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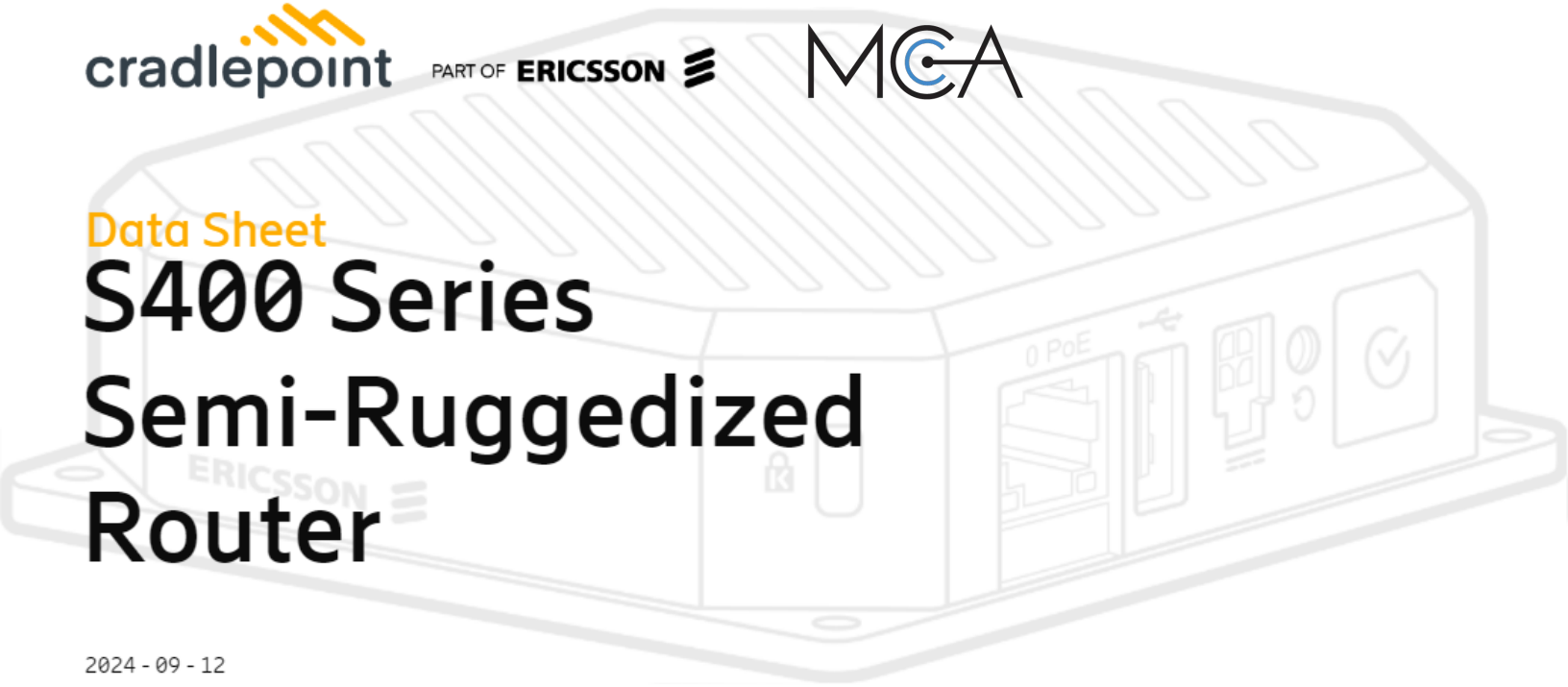
Data Sheet

S400 Series Semi-Ruggedized Router



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The Ericsson Cradlepoint S400 is a cloud managed, semi-ruggedized secure appliance and router for IoT networks. Offering connectivity through LTE plus wired and Wi-Fi options, the S400 is designed for light industrial, digital signage, and kiosk use cases. The S400 includes a NetCloud Service Plan Secure IoT license, which provides management at scale, group policies, configurations and troubleshooting, plus connect and go zero trust security.

Semi-Ruggedized IoT Solution

When coupled with the NetCloud Secure IoT service plan, the S400 provides a compact, semi-ruggedized Cat 6 4G LTE router and security solution for connecting IoT devices at scale. With an IP30-rated housing built to withstand vibration and temperature extremes and designed for mounting on DIN rails, the S400 is ideal for use in light industrial applications such as SCADA, remote monitoring, smart city intelligent traffic control or in applications such as surveillance cameras, digital signs, and control sensors. With an extensive list of features, it can be confidently deployed in the field, in buildings, or in embedded systems to deliver complete visibility, security, and control of connected devices anywhere.

