

# Cisco Catalyst IR1800 Rugged Series Routers

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Cisco Catalyst IR1800 Rugged Series Routers deliver performance, security, and flexibility to help you accelerate your digitization journey at the edge.

## Product overview

Cisco Catalyst IR1800 Rugged Series Routers are Cisco IoT's most versatile routers, designed for mobile or stationary deployments. They deliver secure, high-performance, 5G routers in a modular design that support private LTE, FirstNet, Verizon Frontline, Wi-Fi6 and Gigabit Ethernet. Designed with a high level of modularity, they can be customized to help you reduce costs and make your networking investments ready for the future, keeping in mind the needs of tomorrow. With high bandwidth and throughputs from 5G and Wi-Fi 6, they enable you to connect all your assets, converge networks and drive efficiency.

The Catalyst IR1800 Series offers enterprise-grade security from the hardware to the network communications all the way to the industrial assets. The routers are powered by Cisco IOS® XE, Cisco's fully programmable next-generation operating system.

Scale and simplify operations at the edge with powerful network management tools such as the Cisco IoT Operations Dashboard, Cisco DNA Center, and Cisco vManage for configuration, monitoring, and troubleshooting.

The IR1800 Series is built to withstand the harsh environments found in transportation, public safety, and oil and gas applications as well as a variety of stationary deployments. Automotive certifications and features such as Controller Area Network (CAN) bus support, dead reckoning and Global Navigation Satellite System (GNSS), and ignition power management make it ideal for secure, reliable connectivity in transit and public safety applications, including first responder vehicles, passenger fleets, service fleets, and commercial truck fleets. The router also provides reliable, rugged connectivity for stationary assets such as oil and gas equipment, solar and wind farms, ATM machines and EV charging stations.

### Catalyst IR1800 Rugged Series Routers

High performance modular router for mission-critical mobile and remote assets

**Flexible**

Modular design-modules for storage, Wi-Fi, GPS, LTE, private LTE, 5G, FirstNet, Verizon Frontline

SD-WAN enabled

Choice of management platforms for IT and Operations

AT&T Firstnet

Verizon frontline

**Purpose-built for mobile**

Transportation certifications, shock and vibration resistant

Dead reckoning GNSS

Ignition Power Management

CAN bus support for vehicle diagnostics

**Secure**

Built-in Cisco multi-layer security

Visibility into OT assets with Cisco cyberVision

**Edge computing**

Built-in edge compute resource

IOx App hosting support for your own application

Cisco Edge Intelligence

**Figure 1.**  
Product Highlights

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## Use cases

### Passenger and service fleets

Keep your fleet vehicles connected wherever they go and effectively track them in real time through built-in GPS systems. Power a seamless experience for passengers on board with Wi-Fi 6.

Reduce unplanned maintenance and repairs and minimize operating expenses with route optimization. Centrally manage all fleet vehicles through a single dashboard.

### Public safety

Improve public safety and security, provide better response time, and increase cost efficiencies with secure, reliable access to real-time data in police cars and first responder vehicles such as fire trucks and ambulances. Move critical video data and other sensitive information from incident commanders to field officers over a secure network.

### Mass transit

Enable fast and reliable on-board Wi-Fi, location-based services, and automated ticketing for passengers. Enhance passenger monitoring using video, both on board and within the station environment. Know the exact location to provide an estimated time of arrival with GPS.

Use data insights from the vehicles to gain operational efficiencies and reduce maintenance costs.

### Oil and gas

Monitor pipelines, adjust valve pressure, optimize production, and prevent unplanned downtime.

Enable machine visibility and equipment monitoring to prevent faults before they occur while reducing costs.

### Renewable energy production

Collect telemetry, monitor operations, detect incidents, easily gain remote access to control equipment, and ensure physical security in remote locations while leveraging cellular networks to simply connect individual wind turbines and solar panels.

### EV chargers

With the risks of broken hardware, unexpected shutoffs, payment problems and more, you need reliable connectivity to your EV infrastructure to monitor and maintain equipment remotely to quickly resolve issues and reduce truck rolls to deliver a seamless customer experience.

### Roadways and intersections

Highways and transportation agencies require reliable networks to connect speed cameras, monitoring cameras and more using backhaul technologies such as 4G and 5G with secure remote access capabilities to remotely maintain equipment.

### Connected machines

Whether you're dealing with heavy industrial machinery or remote systems such as ATMs, kiosks, and vending machines, you need connectivity for the machine to access business applications or just to troubleshoot issues and maintain uptimes.

## Mining

Connect light duty trucks and other assets using a combination of private cellular networks and Wi-Fi due to spotty public cellular coverage and need for cost-effective high throughput connectivity for high bandwidth applications such as video and file transfers and on-board connectivity for fleets.

## Features and benefits

### Key features and benefits

Table 1. Features and benefits

Feature	Benefit
<b>Reliable connectivity for mission-critical mobile environments</b>	<ul style="list-style-type: none"><li>• The modular IR1800 with dual cellular slots is capable of running multiple cellular services at once for mission-critical applications, allowing dual cellular band redundancy.</li><li>• Supports modular IEEE 802.11ax Wi-Fi 6. The dual-radio Wi-Fi (2.4 and 5 GHz) can provide access point capability and also backhaul capability (in a stationary condition) to connect to infrastructure Wi-Fi.</li><li>• Certified for transportation, making it ideal for transit and public safety applications.</li><li>• With dead reckoning GNSS, provides the exact location and path of fleet vehicles, even in environments with no cellular connectivity and no line-of-sight satellite connectivity.</li><li>• Ignition power management keeps the router running while the vehicle is turned off and protects the battery from over-discharging by the router.</li><li>• Offers native CAN bus support, allowing the extraction of vehicle data that can be used for telematics, enabling predictive maintenance, reducing the cost of fuel, and enhancing safety.</li></ul>
<b>Modular design</b>	<ul style="list-style-type: none"><li>• Ultra-modular design supports evolving business and technical needs, protecting your investment.</li><li>• Supports multiple different modules, including public or private 4G/LTE and 5G, Wi-Fi 6, FirstNet certified public safety LTE, SSD, and advanced GNSS, thus providing a high level of flexibility to choose the desired configuration to suit individual deployments.</li></ul>
<b>Security</b>	<ul style="list-style-type: none"><li>• Provides end-to-end multilayer enterprise-grade security that is part of Cisco's ultra-secure and advanced Cisco IOS XE operating system.</li><li>• For added security, the IR1800 supports advanced enterprise-grade security suites such as unified threat detection for deployments requiring a higher level of enterprise-class security.</li><li>• Supports Cisco Cyber Vision, providing visibility into industrial assets connected to the router (post FCS).</li></ul>
<b>Edge computing</b>	<ul style="list-style-type: none"><li>• Comes with built-in edge compute resources and Cisco IOx App hosting support to securely run your own applications at the edge.</li><li>• Supports Cisco's Edge Intelligence suite to unlock business intelligence.</li></ul>
<b>Integrated storage</b>	<ul style="list-style-type: none"><li>• Provides support to expand the internal storage to save multimedia and mission-critical data at the edge with its field-replaceable industrial-grade SSD.</li></ul>
<b>SD-WAN</b>	<ul style="list-style-type: none"><li>• Supports Cisco IOS XE SD-WAN technology to effectively manage hundreds of disparate locations, lowering TCO and operating at scale.</li><li>• Support advanced SD-WAN security on IR1835 with 8GB memory.</li></ul>
<b>Public Safety Certifications</b>	<ul style="list-style-type: none"><li>• FirstNet Ready</li><li>• Verizon Frontline</li></ul>

## Prominent features

### Cisco Catalyst IR1800 Rugged Series Routers portfolio

Cisco Catalyst IR1800 Rugged Series Routers are best-in-class ruggedized routers designed for assets that are mobile or on the move, stationary or remote. These highly flexible and modular routers are 5G ready and adopt the latest Wi-Fi 6 standards. The IR1800 Series consists of four models: IR1821-K9, IR1831-K9, IR1833-K9, and IR1835-K9.



**Figure 2.**  
Models in the Catalyst IR1800 Series

The table below explains the top-level features of the models in the IR1800 Series.

**Table 2.** Comparison of key features

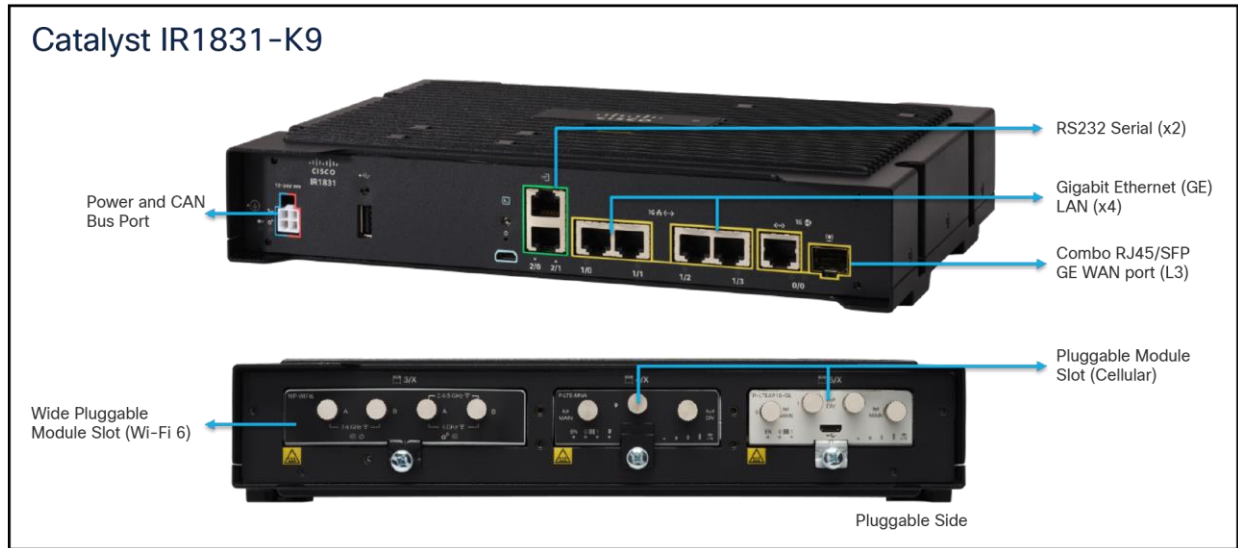
Feature	IR1821-K9	IR1831-K9	IR1833-K9	IR1835-K9
Memory	4 GB	4 GB	4 GB	8 GB
Pluggable slots (cellular)	1	2	2	2
Wide pluggable slot (Wi-Fi)	1	1	1	1
CAN bus	✓	✓	✓	✓
Ignition power management	✓	✓	✓	✓
Gigabit Ethernet (GE) LAN (x4)	✓	✓	✓	✓
Combo RJ-45/SFP GE WAN port (L3) (x1)	✓	✓	✓	✓
Micro USB console	✓	✓	✓	✓
Power over Ethernet (PoE)/PoE+	-	-	✓	✓
SSD slot	-	-	✓	✓
Automotive dead reckoning GNSS slot	-	-	✓	✓

