Product Overview

This chapter contains the following sections:

- Overview of Features, on page 1
- Cisco IR1800 Series Platform Features, on page 2
- Front Panel Overview, on page 3
- Rear Panel Overview, on page 4
- Pluggable Modules, on page 5
- Gigabit Ethernet Combo Port, on page 7
- Gigabit Ethernet Copper Ports, on page 7
- Power over Ethernet, on page 7
- Front Panel LEDs, on page 7
- Reset Button, on page 9
- Supported Cisco Antennas and Antenna Accessories, on page 9
- Modem Support, on page 10
- Power Supply, on page 12
- Serial Ports, on page 12
- USB Ports, on page 13

Overview of Features

This chapter provides an overview of the features available in the Cisco Catalyst IR1800 Rugged Series Router (referred to as the IR1800 in the rest of this document).

The IR1800 is a next-generation modular industrial router based on Cisco IOS-XE, with advanced features such modular Wi-Fi, modular cellular WAN, Controller Area Network (CAN bus), solid-state drive (SSD), digital I/O, and GPS dead reckoning.

The IR1800 features a base platform with modularity that includes:

- Pluggable Interface Module (PIM) slot(s)
- Wi-fi Interface Module (WIM) slot
- SSD Module slot
- GPS Module slot

The IR1800 consists of four SKUs:

- IR1821

- IR1831
- IR1833
- IR1835

The following table shows the differences among the features of these SKUs.

Table 1: Differences in IR1800 SKU Features

Feature	IR1821	IR1831	IR1833	IR1835
Processor Frequency	600 MHz	600 MHz	600 MHz	1200 MHz
DDR Memory	4GB	4GB	4GB	8GB
Flash Storage	4GB	4GB	4GB	8GB
PIM Slot	1	2	2	2
Wi-Fi Pluggable Module Slot	1	1	1	1
PoE	No	No	Yes	Yes
SSD Module Slot	No	No	Yes	Yes
GPS FRU Module Slot	No	No	Yes	Yes
Digital I/O	No	No	No	Yes
Asynchronous Serial Interface	(1) RS232 DTE	(1) RS232 DTE (1) RS232 DCE	(1) RS232 DTE (1) RS232 DCE	(1) RS232 DTE (1) RS232 DCE/RS485

Cisco IR1800 Series Platform Features

This section describes the different components of the router.

Cisco IR1821 Router

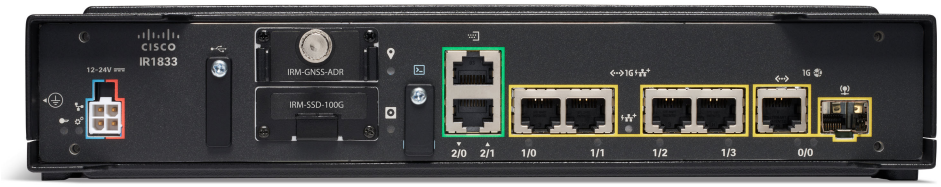
Figure 1: Cisco IR1821 Router

Cisco IR1831 Router

Figure 2: Cisco IR1831 Router

Cisco IR1833 Router

Figure 3: Cisco IR1833 Router



Cisco IR1835 Router

Figure 4: Cisco IR1835 Router

Front Panel Overview

This section describes the components of the IR1800 router. The IR1835 is used as an example since this SKU is the full featured router.