Cloud-Managed IoT Solution — with Secure Connect Included

Notable Features

- Build protected connections with zero trust, connect and go security, included as part of the subscription.
- Define policies through centralized, cloud-based management for easy deployment at scale.
- Gain fast, reliable connectivity with an embedded Cat 6 modem with dual SIM support.
- Expand working radius and IoT connectivity with 2.4GHz or 5GHz Wi-Fi 5, Wi-Fi 5.
- Provide a semi-ruggedized solution capable of wide temperature ranges and vibration.
- Utilize configurable GPIO ports and NetCloud integrations for IoT applications.
- Customize and extend NetCloud Service functionality with NetCloud SDK and API.
- Provide GNSS/GPS for asset tracking and portable IoT use cases.

For organizations requiring robust connectivity for IoT networks — with installed networking endpoints numbering from a handful to many thousands — Ericsson's NetCloud Secure Services for IoT with the S400 provides a comprehensive cloud managed network solution with NetCloud SASE Secure Connect included. With this zero-trust security, any IoT device connected to the S400 is immediately hidden from public scans and from devices connected to other routers. Access policies are easily defined so IoT devices communicate only with their authorized resources on a least-privilege basis. Ericsson's NetCloud-managed IoT endpoints can be rapidly deployed and easily scaled to accommodate the diverse requirements of organizations.

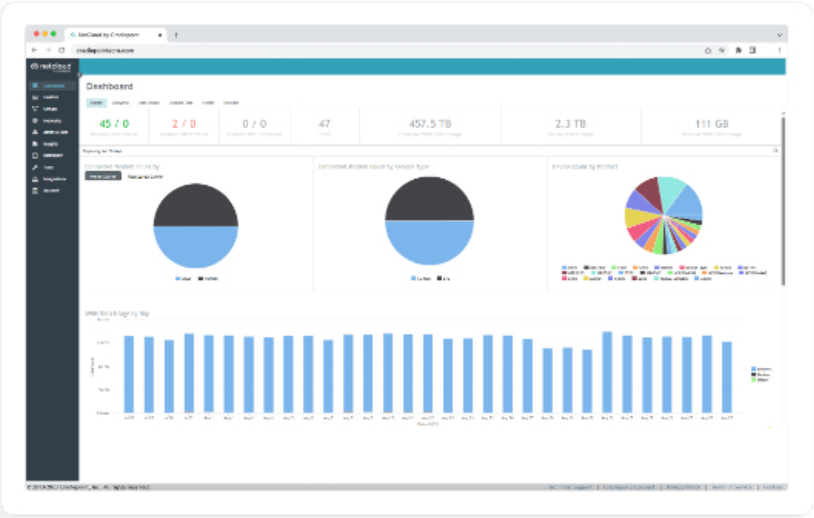
Product Page

NetCloud Service

Quick Start Guide

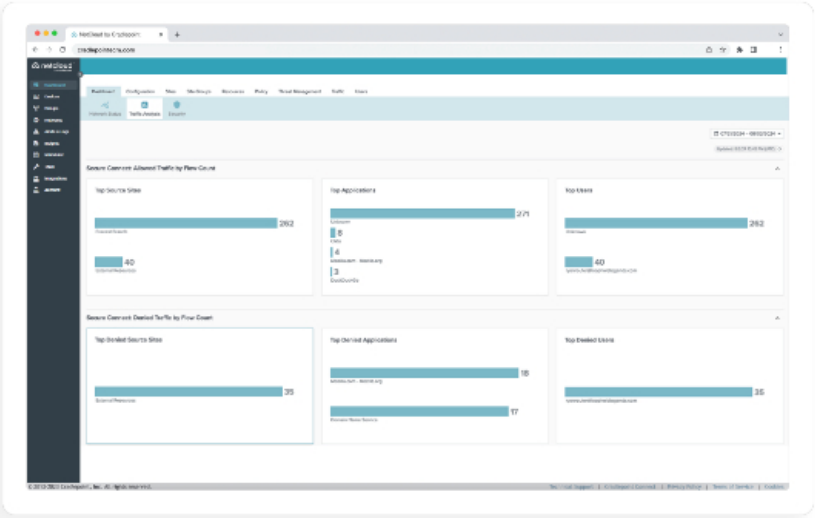
Key Software Capabilities

NetCloud Secure Service for IoT includes the appropriate S400 software with powerful cloud management features for managing IoT at scale. The NetCloud Service includes cloud-based management for optimizing routing, zero trust connections, visibility dashboards and troubleshooting capabilities. The cloud capabilities include defining and applying policies, at-a-glance status insights, reports, and analytics dashboards. The service includes a warranty for as long as there is an active Secure IoT Essentials or Secure Essentials + Advanced subscription on the router, online training, live and online support, and all software and firmware updates.