Feature	IR1821-K9	IR1831-K9	IR1833-K9	IR1835-K9
Digital I/O (x4)	-	-	-	✓
Serial interface	RS-232 (1)	RS-232 (2)	RS-232 (2)	RS-232 (1), RS-232/485 (1)

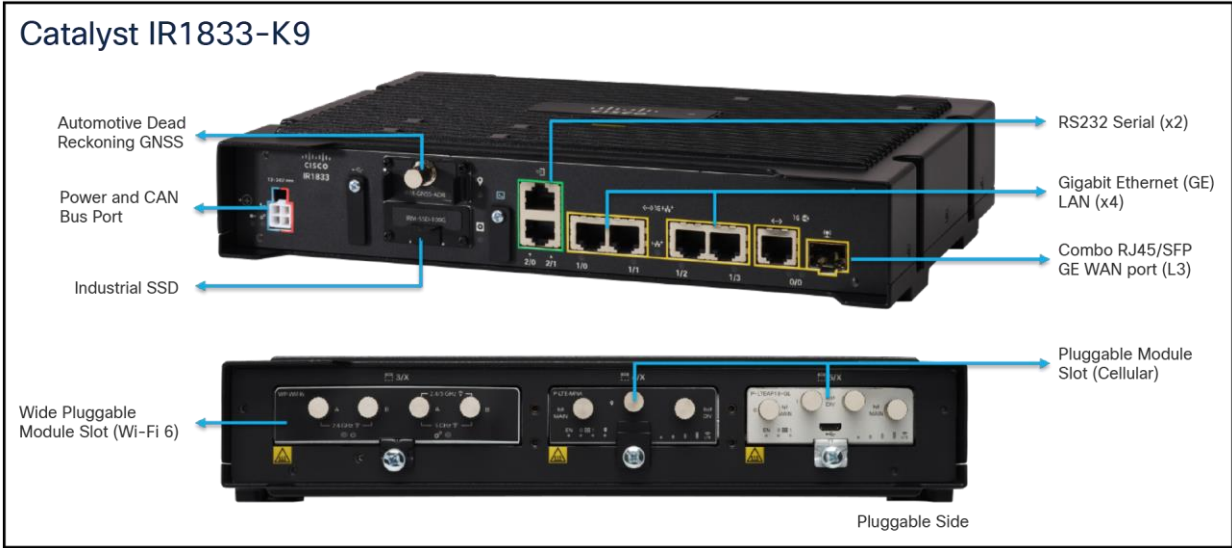
**Placement of IR1800 interface ports**



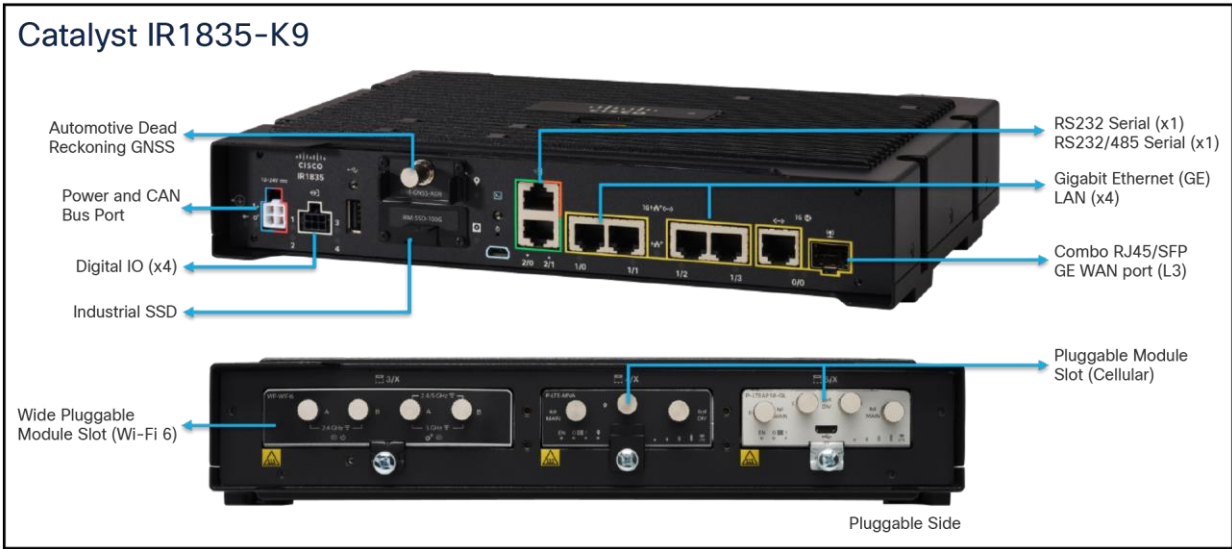
**Figure 3.**  
IR1821-K9 interface ports



**Figure 4.**  
IR1831-K9 interface ports

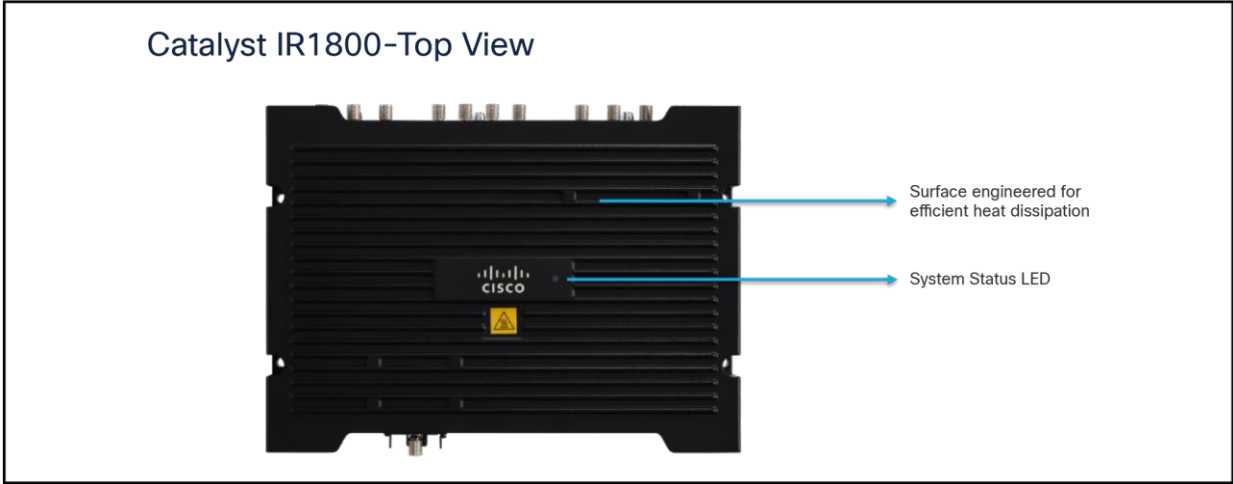


**Figure 5.**  
IR1833-K9 interface ports



**Figure 6.**  
IR1835-K9 interface ports





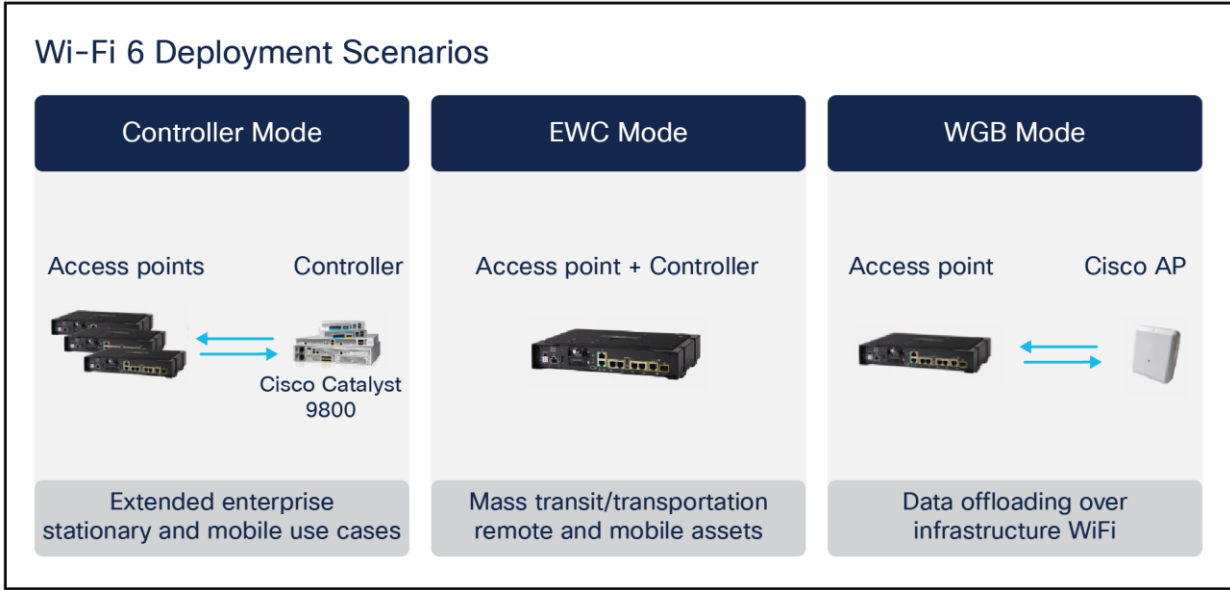
**Figure 7.**  
Top view

The Catalyst IR1800 Series also introduces Wi-Fi 6 in a pluggable form factor. This ruggedized wide pluggable module provides the latest in Wi-Fi technology and is compatible with the latest wireless controllers from Cisco. The module can run in Control and Provisioning of Wireless Access Points (CAPWAP) mode and Embedded Wireless Controller (EWC) mode, as well as Work Group Bridge (WGB) mode.



**Figure 8.**  
Wi-Fi 6 wide pluggable module

The Catalyst IR1800 Wi-Fi 6 supports the following deployment scenarios and modes.



