hertz
Size	4.844L x 10W x 18.5H
Number Of Cutouts	0
Cutout Size	No Main Breaker
Cable Entry	Overhead
Terminal	Lay in
Insulation	Glass Polyester
Mounting	Surface Mount

Enclosure	G90 Galvanized Steel with Powder Coat Finish
Jaw Quantity	5 Terminal
Bypass Type	Lever Bypass
Number of Meter Positions	1 Position
Equipment Ground	Triplex Ground
Hub Opening	Small Closing Plate
Line Side Wire Range	6 - 2/0 AWG
Load Side Wire Range	6 - 2/0 AWG
Number Of Receptacles	0

Please consult serving utility for their requirements prior to ordering or installing, as specifications and approvals vary by utility and may require local electrical inspector approval. All installations must be installed by a licensed electrician and must comply with all national and local codes, laws and regulations. Milbank reserves the right to make changes in specifications and features shown without notice or obligation.

VIPER/SIDEWINDER SERIES (P Product)

by [Wireless Technology Inc.](#)

Model: VS265-R, VS265-RE

APL Certification

- 682-001-011 Approval Date: 1/29/2024) Service Life Expectancy:)
B B Eligible: Eligible

Product Types

- Camera - External Positioner

Resource Links

- [FDOT Standard Specifications for Road and Bridge Construction](#)
- [FDOT Standard Plans for Road and Bridge Construction](#)
- [Traffic Engineering & Research Lab Matrices](#)
- [Build America, Buy America Form](#)

Random Sampling Frequency

There are no items to display.

Limitations

There are no items to display.

Documents

There are no items to display.

Comments

01/25/2024) Tested with Firmware 3.4.2.r 2023/10/30 and SunGuide version 8.2.3.

Product Fabrications

Buy America Category: Electrical/Electronic, Exempt with FHW Manufactured Product waiver

Manufacturer Detail

Wireless Technology Inc.

2064 Eastman Ave

Ste 113

Ventura CA 93003

805-339-9696

R920-F Rec I r R pid Fl shi Be co (RRFB) (APL Prod c)

by [Ca manah Technologies Co p. \(Manufactu e Website\)](#)

Model: R920-F

APL Certification

- 654-001-012 (Approv I D e: 9/24/2021) (Service Life Expec cy:)
BABA Eli ible: Eli ible

Product Types

- Rec I r R pid Fl shi Be co Assembly (RRFB)

Resource Links

- [FDOT Standa d Specifications fo Road and B idge Const uction](#)
- [FDOT Standa d Plans fo Road and B idge Const uction](#)
- [T affic Enginee ing & Resea ch Lab Mat ices](#)
- [Build Ame ica, Buy Ame ica Fo m](#)

Random Sampling Frequency

There re o i ems o displ y.

Limitations

The Rec I r R pid Fl shi Be co Assembly (RRFB) h s FHWA I erim Approv I IA-21 for S e Hi hw y Sys em se. No -S e Hi hw y Sys em se of RRFB req ires he Loc IA e cy o ob i FHWA I erim Approv I.

Documents

There re o i ems o displ y.

Comments

Ev I ed wi h WW+S Fl sh P er , Firmw re Versio 1.1.9.9 (30 W Sol r) wi h Pol r XAV2E-LED, iDX To chless d iNX (Mid-Block APS for RRFB), R920E d SC315-G.

Ev I ed wi h Rev B. PCB d firmw re versio 1.2 i cl di fe re lock.

Product Fabrications

Elec ric l/Elec ro ic, Exemp wi h FHWA M f c red Prod c w iver

Manufacturer Detail

C rm h Tech olo ies Corp.
250 B y S ree
Vic ori BC V9A 3K5
250-380-0052

Corning, Apollo Tub , G -Fr , A -Di c ric Cab wi h Fa Acc ® T chno ogy (AP Produc)

by FDOT Produc va ua ion, mai : Produc . va ua ion@do . a .f.u (Manufac ur r W b i)

APL Certification

- 633-002-001 (Approva Da : 8/15/2024) (S rvic if xp c ancy:)
BABA igib : igib

Product Types

- Fib r Op ic Cab

Resource Links

- [FDOT S andard Sp cifica ion for Road and Bridg Con ruc ion](#)
- [FDOT S andard Plan for Road and Bridg Con ruc ion](#)

Random Sampling Frequency

Th r ar noi m o di pay.

Limitations

Th r ar noi m o di pay.

Documents

Th r ar noi m o di pay.

Comments

Approv d for Proj c 448985-1 on y.

Product Fabrications

Buy Am rica Ca gory: Con ruc ion Ma ria - Op ica Fib r

Manufacturer Detail

FDOT Produc va ua ion, mai : Produc . va ua ion@do . a .f.u
605 Suwann S ., MS 75
Ta aha F 32399-0450
850-414-4353

Ruckus Net 1000 3 Managed Field Ethernet Switch (AP Product)

by FOT Product Evaluation email: Product.Evaluation@dot.state.fl.us (Manufacturer Website)

Model:

APL Certification

- 684-007-001 (Approval date: 11/9/2023) (Service Life Expectancy:)
BABA Eligible: Eligible

Product Types

- Non-Standard Managed Field Ethernet Switch 3

Resource Links

- FOT Standard Specifications for Road and Bridge Construction
- FOT Standard Plans for Road and Bridge Construction
- Traffic Engineering & Research Materials
- Build America Buy America Form

Random Sampling Frequency

The evaluation items to display.

Limitations

The evaluation items to display.

Documents

The evaluation items to display.

Comments

Approved Project 445302-1-52-01 (3/2024 letting) 447094-1-52-01 (6/2024 letting) 447688-1-52-01 (4/2024 letting) 448635-1 448794-1 448985-1 443426-1 448795-1-52-01 (9/2024 letting) 448800-1-52-01 (9/2024 letting) 448787-1 only.

Product Fabrications

Buy America Category: Electrical/Electronic Exempt with FHWA Manufactured Product waiver

Manufacturer Detail

FOT Product Evaluation email: Product.Evaluation@dot.state.fl.us

605 Suwannee St. MS 75

Tallahassee FL 32399-0450

850-414-4353

Cisco Catalyst IEx300 Rugged Series

Contents

Product overview	3
Features and benefits	5
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The Cisco Catalyst™ IE9300 Rugged Series ushers in mainstream adoption of Gigabit / 10 Gigabit Ethernet connectivity in compact 1RU, rack-mount switches that are purpose-built for a wide variety of industrial and extended enterprise applications.

Product overview

Cisco Catalyst IE9300 Rugged Series switches with 28 ports of Gigabit and 10 Gigabit Ethernet interfaces deliver high-speed Ethernet connectivity in a compact form factor and are designed for a wide range of industrial applications for which hardened products are required. The platform is built to withstand harsh environments in manufacturing, energy, transportation, mining, smart cities, and oil and gas. The switches are ideal for outdoor enclosures or harsh environments while adhering to overall IT network design, compliance, and performance requirements.

These switches run Cisco IOS® XE, an operating system with built-in security and trust, featuring Secure Boot, image signing, and the Cisco® Trust Anchor module. Cisco IOS XE also provides API-driven configuration with open APIs and data models.