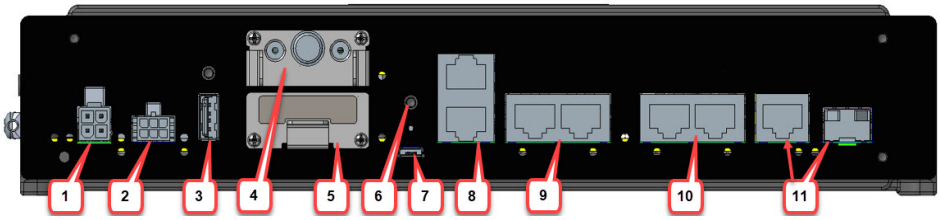
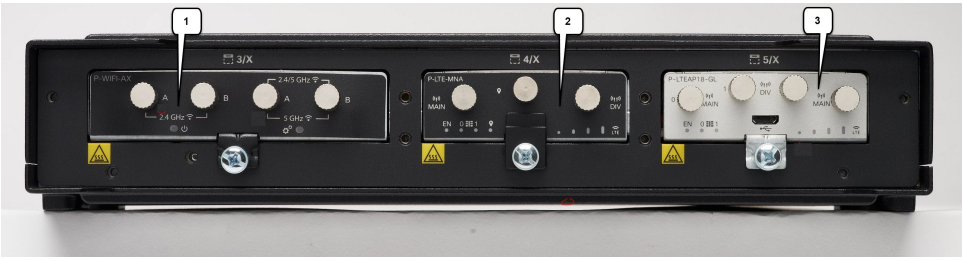


Table 2: Front Panel of the IR1835 Router

Item	Description
1	Power Connector/CAN Bus High/Low wiring
2	Digital I/O connector with Ignition Wiring
3	Type A USB 2.0
4	GPS FRU Module
5	SSD FRU Module
6	Reset Button
7	USB Console (Micro-B)
8	Asynchronous Serial Ports
9	Gigabit Ethernet LAN ports 0/1/0-0/1/1
10	Gigabit Ethernet LAN ports 0/1/2-0/1/3
11	Gigabit Ethernet 0/0/0 WAN Combo Ports (RJ-45 or SFP)

Rear Panel Overview

This section describes the components of the IR1800 router. The IR1835 is used as an example since this SKU is the full featured router.



Item	Description
1	Wi-Fi Interface Module (WIM) 0/3/0

Item	Description
2	Pluggable Interface Module 0/4/0 (PIM)
3	Pluggable Interface Module 0/5/0 (PIM)

Pluggable Modules

The following subsections provide details on the different modules that can be plugged into the IR1800 Series Routers.

Cellular Pluggable Interface Module (PIM)

The Cellular Pluggable Interface Module (PIM) is a pluggable unit used to connect to a wireless (LTE) interface. For more information about the PIM, see Pluggable Interface Modules.

SSD Module

The IR1800 supports one Solid State Drive (SSD) module. For more information see SSD Module.

GPS Module

The IR1800 supports one GPS module. This module is used in addition to the ones integrated in the pluggable LTE module for more accurate dead reckoning performance.

For more information about the module see GPS Field Replaceable Unit Module .

SFP Modules

Warning **Statement 1008**—Class 1 Laser Product

This product is a Class 1 laser product.

The IR1800 Ethernet SFP module provides connections to other devices. These field-replaceable transceiver modules provide uplink interfaces. Local connectors provide the fiber-optic connection. RJ-45 connectors allow copper connections. You can use any combination of the supported SFP modules listed in the following table.

Table 3: Supported Gigabit Ethernet SFPs

Gigabit Ethernet SFP	Distance	Fiber	Commercial 0C to +70C	Extended -5C to +85C	Industrial -40C to +85C	Digital Optical Monitoring
GLC-SX-MM-RGD	220-550 m	MMF	—	—	YES	—

Gigabit Ethernet SFP	Distance	Fiber	Commercial 0C to +70C	Extended -5C to +85C	Industrial -40C to +85C	Digital Optical Monitoring
GLC-LX-SM-RGD	550m/10 km	MMF/SMF	—	—	YES	—
GLC-ZX-SM-RGD	70 km	SMF	—	—	YES	YES
SFP-GE-S	220-550 m	MMF	—	YES	—	YES
SFP-GE-L	550 m/10 km	MMF/SMF	—	YES	—	YES
SFP-GE-Z	70 km	SMF	—	YES	—	YES