**Figure 9.** Wi-Fi 6 deployment scenarios

**Memory specifications**

**Table 3.** Memory specifications

Feature	Specification
<b>Default and maximum DRAM</b>	<ul style="list-style-type: none"> <li>• 4 GB (IR1821, IR1831, IR1833)</li> <li>• 8 GB (IR1835)</li> </ul>
<b>Default and maximum flash memory</b>	<ul style="list-style-type: none"> <li>• 4 GB (IR1821, IR1831, IR1833, 1835)</li> </ul>
<b>Expandable SSD storage</b>	<ul style="list-style-type: none"> <li>• Cisco’s industrial-grade field-replaceable 100-GB storage (IRM-SSD-100G) (IR1833 and IR1835 only)</li> </ul>
<b>Backup flash storage</b>	<ul style="list-style-type: none"> <li>• Provides an added layer of protection from improper shutdown cycles, thus preventing any kind of memory corruptions.</li> </ul>

## Physical specifications

Table 4. Physical specifications

Feature	Specification
<b>Physical dimensions (H x W x D)</b>	<ul style="list-style-type: none"><li>• 2.20 x 11.04 x 8.06 in. (55.9 x 280.4 x 204.7 mm)</li><li>• 2.20 x 11.04 x 9.73 in. (55.9 x 280.4 x 247.0 mm) with additional IP54-KIT (IR1800-IP54-KIT)</li></ul>
<b>Weight</b>	<ul style="list-style-type: none"><li>• 2.4 kg (5.3 lb) (without any modules)</li><li>• 3.1 kg (6.8 lb) (fully configured)</li></ul>
<b>IP rating</b>	<ul style="list-style-type: none"><li>• IP40 rated</li><li>• IP54 rated with additional IP54-KIT (IR1800-IP54-KIT)</li></ul>
<b>Mounting options</b>	<ul style="list-style-type: none"><li>• DIN rail</li><li>• Panel mount</li></ul>

## Power specifications

Table 5. Power specifications

Feature	Specification
<b>Power input</b>	<ul style="list-style-type: none"><li>• Nominal voltage: +12V and +24V</li><li>• Minimum and maximum input voltage: 9V - 36V</li><li>• Maximum and Minimum input current: 7.56A - 1.99A</li></ul>
<b>Power consumption</b>	<ul style="list-style-type: none"><li>• At idle: 16W (at 12V), 17W (at 24V)</li><li>• Typical: 22W (at 12V), 23W (at 24V)</li><li>• Maximum: 27W (without PoE), 71W (with PoE)</li></ul>

When powering the vehicle through OBD2 connector in a vehicle, maximum current value must be matched with OBD2 fusing.

## Interfaces

Table 6. Interfaces

Feature	Specification
<b>WAN interfaces</b>	<ul style="list-style-type: none"><li>• Pluggable Interface Module slots<ul style="list-style-type: none"><li>◦ IR1821: 1x for Cisco Cellular Pluggable Interface Modules</li><li>◦ IR1831, IR1833, IR1835: 2x for Cisco Cellular Pluggable Interface Modules</li></ul></li><li>• Wide interface pluggable module slots-<ul style="list-style-type: none"><li>◦ 1x on all IR1800 models for Cisco Wi-Fi 6 Wide Interface Pluggable Module</li></ul></li><li>• Combo 10/100/1000 Mbps Ethernet port (RJ-45 and SFP) (1x on all IR1800 models)</li></ul>
<b>LAN interfaces</b>	<ul style="list-style-type: none"><li>• 4x 10/100/1000 Mbps RJ-45 Ethernet ports</li></ul>
<b>Asynchronous serial interfaces</b>	<ul style="list-style-type: none"><li>• IR1821: 1x RS-232 DTE port</li><li>• IR1831, IR1833: 1x RS-232 DTE port and 1x RS-232 DCE port</li><li>• IR1835: 1x RS-232 DTE port and 1x RS-232 DCE/RS-422/RS-485 port</li></ul>
<b>Console</b>	<ul style="list-style-type: none"><li>• 1 micro-USB port</li></ul>

Feature	Specification
<b>Automotive dead reckoning GNSS</b>	<ul style="list-style-type: none"> <li>IR1833, IR1835: 1x slot for automotive dead reckoning GNSS module (IRM-GNSS-ADR)</li> </ul>
<b>Expandable storage</b>	<ul style="list-style-type: none"> <li>IR1833, IR1835: 1x slot for Cisco's industrial 100-GB SSD (IRM-SSD-100G)</li> </ul>
<b>Power input/CAN bus combo</b>	<ul style="list-style-type: none"> <li>4-pin Molex Mini-Fit port for power and CAN bus (see accessories for more details)</li> </ul>
<b>Digital I/O</b>	<ul style="list-style-type: none"> <li>IR1835: 4x digital I/O ports</li> </ul>
<b>Ignition power management</b>	<ul style="list-style-type: none"> <li>All IR1800 models have automatic ignition power management capability for Ignition sense.</li> <li>IR1835 supports Ignition power management with Ignition signal switching.</li> </ul>
<b>USB port</b>	<ul style="list-style-type: none"> <li>1x USB 2.0 Type A</li> </ul>
<b>Status LEDs</b>	<ul style="list-style-type: none"> <li>Top surface- <ul style="list-style-type: none"> <li>1x system status LED</li> </ul> </li> <li>Front surface <ul style="list-style-type: none"> <li>1x ignition power management LED</li> <li>1x system status LED</li> <li>4x Gigabit Ethernet LEDs</li> <li>2x Combo Gigabit Ethernet-SFP LEDs</li> <li>IR1833, IR1835: 1x expandable storage LED</li> <li>IR1833, IR1835: 1x automotive dead reckoning GNSS LED</li> <li>IR1835: 4x digital I/O LEDs</li> </ul> </li> <li>Cellular and Wi-Fi modules have power and status LEDs on the modules</li> </ul>

## Environmental specifications

**Table 7.** Environmental specifications

Feature	Specification
<b>Environmental operating temperature range</b>	<ul style="list-style-type: none"> <li>-40° to 140° F (-40° to 60° C) in a sealed NEMA cabinet with no airflow</li> <li>-40° to 158° F (-40° to 70° C) in a vented cabinet with 40 linear feet per minute (LFM) of air</li> <li>-40° to 167° F (-40° to 75° C) in a forced air enclosure with 200 LFM of air</li> <li>Type tested at 85° C for 16 hours</li> <li>Refer to the IR1800 Hardware Installation Guide (HIG) for the operating temperature range for pluggable cellular modules and wide pluggable Wi-Fi modules</li> </ul>
<b>Operating altitude</b>	<ul style="list-style-type: none"> <li>Maximum altitude: 13,800 ft per IEC 68-2-41</li> </ul>

## Standards and industry specifications

**Table 8.** Standards and industry specifications

Feature	Specification
<b>Mechanical</b>	<ul style="list-style-type: none"> <li>• SAE J1455 (Automobile Standard)</li> <li>• Temperature cycle stress test</li> <li>• Active 10-day temperature and humidity test</li> <li>• MIL STD 810G (Military Standard)</li> <li>• Method 514.6, Category 4 – Random Vibration</li> <li>• Method 516.6, Procedure V – Crash Hazard Shock</li> <li>• Method 516.6, Procedure I – Functional Shock</li> </ul>
<b>Automotive</b>	<ul style="list-style-type: none"> <li>• UNECE R10</li> <li>• CISPR25</li> <li>• ISO 7637 – 2</li> <li>• ISO 11452 – 2/4</li> </ul>
<b>Hazardous locations and ITE safety</b>	<ul style="list-style-type: none"> <li>• UL 121201 (Class I, Div. 2, groups A-D)</li> <li>• CSA 213 (Class I, Div. 2, groups A-D)</li> <li>• UL/CSA 60079-0, -15 (Class I, Zone 2, Gc/IIC)</li> <li>• IEC 60079-0, 7 -15 IECEx test report (Class I, Zone 2, Gc/IIC)</li> <li>• EN 60079-0, 7, 15 ATEX certificate (Class I, Zone 2, Gc/IIC)</li> <li>• UL/CSA 60950-1</li> <li>• UL/CSA 62368-1</li> <li>• IEC/EN 60950-1</li> <li>• IEC/EN 62368-1</li> </ul>
<b>EMC</b>	<ul style="list-style-type: none"> <li>• FCC part 47 CFR Part 15 Subpart B Class A</li> <li>• EN 5032/CISPR 32 Class A</li> <li>• VCCI Class A, AS/NZS CISPR 32 Class A</li> <li>• CISPR 11 Class A, ICES 003 Class A</li> <li>• CNS 13438 Class A, KN 32 Class A</li> <li>• EN 300 386</li> <li>• CISPR35/EN 55035</li> <li>• EN/IEC61000-4-2 (ESD - Air/Contact Charge)</li> <li>• EN/IEC61000-4-3 (Radiated Immunity)</li> <li>• EN/IEC61000-4-4 (Electro Fast Transients Burst)</li> <li>• EN/IEC61000-4-5 (Surge)</li> <li>• EN/IEC61000-4-6 (Conducted Immunity)</li> <li>• EN/IEC61000-4-8 (Power Frequency Magnetic Field Immunity)</li> <li>• EN/IEC61000-4-9 (Pulse Magnetic Field Immunity)</li> <li>• EN/IEC61000-4-11 (Voltage Disturbance Immunity)</li> </ul>

Feature	Specification
<b>Radio (cellular)</b>	<ul style="list-style-type: none"> <li>• FCC 47 CFR Part 22,24,27</li> <li>• FCC 47 CFR Part 2 MPE</li> <li>• RSS 102, 132, 133</li> <li>• AS/NZ: ACMA EMR, AS/CA S042.1, 4</li> <li>• Japan MIC Article 2, 9</li> <li>• EN 301 489-1,19,52</li> <li>• EN 301 908-1,2,13</li> <li>• EN 301 511</li> <li>• EN 303 413</li> <li>• EN 62311 MPE</li> </ul>
<b>Radio (Wi-Fi)</b>	<ul style="list-style-type: none"> <li>• FCC CFR Part 15.247, 15.407</li> <li>• RSS 247 Issues 5</li> <li>• EN 300 328, EN 301 893</li> <li>• AS/NZ 4268:2018</li> <li>• 2018.7 (MSIT notice 2018-38), 2017.9 (MSIT notice # 2017-10)</li> <li>• NOTACNCANEH N° 14/2013, NOTACNCANEH N° 14/2013</li> <li>• Act n° 14448 (2017-12-04)</li> <li>• MIIT R-2002-353, MIIT R-2002-277, MIIT R-2012-620</li> <li>• LP0002;2018</li> <li>• Résolution 1985/2017 + Res. 1517/2018 + Res. 855/2019</li> </ul>