The Cisco Catalyst IE9300 Rugged Series can be managed with a powerful management tool, Cisco Catalyst Center, and can easily be set up with a completely redesigned user-friendly modern GUI tool called WebUI. The platform supports Full Flexible NetFlow (FNF) for real-time visibility into traffic patterns and threat analysis with support for Cisco Cyber Vision and Cisco Secure Network Analytics.

The IE9300 Rugged Series switches offer:

- Robust resiliency enabled by features such as dual ring design, Resilient Ethernet Protocol (REP), Parallel Redundancy Protocol (PRP)¹, PROFINET, Media Redundancy Protocol (MRP) ring, High Availability Seamless Redundancy (HSR)¹ ring, EtherChannel, integrated redundant power supplies, dying gasp, etc.
- True zero-touch replacement for middle-of-the-night or middle-of-nowhere failures
- Line-rate, low-latency forwarding
- Simplified software management with universal images
- Support for industrial automation protocols EtherNet/IP (CIP) and PROFINET

¹Supported on IE-9320-26S2C and IE-9320-22S2C4X only.



Figure 1.
IE-9310-26S2C switch



Figure 2.
IE-9320-26S2C switch with advanced feature set



Figure 3.
IE-9320-22S2C4X Switch with conformal coating and advanced feature set, including support for GPS/IRIG-B input



Figure 4.
IE-9320-24P4S Switch

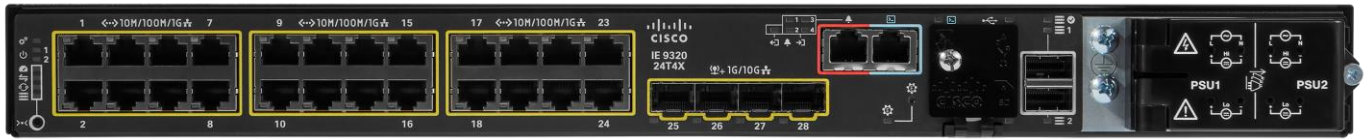


Figure 5.
IE-9320-24T4X Switch



Figure 6.
IE-9320-24P4X Switch



Figure 7.
IE-9320-16P8U4X Switch with multi-gigabit and 4PPoE

Features and benefits

Table 1. Features and benefits

Feature	Benefits
Robust industrial design	• A utility-grade, fully managed 1-Rack-Unit (1RU) rack-mount Ethernet switch • Built for harsh environments and temperature ranges (-40° to 75° C / -40° to 167° F) • Fanless, convection-cooled with no moving parts for extended durability • Hardened for vibration, shock and surge, and electrical noise immunity • Complies with multi-industry specifications for automation, Intelligent Transport Systems (ITS), and substation environments • Improves the uptime, performance, and safety of industrial systems and equipment • IEEE 1588v2 Precision Timing Protocol (PTP) (both power profile for utility and default profile for manufacturing are supported) • Alarm I/O for monitoring and signaling to external equipment
High density Ethernet switch with GE / mGig / 10G options	• Total of 28 Ethernet ports provide multiple resilient design options • Provides secure access for new high-speed applications in the industrial space • Enables new UHD IP cameras, Wi-Fi access points, and future-ready Gigabit speed automation devices • Allows IP-based Supervisory Control And Data Acquisition (SCADA) connectivity • Delivers multiple rings, redundant ring topology for new network configurations • Extends geographical scalability where connectivity over longer distances is required
High-density industrial Power over Ethernet (PoE)	• Support for up to 24 Ports of Power over Ethernet with 802.3af, 802.3at and 802.3bt options • Controls costs by limiting wiring, distribution panels, and circuit breakers • Reduces equipment needs, thus requiring less space and reducing heat dissipation. • Enables ready-to-use high-power PoE devices, such as IP phones, next-generation PTZ cameras, and Wi-Fi 6 wireless access points. • PoE Power budget of up to 720W with two 400W power supplies on PoE variants with 10G uplinks • Perpetual PoE Support: With Perpetual PoE, the PoE power is maintained during a switch reload. This is important for IoT endpoints such as PoE-powered lights, so that there is no disruption during switch reboot. • Fast PoE Support: When power is restored to a switch, PoE starts delivering power to endpoints without waiting for the operating system to fully load, thereby speeding up the time for the endpoint to start up.
User-friendly WebUI	• Allows for easy configuration and monitoring, even by nonspecialist personnel • Eliminates the need for more complex terminal emulation programs • Reduces the cost of deployment
Full Flexible NetFlow (FNF)	• Provides enhanced flow and threat visibility • Enables optimization of the network infrastructure, reduces operating costs, and improves capacity planning and security incident detection

Table 2. Product feature sets

Product family	Platforms supported	Cisco IOS Software image (feature sets) supported
IE9300	IE-9310-26S2C-E/-A	Network Essentials, Network Advantage
	IE-9320-26S2C-E/-A	Network Essentials, Network Advantage
	IE-9320-22S2C4X-E/-A	Network Essentials, Network Advantage
	IE-9320-24P4S-E/-A	Network Essentials, Network Advantage
	IE-9320-24T4X-E/-A	Network Essentials, Network Advantage
	IE-9320-24P4X-E/-A	Network Essentials, Network Advantage
	IE-9320-16P8U4X-E/-A	Network Essentials, Network Advantage

Product specifications

Table 3 highlights the hardware configuration for Cisco Catalyst IE9300 Rugged Series switches.

Table 3. Hardware configurations

Product number	Total ports	Downlinks	Uplinks (SFP/SFP+)	Software license (default)
IE-9310-26S2C-E	28	22 ports 100/1000M SFP and 2 ports Dual-Media (100/1000M SFP or 10/100/1000M RJ45)	4 ports 1000M	Network Essentials
IE-9310-26S2C-A	28	22 ports 100/1000M SFP and 2 ports Dual-Media (100/1000M SFP or 10/100/1000M RJ45)	4 ports 1000M	Network Advantage
IE-9320-26S2C-E	28	22 ports 100/1000M SFP and 2 ports Dual-Media (100/1000M SFP or 10/100/1000M RJ45)	4 ports 100/1000M	Network Essentials
IE-9320-26S2C-A	28	22 ports 100/1000M SFP and 2 ports Dual-Media (100/1000M SFP or 10/100/1000M RJ45)	4 ports 100/1000M	Network Advantage
IE-9320-22S2C4X-E	28	22 ports 100/1000M SFP and 2 ports Dual-Media (100/1000M SFP or 10/100/1000M RJ45)	4 ports 1/10G	Network Essentials
IE-9320-22S2C4X-A	28	22 ports 100/1000M SFP and 2 ports Dual-Media (100/1000M SFP or 10/100/1000M RJ45)	4 ports 1/10G	Network Advantage
IE-9320-24P4S-E	28	24 ports 10/100/1000M RJ45 PoE+	4 ports 1000M	Network Essentials
IE-9320-24P4S-A	28	24 ports 10/100/1000M RJ45 PoE+	4 ports 1000M	Network Advantage
IE-9320-24T4X-E	28	24 ports 10/100/1000M RJ45	4 ports 1/10G	Network Essentials

Product number	Total ports	Downlinks	Uplinks (SFP/SFP+)	Software license (default)
IE-9320-24T4X-A	28	24 ports 10/100/1000M RJ45	4 ports 1/10G	Network Advantage
IE-9320-24P4X-E	28	24 ports 10/100/1000M RJ45 PoE+	4 ports 1/10G	Network Essentials
IE-9320-24P4X-A	28	24 ports 10/100/1000M RJ45 PoE+	4 ports 1/10G	Network Advantage
IE-9320-16P8U4X-E	28	16 ports 10/100/1000M PoE+ and 8 ports 100/1000/2500M 4PPoE (up to 90W/port)	4 ports 1/10G	Network Essentials
IE-9320-16P8U4X-A	28	16 ports 10/100/1000M PoE+ and 8 ports 100/1000/2500M 4PPoE (up to 90W/port)	4 ports 1/10G	Network Advantage

Tables 4 and 5 highlight the hardware specifications for the Cisco Catalyst IE9300 Rugged Series switches.

