Cisco FM4200 Mobi

Ultra-Reliable Wireless Backhaul for moving vehicles (formerly Fluidmesh)

Contents

The Cisco FM4200Mobi is a high-performance mobility-communications radio transceiver, designed to deliver fast, stable connectivity from a wayside network to any slow- or fast-moving vehicle, particularly within mission-critical market sectors and in extreme environments.

The FM4200Mobi has received numerous railway and transport certifications, making it a popular choice for deployment on many transportation systems in the USA and worldwide, as well as in ports, intermodal yards and mining environments. Its low-latency, high-bandwidth characteristics make it the class leader in a diverse portfolio of applications, including (but not limited to) computer-based train control, real-time situation monitoring, and on-board client services (such as Wi-Fi and VoIP).

Wi-Fi on board

Your passengers expect wireless high-speed connectivity everywhere, and FLUIDITY delivers it. With our trackside technology, we are able to deliver connectivity up to 100 Mbps to fast-moving vehicles and trains.

Works with FLUIDITY, our unique mobility solution

The Cisco FM4200 Mobi supports FLUIDITY, the ultimate broadband connectivity solution for high-speed vehicles. Providing up to 100 Mbps of usable throughput to vehicles traveling up to 225 mph/360 km/h is now a reality.

There is no handoff time with FLUIDITY, thanks to the seamless "make before break" approach, and it maintains persistent network sessions and streams for any type of traffic.

Reduce the cost of network ownership by selecting the amount of throughput you need

Limit the cost of network ownership with FluidThrottle by selecting only the amount of throughput required. More throughput can be easily achieved by upgrading the system with software plug-ins when the traffic requirements increase.

FluidThrottle makes Cisco FM cost-effective and future-ready.

Prodigy 2.0 for reliable mission-critical applications

Our Multiprotocol Label Switching (MPLS)-based transmission protocol is built to overcome the limits of standard wireless protocols and to deliver an infrastructure with a higher level of reliability. At the base of our innovative transmission protocol is a traffic optimization algorithm that allows every Cisco FM radio to assign a specific level of priority and reliability to every packet transmitted. The result is a better, more reliable, multiservice wireless infrastructure.

Web interface configures, monitors, and troubleshoots the wireless network

The Cisco FM4200 Mobi includes the FMQuadro web interface, which allows you to configure, monitor, and troubleshoot the wireless network in real time, without any additional software. To simplify the configuration of the wireless network, the radio has a built-in spectrum analyzer and a real-time bandwidth monitoring tool.

Quick peek

Rugged die-cast aluminum housing

Specific for harsh environments and long lasting performance

FluidThrottle

Select only the throughput you need

Prodigy 2.0

MPLS transmission protocol with intelligent QoS

FMQuadro

Web-based interface to easily configure, monitor, and troubleshoot the network

FluidMAX

Change the network's architecture, not the radios

FLUIDITY

Connectivity solution for vehicles and trains

Multiple frequencies

4.9 GHz and 5.1 to 5.8 GHz

Ethernet port

802.3af PoE Gigabit

Ports and connectors

Industrial-grade antivibration M12 ports and QMA connectors, EN50155 certified. Optional SFP fiber port with XCO connector

Operational applications

- Communication-Based Train Control (CBTC)
- Remote system configuration and diagnostics
- Telemetry
- 24/7 maintenance and service data
- Onboard ticketing
- Onboard Point of Sale (POS)
- VoIP communications

Security applications

- Live video streaming
- Live front-facing camera streaming
- Level crossing monitoring
- Incident analysis
- Online virtual black box
- Emergency VoIP intercom

Passenger services

- Internet on board (Wi-Fi)
- Passenger information system
- Entertainment
- Digital advertising
- Emergency service phone
- Onboard femtocells

System		
Chipset	CPU	600 MHz MIPS network processor
	RF	MIMO 2x2
Interface	Ethernet	1x 10/100/1000 M12 port
		1x 10/100 M12 port
	SFP-Fiber (optional)	1x dual LC ruggedized SFP XCO connector 100/1000 Mbps
		1x 10/100/1000 M12 port
	Reset	1x Reset button for factory default
LED 1		1x Power
LED 2		1x Ethernet 1
LED 3		1x Ethernet 2
LEDs 4 to 7		4x RSSI