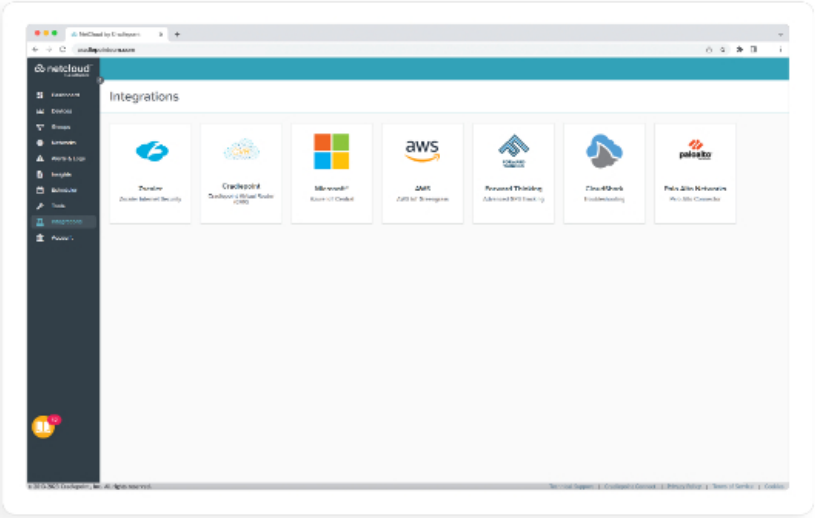
Security Services

Cradlepoint zero trust security networking, delivered through Secure Connect, protects the Ericsson Cradlepoint IoT routers and any connected devices through connect-and-go ease. IoT or other devices simply connect to the router with encrypted tunnels to build micro-segmented networks that are instantly hidden from internal and external sites. Access policies are easily defined to enable IoT devices to communicate only with their authorized resources or applications and nothing else. The simple and secure zero trust access, delivered through Zero Trust Network Access, also delivers authorized contractors and third parties secure remote access to IoT devices on the WAN for remote monitoring and maintenance.



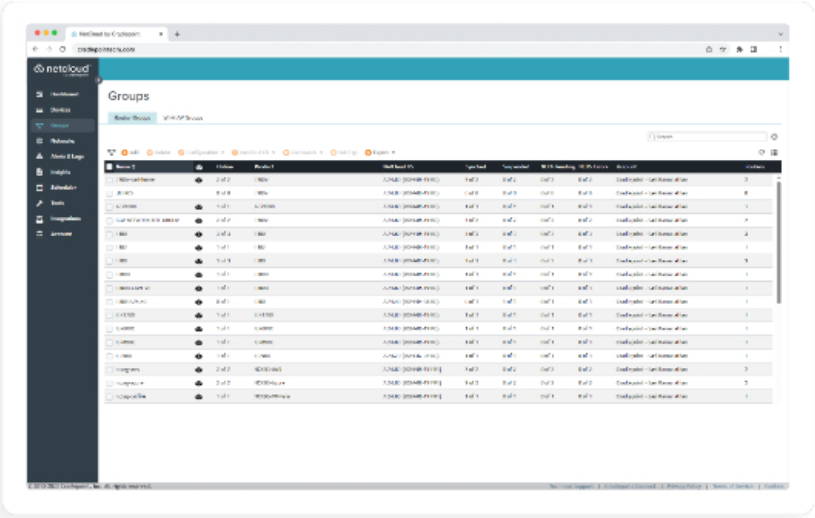
Extensibility and Integrations

NetCloud Service and the S400 Series Router can access network data that third-party applications need to provide higher levels of insights and control. Leverage pre-built connections to partner applications or create custom connections across a variety of use cases using the NetCloud SDK or NetCloud API.



Cloud Services

NetCloud Manager delivers true, zero-touch deployment with the ability to define and deliver policy across entire groups of endpoints. Users can create cloud-orchestrated zero trust networks and gain insights and analytics required for rapid troubleshooting and diagnostic workflows.



Hardware Specifications

The following features are delivered through the hardware.

INTERFACES	
Modem:	Embedded Cat 6 LTE modem — 2 x SMA cellular antenna connectors
Ethernet:	1 x GbE RJ45 (LAN/WAN switchable)
Wi-Fi:	Single-radio, dual-band, non-concurrent operation (2.4 GHz or 5 GHz) — 1x1 MIMO 802.11ac Wi-Fi 5 — 150 Mbps (2.4 GHz) and 433 Mbps (5 GHz) — 1 x RP-SMA Wi-Fi antenna connector — Global Optimized Wi-Fi & International SDR — WPA/WPA2/WPA3 Personal, WPA2/WPA3 Enterprise, Open — 802.11k, 802.11v — Wi-Fi Alliance Certified