Table 4. Hardware specifications

Hardware specification	IE 9310 26S2C E/ A	IE 9320 26S2C E/ A IE 9320 22S2C4X E/ A IE 9320 24P4S E/ A IE 9320 24T4X E/ A IE 9320 24P4X E/ A IE 9320 16P8U4X E/ A
Hardware	4-GB DRAM 8-GB onboard flash memory ¹	4-GB DRAM 8-GB onboard flash memory ¹
Removable storage	USB ^{2,3} , SD card ²	USB ^{2,3} , SD card ²
Alarms	4 dry-contact alarm inputs 1 dry-contact Form-C relay alarm output	4 dry-contact alarm inputs 1 dry-contact Form-C relay alarm output
Console ports	1 RS-232 (via RJ-45), 1 Micro USB	1 RS-232 (via RJ-45), 1 Micro USB
Power inputs	Dual AC/DC power inputs	Dual AC/DC power inputs
Cisco StackWise® ports	–	2 stacking ports

¹User-accessible flash memory is approximately 2.5 GB.

²The SD card and USB are optional and are not shipped by default with the switch.

³USB 2.0 to load system images and set configurations.

Table 5. Physical configurations

Product number	Dimensions (H x W x D)	Weight ¹	Mounting	Power consumption ²
IE-9310-26S2C-E/-A	1.72 x 17.5 x 14.0 in. with PWR-RGD-AC-DC-H / PWR-RGD-LOW-DC-H	12.2 lb (5.53 kg)	Rack mount	61W
IE-9320-26S2C-E/-A	1.72 x 17.5 x 14.0 in. with PWR-RGD-AC-DC-H / PWR-RGD-LOW-DC-H	12.2 lb (5.53 kg)	Rack mount	64W
IE-9320-22S2C4X-E/-A	1.72 x 17.5 x 14.0 in. with PWR-RGD-AC-DC-H / PWR-RGD-LOW-DC-H	12.7 lb (5.76 kg)	Rack mount	73W
IE-9320-24P4S-E/-A	1.72 x 17.5 x 14.0 in. with PWR-RGD-AC-DC-H / PWR-RGD-LOW-DC-H 1.72 x 17.5 x 15.18 in. with PWR-RGD-AC-DC-250 1.72 x 17.5 x 15.57 in. with PWR-RGD-AC-DC-400	9.7 lb (4.4 kg)	Rack mount	37W
IE-9320-24T4X-E/-A	1.72 x 17.5 x 14.0 in. with PWR-RGD-AC-DC-H / PWR-RGD-LOW-DC-H	9.5 lb (4.3 kg)	Rack mount	35W
IE-9320-24P4X-E/-A	1.72 x 17.5 x 14.0 in. with PWR-RGD-AC-DC-H / PWR-RGD-LOW-DC-H 1.72 x 17.5 x 15.18 in. with PWR-RGD-AC-DC-250 1.72 x 17.5 x 15.57 in. with PWR-RGD-AC-DC-400	9.7 lb (4.4 kg)	Rack mount	39W
IE-9320-16P8U4X-E/-A	1.72 x 17.5 x 14.0 in. with PWR-RGD-AC-DC-H / PWR-RGD-LOW-DC-H 1.72 x 17.5 x 15.18 in. with PWR-RGD-AC-DC-250 1.72 x 17.5 x 15.57 in. with PWR-RGD-AC-DC-400	9.9 lb (4.5 kg)	Rack mount	45W

¹Chassis only (does not include power supplies or blank cover).

²System power consumption is indicative only and will depend on multiple factors:

- The type and number of Small Form-Factor Pluggable (SFP) modules used.
- The type and efficiency of the power supply used.
- The number of power supplies: One power supply versus two power supplies used in the system.

Table 6 highlights the performance and scalability features of the Cisco Catalyst IE9300 Rugged Series switches.

Table 6. Performance and scalability features

Feature	IE 9310 26S2C E/ A	IE 9320 26S2C E/ A IE 9320 24P4S E/ A	IE 9320 22S2C4X E/ A IE 9320 24T4X E/ A IE 9320 24P4X E/ A	IE 9320 16P8U4X E/ A
Forwarding rate	28 Gbps (line rate/nonblocking)	28 Gbps (line rate/nonblocking)	64 Gbps (line rate/nonblocking)	76 Gbps (line rate/nonblocking)
Switching bandwidth	56 Gbps (switching bandwidth is full-duplex capacity)	56 Gbps (switching bandwidth is full-duplex capacity)	128 Gbps (switching bandwidth is full-duplex capacity)	152 Gbps (switching bandwidth is full-duplex capacity)
Number of queues / port	8 egress	8 egress	8 egress	8 egress
Unicast MAC addresses	16,000	16,000	16,000	16,000
Internet Group Management Protocol (IGMP) multicast groups	1000	1000	1000	1000
VLANs	1024	1024	1024	1024
IPv4 indirect routes	3044	3044	3044	3044
IPv6 indirect routes	1522	1522	1522	1522
Spanning Tree Protocol (STP) instances	128	128	128	128
Access Control List (ACL) entries (port ACL [PACL], VLAN ACL [VACL], router ACL [RACL])	1408	1408	1408	1408
DRAM	4 GB	4 GB	4 GB	4 GB
Flash (user accessible)	2.5 GB	2.5 GB	2.5 GB	2.5 GB
SD card capacity¹	4 GB	4 GB	4 GB	4 GB
SD Access Fabric Edge Support	Yes (32 VNs)	Yes (32 VNs)	Yes (32 VNs)	Yes (32 VNs)
SGT/DGT policies	2000	2000	2000	2000

Feature	IE 9310 26S2C E/ A	IE 9320 26S2C E/ A IE 9320 24P4S E/ A	IE 9320 22S2C4X E/ A IE 9320 24T4X E/ A IE 9320 24P4X E/ A	IE 9320 16P8U4X E/ A
IPv4 to SGT binding	10000	10000	10000	10000
Maximum SVIs	984	984	984	984
SXP Sessions	200	200	200	200

¹The SD card is optional and is not shipped by default with the switch.