## IR1800-compatible pluggable WAN modules

### Cellular pluggable modules

**Table 9a.** LTE (3GPP Category 4) modules

Feature	P-LTE-MNA	P-LTE-VZ	P-LTE-US	P-LTE-GB
<b>LTE bands</b>	LTE bands 2, 4, 5, 12, 13, 14, 17, and 66  FDD LTE 1700 MHz and 2100 MHz (band 66 Ext AWS), 700 MHz (bands 17, 14, 13, 12), 850 MHz (band 5 CLR), 1700 MHz and 2100 MHz (band 4 AWS), 1900 MHz (band 2)	LTE bands 4 and 13  FDD LTE 700 MHz (band 13), 1700 MHz and 2100 MHz (band 4 AWS)	LTE bands 2, 4, 5, and 12  FDD LTE 700 MHz (band 17), 700 MHz (band 12), 850 MHz (band 5 CLR), 1700 MHz and 2100 MHz (band 4 AWS)	LTE bands 1, 3, 7, 8, 20, and 28  FDD LTE 700 MHz (band 28), 800 MHz (band 20), 900 MHz (band 8), 1800 MHz (band 3), 2100 MHz (band 1), and 2600 MHz (band 7)

Feature	P-LTE-MNA	P-LTE-VZ	P-LTE-US	P-LTE-GB
<b>Backward compatibility</b>	UMTS, HSPA+ (bands 2, 4, 5)	-	HSPA+ (bands 2, 4, 5)	UMTS, HSPA+ (bands 1, 8), EDGE, GSM, GPRS (900/1800)
<b>Theoretical download and upload speeds</b>	150 and 50 Mbps	150 and 50 Mbps	150 and 50 Mbps	150 and 50 Mbps
<b>United States</b>	Multicarrier (AT&T and Verizon)	Verizon	AT&T	-
<b>Europe</b>	-	-	-	Yes
<b>Band 14</b>	Yes	-	-	-
<b>FirstNet Ready</b>	Approved by AT&T FirstNet	-	-	-

**Table 9b.** LTE (3GPP Category 4) modules

Feature	P-LTE-IN	P-LTE-JN
<b>LTE bands</b>	LTE bands 1, 3, 5, 8, 40, and 41* FDD LTE 2100 MHz (band 1), 1800 MHz (band 3), 850 MHz (band 5), 900 MHz (band 8) TDD LTE 2300 MHz (band 40), 2500 MHz (band 41) *Band 41 supported frequency range: (2535 to 2655 MHz)	LTE bands 1, 3, 8, 11, 18, 19, and 21 FDD LTE 2100 MHz (band 1), 1800 MHz (band 3), 900 MHz (band 8), 1500 MHz (band 11), 850 MHz (bands 18, 19), 1500 MHz (band 21)
<b>Backward compatibility</b>	HSPA+, UMTS (bands 1, 8)	HSPA+, UMTS (bands 1, 6, 19)
<b>Theoretical download and upload speeds</b>	150 and 50 Mbps	150 and 50 Mbps
<b>India</b>	Yes	-
<b>Japan</b>	-	Yes (NTT Docomo, KDDI, Softbank)
<b>China</b>	Yes	-

**Table 10.** LTE Advanced (3GPP Category 6) modules

Feature	P-LTEA-EA	P-LTEA-LA
<b>LTE bands</b>	<p>LTE bands 1-5, 7, 8, 12, 13, 20, 25, 26, 29, 30, and 41</p> <p>FDD LTE 700 MHz (band 12), 700 MHz (band 29), 800 MHz (band 20), 850 MHz (band 5 CLR), 850 MHz (band 26 Low), 900 MHz (band 8), 1800 MHz (band 3), 1900 MHz (band 2), 1900 MHz (PCS band 25), 1700 MHz and 2100 MHz (band 4 AWS), 2100 MHz (band 1), 2300 MHz (band 30), or 2600 MHz (band 7)</p> <p>TDD LTE 2500 MHz (band 41)</p> <p>Carrier aggregation band combinations: 1+8; 2+(2,5,12,13,29); 3+(7,20); 4+(4,5,12,13,29); 7+(7,20); 12+30, 5+30, and 41+41</p>	<p>LTE bands 1, 3, 5, 7, 8, 18, 19, 21, 28, 38, 39, 40, and 41</p> <p>FDD LTE 700 MHz (band 28), 850 MHz (band 5 CLR), 850 MHz (bands 18 and 19 Low), 900 MHz (band 8), 1500 MHz (band 21), 1800 MHz (band 3), 2100 MHz (band 1), or 2600 MHz (band 7)</p> <p>TDD LTE 1900 MHz (band 39), 2300 MHz (band 40), 2500 MHz (band 41), or 2600 MHz (band 38)</p> <p>Carrier aggregation band combinations: 1+(8,18,19,21); 3+(5,7,19,28); 7+(5,7,28); 19+21, 38+38, 39+39,40+40, and 41+41</p>
<b>Theoretical download and upload speeds<sup>3</sup></b>	300 and 50 Mbps	300 and 50 Mbps
<b>Dying Gasp</b>	Yes	Yes
<b>United States</b>	AT&T & Verizon	-
<b>Europe</b>	Yes	-
<b>Band 14</b>	Yes	-
<b>Canada</b>	Yes	-
<b>Australia and New Zealand</b>	-	Yes (approved by Telstra)
<b>Japan</b>	-	Yes (NTT Docomo, KDDI, Softbank)
<b>India, Singapore, Malaysia, Thailand</b>	-	Yes
<b>China</b>	-	Yes
<b>United Arab Emirates</b>	Yes	-



**Table 11.** LTE Advanced Pro (3GPP Category 18) modules

Feature	P-LTEAP18-GL
<b>LTE bands</b>	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)
<b>Theoretical download and upload speeds<sup>3</sup></b>	1.2 Gbps/200 Mbps
<b>Dying Gasp</b>	Yes
<b>United States</b>	Multicarrier (AT&T and Verizon)
<b>Europe</b>	Yes
<b>Canada</b>	Yes
<b>Australia</b>	Yes
<b>China</b>	Yes
<b>Japan</b>	Yes
<b>Band 14</b>	Yes
<b>FirstNet certification</b>	Yes
<b>Band 48 (CBRS)</b>	Yes

**Note:** Band 30 must be disabled for mobile deployments in United States.

**Table 12.** 5G Sub 6 GHz module available with the IR1800

Region theaters	P-5GS6-GL <sup>1</sup>
<b>RF Bands</b>	5G FR1 - n1, n2, n3, n5, n7, n8, n12, n20, n25, n28, n38, n40, n41, n48, n66, n71, n77, n78, n79 LTE bands 1-5, 7-8, 12-14, 17-20, 25, 26, 28-30, 32, 34, 38-43, 46(LAA), 48(CBRS), 66 and 71
<b>Theoretical download and upload speeds</b>	3.3 Gbps/400 Mbps
<b>United States</b>	<b>Multicarrier</b> (AT&T, Verizon, T-mobile)
<b>Europe</b>	Yes
<b>Canada</b>	Yes (Bell, Telus, Rogers)
<b>APJC</b>	Yes (Australia, New Zealand, Japan, Hong Kong, Indonesia, Singapore, India)
<b>Japan</b>	Yes (NTT Docomo)
<b>Australia</b>	Telstra
<b>Band 14, Band 48 (CBRS)</b>	Yes

**Wi-Fi 6 pluggable module performance (support from Cisco IOS XE 17.6 onward)**

**Table 13.** Wi-Fi 6 pluggable module performance

Feature	WP-WIFI6 Wi-Fi performance
<b>Supported wireless LAN controllers</b>	<ul style="list-style-type: none"> <li>• Cisco Catalyst 9800 Series Wireless Controllers</li> </ul>
<b>802.11ax capabilities</b>	<ul style="list-style-type: none"> <li>• 2x2 uplink/downlink multiuser multiple-input multiple-output (MU-MIMO) with two spatial streams</li> <li>• Uplink/downlink Orthogonal Frequency-Division Multiple Access (OFDMA)</li> <li>• Target Wake Time (TWT)</li> <li>• Basic Service Set (BSS) coloring</li> <li>• Maximum Ratio Combining (MRC)</li> <li>• 802.11ax beamforming</li> <li>• 20-, 40-, and 80-MHz channels</li> <li>• PHY data rates up to 1.488 Gbps (80 MHz with 5 GHz and 20 MHz with 2.4 GHz)</li> <li>• Packet aggregation: Aggregate MAC Protocol Data Unit (A-MPDU) (transmit and receive), Aggregate MAC Service Data Unit (A-MSDU) (transmit and receive)</li> <li>• 802.11 Dynamic Frequency Selection (DFS)</li> <li>• Cyclic shift diversity (CSD) support</li> <li>• Wi-Fi Protected Access 3 (WPA3) support</li> </ul>

Feature	WP-WIFI6 Wi-Fi performance
<b>802.11ac capabilities</b>	<ul style="list-style-type: none"> <li>• 2x2 downlink MU-MIMO with 2 spatial streams</li> <li>• MRC</li> <li>• 802.11ac beamforming</li> <li>• 20-, 40-, and 80-MHz channels</li> <li>• PHY data rates up to 866.7 Mbps (80 MHz with 5 GHz)</li> <li>• Packet aggregation: A-MPDU (transmit and receive), A-MSDU (transmit and receive)</li> <li>• 802.11 DFS</li> <li>• CSD support</li> <li>• WPA3 support</li> </ul>
<b>802.11n version 2.0 (and related) capabilities</b>	<ul style="list-style-type: none"> <li>• 2x2 MIMO with 2 spatial streams</li> <li>• MRC</li> <li>• 802.11n and 802.11a/g</li> <li>• 20- and 40-MHz channels</li> <li>• PHY data rates up to 444.4 Mbps (40 MHz with 5 GHz and 20 MHz with 2.4 GHz)</li> <li>• Packet aggregation: A-MPDU (transmit and receive), A-MSDU (transmit and receive)</li> <li>• 802.11 DFS</li> <li>• CSD support</li> </ul>
<b>Indicators</b>	<ul style="list-style-type: none"> <li>• Status LED indicates boot loader status, association status, operating status, boot loader warnings, and boot loader errors</li> <li>• Power LED indicates power status to module</li> </ul>
<b>Dimensions (W x L x H)</b>	3.66 x 3.29 x 0.85 in. (9.30 x 8.36 x 2.16 cm)
<b>Available transmit power settings (max/min)</b>	<ul style="list-style-type: none"> <li>• 2.4 GHz – total with two active antennas <ul style="list-style-type: none"> <li>◦ 23 dBm (200 mW) max for Complementary Code-Keying (CCK) rates</li> <li>◦ 21 dBm (125 mW) max for OFDM rates</li> <li>◦ -7 dBm (0.2 mW) min</li> </ul> </li> <li>• 5 GHz – total with two active antennas <ul style="list-style-type: none"> <li>◦ 20 dBm (100 mW) max</li> <li>◦ -7 dBm (0.2 mW) min</li> </ul> </li> </ul>
<b>WP-WIFI6-S – Thailand</b>	<p>2.4GHz – Total with two chain active</p> <ul style="list-style-type: none"> <li>• 20 dBm (100 mW) max for Complementary Code-Keying (CCK) rates</li> <li>• 20 dBm (100 mW) max for OFDM rates</li> </ul> <p>5GHz – Total with two chain active</p> <ul style="list-style-type: none"> <li>• 5150-5350MHz - 23 dBm (200 mW EIRP) max for all OFDM rates</li> <li>• 5470-5700MHz - 30dBm (1W EIRP) max for all OFDM rates</li> <li>• 5745-5825MHz - 30dBm (1W EIRP) Max for all OFDM rates</li> </ul>

## Cisco Small Form-Factor Pluggable (SFP) modules

The IR1800 offers Ethernet (copper and fiber) uplink options through SFP modules (software support post-FCS).