Expansion:	— 1 x USB 2.0 Type A (output: 5 V, 500 mA, 2.5 W)
	— 1 x Expansion module slot
	  — Serial DB-9, RS232 interface with flow control
	  — Dual Fast Ethernet, 2 x FE RJ45 (LAN/WAN switchable)
	  — GPIO module, 1 x 10-pin connector

GNSS/GPS:	Passive GNSS (multiplex with cellular antenna)
GNSS/GPS	
Acquisition: **(Time to First Fix)**	30 seconds (cold start)

Protocols:	— NMEA 0183 — TAIP
Constellations:	— GPS — Galileo — GLONASS — BDS
Accuracy:	Autonomous @ open sky 2 meter (CEP-50)
Update Rate:	1 Hz (once per second)
Sensitivity:	— Acquisition: -147 dBm — Tracking: -159 dBm — Reacquisition: -159 dBm
Frequencies:	L1
Power:	Passive (no power provided)
ENVIRONMENTAL	
Temperature:	— Operating: -20 °C to 60 °C (-4 °F to 140 °F) — Storage: -20 °C to 70 °C (-4 °F to 158 °F)
Humidity:	— Operating: 5% to 95% non-condensing — Storage: 5% to 95% non-condensing
Ingress Protection:	IP30
POWER	
Required:	One of the following: — DC input steady state voltage range: 9–33 VDC — For 9–12 VDC installations, use a 3 A fuse — For > 12 VDC installations, use a 2 A fuse — PoE Power — 802.3af PSE Type 1 (15 W)
Features:	Reverse polarity and transient voltage protection (ISO 7637-2)

Consumption:	S400 DC: — Sleep: Not supported — Idle: 3.3 W — Typical: 4.1 W — Heavy: 5.8 W S450 DC: — Sleep: Not supported — Idle: 2.9 W — Typical: 3.3 W — Heavy: 4.6 W S400/S450 PoE: — 802.3af Class 3 (15 W)
PHYSICAL	
Size:	100 x 105 x 31 mm (3.9 x 4.1 x 1.2 in)
Weight:	221 g (7.8 oz)
Construction:	Plastic housing
RELIABILITY	
Calculated MTBF:	— S400/S450: 1,828,355 hours (Telcordia SR332 at 25 °C) — S400/S450 with GPIO Module: 1,343,279 hours (Telcordia SR332 at 25 °C) — S400/S450 with Ethernet Module: 1,659,720 hours (Telcordia SR332 at 25 °C) — S400/S450 with DB9 Module: 1,712,886 hours (Telcordia SR332 at 25 °C)
CERTIFICATIONS	
Safety:	— UL/cUL — CB Scheme — EN 62368-1
Materials:	— WEEE — RoHS — REACH — California Prop 65
Security:	FIPS 140-3 Level 1 Module in Process (S400 and S450 FIPS models only)
Shock/Vibration/Humidity:	— MIL STD 810H Method 514.8, Annex C-1, Category 4 — MIL STD 810H Method 516.8, Procedure I — MIL STD 810H Method 516.8, Procedure V
Hazardous Locations:	— Class 1 Div 2 — ATEX

Regulatory:	— FCC (U.S.) — IC (Canada) — CE (European Union) — RCM (AU/NZ) — UKCA (UK) — ANATEL (Brazil) — IFT (Mexico) — SUBTEL (Chile) — MCMC (Malaysia) — IMDA (Singapore)
CLOUD SERVICES	
Service Plans:	NetCloud Service for IoT
Service Add-Ons:	NetCloud Exchange, NetCloud Advanced
Support:	NetCloud Packages include support for the full subscription term.
Warranty:	All Cradlepoint hardware products are covered by a limited lifetime warranty for as long as they have a subscription license to an active NetCloud Service Plan.
Device Management:	NetCloud Manager for the full subscription term.
Software Updates:	NetCloud Manager for the full subscription term.
WI-FI POWER	
FCC:	— 2400-2484.2 MHz (2.4 GHz): 19.60 dBm Conducted — 5150–5250 MHz: 16.25 dBm Conducted — 5250–5350 MHz: 15.89 dBm Conducted — 5470–5725 MHz: 15.93 dBm Conducted — 5725–5850 MHz: 14.38 dBm Conducted
IC:	— 2400-2484.2 MHz (2.4 GHz): 19.60 dBm Conducted — 5150–5250 MHz: 16.25 dBm Conducted — 5250–5350 MHz: 15.89 dBm Conducted — 5470–5725 MHz: 15.93 dBm Conducted — 5725–5850 MHz: 14.38 dBm Conducted
CE:	— 2400-2484.2 MHz (2.4 GHz): 17.50 dBm Conducted — 5150–5250 MHz: 16.64 dBm Conducted — 5250–5350 MHz: 16.64 dBm Conducted — 5470–5725 MHz: 17.01 dBm Conducted — 5725–5875 MHz: 11.50 dBm Conducted
UKCA:	— 2400-2484.2 MHz (2.4 GHz): 17.50 dBm Conducted — 5150–5250 MHz: 16.64 dBm Conducted — 5250–5350 MHz: 16.64 dBm Conducted — 5470–5725 MHz: 17.01 dBm Conducted — 5725–5875 MHz: 16.12 dBm Conducted