Radio	
Operating frequencies*	4.9 GHz / from 5.1 to 5.8 GHz
Channel width	5/10/20/40 MHz
Data rate	6/9/12/18/24/36/48/54 Mbps
	30/60/90/120/180/240/300 Mbps
Modulation	OFDM (BPSK, QPSK, 16QAM, 64QAM)
Compatible standards	IEEE 802.11p, IEEE 802.11e
Coaxial connectors	2x Cu-Sn-Zn-plated QMA compliant with ASTM B-117
Supported roaming vehicle speed	Up to 225 mph/362 km/h
MPLS technology	Yes
Output power	Up to 27 dBm**
Handoff latency	Make-before-break seamless handoff
Receiving sensitivity	−96 dB at 6.5 Mbps
	−70 dB at 300

Electrical	
Radio power input	48 VDC active 802.3af PoE
	48 VDC passive PoE input***
	48 VDC M12 power input
Max power consumption	8W

Physical	
Dimensions (in)	6.59 (H) x 5.21 (W) x 2.39 (D)
Dimensions (mm)	167.4 (H) x 132.4 (W) x 60.5 (D)
Weight	25 oz (700 g)
Finishing	Powder coating Pantone cool gray 10c

Regulatory compliance	
Approvals	FCC Part 15.B, FCC Part 15.C, FCC Part 15.E, NII/RSS-210 Annex 9, FCC Part 90y, OET 65 MPE/RSS102, EN893+DFS, EN301189-1-17/ EN55022 EN 623111, EN60950, IC RS210, CE, ROHS24,
Railway certifications	EN50155, EN50121, EN50121-3 EN50121-4, EN45545, EN50129 IEC 60571, AREMA 11.5.1, CBTC: EN50129
Environmental specs	T3

Environmental	
Operating temperature	-40° to 176°F
	-40° to 80°C
Humidity	5% to 95% non condensing
Mounting	Pole mounting kit and DIN rail mounting included
Enclosure characteristic	Die-cast aluminum
IP rating	IP66
Shock and vibration	ETSI 300 - 019 - 1.4

Network	
Protocols	UDP, TCP, IP, RTP, RTCP, RTSP, HTTP, HTTPS, ICMP, ARP
Web-based interface	Yes
Multicast support	Yes
UPnP support	Yes
SNMP support	Yes

Security	
VPN/L2TP	Yes
Full compatibility with AES, 3DES, RSA, HTTPS, SSL	Yes

** Depends on configuration and regulations.

*** PoE injector and PoE converters available upon request.

Table 1.   Cisco FM4200: Plugin and License Summary

Type of Plugin or License	Fluidmesh Part Numbers	Cisco PID	Description
Hardware P/N	FM4200M-HW	FLMESH-HW-4200-2	Cisco FM4200 Mobi, 2x2 MIMO single-radio device, 15 Mbps Ethernet Throughput, 4.9-5.8 GHz. Two (2) M12 Ethernet Ports. EN50155 Certified. DOES NOT INCLUDE FLUIDCARE SUPPORT PLAN.
Point-to-Multipoint (PtMP)	FM4200-30	L-FLMESH-4200-11	Enable up to 30 Mbps ethernet throughput in FM4200 Devices for fixed backhaul (No Mobility Option)
	FM4200-60	L-FLMESH-4200-12	Enable up to 60 Mbps ethernet throughput in FM4200 Devices for fixed backhaul (No Mobility Option)
	FM4200-UN	L-FLMESH-4200-19	Enable up to 150 Mbps Ethernet throughput in FM4200 Devices for fixed backhaul (No Mobility Option)
Point-to-Point (PtP)	FM4200-PTP-UN	L-FLMESH-4200-18	Enable ETHERNET throughput UNLIMITED (up to 500 Mbit/s) in FM4200 for BRIDGE MODE ONLY