### Supported Ethernet SFP modules

The Ethernet SFP module provides connections to other devices. These field-replaceable transceiver modules provide the uplink interfaces. RJ-45 connectors allow for copper connections.

**Table 14.** Supported SFP modules

GE SFP	Distance	Fiber	Classification
GLC-SX-MM-RGD	220 to 550 m	MMF	Industrial (-40° to +85° C)
GLC-LX-SM-RGD	550 m to 10 km	MMF/SMF	Industrial (-40° to +85° C)
GLC-ZX-SM-RGD	70 km	SMF	Industrial (-40° to +85° C)
GLC-SX-MMD	220 to 550 m	MMF	Extended (-5° to +85° C)
GLC-LH-SMD	550 m to 10 km	MMF/SMF	Extended (-5° to +85° C)
GLC-ZX-SMD	70 km	SMF	Extended (-5° to +85° C)
GLC-BX-U	10 km	SMF	Commercial (0° to +70° C)
GLC-BX-D	10 km	SMF	Commercial (0° to +70° C)
GLC-LH-MMD	550 m to 10 km	MMF/SMF	Extended (-5° to +85° C)
GLC-EX-SMD	40 km	SMF	Extended (-5° to +85° C)
GLC-FE-100FX-RGD	2 km	MMF	Industrial (-40C to +85C)
GLC-FE-100LX-RGD	10 km	SMF	Industrial (-40C to +85C)
GLC-FE-100FX	2 km	MMF	Commercial (0C to +70C)
GLC-FE-100LX	10 km	SMF	Commercial (0C to +70C)
GLC-FE-100EX	40 km	SMF	Commercial (0C to +70C)
GLC-FE-100ZX	80 km	SMF	Commercial (0C to +70C)
GLC-FE-100BX-U	10 km	SMF	Commercial (0C to +70C)
GLC-FE-100BX-D	10 km	SMF	Commercial (0C to +70C)
GLC-TE	100 m	N/A (RJ-45)	Extended (-5C to +85C)

## Other IR1800-compatible pluggable modules

### Automotive dead reckoning GNSS module

The IR1800 Series introduces an advanced automotive dead reckoning GNSS pluggable module (for the IR1833-K9 and IR1835-K9 platforms): IRM-GNSS-ADR.

The module is a powerful automotive-grade GNSS system equipped with automotive dead reckoning software, an embedded 6-axis sensor Micro-Electromechanical System (MEMS), and a powerful core. Whenever GNSS coverage is missing or compromised, the IRM-GNSS-ADR provides accurate estimates of a vehicle's or moving device's position and velocity by combining speed and heading data from internal sensors with On-Board Diagnostics (OBD-II) data from the vehicle's CAN bus.

This multi constellation, pluggable module is ideal for telematics applications that require continuous and reliable accuracy for navigation and tracking.

The table below shows detailed specifications for the automotive dead reckoning GNSS module.

**Table 15.** Automotive dead reckoning GNSS specifications

Feature	Specification
<b>Frequency bands supported</b>	<ul style="list-style-type: none"><li>• GPS (L1)</li><li>• GLONASS (L1, FDMA) (supported in future software releases)</li><li>• Galileo (E1) (supported in future software releases)</li><li>• BeiDou (B1) (supported in future software releases)</li></ul>
<b>Standards</b>	<ul style="list-style-type: none"><li>• NMEA, RTCM 104</li></ul>
<b>GNSS channels</b>	<ul style="list-style-type: none"><li>• 48-channel GNSS architecture</li></ul>
<b>Positional accuracy</b>	<ul style="list-style-type: none"><li>• 1.6 m (CEP50)</li></ul>
<b>Frequency</b>	<ul style="list-style-type: none"><li>• 10 Hz navigation, SBAS, 1PPS</li></ul>
<b>A-GPS support</b>	<ul style="list-style-type: none"><li>• Yes, local ephemeris prediction, server predicted ephemeris (future software support)</li></ul>
<b>Jammer rejection</b>	<ul style="list-style-type: none"><li>• Yes</li></ul>
<b>MEMS sensors</b>	<ul style="list-style-type: none"><li>• Embedded 6-axis (3D gyro + 3D accelerometer)</li></ul>

### 100-GB additional storage module

The IR1800 Series supports memory expansion to 100 GB (for the IR1833-K9 and IR1835-K9 platforms): IRM-SSD-100G. This pluggable industrial SSD can be used to store mission-critical data and applications or multimedia files.

**Table 16.** SSD specifications

Feature	Specification
SSD memory	100 GB
Endurance	33 terabytes written (TBW)
Replacement recommendation	Replacement recommended when wear ratio reaches 90%

## Accessories

The Catalyst IR1800 Series introduces multiple new accessories, including a new 7-in-1 antenna, a set of OBD-II cables, and an IP54 kit.

**Table 17.** Compatible antennas

Antenna	Description
<b>ANT-7-5G4WL2G1-O</b>	7-in-1 outdoor vehicle mount antenna- 4G LTE SMA x4, Wi-Fi dual band RP-SMA x2, GNSS SMA x1
<b>LTE-ANTM2-SMA-D</b>	4G LTE dipole antenna 698-960, 1448-1511, 1710-2690 MHz, SMA
<b>5G-ANTM-SMA-D</b>	5G Sub-6 & LTE Advanced Pro capable dipole antenna, SMA
<b>W-ANTM2050D-RPSMA</b>	Wi-Fi dual band swivel dipole antenna, RP-SMA
<b>ANT-4G-OMNI-OUT-N</b>	Outdoor omnidirectional 4G antenna, N connector, 698-3800 MHz
<b>ANT-5G-OMNI-OUT-N</b>	Outdoor omnidirectional 617 - 5950 MHz antenna, N connector
<b>4G-LTE-ANTM-O-3-B</b>	3-in-1 outdoor black antenna, 4G LTE SMA x2, GPS SMA x1
<b>ANT-3-4G2G1-O</b>	3-in-1 outdoor antenna- 4G LTE TNC x2, GPS SMA x1
<b>ANT-2-4G2-O</b>	2-in-1 outdoor vehicle mount antenna- 4G LTE TNC x2
<b>ANT-5-4G2WL2G1-O</b>	5-in-1 outdoor vehicle mount antenna- 4G LTE TNC x2, Wi-Fi dual band RP-TNC x2, GPS SMA x1
<b>5G-ANTM-O-4-B</b>	9-in-1 outdoor antenna- 5G Sub-6 GHz / 4G LTE SMA x4, Wi-Fi dual band RP-SMA x4, GPS SMA x1

Please refer to the antenna guide for all the antenna options available for the industrial routers:

<https://www.cisco.com/c/en/us/td/docs/routers/connectedgrid/antennas/installing-combined/industrial-routers-and-industrial-wireless-antenna-guide.html>.

[https://www.cisco.com/c/dam/td-xml/en\\_us/iot/antennas/scenarios/Antenna-Installation-Scenarios.pdf](https://www.cisco.com/c/dam/td-xml/en_us/iot/antennas/scenarios/Antenna-Installation-Scenarios.pdf).

**Table 18.** OBD-II cables

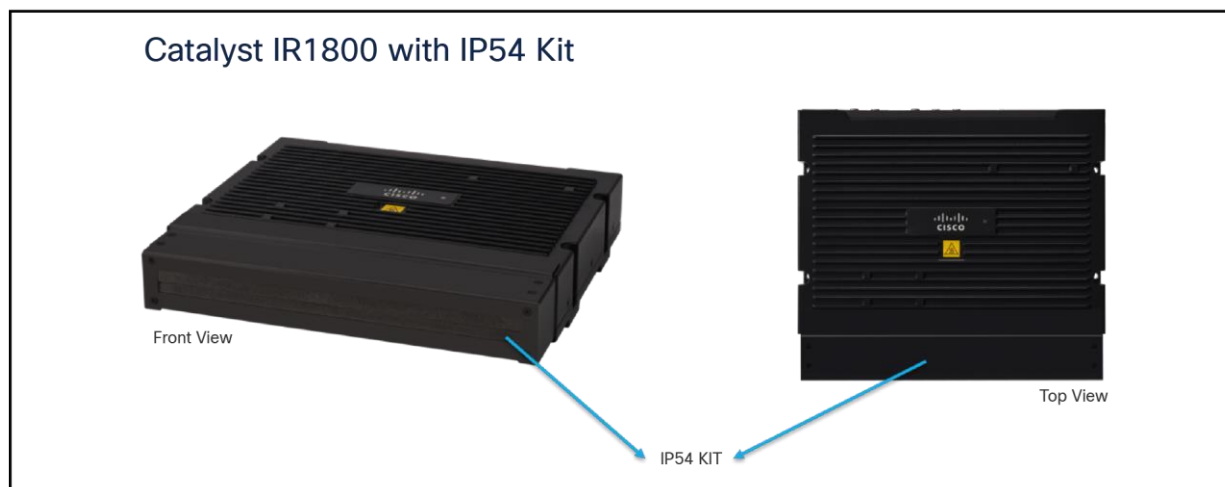
Cable	Description (all OBD-II cables are 4.35 m in length)
<b>OBD2-J1962YA-MF4</b>	OBD-II (J1962) Type A to IR1800 cable with type 1 Y-splitting bypass harness
<b>OBD2-J1962YB-MF4</b>	OBD-II (J1962) Type B to IR1800 cable with type 2 Y-splitting bypass harness
<b>OBD2-J1939Y2-MF4</b>	OBD-II (J1939) Type 2 heavy duty diagnostic harness for Volvo/Mack
<b>OBD2-J1939Y1-MF4</b>	OBD-II (J1939) Type 1 to IR1800 cable with type 1 y-splitting bypass harness and auxiliary (discrete voltage) inputs
<b>OBD2-J1708Y-MF4</b>	OBD-II (J1708) to IR1800 cable with type 1 y-splitting bypass harness and auxiliary (discrete voltage) inputs
<b>OBD2-J1962VMB-MF4</b>	J1962-VM-Type B Volvo & Mack

OBD-II cables provide power and CAN bus connectivity to the Catalyst IR1800.

**Note:** When powering an IR1800 from an ODB2 connector, fusing must match the maximum power consumption requirement of the IR1800 variant attached to it. OBD2 connectors generally fuse at 60W.