RCM:	— 2400-2484.2 MHz (2.4 GHz): 17.50 dBm Conducted — 5150–5250 MHz: 16.64 dBm Conducted — 5250–5350 MHz: 16.64 dBm Conducted — 5470–5725 MHz: 17.01 dBm Conducted — 5725–5850 MHz: 14.38 dBm Conducted
Global Safe Mode:	2.4 GHz: 14 dBm Conducted
PERFORMANCE†	
Stateful Firewall Throughput:	95 Mbps
IPsec VPN Throughput:	20 Mbps
Concurrent VPN Tunnels:	5
Concurrent Sessions (TPC):	32,000
Typical IoT Client Count††:	25
Layer 2 / Layer 3 VLANs:	Up to 64
LEDs	
	See the S400 Series Semi-Ruggedized Router Quick Start Guide.

†Performance testing conducted based on requirements as defined in RFC2544 using fixed-frame 1518-byte packets. Throughput results reflect uni-directional UDP traffic with less than 1% packet loss as tested with wired connections. Results do not reflect performance of the cellular wireless operator networks.††Typical IoT Client represents a single connected client device to the Ericsson Cradlepoint and typically passing 1Mbps or less data per client.

Enterprise-Class Modem Specifications

SPECIFICATION	S400-C6-NA
Technology:	Cat 6 LTE (3GPP Rel. 11) — Dual SIM slots, 4FF form factor — SIM-based auto-carrier selection
3G:	N/A
Carrier Aggregation:	— Downlink: Up to 2CA — Uplink: Up to 1 CA See Understanding Carrier Aggregation.
Peak Rates:	LTE — Download: 300 Mbps — Upload: 50 Mbps
MIMO:	2x2 MIMO
Modulation:	Up to 16 QAM

4G/LTE Bands:	FDD — B2 (1900), B4 (1700), B5 (850), B7 (2600), B12 (700), B13 (700), B14 (700), B25 (1900), B26 (850), B29 (700), B30 (2300), B66 (1700), B71 (600) TDD — B41 (2500), B48 (3500)
3G Bands:	N/A
Power:	LTE 23 dBm ± 2 (typical conducted)
Antennas:	SMA female connectors, external 600 MHz - 6 GHz cellular paddle antennas (Qty 2, included only with certain packages)
GNSS/GPS:	Active GNSS — GPS — GLONASS — BeiDou — Galileo
SMS:	Yes
Regulatory:	— FCC (U.S.) — IC (Canada)
Network Operator Standards:	PTCRB (U.S., Canada)
GCF Global Operators:	N/A
PTCRB North America Operators:	https://www.ptcrb.com/about/
Network Operator Certifications:	AT&T, T-Mobile, Verizon†
Public Safety Network Certifications:	FirstNet Trusted™, T-Mobile Connecting Heroes, Verizon Frontline
Private Cellular Network:	N/A

†Cellular carriers and operators throughout the world may only require telecom industry certifications, like PTCRB or GCF, to operate on their network. Some carriers require additional testing and approval, beyond telecom certifications. A carrier listed in the approvals section means Cradlepoint completed additional testing and acquired technical approval for that given carrier. Any carrier not listed may not require additional testing or approval beyond telecom industry certifications to operate on their network.

SPECIFICATION	S400-C6-EA
Technology:	Cat 6 LTE (3GPP Rel. 11), DC-HSPA+ — Dual SIM slots, 4FF form factor — SIM-based auto-carrier selection
3G:	UMTS/HSPA+/DC-HSDPA

Carrier Aggregation:	— Downlink: Up to 2 CA — Uplink: Up to 1 CA See Understanding Carrier Aggregation.
Peak Rates:	LTE — Download: 300 Mbps — Upload: 50 Mbps HSPA+ — Download: 42 Mbps — Upload: 5.76 Mbps WCDMA — Download: 384 kbps — Upload: 384 kbps
MIMO:	2x2 MIMO
Modulation:	— Downlink: Up to 64 QAM — Uplink: Up to 16 QAM
4G/LTE Bands:	LTE FDD — B1 (2100), B3 (1800), B5 (850), B7 (2600), B8 (900), B20 (800), B28 (700), B32 (1500) LTE TDD — B38 (2600), B40 (2300), B41 (2500), B42 (3500), B43 (3700)
3G Bands:	B1, B3, B5, B8
Power:	LTE 23 dBm ± 2, DC-HSPA+ 23 dBm ± 1 (typical conducted)
Antennas:	SMA female connectors, external 600 MHz - 6 GHz cellular paddle antennas (Qty 2, included only with certain packages)
GNSS/GPS:	Active GNSS — GPS — GLONASS — BeiDou — Galileo
SMS:	Yes
Regulatory:	— CE (European Union) — RCM (AU/NZ) — UKCA (UK)
Network Operator Standards:	— GCF (Worldwide)