Table 4: Supported Fast Ethernet SFPs

Fast Ethernet SFP	Distance	Fiber	Commercial 0C ~ +70C	Extended -5C ~ +85C	Industrial -40C ~ +85C	Digital Optical Monitoring
GLC-FE-100FX-RGD	2 km	MMF	—	—	YES	—
GLC-FE-100LX-RGD	10 km	SMF	—	—	YES	—

Table 5: Supported SFPs added in IOS XE 17.7.1

SFP	Distance	Fiber	Commercial 0C ~ +70C	Extended -5C ~ +85C	Industrial -40C ~ +85C	Digital Optical Monitoring
GLC-T-RGD	100 M	Copper	—	—	YES	—
CWDM-SFP-1470	100 km	Duplex	YES	—	—	YES
CWDM-SFP-1610	100 km	Duplex	YES	—	—	YES
CWDM-SFP-1530	100 km	Duplex	YES	—	—	YES
DWDM-SFP-3033	80 km	Duplex	YES	—	—	YES
DWDM-SFP-3112	80 km	Duplex	YES	—	—	YES
GLC-BX-D-I	10 km	Single Strand	—	—	YES	YES
GLC-BX-U-I	10 km	Single Strand	—	—	YES	YES
GLC-TE	100 m	Copper	—	—	YES	NO

For the most up-to-date list of supported SFP models for Cisco Industrial Devices, see the Cisco Optics-to-Device Compatibility Matrix.

Wireless Interface Module (WIM)

The Wireless Interface Module (WIM)

Complete details on the WIM are found in this chapter: Cisco Wi-Fi Interface Module (WIM)

Gigabit Ethernet Combo Port

The IR1800 supports a single combo fiber and copper port (SFP/RJ45). The SFP supports standard 1000Base-X or 100Base-FX Ethernet over single-mode or multi-mode optics. Industrial SFPs must be used for the system to meet the operating temperature from -40C to +60C. If commercial or extended temperature grade of SFP is used, the system's operating temperature must be derated.

Gigabit Ethernet Copper Ports

The IR1800 has four RJ-45 copper ports. These copper ports support standard 3-speed, 10/100/1000Base-T Ethernet features, including automatic medium-dependent interface crossover (auto-MDIX), forced or auto negotiation of speed and duplex, fast link drop, and cable diagnostics.

Power over Ethernet

A 30.8W capacity PoE PSE power supply is built into the IR1800. The power supply can power any of the LAN switch ports that are compliant with PoE and PoE+ 802.3af and 802.3at Powered Device (PD) specification, subject to 30.8 W maximum power shared among all ports.

Front Panel LEDs

The following figure shows the locations of the LEDs.