Table 7 highlights the power supply options for the Cisco Catalyst IE9300 Rugged Series switches.

Table 7. Power supply options¹

Product number	Wattage	Rated nominal input operating range	Supported input voltage operating range	Use case scenario
PWR-RGD-LOW-DC-H	150W	DC 24-60V/10A	DC 18-75V	Low-voltage DC power source Compliant for use in hazardous locations
PWR-RGD-AC-DC-H	150W	AC 100-240V/2.0A 50-60 Hz or DC 100-250V/2.0A	AC 85-264V or DC 88-300V	High-voltage AC or DC power source. Compliant for use in hazardous locations
PWR-RGD-AC-DC-250	250W	AC 100-240V 3.3A 50-60 Hz or DC 100-250V 3.3A	AC 85-264V or DC 88-300V	High-voltage AC or DC power source Compliant for use in hazardous locations
PWR-RGD-AC-DC-400	400W	AC 100-240V 3.3A 50-60 Hz or DC 100-250V 3.3A	AC 85-264V or DC 88-300V	High-voltage AC or DC power source Compliant for use in hazardous locations

¹All power supplies have their power output galvanically isolated from the power input.

Table 8 highlights the PoE capability of the Cisco Catalyst IE9300 Rugged Series switches.

Table 8. Available power¹ budget for PoE/PoE+ with different power supply wattage

Product number	150W	150W (dual)	250W	250W + 150W	250W (dual)	400W	400W (dual)
IE-9320-24P4S-E/-A	70W	190W	170W	280W	370W	320W	385W
IE-9320-24P4X-E/-A	70W	190W	170W	280W	370W	320W	720W
IE-9320-16P8U4X-E/-A ²	70W	190W	170W	280W	370W	320W	720W

¹150W and 250W Power Supplies cannot be used with the 400W Power Supply in a load sharing configuration.

²400W power supplies are required to support 4PPoE Type 4 (PoE Class 7 and 8, PDs requiring greater than 60W). Any of the supported power supplies can be used for PoE+ and 4PPoE Type 3 (PoE Class 1 through 6) up to 60W.

Tables 9 and 10 highlight the software features supported by the Cisco Catalyst IE9300 Rugged Series switches.

Table 9. Key supported software features (Network Essentials license)

Network Essentials license (perpetual)	Features
Layer 2 switching	802.1Q, 802.1w, 802.1ab, 802.1s, 802.3ad, Per-VLAN Rapid Spanning Tree (PVRST+), Per-VLAN Spanning Tree (PVST+), Rapid PVST (RPVST), Remote Switched Port Analyzer (RSPAN), Switched Port Analyzer (SPAN), STP, Storm Control, VLAN Trunk Protocol (VTP) v2/v3, 802.1Q Tunneling, Layer 2 Protocol Tunneling (L2PT), Q-in-Q, Selective Q-in-Q, EtherChannel, VLAN Mapping
Multicast	IGMP v1/v2/v3, IGMP snooping, Multicast Listener Discovery (MLD) snooping
Management	WebUI, MIB, Simple Network Management Protocol (SNMP), syslog, Dynamic Host Configuration Protocol (DHCP) server, NETCONF, Embedded Event Manager (EEM), Cisco Plug and Play (PnP), Express Setup, Resilient Ethernet Protocol (REP) Zero Touch Provisioning (ZTP)
Security	DHCPv6 Guard, IP Source Guard, IPv6 Destination Guard, IPv6 Neighbor Discovery Multicast Suppress, IPv6 Router Advertisement (RA) Guard, IPv6 Snooping, IPv6 Source/Prefix Guard, IPv6 Neighbor Discovery Duplicate Address Detection, Full Flexible NetFlow, PACL, VACL, Network Edge Authentication Topology (NEAT), HTTPS, RADIUS, TACACS+, X.509v3, Secure Shell (SSH), DHCP Snooping, 802.1X, Client Information Signaling Protocol (CISP), Dynamic ARP Inspection (DAI), authentication, authorization, and accounting (AAA), Secure Copy Protocol (SCP), IEEE 802.1AE MACsec-128, TLS 1.3
Quality of Service (QoS)	802.1p, priority queuing, Modular QoS command-line interface (MQC), class-based shaping and marking, egress policing, egress queuing and shaping, Auto-QoS, Differentiated Services Code Point (DSCP) mapping and filtering, low-latency queuing
Layer 3 routing	Static routing, Open Shortest Path First (OSPF - 1000 routes), OSPFv3, Routing Information Protocol (RIP), Policy-Based Routing (PBR)
Industrial Ethernet	Locate Switch, Swap Drive, Generic Object-Oriented Substation Events (GOOSE) messaging, SCADA Protocol Classification, PTP ² (Default Profile, Power Profile 2011, Power Profile 2017), Network Time Protocol (NTP) to PTP, Bidirectional Forwarding Detection (BFD), PTP as refclock for NTP, PROFINET support, Common Industrial Protocol (CIP) Support, Cisco IOx support, Layer 2 Network Address Translation (L2 NAT), ModBus TCP

Network Essentials license (perpetual)	Features
Redundancy	REP rings, REP Fast, HSR ¹ , PRP ¹ , MRP, PTP over PRP ¹
Automation	YANG, NETCONF, RESTCONF

¹Supported on the IE-9320-26S2C-E/-A and IE-9320-22S2C4X-E/-A only.

²PTP is not supported on 2.5G ports of the IE-9320-16P8U4X-E/A

Table 10. Key supported software features (Network Advantage license)

Network Advantage license (perpetual) ¹	Features
IP routing protocols	Hot Standby Router Protocol (HSRP), Border Gateway Protocol (BGP), Enhanced Interior Gateway Routing Protocol (EIGRP), Intermediate System-to-Intermediate System (IS-IS), Nonstop Forwarding (NSF), LISP, OSPF
Virtualization	VRF-lite
Security	Cisco TrustSec®: Security group ACL (SGACL), SGACL logging, Extensible Authentication Protocol – Transport Layer Security (EAP-TLS), IEEE 802.1AE MACsec-256, SD-Access Policy Extended Node, SD-Access Fabric Edge Node
IP Multicast	Auto-RP, Multicast Source Discovery Protocol (MSDP), Protocol Independent Multicast (PIM) v2, IPv6 Multicast with VRF-lite support
Industrial Ethernet	Layer 3 Network Address Translation (L3 NAT)

¹Network Advantage license includes all Network Essentials features.

Table 11 highlights the details of Cisco Catalyst Center Essentials and Cisco Catalyst Center Advantage licenses for the IE9300 Rugged Series switches.