GCF Global Operators:	https://www.globalcertificationforum.org/membership/gcf-members.html†
PTCRB North America Operators:	https://www.ptcrb.com/about/
Network Operator Certifications:	See note†
Public Safety Network Certifications:	N/A
Private Cellular Network:	N/A

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SPECIFICATION	S400-C6-LA
Technology:	Cat 6 LTE (3GPP release 11), DC-HSPA+ — Dual SIM slots, 4FF form factor — SIM-based auto-carrier selection
3G:	UMTS/HSPA+/DC-HSDPA
Carrier Aggregation:	N/A See Understanding Carrier Aggregation.
Peak Rates:	LTE — Download: 300 Mbps — Upload: 50 Mbps HSPA+ — Download: 42 Mbps — Upload: 5.76 Mbps WCDMA — Download: 384 kbps — Upload: 384 kbps
MIMO:	2x2 MIMO
Modulation:	— Downlink: Up to 64 QAM — Uplink: Up to 16 QAM
4G/LTE Bands:	FDD — B2 (1900), B4 (1700), B5 (850), B7 (2600), B8 (900), B25 (1900), B28 (700), B66 (1700) TDD — B42 (3500), B43 (3700)
3G Bands:	B2, B4, B5, B8
Power:	LTE 23 dBm ± 2; HSPA+ 23 dBm ± 1 (typical conducted)

Antennas:	SMA female connectors, external 600 MHz - 6 GHz cellular paddle antennas (Qty 2, included only with certain packages)
GNSS/GPS:	Active GNSS — GPS — GLONASS — BeiDou — Galileo
SMS:	Yes
Regulatory:	— FCC (U.S.) — IC (Canada) — CE (European Union)
Network Operator Standards:	— PTCRB (U.S., Canada) — GCF (Worldwide)
GCF Global Operators:	https://www.globalcertificationforum.org/membership/gcf-members.html†
PTCRB North America Operators:	https://www.ptcrb.com/about/
Network Operator Certifications:	AT&T, T-Mobile, Verizon†
Public Safety Network Certifications:	FirstNet Trusted™, T-Mobile Connecting Heroes, Verizon Frontline
Private Cellular Network:	N/A

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SPECIFICATION	S450-C6-NA
Technology:	Cat 6 LTE (3GPP release 11) — Dual SIM slots, 4FF form factor — SIM-based auto-carrier selection
3G:	N/A
Carrier Aggregation:	— Downlink: Up to 2 CA — Uplink: Up to 1 CA See Understanding Carrier Aggregation.
Peak Rates:	LTE — Download: 300 Mbps — Upload: 50 Mbps
MIMO:	2x2 MIMO
Modulation:	Up to 16 QAM

4G/LTE Bands:	FDD — B2 (1900), B4 (1700), B5 (850), B7 (2600), B12 (700), B13 (700), B14 (700), B25 (1900), B26 (850), B29 (700), B30 (2300), B66 (1700), B71 (600) TDD — B41 (2500), B48 (3500)
3G Bands:	N/A
Power:	LTE 23 dBm ± 2 (typical conducted)
Antennas:	SMA female connectors, external 600 MHz - 6 GHz cellular paddle antennas (Qty 2, included only with certain packages)
GNSS/GPS:	Active GNSS — GPS — GLONASS — BeiDou — Galileo
SMS:	Yes
Regulatory:	— FCC (U.S.) — IC (Canada)
Network Operator Standards:	— PTCRB (U.S., Canada) — GCF (Worldwide)
GCF Global Operators:	N/A
PTCRB North America Operators:	https://www.ptcrb.com/about/
Network Operator Certifications:	AT&T, T-Mobile, Verizon†
Public Safety Network Certifications:	FirstNet Trusted™, T-Mobile Connecting Heroes, Verizon Frontline
Private Cellular Network:	N/A