**IP54 kit**

The IR1800 Series is IP40 rated by design. This IP rating can further be improved to IP54 with an additional IP54 kit (IR1800-IP54-KIT).



**Figure 10.**  
Catalyst IR1800 with IP54 kit

## M12 kit

The IR1800 router can be used in Mass-Transit use cases such as railways and buses requiring M12 connectors using the optional M12 Conversion Kit. The kit comes with the front M12 Adapter assembly as well as the IP54 kit. This improves the IP rating of the whole unit to IP54 and makes the unit EN50155 compliant for railways and bus use cases.

The kit is made of die cast aluminum with paint and texture matching the IR1800 chassis. It includes:

- 1 M12 GE Copper Uplink
- 4 M12 GE LAN Ports
- 1 RS232/485\* M12 port
- 1 GPS / GNSS SMA connector
- 1 M12 T-code power / CANBUS connector

\*RS-485 interface only available in IR1835



**Table 19.** M-12 Connector Kit

PID	Description
IRM-1800-M12KIT	M12 Conversion Kit for IR1800
IRM-1800-M12KIT=	M12 Conversion Kit for IR1800 - Spare



## Software details and management options

### Software details

The Catalyst IR1800 Series runs on Cisco’s latest ultra-secure Cisco IOS XE. The table below details key features of Cisco IOS XE on the IR1800.

**Table 20.** Software details

Feature	Description
<b>Cisco IOS Software requirements</b>	<ul style="list-style-type: none"> <li>• Cisco IOS XE Software: Universal Cisco IOS Software image</li> <li>• Cisco IOS XE Software Release 17.5.1 or later</li> <li>• Cisco IOS XE Software: Unified image for Autonomous and Controller (SD-WAN) mode</li> </ul>
<b>IPv4 and IPv6 services features</b>	<ul style="list-style-type: none"> <li>• Routing Information Protocol Versions 1 and 2 (RIPv1 and RIPv2) and RIPng (IPv6)</li> <li>• Generic Routing Encapsulation (GRE) and Multipoint GRE (MGRE)</li> <li>• Standard 802.1d Spanning Tree Protocol (STP)</li> <li>• Network Address Translation (NAT)</li> <li>• Dynamic Host Configuration Protocol (DHCP) server, relay, and client for IPv4 and IPv6</li> <li>• Dynamic DNS (DDNS)</li> <li>• DNS proxy</li> <li>• DNS spoofing</li> <li>• Access control Lists (ACLs) for IPv4 and IPv6</li> <li>• IPv4 and IPv6 multicast</li> <li>• IP Service-Level Agreement (IP SLA)</li> <li>• Open Shortest Path First (OSPF) v2 and v3</li> <li>• Multiprotocol Border Gateway Protocol (MP-BGP)</li> <li>• Enhanced Interior Gateway Routing Protocol (EIGRP) for IPv4 and IPv6</li> <li>• Virtual Route Forwarding (VRF) Lite</li> <li>• Next-Hop Resolution Protocol (NHRP)</li> <li>• Asynchronous serial data encapsulation and relay</li> <li>• Layer 2 Tunneling Protocol (L2TP) v3 over subinterfaces and VLAN</li> </ul>
<b>Security features</b>	<p><b>Secure connectivity</b></p> <ul style="list-style-type: none"> <li>• Trusted Anchor Module (TAM)</li> <li>• Hardware-accelerated encryption with minimal impact to system performance</li> <li>• Next-Generation Encryption (NGE) and Quantum Computing Resistant (QCR) algorithms such as AES- 256, SHA-384, and SHA-512</li> <li>• Public-Key Infrastructure (PKI) support</li> <li>• 20 IPsec tunnels</li> <li>• NAT transparency</li> <li>• Dynamic Multipoint VPN (DMVPN)</li> <li>• Tunnel-less Group Encrypted Transport VPN (GETVPN)</li> <li>• Flex VPN</li> <li>• IPsec stateful failover</li> <li>• Secure Sockets Layer (SSL) VPN for secure remote access</li> <li>• VRF-aware IPsec</li> <li>• IPsec over IPv6</li> </ul>

Feature	Description
	<p><b>Cisco IOS Firewall</b></p> <ul style="list-style-type: none"> <li>• Zone-based policy firewall</li> <li>• VRF-aware stateful inspection routing firewall</li> <li>• Stateful inspection transparent firewall</li> <li>• Advanced application inspection and control</li> <li>• Secure HTTP (HTTPS), FTP, and Telnet Authentication Proxy</li> <li>• Dynamic and static port security</li> <li>• Firewall stateful failover</li> <li>• VRF-aware firewall</li> </ul> <p><b>Integrated threat control</b></p> <ul style="list-style-type: none"> <li>• Control-Plane Policing (CoPP)</li> <li>• Flexible packet matching</li> <li>• Network foundation protection</li> </ul> <p><b>Cisco Umbrella</b></p> <ul style="list-style-type: none"> <li>• As supported by IOS-XE</li> <li>• Advanced SD-WAN security features supported on IR1835</li> </ul>
<b>Quality of Service (QoS) features</b>	<ul style="list-style-type: none"> <li>• Provides LTE QoS with support for up to 8 concurrent bearers on each cellular WAN interface for traffic classification and prioritization</li> <li>• Provides traffic precedence to delay-sensitive and mission-critical services</li> <li>• Facilitates low-latency routing of delay-sensitive industrial applications</li> <li>• Supported on all LAN and WAN interfaces, including cellular</li> <li>• Low Latency Queuing (LLQ)</li> <li>• Weighted Fair Queuing (WFQ)</li> <li>• Class-Based WFQ (CBWFQ)</li> <li>• Class-Based Traffic Shaping (CBTS)</li> <li>• Class-Based Traffic Policing (CBTP)</li> <li>• Policy-Based Routing (PBR)</li> <li>• Class-Based QoS MIB</li> <li>• Class of Service (CoS) to Differentiated Services Code Point (DSCP) mapping</li> <li>• Class-Based Weighted Random Early Detection (CBWRED)</li> <li>• Resource Reservation Protocol (RSVP)</li> <li>• Real-Time Transport Protocol (RTP) header compression (cRTP)</li> <li>• Differentiated Services (DiffServ)</li> <li>• QoS pre-classify and pre-fragmentation</li> </ul>
<b>High-availability features</b>	<ul style="list-style-type: none"> <li>• Dual active LTE backhaul</li> <li>• Virtual Router Redundancy Protocol (VRRP) (RFC 2338)</li> <li>• Hot Standby Router Protocol (HSRP)</li> <li>• Dual SIM support on the LTE module for cellular failover</li> <li>• WAN monitoring to handle dual-SIM failover</li> </ul>

Feature	Description
<b>IPv6 features</b>	<ul style="list-style-type: none"> <li>• IPv6 addressing architecture</li> <li>• IPv6 unicast and multicast forwarding</li> <li>• IPv6 ACLs</li> <li>• IPv6 over cellular, including DHCP Prefix Delegation</li> <li>• IPv6 routing (Static, RIPng, OSPFv3, EIGRP, MP-BGP)</li> <li>• IPv6 domain name resolution</li> <li>• IPv6 DHCP services</li> </ul>

The Catalyst IR1800 supports multiple management solutions to deploy and manage large-scale deployments at their various stages.

**Table 21.** Supported management solutions

Operational phase	Application	Description
<b>Device staging and configuration for a few routers</b>	Cisco WebUI	A GUI-based device-management tool that simplifies provisioning of devices for a small-scale deployment through easy-to-use wizards.
<b>Deploy, manage, monitor, and maintain IoT routers and assets at scale</b>	Cisco IoT Operations Dashboard	<ul style="list-style-type: none"> <li>• A cloud-based dashboard that empowers OT/IT collaboration to deploy, monitor, and gain insights from Cisco networking devices and the assets they connect, simply and securely at scale.</li> <li>• Rapid-scaling zero-touch deployment and secure enrollment for tens of thousands of routers</li> <li>• Enhanced security: Role-based access and user audit trail and secure communications for data transport across networks, VPN tunnels, geo-fencing, alerts, and notifications for data and physical security.</li> <li>• Increased reliability: Reliable communications over cellular or Ethernet networks, lifecycle management, and 24/7 real-time monitoring and alerts.</li> </ul>
<b>Extend your enterprise network to configure, monitor, and manage industrial assets</b>	Cisco Digital Network Architecture (Cisco DNA) with SD-WAN	<ul style="list-style-type: none"> <li>• Cisco DNA offers a network infrastructure that is not only fully programmable and open to third-party innovation, but can also fully and seamlessly integrate the cloud as an infrastructure component.</li> <li>• Simplifies and automates processes and workflow by bringing the notion of user-aware and application-aware policies into the foreground of network operations.</li> <li>• With Cisco DNA, the network can provide continuous feedback to simplify and optimize network operations.</li> <li>• Single management dashboard for configuration and management of WAN.</li> <li>• Cisco SD-WAN (vManage) automates application flexibility over multiple connections, such as the internet, MPLS, and wireless 4G LTE/5G (advanced SDWAN security features only available on IR1835).</li> </ul>

The Catalyst IR1800 supports multiple embedded management capabilities.

**Table 22.** Embedded management capabilities

Feature	Description
<b>Cisco IOS Embedded Event Manager (EEM)</b>	A distributed and customized approach to event detection and recovery. Provides the ability to monitor events and take corrective or any other desired action when the monitored events, such as a high or low threshold, occur.
<b>Cisco IOS XE IP SLA</b>	Helps assure the performance of new, business-critical IP applications as well as IP services by actively monitoring and reliably reporting traffic statistics such as jitter, response time, packet loss, and connectivity.
<b>Simple Network Management Protocol (SNMP), Syslog, NetFlow</b>	Open-standards-based network monitoring and accounting tools, such as SNMP for 3G, 4G, ignition power, ADR-GNSS, mSATA, etc., provide a common management platform for many different devices.
<b>LTE network management and diagnostics</b>	A dedicated diagnostic port on a cellular module enables logging of data during debugging sessions that can be analyzed by industry-standard tools such as Spirent Universal Diagnostic Monitor (UDM).
<b>Cisco IOS XE telemetry/YANG model</b>	Telemetry is an automated communications process by which measurements and other data are collected at remote or inaccessible points and transmitted to the receiving equipment for monitoring. Telemetry provides a mechanism to stream YANG-modeled data to a data collector.

## Software licensing

The Catalyst IR1800 introduces a dual network stack along with throughput licenses. Appropriate combinations can be selected according to need.