Table 11. Cisco Catalyst Center Essentials and Cisco Catalyst Center Advantage licenses

Feature	Description	Cisco Catalyst Center Essentials ²	Cisco Catalyst Center Advantage ^{1,2}
Cisco Catalyst Center	Discovery, topology, inventory, software image management	Yes	Yes
Visibility	Overall Health Dashboard	Yes	Yes
Day-zero network bring-up automation	Cisco Network Plug-and-Play application	Yes	Yes
SD-Access Extended Node	SD-Access fabric overlay extension	Yes	Yes
LAN Automation	Lan automation helps create error-free underlay network for SDA deployments	No	Yes
SD-Access Policy Extended Node	SD-Access fabric overlay extension and segmentation	No	Yes

Feature	Description	Cisco Catalyst Center Essentials ²	Cisco Catalyst Center Advantage ^{1,2}
SD-Access Fabric Edge Node	A fabric device that connects wired endpoints to the SDA fabric.	No	Yes
Device 360	Device 360, Client 360, and Network Health Insights	No	Yes
Patch/SMU Lifecycle Management	Management of Software Maintenance Upgrades (SMU) or Patches via Cisco Catalyst Center	No	Yes
Application Visibility and Control (NBAR2)	Provides application-level classification, monitoring, and traffic control	No	Yes

¹Cisco Catalyst Center Advantage license can be paired only with the Network Advantage license.

²Cisco Catalyst Center licenses for Industrial Ethernet switches are add-on/optional and not mandatory. They do not include Network Tier features.

Table 12 highlights the compliance specifications for the Cisco Catalyst IE9300 Rugged Series switches.

Table 12. Compliance specifications

Descriptions	Specifications
Electromagnetic emissions	FCC 47 CFR Part 15 Class A EN 55032 Class A VCCI Class A AS/NZS CISPR 32 Class A CISPR 11 Class A CISPR 32 Class A ICES 003 Class A CNS15936 ¹ EN 300 386 EN 61000-3-2 Harmonic Current Emissions EN 61000-3-3 Voltage Fluctuations and Flicker KS C9832
Radio	EN 303 413 ²
Electromagnetic immunity	EN55024/EN5035 CISPR 24/CISPR35 KS C9835 EN 61000-4-2 Electro Static Discharge EN 61000-4-3 Radiated RF EN 61000-4-4 Electromagnetic Fast Transients EN 61000-4-5 Surge

Descriptions	Specifications
	EN 61000-4-6 Conducted RF EN 61000-4-8 Power Frequency Magnetic Field EN 61000-4-10 Oscillatory Magnetic Field EN 61000-4-11 AC Voltage Dips EN 61000-4-29 DC Voltage Dips EN 301 489-19 and -1 ²
Industry standards	EN 61000-6-2 Industrial EN 61000-6-4 Industrial EN 61000-6-1 Light Industrial EN 61326 Industrial Control IEEE 1613:2009 Electric Power Stations Communications Networking ³ IEC 61850-3 Electric Substations Communications Networking ³ EN 50121-4 ⁴ IP30 (per EN60529) IEC 61850-9-3 (Power Utility Profile)
Safety standards and certifications	Information technology equipment: UL/CSA 60950-1 EN 60950-1, CB to IEC 60950-1 with all country deviations UL/CUL 62368-1, CB to IEC62368-1 with country deviations NOM to NOM-019-SCFI (through partners and distributor) Industrial floor (control equipment): CB report and certificate to IEC 61010-2-201 UL/CSA 61010-2-201 CSA C22.2, No.142 Hazardous locations: UL 121201 (Class I, Div 2, groups A-D) CSA 213 (Class I, Div 2, groups A-D) UL/CSA 60079-0, -7 (Class I, Zone 2, Gc/IIC) IEC 60079-0, -7 IECEx test report (Class I, Zone 2, Gc/IIC, ec) EN 60079-0, -7 ATEX certificate (Class I, Zone 2, Gc/IIC, ec)
Operating environment	Operating temperature: -40° to 75° C (-40° to 167° F) (blower-equipped cabinet) -40° to 60° C (-40° to 140° F) (sealed cabinet) ⁵ -40° to 70° C (-40° to 158° F) (vented cabinet) EN 60068-2-1 EN 60068-2-2 EN 61163

Descriptions	Specifications
	Altitude: Up to 15,000 feet (4572 m) with no temperature derating Up to 40,000 feet (12,192 m) with temperature derating down to 25° C (77° F)
Storage environment	Temperature: -40° to 85° C (-40° to 185° F) Altitude: 15,000 feet (4572 m) IEC 60068-2-14
Humidity	Relative humidity of 5% to 95% noncondensing IEC 60068-2-3 IEC 60068-2-30
Shock and vibration	IEC 60068-2-6 (Vibration) IEC 60068-2-27 (Shock) IEC 60068-2-31 (Shock) IEC 60068-2-32 (Shock) IEC 60068-2-64 (Vibration)
Corrosion	IEC 60068-2-52 (salt fog) ² IEC 60068-2-60 (flowing mixed gas) ²
Warranty	Five-year limited hardware warranty on all IE9300 product IDs and all Industrial Ethernet (IE) power supplies. See more information in the Warranty section.
Certifications	IEC/ANSI/ISA-62443-4-1-2018 ANSI/ISA-62443-4-2-2018 ¹ , IEC-62443-4-2-2019 ¹ FIPS 140-2 USGv6-r1 Ready Logo Version 5 Common Criteria ³ ODVA Industrial EtherNet/IP NEMA TS2:2021 ⁶

¹ Pending

² For IE-9320-22S2C4X-E/A only

³ Certified for IE-9310-26S2C-E/A and IE-9320-26S2C-E/A

⁴ Pending for IE-9320-24T4X-E/A, IE-9320-22S2C4X-E/A, IE-9320-24P4X-E/A, IE-9320-16P8U4X-E/A, IE-9320-24P4S-E/A

⁵ Safety approved up to 60°

⁶ Certified for IE-9320-16P8U4X-E/A, IE-9320-24P4X-E/A, IE-9320-24T4X-E/A, IE-9320-24P4S-E/A, IE-9320-22S2C4X-E/A

Table 13 highlights the Mean Time Between Failures (MTBF) for the Cisco Catalyst IE9300 Rugged Series switches.

Table 13. MTBF information

Product ID	Rated MTBF (hours) based on Telcordia Issue 4
IE-9310-26S2C -E/-A	435,092
IE-9320-26S2C -E/-A	413,687
IE-9320-22S2C4X -E/-A	312,948
IE-9320-24P4S -E/-A	250,037
IE-9320-24T4X -E/-A	335,936
IE-9320-24P4X -E/-A	250,037
IE-9320-16P8U4X -E/-A	250,733

Table 14 highlights information about management and standards for the Cisco Catalyst IE9300 Rugged Series switches.