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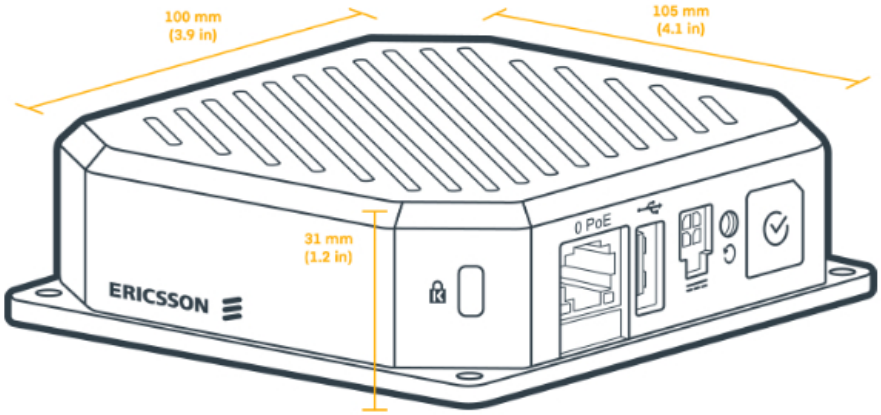
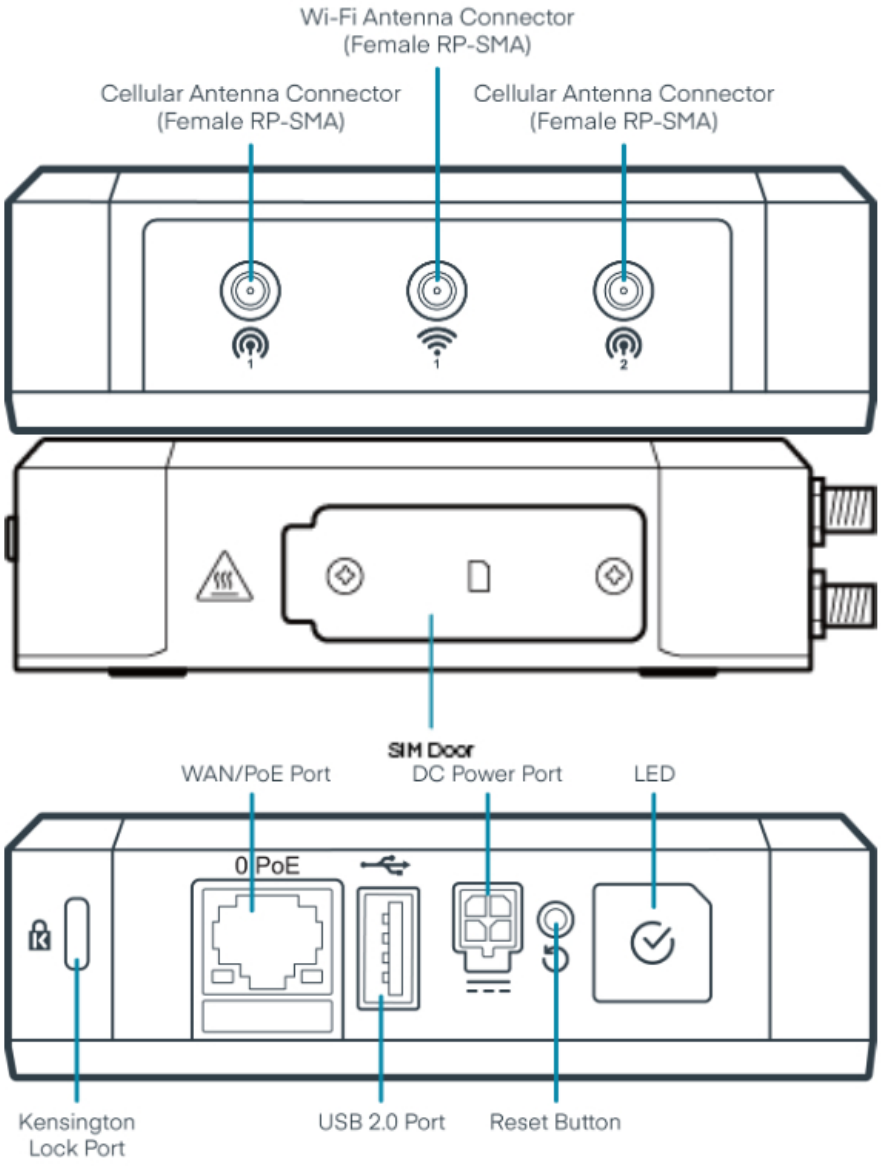
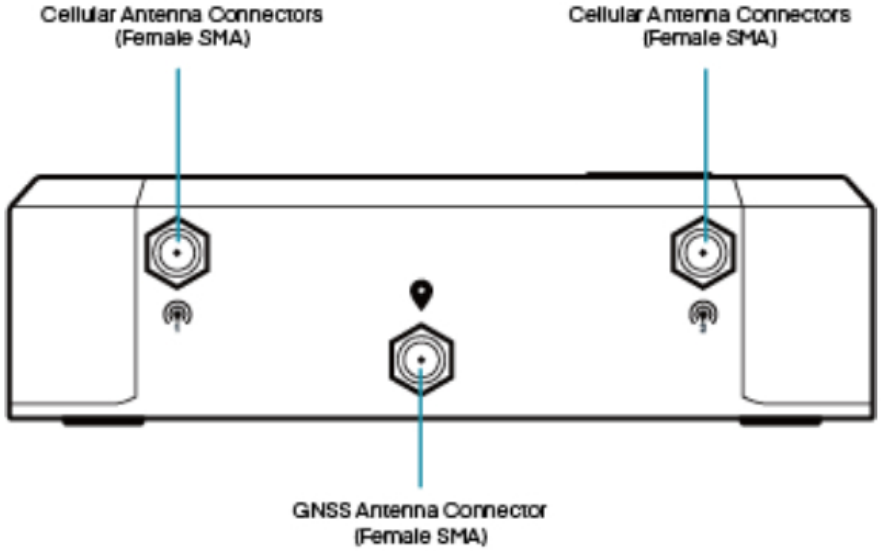
Physical Measurements & Features