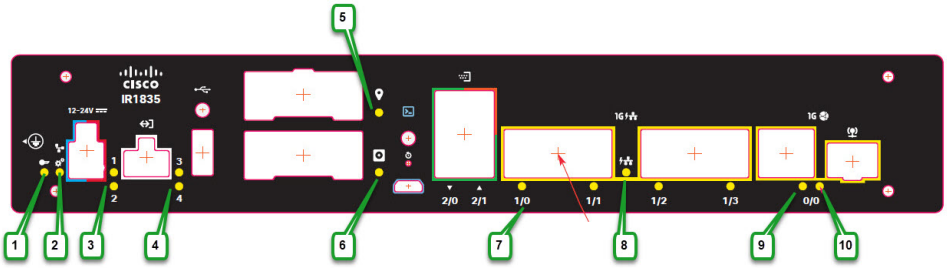


Table 6: LED Descriptions

LED Number	Description	LED Status
1	Ignition Status	Off: Ignition power management is disabled when SYS LED is on. Steady Green combined with SYS LED Off: Ignition signal is off (power management is enabled). Steady Green combined with SYS LED On: Ignition signal is on. Flashing Green with Ignition Off: Timer counts down when SYS LED is on. Steady Yellow: Ignition power management feature is not loaded.
2	System Status **Note** There is also a System Status LED located on the top cover of the device. The Front panel LED and the Top Cover LED perform the same function. (see the Top Cover LED below)	Steady Green: Operational. Flashing Green: Cisco IOS-XE booting. Steady Yellow: System in ROMMON mode. Off: No power.
3 and 4	Digital I/O	Off: Inactive. Steady Yellow: Active.
5	GPS Module	Steady Green: GPS/DR configured; location fix achieved. Flashing Green: GPS DR active; trying to achieve location fix. Off: GPS DR not configured.
6	SSD Module	Steady Green: SSD is being accessed. Off: No power or is not enabled.
7	Four Gigabit Ethernet LAN ports labeled 1/0, 1/1, 1/2, 1/3 **Note** See the IR1800 Software Configuration Guide for Cisco IOS-XE naming conventions.	Steady Green: Port is up with link. Flashing Green: Link with activity. Off: Port is off or down.
8	PoE Power Status	Steady Green: POE or POE+ power supplied on one LAN Port. Off: No POE or POE+ power in any LAN port.
9	RJ45 Gigabit Ethernet WAN **Note** Either the SFP or the RJ45 LED will be On, depending on what type of interface is used in the combo port.	Steady Green: Port is up with link. Flashing Green: Link with activity. Off: No link, or port is off.

LED Number	Description	LED Status
10	SFP Gigabit Ethernet WAN **Note** Either the SFP or the RJ45 LED will be On, depending on what type of interface is used in the combo port.	Steady Green: Port is up with link. Flashing Green: Link with activity. Off: No link, or port is off.

Figure 5: Top Cover LED

Reset Button

The **Reset** button resets the router configuration to the default factory configuration. To perform the reset, use a standard size #1 paper clip with wire gauge 0.033 inch or smaller, and simultaneously press the Reset button while applying power to the router.

Note The reset button does not cause a reset while the device is running.

Supported Cisco Antennas and Antenna Accessories

The IR1800 must have a pluggable module with antenna ports installed in order to connect to antennas. The base unit does not have any wireless capabilities on its own.

The Chapter Antenna Selection and Installation lists the supported antennas and accessories for the IR1800 with a wireless pluggable module. For detailed information about Cisco antennas for industrial routers, see the Cisco Industrial Routers and Industrial Wireless Access Points Antenna Guide.

Note We strongly recommend against having antennas attached directly to the router. It is better to use cables attached directly to the router.

Modem Support

Software download for the pluggable modules supported in the IR1800 is available at:

https://software.cisco.com/download/navigator.html?mdfid=286288566&flowid=76082

The following tables show the technology details for the modems.

Table 7: Modem Technology Supported

SKU ID	Description	Supported Technology
P-LTE-VZ	U.S. (Verizon) Single Micro SIM	LTE CAT4: B4, B13
P-LTE-US	North America (AT&T) Dual Micro SIM	LTE CAT4: B2, B4, B5, B12 HSPA+,UMTS: B2, B4, B5
P-LTE-GB	Europe Dual Micro SIM	LTE CAT4: B3, B5, B8, B20, B28 HSPA+: B1, B5, B8 EDGE: 900/1800
P-LTE-IN	India and China	LTE CAT4: B1, B3, B5, B8, B40, B41* * B41—supported frequency range: (2535–2655 MHz) 3G UMTS DC-HSPA+
P-LTE-MNA	North America	LTE CAT4: B2, B4, B5, B12, B13, B14, B17, B66 3G UMTS DC-HSPA+, HSPA+, HSPA, WCDMA
P-LTEA-LA	APAC	LTE Bands: B1, B3, B5, B7, B8, B18, B19, B21, B28, B38, B39, B40, B41 Non-LTE Bands: B87 - WCDMA (Europe, Japan, and China) 2100 band B91 - WCDMA US 850 band B92 - WCDMA Japan 800 band B114 - WCDMA Europe and Japan 900 band B115 - WCDMA Japan 1700 band B125 - WCDMA Japan 850 band