Table 14. Management and standards

Description	Specifications	
IEEE standards	• IEEE 802.1D MAC Bridges, STP • IEEE 802.1p Layer2 COS prioritization • IEEE 802.1q VLAN • IEEE 802.1s Multiple Spanning-Trees • IEEE 802.1w Rapid Spanning-Tree • IEEE 802.1x Port Access Authentication • IEEE 802.1AB LLDP • IEEE 802.3ad Link Aggregation (LACP)	• IEEE 802.3ah 100BASE-X SMF/MMF only • IEEE 802.3u 100BASE-TX specification • IEEE 802.3ab 1000BASE-T specification • IEEE 802.3z 1000BASE-X specification • IEEE 1588v2 PTP Precision Time Protocol
RFC compliance	• RFC 768: UDP • RFC 783: TFTP • RFC 791: IPv4 protocol • RFC 792: ICMP • RFC 793: TCP • RFC 826: ARP • RFC 854: Telnet • RFC 951: BOOTP • RFC 959: FTP • RFC 1157: SNMPv1 • RFC 1901,1902-1907 SNMPv2 • RFC 2273-2275: SNMPv3 • RFC 2571: SNMP Management • RFC 1166: IP Addresses • RFC 1256: ICMP Router Discovery	• RFC 1305: NTP • RFC 1492: TACACS+ • RFC 1493: Bridge MIB Objects • RFC 1534: DHCP and BOOTP interoperation • RFC 1542: Bootstrap Protocol • RFC 1643: Ethernet Interface MIB • RFC 1757: RMON • RFC 2068: HTTP • RFC 2131, 2132: DHCP • RFC 2236: IGMP v2 • RFC 3376: IGMP v3 • RFC 2474: DiffServ Precedence • RFC 3046: DHCP Relay Agent Information Option • RFC 3580: 802.1x RADIUS • RFC 4250-4252 SSH Protocol

Description	Specifications	
SNMP MIB objects	• BRIDGE-MIB • CALISTA-DPA-MIB • CISCO-ACCESS-ENVMON-MIB • CISCO-ADMISSION-POLICY-MIB • CISCO-AUTH-FRAMEWORK-MIB • CISCO-BRIDGE-EXT-MIB • CISCO-BULK-FILE-MIB • CISCO-CABLE-DIAG-MIB • CISCO-CALLHOME-MIB • CISCO-CAR-MIB • CISCO-CDP-MIB • CISCO-CIRCUIT-INTERFACE-MIB • CISCO-CLUSTER-MIB • CISCO-CONFIG-COPY-MIB • CISCO-CONFIG-MAN-MIB • CISCO-DATA-COLLECTION-MIB • CISCO-DHCP-SNOOPING-MIB • CISCO-EMBEDDED-EVENT-MGR-MIB • CISCO-ENTITY-ALARM-MIB • CISCO-ENTITY-VENDORTYPE-OID-MIB • CISCO-ENVMON-MIB • CISCO-ERR-DISABLE-MIB • CISCO-FLASH-MIB • CISCO-FTP-CLIENT-MIB • CISCO-IGMP-FILTER-MIB • CISCO-IMAGE-MIB • CISCO-IP-STAT-MIB • CISCO-LAG-MIB • CISCO-LICENSE-MGMT-MIB • CISCO-MAC-AUTH-BYPASS-MIB • CISCO-MAC-NOTIFICATION-MIB • CISCO-MEMORY-POOL-MIB • CISCO-PAE-MIB • CISCO-PAGP-MIB • CISCO-PING-MIB • CISCO-PORT-QOS-MIB • CISCO-PORT-SECURITY-MIB • CISCO-PORT-STORM-CONTROL-MIB • CISCO-PRIVATE-VLAN-MIB • CISCO-PROCESS-MIB • CISCO-PRODUCTS-MIB • CISCO-RESILIENT-ETHERNET-PROTOCOL-MIB • CISCO-RTTMON-ICMP-MIB • CISCO-RTTMON-IP-EXT-MIB • CISCO-RTTMON-MIB • CISCO-RTTMON-RTP-MIB	• CISCO-SNMP-TARGET-EXT-MIB • CISCO-STACK-MIB • CISCO-STACKMAKER-MIB • CISCO-STACKWISE-MIB • CISCO-STP-EXTENSIONS-MIB • CISCO-SYSLOG-MIB • CISCO-TCP-MIB • CISCO-UDLD-MIB • CISCO-VLAN-IFTABLE-RELATIONSHIP-MIB • CISCO-VLAN-MEMBERSHIP-MIB • CISCO-VTP-MIB • ENTITY-MIB • ETHERLIKE-MIB • HC-RMON-MIB • IEEE8021-PAE-MIB • IEEE8023-LAG-MIB • IF-MIB • IP-FORWARD-MIB • LLDP-EXT-MED-MIB • LLDP-EXT-PNO-MIB • LLDP-MIB • NETRANGER • NOTIFICATION-LOG-MIB • OLD-CISCO-CHASSIS-MIB • OLD-CISCO-CPU-MIB • OLD-CISCO-FLASH-MIB • OLD-CISCO-INTERFACES-MIB • OLD-CISCO-IP-MIB • OLD-CISCO-MEMORY-MIB • OLD-CISCO-SYS-MIB< • OLD-CISCO-SYSTEM-MIB • OLD-CISCO-TCP-MIB • OLD-CISCO-TS-MIB • RMON-MIB • RMON2-MIB • SMON-MIB • SNMP-COMMUNITY-MIB • SNMP-FRAMEWORK-MIB • SNMP-MPD-MIB • SNMP-NOTIFICATION-MIB • SNMP-PROXY-MIB • SNMP-TARGET-MIB • SNMP-USM-MIB • SNMP-VIEW-BASED-ACM-MIB • SNMPv2-MIB • TCP-MIB • UDP-MIB

Table 15 highlights information about supported SFP modules for the Cisco Catalyst IE9300 Rugged Series switches.

Table 15. SFP support

Part number	Specification	SFP type	Max distance	Cable type	Temperature range ¹	Digital optical monitoring (DOM) support
GLC-FE-100FX-RGD=	100BASE-FX	FE	2 km	MMF	IND	Yes
GLC-FE-100LX-RGD=	100BASE-LX10	FE	10 km	SMF	IND	Yes
GLC-FE-100FX=	100BASE-FX	FE	2 km	MMF	COM	No
GLC-FE-100LX=	100BASE-LX10	FE	10 km	SMF	COM	No
GLC-FE-100EX=	100BASE-EX	FE	40 km	SMF	COM	No
GLC-FE-100ZX=	100BASE-ZX	FE	80 km	SMF	COM	No
GLC-FE-100BX-D=	100BASE-BX10	FE	10 km	SMF	COM	No
GLC-FE-100BX-U=	100BASE-BX10	FE	10 km	SMF	COM	Yes
GLC-SX-MM-RGD=	1000BASE-SX	GE	550 m	MMF	IND	Yes
GLC-LX-SM-RGD=	1000BASE-LX/LH	GE	550 m/10 km	MMF/SMF	IND	Yes
GLC-ZX-SM-RGD=	1000BASE-ZX	GE	70 km	SMF	IND	Yes
GLC-BX40-U-I=	1000BASE-BX40	GE	40 km	SMF	IND	Yes
GLC-BX40-D-I=	1000BASE-BX40	GE	40 km	SMF	IND	Yes
GLC-BX80-U-I=	1000BASE-BX80	GE	80 km	SMF	IND	Yes
GLC-BX80-D-I=	1000BASE-BX80	GE	80 km	SMF	IND	Yes
GLC-SX-MMD=	1000BASE-SX	GE	550 m	MMF	EXT	Yes
GLC-LH-SMD=	1000BASE-LX/LH	GE	550 m/10 km	MMF/SMF	EXT	Yes
GLC-EX-SMD=	1000BASE-EX	GE	40 km	SMF	EXT	Yes
GLC-ZX-SMD=	1000BASE-ZX	GE	70 km	SMF	EXT	Yes
GLC-BX-D=	1000BASE-BX10	GE	10 km	SMF	COM	Yes