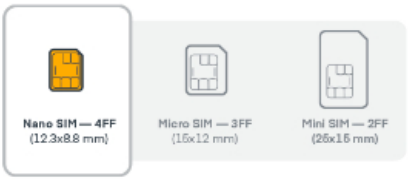
Features — S400 Series



Features — S450 Series



SIM Card Info



Ordering Guide

NetCloud IoT Essentials packages and plans contain all the features and capabilities required for a broad range of IoT applications. Essentials packages include 24x7 support (phone support: 24-hour weekdays with emergency response on weekends, web: 24x7, chat: 24x5) and a limited lifetime warranty. For additional capabilities, a **NetCloud IoT Advanced Plan** can be added to the NetCloud Essentials package at any time.
See additional details of what is included in the Essential and Advanced NetCloud software: cradlepoint.com/netcloud-service

NetCloud IoT Packages for the S400 Series Router

REGION	MODEM	IOT PACKAGE PLAN	PART NUMBER
North America: U.S. & Canada	Cat 6 (150 Mbps) with Wi-Fi, with AC power supply and antennas	Essentials	TBTy-0400-C6-NA-N
		Essentials + Advanced	TBTy-0400-C6-NA-NA

	Cat 6 (150 Mbps) **without** Wi-Fi, with AC power supply and antennas	Essentials Essentials + Advanced	TBTy-0450-C6-NA-N TBVy-0750C4D-NA
North America: Mexico	Cat 6 (150 Mbps) with Wi-Fi, AC power supply, and antennas	Essentials Essentials + Advanced	TBTy-0400-C6-LA-M TBTy-0400-C6-LA-MA
Europe: European Union and United Kingdom	Cat 6 (150 Mbps) with Wi-Fi, AC power supply, and antennas	Essentials Essentials + Advanced	TBTy-0400-C6-EA-M TBTy-0400-C6-EA-MA
All Regions:		Advanced Renewal Essentials Renewal Advanced Renewal Essentials + Advanced	TBTx-NCADV TSAx-NCESS-R TBTx-NCADV-R TBSAx-NCEA-R

x = 1, 3, or 5 years
y = 3 or 5 years

Accessories

INCLUDED WITH DESIGNATED SKUS	PART NUMBER
One of the following: — Power Supply, 12 VDC, 2x2, 1.5 meters (North America Type A) — Power Supply, 12 VDC, 2x2, 1.5 meters (North America-United Kingdom-Europe-Australia Types A-G-C-I)	170716-001 170717-000
Cellular Antenna, Charcoal, 600 MHz - 6 GHz, SMA, 180 mm (Qty 2)	170704-002
Wi-Fi Antenna, 2.4/5 GHz RPSMA GRA 184 mm (Qty 2)	170836-000
OPTIONAL	**PART NUMBER**
GPIO Cable, Small 2x2 MPP Black, 3 meters, 20 AWG	170919-000
DIN Rail Mounting Bracket	170904-000
Drop Ceiling Mounting Bracket	170920-000
Expansion Module - Dual Ethernet	MC20-ETH
Expansion Module - Serial (DB9)	MC20-SRL
Expansion Module - GPIO	MC20-GPO

†Refer to the Cradlepoint MC400 Modular Modem webpage for more information about modular modems.

Support & Warranty

The S400 Series Router is only sold as a component of NetCloud IoT Connectivity, IoT Essentials or Essentials + Advanced Packages.

- Only IoT Essentials or Essentials + Advanced Packages include support for the full subscription term.
- All Cradlepoint hardware products are covered by a limited lifetime warranty for as long as they have a subscription license to an active NetCloud IoT Essentials or Essentials + Advanced Service Plan.

More Information

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