SKU ID	Description	Supported Technology
P-LTEA-EA	USA, Canada, Europe, Latin America	LTE bands: Bands 1-5, 7, 12, 13, 20, 25, 26, 29, 30 Non-LTE bands: B87 - WCDMA (Europe, Japan, and China) 2100 band B88 - WCDMA US PCS 1900 band B89 - WCDMA (Europe and China) DCS 1800 band B90 - WCDMA US 1700 band B91 - WCDMA US 850 band B114 - WCDMA Europe and Japan 900 band
P-LTEAP18-GL	United States, Europe, Canada, Japan, Australia, New Zealand and Private LTE or U.S. CBRS	LTE bands: 1-5, 7, 8, 12-14, 17, 18-20, 25, 26, 28-30, 32, 38-43, 46, 48, 66, and 71. FDD LTE 600 MHz (band 71), 700 MHz (bands 12, 13, 14, 17, 28, and 29), 800 MHz (band 20), 850 MHz (bands 5, 18, 19, and 26), 900 MHz (band 8), 1500 MHz (band 32), 1700 MHz (bands 4 and 66), 1800 MHz (band 3), 1900 MHz (bands 2 and 25), 2100 MHz (band 1), 2300 MHz (band 30), 2600 MHz (band 7). TDD LTE 1900 MHz (band 39), 2300 MHz (band 40), 2500 MHz (band 41), 2600 MHz (band 38), 3500 MHz (bands 42 and 48), 3700 MHz (band 43), 5200 MHz (band 46).
P-5GS6-GL	The 5G Sub-6 GHz Pluggable Interface Module offers 5G capability to the IoT Industrial Router family. The product ID for the pluggable module is P-5GS6-GL. The P-5GS6-GL uses the FN980 Telit modem.	Complete details can be found in the 5G Sub-6 GHz Pluggable Interface Module chapter.
P-LTEA7-NA	North America	LTE CAT 7: B2, B4, B5, B7, B12, B13, B14, B25, B26, B41, B42, B43, B48, B66, B71 3G UMTS, WCDMA: B2, B4, B5
P-LTEA7-EAL	Canada, Europe, Latin America, US	LTE CAT 7: B1, B3, B7, B8, B20, B28, B32, B38, B40, B41, B42, B43 3G UMTS, WCDMA: B1, B5, B8
P-LTEA7-JP	Japan	LTE CAT 7: B1, B3, B5, B8, B18, B19, B39, B41, B42, B43 3G UMTS, WCDMA: B1, B5, B6, B19

SKU ID	Description	Supported Technology
P-5GS6-R16SA	United States, Europe, Canada, Japan, Australia and New Zealand.	5G FR1 NR: n1, n2, n3, n5, n7, n8, n12, n13, n14, n18, n20, n25, n26, n28, n29, n30, n38, n40, n41, n48, n66, n70, n71, n75, n76, n77, n78, n79 LTE bands: FDD LTE: B1, B2, B3, B4, B5, B7, B8, B12, B13, B14, B17, B18,B19, B20, B25, B26, B28, B29,B30, B32, B66, and B71 TDD LTE: B34, B38, B39, B40, B41, B42, B43, B46, B48 3G UMTS, WCDMA: B1, B2, B4, B5, B8

Table 8: Thermal Mitigation Table for P-LTEA7-XX modules - IR1835

	MaximumAmbient Temperature (C/F)	AirFlow (LFM)	ThroughputPerformance
IR1835plus WP-WIFI6 Single P-5GS6-GL Single P-LTEA7-XX	50℃/122℉	0	Normal
	55℃/131℉	0	Throttled
	70℃/158℉	40	Throttled
	75℃/167℉	200	Throttled

GPS Technology Support

The IR1800 obtains GPS service through either the installed PIM modules, or from the dedicated IRM-GNSS-ADR module. Please inquire with your sales representative for a roadmap of support for additional constellations.