Part number	Specification	SFP type	Max distance	Cable type	Temperature range ¹	Digital optical monitoring (DOM) support
GLC-BX-U=	1000BASE-BX10	GE	10 km	SMF	COM	Yes
CWDM-SFP-xxxx=	CWDM 1000BASE-X	GE		SMF	COM	Yes
DWDM-SFP-xxxx=	DWDM 1000BASE-X	GE		SMF	COM	Yes
SFP-GE-S=	1000BASE-SX	GE	550 m	MMF	EXT	Yes
SFP-GE-L=	1000BASE-LX/LH	GE	550 m/10 km	MMF/SMF	EXT	Yes
SFP-GE-Z=	1000BASE-ZX	GE	70 km	SMF	EXT	Yes
GLC-SX-MM=	1000BASE-SX	GE	550 m	MMF	COM	No
GLC-LH-SM=	1000BASE-LX/LH	GE	550 m/10 km	MMF/SMF	COM	No
GLC-ZX-SM=	1000BASE-ZX	GE	70 km	SMF	COM	Yes
GLC-TE=²	1000BASE-T	GE	100 m	Copper	EXT	NA
GLC-T=²	1000BASE-T	GE	100 m	Copper	COM	NA
GLC-T-RGD=²	1000BASE-T	GE	100 m	Copper	IND	NA
ONS-SI-GE-SX=	1000BASE-SX	GE	500 m	MMF	IND	
ONS-SI-GE-LX=	1000BASE-LX	GE	10 km	SMF	IND	
ONS-SI-GE-EX=	1000BASE-EX	GE	40 km	SMF	IND	
ONS-SI-GE-ZX=	1000BASE-ZX	GE	80 km	SMF	IND	
ONS-SE-GE-BXU=	1000BASE-BX	GE	10 km	SMF	EXT	
ONS-SE-GE-BXD=	1000BASE-BX	GE	10 km	SMF	EXT	
GLC-BX-U-I=	1000BASE-BX	GE	10 km	SMF	IND	
GLC-BX-D-I=	1000BASE-BX	GE	10 km	SMF	IND	
SFP-10G-BXD-I=	10GBASE-BX	10G	10 km	SMF	IND	Yes
SFP-10G-BXU-I=	10GBASE-BX	10G	10 km	SMF	IND	Yes
SFP-10G-BX40D-I=	10GBASE-BX	10G	40 km	SMF	IND	Yes
SFP-10G-BX40U-I=	10GBASE-BX	10G	40 km	SMF	IND	Yes
SFP-10G-SR-X=	10GBASE-SR	10G	400 m	MMF	EXT	Yes
SFP-10G-SR-I=	10GBASE-SR	10G	400 m	MMF	EXT	Yes
SFP-10G-LR-X=	10GBASE-LR	10G	10 km	SMF	EXT	Yes

Part number	Specification	SFP type	Max distance	Cable type	Temperature range ¹	Digital optical monitoring (DOM) support
SFP-10G-SR=	10GBASE-SR	10G	400 m	MMF	COM	Yes
SFP-10G-LR=	10GBASE-LR	10G	10 km	SMF	COM	Yes
SFP-10G-ER=	10GBASE-ER	10G	40 km	SMF	COM	Yes
SFP-10G-ZR=	10GBASE-ZR	10G	80 km	SMF	COM	Yes
SFP-H10GB-CUxM=	Twinax Cable	10G	1m, 3m, 5m	-	COM	-
SFP-H10GB-ACUxM=	Twinax Cable	10G	7m, 10m	-	COM	-
ONS-SI+-10G-SR=	10GBASE-SR	10G	400 m	MMF	IND	Yes
ONS-SI+-10G-LR=	10GBASE-LR	10G	10 km	SMF	IND	Yes
ONS-SI+-10G-ER=	10GBASE-ER	10G	40 km	SMF	IND	Yes
ONS-SI+-10G-ZR=	10GBASE-ZR	10G	80 km	SMF	IND	Yes
SFP-10G-ER-I=	10GBASE-ER	10G	40 km	SMF	IND	Yes
SFP-10G-ZR-I=	10GBASE-ZR	10G	80 km	SMF	IND	Yes
SFP-10G-T-X=	10GBASE-T	10G	30 m	Copper	EXT	NA
SFP-10G-LR10-I=	10GBASE-LR	10G	10 km	SMF	IND	Yes
DWDM-SFP10G-xxxx=	DWDM 10GBASE-X	10G		SMF	COM	Yes
CWDM-SFP10G-xxxx=	CWDM 10GBASE-X	10G		SMF	COM	Yes

¹If nonindustrial SFPs (EXT, COM) are used, the switch operating temperature must be derated.

²Degrades PTP performance.

Ordering information

Table 16 lists the ordering information for the Cisco Catalyst IE9300 Rugged Series switches.

Table 16. Ordering information

Product ID	Description
IE-9310-26S2C-E	Catalyst IE9300 w/ 24 Ports GE SFP Downlinks and 4 Ports GE SFP uplinks, NE
IE-9310-26S2C-A	Catalyst IE9300 w/ 24 Ports GE SFP Downlinks and 4 Ports GE SFP uplinks, NA
IE-9320-26S2C-E	Catalyst IE9300 w/ 24 Ports GE SFP Downlinks and 4 Ports GE SFP uplinks, Stackable, NE
IE-9320-26S2C-A	Catalyst IE9300 w/ 24 Ports GE SFP Downlinks and 4 Ports GE SFP uplinks, Stackable, NA