Type of Plugin or License	Fluidmesh Part Numbers	Cisco PID	Description
Fluidity Licensing: Mobile	FM4200-MOB-MOB-5	L-FLMESH-4200-4	Fluidity Fast-roaming Plug-in enable Mobility Option for Mobile-Unit up to 5 Mbps
	FM4200-MOB-MOB-10	L-FLMESH-4200-13	Fluidity Fast-roaming Plug-in enable Mobility Option for Mobile-Unit up to 10 Mbps
	FM4200-MOB-MOB-15	L-FLMESH-4200-2	Fluidity Fast-roaming Plug-in enable Mobility Option for Mobile-Unit up to 15 Mbps
	FM4200-MOB-MOB-20	L-FLMESH-4200-21	Fluidity Fast-roaming Plug-in enable Mobility Option for Mobile-Unit up to 20 Mbps
	FM4200-MOB-MOB-30	L-FLMESH-4200-3	Fluidity Fast-roaming Plug-in enable Mobility Option for Mobile-Unit up to 30 Mbps
	FM4200-MOB-MOB-60	L-FLMESH-4200-5	Fluidity Fast-roaming Plug-in enable Mobility Option for Mobile-Unit up to 60 Mbps
	FM4200-MOB-MOB-UN	L-FLMESH-4200-6	Fluidity Fast-roaming Plug-in enable Mobility Option for Mobile-Unit up to 150 Mbps
Fluidity Licensing: Trackside	FM4200-MOB-TRK-15	L-FLMESH-4200-10	Fluidity Fast-roaming Plug-in enables Mobility Option Infrastructure Mode up to 15 Mbps
	FM4200-MOB-TRK-20	L-FLMESH-4200-14	Fluidity Fast-roaming Plug-in enables Mobility Option Infrastructure Mode up to 20 Mbps
	FM4200-MOB-TRK-30	L-FLMESH-4200-7	Fluidity Fast-roaming Plug-in enables Mobility Option Infrastructure Mode up to 30 Mbps
	FM4200-MOB-TRK-60	L-FLMESH-4200-8	Fluidity Fast-roaming Plug-in enables Mobility Option Infrastructure Mode up to 60 Mbps
	FM4200-MOB-TRK-UN	L-FLMESH-4200-9	Fluidity Fast-roaming Plug-in enables Mobility Option Infrastructure Mode up to 150 Mbps

Type of Plugin or License	Fluidmesh Part Numbers	Cisco PID	Description
General Licenses	FM-AES	L-FLMESH-ENCR-1	AES Plug-in. Enables One plug-in is required for each hardware device where encryption is desired. ECCN 5D002 (Export Licensed Required to be exported in certain countries; no license required to be sold in North America and in the European Union).
	FM-TITAN	L-FLMESH-TITAN-1	TITAN Plug-in. Enables Fast Failover in case of network, radio or power failure on a single Fluidmesh product. All Fluidmesh devices in a network mush have a plugin-in to operate.
	FM-PROFINET	L-FLMESH-PROFINET	PROFINET Plug-in. Enables support to Layer 2 ethertype 0x8892 on one Fluidmesh product. It requires also QoS support and the VLAN plug-in. All Fluidmesh hardware devices in a network must have these plug-ins to operate.
	FM-VLAN	L-FLMESH-VLAN-1	VLAN Plug-in. Enables port-based and MAC address-based VLANs on a single Fluidmesh product. All Fluidmesh hardware devices in a network must have a plug-in for VLAN to operate.
	FM-QNET	L-FLMESH-QNET	QNET Plug-in. Enables support to Layer 2 ethertype 0x8204 on one Fluidmesh product. All Fluidmesh hardware devices in a network must a plug-ins to operate.
	FM-CANBUS	L-FLMESH-CANBUS	CANBUS Plug-in. Enables CANBUS Support on Fluidmesh radios. All Fluidmesh devices in a network must have these plugin-ins to operate.

Product sustainability

Information about Cisco's Environmental, Social and Governance (ESG) initiatives and performance is provided in Cisco's CSR and sustainability reporting.

Table 2.   Cisco environmental sustainability information

Sustainability Topic		Reference
General	Information on product-material-content laws and regulations	Materials
	Sustainability Inquiries	Contact: csr_inquiries@cisco.com
	Countries and Regions Supported	Table: Regulatory compliance
Power	Power (Including Pluggable)	Table : Electrical
Material	Product packaging weight and materials	Contact: environment@cisco.com
	Weight	Table: Physical

Cisco Capital

Flexible payment solutions to help you achieve your objectives

Cisco Capital makes it easier to get the right technology to achieve your objectives, enable business transformation and help you stay competitive. We can help you reduce the total cost of ownership, conserve capital, and accelerate growth. In more than 100 countries, our flexible payment solutions can help you acquire hardware, software, services and complementary third-party equipment in easy, predictable payments. Learn more.

Printed in USA   C78-744901-00   04/21