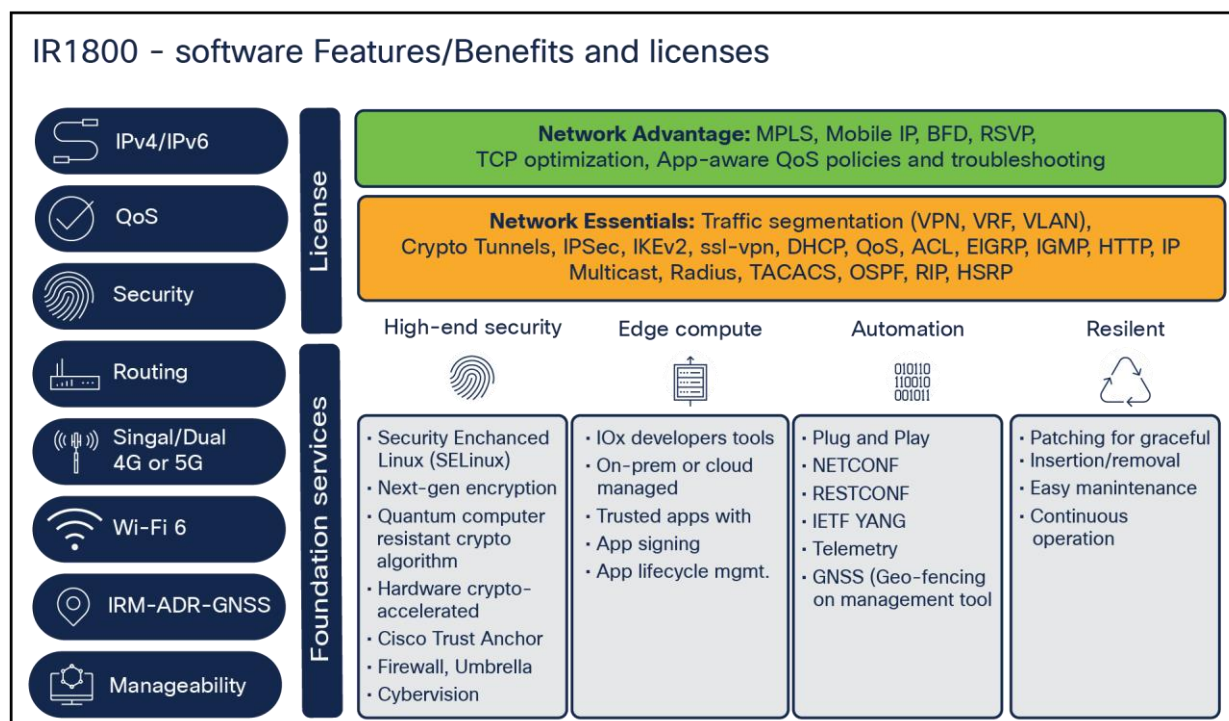
### Network stack

There are two network stacks:

- Network Essentials
- Network Advantage

These stacks provide various capabilities. The Network Essentials license offers the essential elements of routing and security necessary for typical IoT deployments. The Network Advantage license enables advanced features such as MPLS, L2TPv3 for a highly scalable and cost-effective solution, mobile IP for seamless migration between networks, and application-aware QoS policies for built-in intelligence, in addition to the features offered by Network Essentials.

The figure below explains the capabilities provided by the licenses.



**Figure 11.**

Licensing details

### Throughput licenses

The IR1800 has three throughput license options.

**Table 23.** Licenses and throughput

License	Tier	Aggregate throughput	Comment
<b>Default (DEF)</b>	T0	50 Mbps	This is the default tier with 50 Mbps aggregate throughput.
<b>Performance (PERF)</b>	T1	250 Mbps	This tier provides 250 Mbps aggregate throughput.
<b>Boost (BOOS)</b>	T2	2G	This tier provides 2 Gbps aggregate throughput.
<b>Uncapped (UNC)</b>	T2	Uncapped	This tier allows the device to use its full hardware capacity.

Select an appropriate combination of network stack and throughput tier based on your requirements.

Export regulations require HSEC license as a mandatory attach with Boost License.

A single Cisco IOS XE universal image encompassing all functions is delivered with the product. Software feature licenses are preinstalled at the factory, depending on the selection made at the time of purchase, simplifying software delivery and decreasing the operational costs of the deployment. Licenses can be upgraded after deployment by going through the [Cisco Smart License activation process](#). For a more detailed overview of Cisco licensing, go to [cisco.com/go/licensingguide](https://www.cisco.com/go/licensingguide).

## Ordering information

The Catalyst IR1800 Series is a Smart License-enabled product. Cisco Smart Accounts and Virtual Accounts are required to order the product. For more information on how to order the Catalyst IR1800 and Cisco Smart Accounts, visit the [Cisco Smart Account user guide](#).

Ordering the Catalyst IR1800 can be divided into three major sections:

1. Operating system and licenses (step 2)
2. Pluggable modules (steps 3 through 7)
3. Accessories (step 8 and later)

To place an order, select the right product IDs from the tables below in sequential order.

**Table 24.** Product ordering process

**Step 1.** Select the base platform.

Hardware (chassis)	Description
IR1821-K9	Cisco Catalyst IR1821 Rugged Router
IR1831-K9	Cisco Catalyst IR1831 Rugged Router
IR1833-K9	Cisco Catalyst IR1833 Rugged Router
IR1835-K9	Cisco Catalyst IR1835 Rugged Router

**Step 2.** Select the network stack and throughput tier.

Licenses			
Network Essentials	Network Advantage	Throughput tier	Aggregate throughput
SL-1800-NE/DEF-K9	SL-1800-NA/DEF-K9	T0 (default)	50 Mbps
SL-1800-NE/PERF-K9	SL-1800-NA/PERF-K9	T1 (Performance)	250 Mbps
SL-1800-NE/BOOS-K9	SL-1800-NA/BOOS-K9	T2 (Boost)	2Gbps
SL-1800-NE/UNC-K9	SL-1800-NA/UNC-K9	T2(UNC)	Uncapped

Spare Licenses			
Network Essentials	Network Advantage	Throughput tier	Aggregate throughput
	SL-1800-NA/DEF-K9=	T0 (default)	30 Mbps
SL-1800-NE/PER-K9=	SL-1800-NA/PER-K9=	T1 (Performance)	200 Mbps
SL-1800-NE/BOO-K9=	SL-1800-NA/BOO-K9=	T2 (Boost)	Uncapped

Spare Licenses			
Network Essentials	Network Advantage	Throughput tier	Aggregate throughput
SL-1800-NE/UNC-K9	SL-1800-NA/UNC-K9	T2(UNC)	Uncapped

The T2 (Boost) and T2 (Uncapped) license requires an additional mandatory L-18-HSEC-K9 license.

**Step 3.** Select the cellular pluggable modules.

Cellular module	Description
P-LTEAP18-GL(=)	Category 18 LTE module for North America, Europe, and Asia Pacific
P-LTEA-EA(=)	Category 6 LTE module for North America, Europe, and Middle East
P-LTEA-LA(=)	Category 6 LTE module for Asia Pacific and Latin America
P-LTE-MNA(=)	Category 4 LTE module for AT&T, FirstNet Ready and Verizon, US
P-LTE-US(=)	Category 4 LTE module for AT&T, U.S
P-LTE-VZ(=)	Category 4 LTE module for Verizon, U.S
P-LTE-GB(=)	Category 4 LTE module for Europe
P-LTE-IN(=)	Category 4 LTE module for India
P-LTE-JN(=)	Category 4 LTE module for Japan

**Step 4.** Select the option of a preinstalled Verizon SIM card (if required).

Verizon SIM card	Description
LTE-SIM-VZ(=)	Verizon SIM (preinstalled) for zero-touch deployment

**Step 5.** Select the Wi-Fi 6 pluggable module.

Wi-Fi 6 pluggable module		
CAPWAP mode	EWC mode	Description
WP-WIFI6-x(=)	WP-WIFI6-EWC-x(=)	<p>Wi-Fi 6 can be shipped in CAPWAP mode or Embedded Wireless Controller (EWC) mode based on the product ID selected</p> <p>'x' denotes the country/regional code for Wi-Fi frequency (e.g., A/B/C, etc.)</p> <p><a href="#">Wireless LAN Compliance Lookup</a> can be used to choose the right country/regional code</p>

**Step 6.** Select the automotive dead reckoning pluggable GNSS module (only for IR1833-K9 and IR1835-K9).

Dead reckoning GNSS	Description
IRM-GNSS-ADR(=)	Automotive dead reckoning GNSS pluggable module

**Step 7.** Select the additional 100-GB SSD module (only for IR1833-K9 and IR1835-K9).

SSD	Description
IRM-SSD-100G(=)	100-GB industrial-grade field-replaceable SSD

**Step 8.** Select the power adapter and appropriate mating cord (if using a power brick and power cable).

Power supply and cables	Description
PWR-MF4-125W-AC(=)	AC to DC power adapter for IR1800- 125W
IR-PWR-G2A-NA(=)	Power Cord - North America
IR-PWR-G2A-BR(=)	Power Cord - Brazil
IR-PWR-G2A-AU(=)	Power Cord - Australia
IR-PWR-G2A-CE(=)	Power Cord - Central Europe
IR-PWR-G2A-ISR(=)	Power Cord - Israel
IR-PWR-G2A-ID(=)	Power Cord - India
IR-PWR-G2A-UK(=)	Power Cord - United Kingdom
IR-PWR-G2A-ITA(=)	Power Cord - Italy
IR-PWR-G2A-AR(=)	Power Cord - Argentina
IR-PWR-G2A-JP(=)	Power Cord - Japan
IR-PWR-G2A-AP(=)	Power Cord - Asia Pacific
IR-PWR-G2A-CN(=)	Power Cord - China
IR-PWR-G2A-SA(=)	Power Cord - South Africa
IR-PWR-G2A-SWI(=)	Power Cord - Switzerland



**Step 9.** Select the right OBD-II cable (for on-the-move/vehicle deployments).  
 (An OBD-II cable can be used to power the IR1800 from the OBD-II port of a vehicle, along with connecting to the CAN bus of the vehicle for vehicle data.)