Power Supply

IR1800 comes with an external DC power connector. The 4-pin power entry connector (receptacle) is mounted to the unit. The 4-pin power-entry mating connector (plug) is attached to the receptacle. It is removed during installation and used to connect to the DC power source, and then reattached to provide power to the unit.

For more information, see Connecting the Router.

Serial Ports

IR1800 supports up to two RJ-45 RS232 ports (depending on the model) that conform to EIA-561 standard. The pinout is shown in the table below.

One RS232 RJ45 serial port (S0) is intended as a DTE port supporting legacy RS232 equipment. The second serial port (S1) is intended as a DCE port, capable of both RS232 and RS485. RS485 can support full or half duplex.

The RJ45 pinouts are shown in the following figure and table:

Figure 6: Pinouts

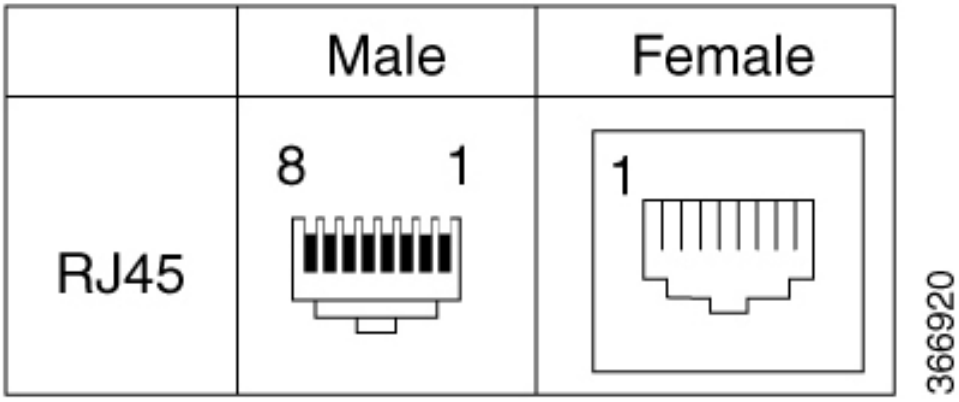


Table 9: Serial Port Characteristics

RS232					RS485 Full Duplex		RS485 Half Duplex	
Pin #	**Signal Description**	**Abbr.**	**S0 (DTE)**	**S1 (DCE)**	**Signal**	**DIR**	**Signal**	**DIR**
1	DCE ready. Used as DSR in Cisco IOS.	DSR/RI	Input	Output	TX-	Output	TX/RX+	<->
2	Received Line Signal Detector	DCD	Input	Output	TX+	Output	TX/RX-	<->
3	DTE Ready	DTR	Output	Input	RX-	Input	—	—
4	Signal Ground	COM	—	—	COM	—	COM	—
5	Received Data	RxD	Input	Output	—	—	—	—
6	Transmitted Data	TxD	Output	Input	RX+	Input	—	—
7	Clear To Send	CTS	Input	Output	—	—	—	—
8	Request To Send	RTS	Output	Input	—	—	—	—

USB Ports

A single USB port with a Type-A connector is present on the front panel. The port is USB 2.0 only, and can be used for USB sticks. We recommend that you do not use this in a hazardous location without mechanical constraint. All front panel USB ports are equipped with a screw hole for mechanical constraint. The USB port can provide a maximum current of 500mA at 5V.

A single USB port (micro-B) is provided for console access on the front panel. If your laptop or PC displays a message that you do not have the proper drivers to communicate with the IR1800, you can obtain them from your computer manufacturer.

Caution If you are connecting to the USB port, note the following points:

- A connection to the USB port can only be made in a nonhazardous environment.
- The USB port cover must be reinstalled before the router can be deployed in a hazardous environment.