Product ID	Description
IE-9320-22S2C4X-E	Catalyst IE9300 w/ 24 Ports GE SFP Downlinks and 4 Ports 10G SFP+ uplinks, Stackable, NE, Conformal Coating
IE-9320-22S2C4X-A	Catalyst IE9300 w/ 24 Ports GE SFP Downlinks and 4 Ports 10G SFP+ uplinks, Stackable, NA, Conformal Coating
IE-9320-24P4S-E	Catalyst IE9300 w/ 24 Ports GE PoE+ Downlinks and 4 Ports GE SFP uplinks, Stackable, NE
IE-9320-24P4S-A	Catalyst IE9300 w/ 24 Ports GE PoE+ Downlinks and 4 Ports GE SFP uplinks, Stackable, NA
IE-9320-24T4X-E	Catalyst IE9300 w/ 24 Ports GE Cu Downlinks and 4 Ports 10G SFP+ uplinks, Stackable, NE
IE-9320-24T4X-A	Catalyst IE9300 w/ 24 Ports GE Cu Downlinks and 4 Ports 10G SFP+ uplinks, Stackable, NA
IE-9320-24P4X-E	Catalyst IE9300 w/ 24 Ports GE PoE+ Downlinks and 4 Ports 10G SFP+ uplinks, Stackable, NE
IE-9320-24P4X-A	Catalyst IE9300 w/ 24 Ports GE PoE+ Downlinks and 4 Ports 10G SFP+ uplinks, Stackable, NA
IE-9320-16P8U4X-E	Catalyst IE9300 w/ 16 Ports GE PoE+ and 8 Ports 2.5G 4PPoE Downlinks and 4 Ports 10G SFP+ uplinks, Stackable, NE
IE-9320-16P8U4X-A	Catalyst IE9300 w/ 16 Ports GE PoE+ and 8 Ports 2.5G 4PPoE Downlinks and 4 Ports 10G SFP+ uplinks, Stackable, NA
SD-IE-4GB=	4GB SD memory card for IE
CAB-STK-0.5M=	Cisco 0.5M stack cable
CAB-STK-1M=	Cisco 1M stack cable
RM-RGD-19IN=	Spare 19IN rack-mount kit
RM-RGD-23IN=	23IN NEBS rack-mount kit
RM-RGD-ETSI=	ETSI rack-mount kit
PWR-RGD-AC-DC-H	Hazloc Power Supply High AC/DC 85-264VAC/88-300VDC
PWR-RGD-LOW-DC-H	Hazloc Power Supply Low DC 24-60V/10A
PWR-RGD-AC-DC-250	Hazloc Power Supply 100-240VAC/100-250VDC
PWR-RGD-AC-DC-400	Hazloc Power Supply 100-240VAC/100-250VDC, 400W
PWR-RGD-AC-DC-400=	Spare Hazloc Power Supply 100-240VAC/100-250VDC, 400W
IE9300-NW-A=	Network Advantage License for IE9300, Perpetual
IE9300-DNA-E	Cisco Catalyst Center Essentials license for IE9300 Series
IE9300-DNA-E-3Y	IE 9300 Cisco Catalyst Center Essentials, 3 Year Term license
IE9300-DNA-E-5Y	IE 9300 Cisco Catalyst Center Essentials, 5 Year Term license
IE9300-DNA-E-7Y	IE 9300 Cisco Catalyst Center Essentials, 7 Year Term license

Product ID	Description
IE9300-DNA-A	Cisco Catalyst Center Advantage license for IE9300 Series
IE9300-DNA-A-3Y	IE 9300 Cisco Catalyst Center Advantage, 3 Year Term license
IE9300-DNA-A-5Y	IE 9300 Cisco Catalyst Center Advantage, 5 Year Term license
IE9300-DNA-A-7Y	IE 9300 Cisco Catalyst Center Advantage, 7 Year Term license

Warranty

Five-year limited hardware warranty on all IE9300 product IDs and power supplies (see Table 15 above). See the following link for more details on the warranty:

<https://www.cisco.com/c/en/us/products/warranties/warranty-doc-c99-740591.html>.

Cisco environmental sustainability

Information about Cisco’s environmental sustainability policies and initiatives for our products, solutions, operations, and extended operations or supply chain is provided in the “Environment Sustainability” section of Cisco’s [Corporate Social Responsibility](#) (CSR) Report.

Reference links to information about key environmental sustainability topics (mentioned in the “Environment Sustainability” section of the CSR Report) are provided in the following table:

Sustainability topic	Reference
Information on product material content laws and regulations	Materials
Information on electronic waste laws and regulations, including products, batteries, and packaging	WEEE compliance

Reference links to product-specific environmental sustainability information that is mentioned in relevant sections of this data sheet are provided in the following table:

Sustainability topic	Reference
Power	
Power specifications and consumption	Table 5. IE9300 physical configurations
Environmental characteristics	
Operating temperature, industry standards, EMC emissions	Table 12. Compliance specifications
Material	
Unit weight	Table 5: IE9330 physical configurations

Cisco makes the packaging data available for informational purposes only. It may not reflect the most current legal developments, and Cisco does not represent, warrant, or guarantee that it is complete, accurate, or up to date. This information is subject to change without notice.

Cisco Services

For information on services, visit <https://www.cisco.com/web/services/>.

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For more information

For more information about the Cisco IE 9300 Series, visit <https://www.cisco.com/go/ie9300> or contact your local account representative.

Document history

New or Revised Topic	Described In	Date
Power supplies footnote update, REP ZTP feature addition, Certifications, Removed Full Flexible Netflow from Catalyst Center Visibility row	Table 7 , Table 9 , Table 11 , Table 12	April 2024
Footnotes update, PID Description update, Figure 3 description update and ModBus TCP feature update, DNA name change to Catalyst Center	Figure 3, Table 7 , Table 8 , Table 9 , Table 12 , Table 16	October 19, 2023
Updated Features L2 NAT, PTP as Ref for NTP, CIP, PROFINET. REP Fast, Power Profile 2017, SD-Access Fabric Edge Node and Cisco DNA Centre License Matrix	Table 9 , Table 10 and Table 11	April 12, 2023

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RTC Manufactory, Sun Beacon (School Zone), Guard and Sees (APL Product)

by RTC Manufactory, Inc. (Manufactory Website)

Model: Guardian Series

APL Certification

- 700-026-016 (Approval Date: 1/4/2018) (Service Life Expectancy:)
BABA Eligible: Eligible

Product Types

- Sun Beacon

Resource Links

- FDOT Standard Specifications for Road and Bridge Construction
- FDOT Materials Manual
- Product Family Reports (Approved Fabricators)
- FDOT Standard Plans for Road and Bridge Construction
- Developmental Design Standards (DDS)
- Developmental Design Specifications (DDS)
- Traffic Engineering and Operations Manual (TEM)
- Traffic Engineering & Research Lab Materials
- Build America, Buy America Form

Random Sampling Frequency

The e a e no ems o d splay.

Limitations

The e a e no ems o d splay.

Documents

The e a e no ems o d splay.

Comments

Solar powered, GUARD, GUARD1, & GUARD2 reviewed with M2M Modem and Sunsave 20L.

Re-evaluated on 9/8/2022 with the new RTC Guard and flasher control board.

Product Fabrications

Buy America Category: Electrical/Electronic, Exempt with FHWA Manufactured Product waiver

Manufacturer Detail

RTC Manufactory, Inc.

1016 Enterprise Plaza

Arlington TX 76001

615-299-3228

Flex-Guide (APL Product)

by [Pexco, LLC \(Manufacturer Web site\)](#)

APL Certification

- 7 5- - 2 (Approval Date: 1 / 1/2 1) (Service Life Expectancy:)
BABA Eligible: Eligible
Previous APL Number
◦ S7 5- 2

Product Types

- Flexible Post Delineator

Resource Links

- [FDOT Standard Specification for Road and Bridge Construction](#)
- [FDOT Standard Plan for Road and Bridge Construction](#)
- [Developmental Design Standard \(DDS\)](#)
- [Developmental Design Specification \(DDS\)](#)
- [Developmental Specification](#)
- [Roadway Design Bulletin/Memorandum](#)
- [Build America, Buy America Form](#)

Random Sampling Frequency

There are no items to display.

Limitations

There are no items to display.

Documents

[FG S7 5- 2 Installation Instructions \(PDF 2 KB\)](#)

[Download the Adobe Reader](#)

Comments

Surface Mount

Product Fabrications

Buy America Category: Construction Material - Plastic or Polymer Based

Manufacturer Detail

Pexco, LLC

11 7th Ave East

Tacoma WA 98424

253-284-809