OBD-II cable	Description
<b>OBD2-J1962YA-MF4(=)</b>	OBD-II (J1962) Type A to IR1800 cable with type 1 Y-splitting bypass harness
<b>OBD2-J1962YB-MF4(=)</b>	OBD-II (J1962) Type B to IR1800 cable with type 2 Y-splitting bypass harness
<b>OBD2-J1939Y2-MF4(=)</b>	OBD-II (J1939) Type 2 heavy duty diagnostic harness for Volvo/Mack
<b>OBD2-J1939Y1-MF4(=)</b>	OBD-II (J1939) Type 1 to IR1800 cable with type 1 y-splitting bypass harness and auxiliary (discrete voltage) inputs
<b>OBD2-J1708Y-MF4(=)</b>	OBD-II (J1708) to IR1800 cable with type 1 y-splitting bypass harness and auxiliary (discrete voltage) inputs
<b>OBD2-J1962VMB-MF4(=)</b>	J1962-VM-Type B Volvo & Mack

**Step 10.** Select the right antennas and antenna stand for the use case/deployment.

Antenna	Description
<b>ANT-7-5G4WL2G1-O(=)</b>	7-in-1 outdoor vehicle mount antenna- 4G LTE SMA x4, Wi-Fi dual band RP-SMA x2, GNSS SMA x1
<b>LTE-ANTM2-SMA-D(=)</b>	4G LTE dipole antenna 698-960, 1448-1511, 1710-2690 MHz, SMA
<b>5G-ANTM-SMA-D(=)</b>	5G Sub-6 & LTE Advanced Pro capable dipole antenna, SMA
<b>W-ANTM2050D-RPSMA(=)</b>	Wi-Fi dual band swivel dipole antenna, RP-SMA
<b>ANT-4G-OMNI-OUT-N(=)</b>	Outdoor omnidirectional 4G antenna, N connector, 698-3800 MHz
<b>ANT-5G-OMNI-OUT-N(=)</b>	Outdoor omnidirectional 617 - 5950 MHz antenna, N connector
<b>4G-LTE-ANTM-O-3-B(=)</b>	3-in-1 outdoor black antenna, 4G LTE SMA x2, GPS SMA x1
<b>ANT-3-4G2G1-O(=)</b>	3-in-1 outdoor antenna- 4G LTE TNC x2, GPS SMA x1
<b>ANT-2-4G2-O(=)</b>	2-in-1 outdoor vehicle mount antenna- 4G LTE TNC x2
<b>ANT-5-4G2WL2G1-O(=)</b>	5-in-1 outdoor vehicle mount antenna- 4G LTE TNC x2, Wi-Fi dual band RP-TNC x2, GPS SMA x1
<b>5G-ANTM-O-4-B(=)</b>	9-in-1 outdoor antenna- 5G Sub-6 GHz / 4G LTE SMA x4, Wi-Fi dual band RP-SMA x4, GPS SMA x1

**Step 11.** Select the DIN rail (if using a DIN rail mount).

Mounting option	Description
IR1800-DINRAIL(=)	DIN rail mount

**Step 12.** Select the IP54 Kit (if you require an IP54 system).

IP54 option	Description
IR1800-IP54-KIT(=)	IP54 Kit for IR1800

**Step 13.** Select the appropriate SFP module (if needed).

Ethernet SFP	Distance	Fiber	Classification
GLC-SX-MM-RGD	220 to 550 m	MMF	Industrial (-40C to +85C)
GLC-LX-SM-RGD	550 m to 10 km	MMF/SMF	Industrial (-40C to +85C)
GLC-ZX-SM-RGD	70 km	SMF	Industrial (-40C to +85C)
GLC-SX-MMD	220 to 550 m	MMF	Extended (-5C to +85C)
GLC-LH-SMD	550 m to 10 km	MMF/SMF	Extended (-5C to +85C)
GLC-ZX-SMD	70 km	SMF	Extended (-5C to +85C)
GLC-BX-U	10 km	SMF	Commercial (0C to +70C)
GLC-BX-D	10 km	SMF	Commercial (0C to +70C)
GLC-LH-MMD	550 m to 10 km	MMF/SMF	Extended (-5C to +85C)
GLC-EX-SMD	40 km	SMF	Extended (-5C to +85C)
GLC-FE-100FX-RGD	2 km	MMF	Industrial (-40C to +85C)
GLC-FE-100LX-RGD	10 km	SMF	Industrial (-40C to +85C)
GLC-FE-100FX	2 km	MMF	Commercial (0C to +70C)
GLC-FE-100LX	10 km	SMF	Commercial (0C to +70C)
GLC-FE-100EX	40 km	SMF	Commercial (0C to +70C)
GLC-FE-100ZX	80 km	SMF	Commercial (0C to +70C)
GLC-FE-100BX-U	10 km	SMF	Commercial (0C to +70C)
GLC-FE-100BX-D	10 km	SMF	Commercial (0C to +70C)
GLC-TE	100 m	NA (RJ-45)	Extended (-5C to +85C)

**Step 14.** Select other accessories as needed.

Other accessories	Description
<b>Power cable</b>	
<b>CAB-PWR-15-MF4</b>	Power cable when directly connecting to a DC source (such as a vehicle battery) <b>NOTE:</b> It is preferred to use an OBD-II cable for a quick and clean installation
<b>RF cables</b>	
<b>CAB-L240-10-SM-TM</b>	SMA(m)-straight to TNC(m)-straight, LMR-240-DB, 10 ft.
<b>CAB-L240-15-SM-TM</b>	SMA(m)-straight to TNC(m)-straight, LMR-240-DB, 15 ft.
<b>CAB-L240-20-SM-TM</b>	SMA(m)-straight to TNC(m)-straight, LMR-240-DB, 20 ft.
<b>LTE-AE-MAG-SMA</b>	Magnetic SMA antenna stand, SMA(f)-straight to TNC(f)-straight, LMR-195 plenum rated, 1 ft.
<b>CAB-L240-10-SM-NM</b>	SMA(m)-straight to N(m)-straight, LMR-240-FRDB, 10 ft.
<b>CAB-L-10-RSP-RTP</b>	RP-SMA(male) to RP-SMA(female), 10 ft.
<b>CAB-L195-10-SM-SF</b>	SMA(m) to SMA(f), LMR-195, 10 ft.
<b>CAB-L240-20-SM-SF</b>	SMA(m) to SMA(f), LMR-240, 20 ft.
<b>CAB-L400-20-N-N</b>	N(m)-straight to N(m)-right angle, LMR-400-DB, 20 ft.
<b>RF adapters</b>	
<b>LTE-ADPT-SM-TF</b>	SMA(m)-straight to TNC(f)-straight adapter
<b>AIR-ACC370-NF-NF</b>	N(f)-straight to N(f)-straight adapter
<b>Ethernet cable</b>	
<b>CAB-ETH-S-RJ45</b>	Yellow Cable for Ethernet, Straight through,RJ-45,15 feet
<b>Console cable</b>	
<b>CAB-USB-UB</b>	USB Type A to USB Micro-B (2m)
<b>Digital I/O cable</b>	
<b>CAB-IO-MF6</b>	Mating connector for Alarm-In / Digital I/O / Ignition Sense
<b>Lighting arrestors</b>	
<b>ACC-LA-G-SM-SF</b>	SMA(m) to SMA(f)- straight, GDT, DC to 6 GHz
<b>CGR-LA-NF-NF</b>	N(f)-straight to N(f)-straight, GDT, DC to 6 GHz
<b>CGR-LA-NM-NF</b>	N(f)-straight to N(m)-straight, GDT, DC to 6 GHz
<b>4G-ACC-OUT-LA</b>	TNC(f)-straight to TNC(m)-straight, HPF, 698 to 2700 MHz (does not support GNSS)

Other accessories	Description
ACC-LA-G-TM-TF	TNC(f)-straight to TNC(m)-straight, GDT, DC to 6 GHz

Ordering the IR1800 bundled with the Cisco IoT Operations Dashboard

Select the product ID as described in the table below.

**Table 25.** IR1800 and Cisco IoT Operations Dashboard bundle

Bundle product ID	Description
IR1800-IOTOC	Bundled product ID for IoT Operations Dashboard subscription and IR1800 hardware

A detailed data sheet and ordering guide for the IR1800 with Cisco IoT Operations Dashboard can be found at [Cisco IoT Operations Dashboard Datasheet](#), [Cisco IoT Operations Dashboard Ordering Guide](#).

## Warranty information

The Catalyst IR1800 Series comes with a Cisco 5-year limited hardware warranty. Adding a contract for a technical service offering, such as Cisco Smart Net Total Care® Service, provides benefits not available with the warranty, including access to OS updates, Cisco.com online resources, and Cisco Technical Assistance Center (TAC) support services. The table below shows the available technical services.

Find more information about [Cisco product warranties](#).

Learn more about [Cisco Technical Services](#).

**Table 26.** Technical services

Technical services
<p><b>Cisco Smart Net Total Care Service</b></p> <ul style="list-style-type: none"> <li>• Global access to the Cisco TAC 24 hours daily</li> <li>• Unrestricted access to the extensive Cisco.com resources, communities, and tools</li> <li>• Next-business-day (NBD), 8x5x4, 24x7x4, and 24x7x2 advance hardware replacement and onsite parts replacement and installation available</li> <li>• Ongoing operating system software updates within the licensed feature set</li> <li>• Proactive diagnostics and real-time alerts on Cisco Smart Call Home-enabled devices</li> </ul>
<p><b>Cisco Smart Foundation Service</b></p> <ul style="list-style-type: none"> <li>• NBD advance hardware replacement, as available</li> <li>• Business-hours access to Small and Medium-Sized Business (SMB) Cisco TAC (access levels vary by region)</li> <li>• Access to Cisco.com SMB knowledge base</li> <li>• Online technical resources through the Cisco Smart Foundation portal</li> <li>• OS software bug fixes and patches</li> </ul>

## Product 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 “Environmental Sustainability” section of Cisco’s [Corporate Social Responsibility \(CSR\) Report](#).

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

**Table 27.** Cisco environmental sustainability information

Sustainability topic		Reference
<b>General</b>	Information on product-material-content laws and regulations	<a href="#">Materials</a>
	Information on electronic waste laws and regulations, including our products, batteries and packaging	<a href="#">WEEE Compliance</a>
	Information on product takeback and reuse program	<a href="#">Cisco Takeback and Reuse Program</a>
	Sustainability inquiries	Contact: <a href="mailto:csr_inquiries@cisco.com">csr_inquiries@cisco.com</a>
	Environmental operating temperature range	<a href="#">Table 7. Environmental specifications</a>
<b>Power</b>	Power input	<a href="#">Table 5. Power specifications</a>
	Power consumption	
<b>Material</b>	Product packaging weight and materials	Contact: <a href="mailto:environment@cisco.com">environment@cisco.com</a>
	Physical dimensions and weight	<a href="#">Table 4. Physical specifications</a>

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.

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### For more information

Learn more about the Cisco Catalyst IR1800 Rugged Series Routers: <https://www.cisco.com/go/IR1800>

Learn more about the industrial routing portfolio: <https://www.cisco.com/c/en/us/solutions/internet-of-things/iot-routers-and-gateways.html>.

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## Document history

New or revised topic	Described in	Date
<b>Added additional use cases for fixed deployments</b>	Product overview	June 2023
<b>Added M12 Connector Kit</b>	<a href="#">Table 19</a>	June 2023
<b>Spare Licenses Ordering information</b>	<a href="#">Table 24</a>	June 2023

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