BoltMAR 20-28
Embedded Services Router - EN50155, Cisco 5921

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- **Cisco IOS® 5921 ESR**
- **EN50155 and EN45545 Certified**
- **Class TX Fanless with IP66**
- **Extended Connectivity**
- **Long-term Availability**
- **Highly Customizable**

Features

Cisco IOS - Features the Cisco 5921 Embedded Services Router (ESR), the IOS Software router that provides reliable network routing in extreme enviroments

Certified - Provides multiple certifications, including EN50155 (Rolling Stock), EN45545 (Fire & Smoke), and for selected cellular carriers

Rugged - Operates in extended temperature (EN50155 TX Class) while completely fanless and IP66 rated

Extended Connectivity - Cellular connectivity with carrier pre-certifications, dual Gigabit Ethernet, Wi-Fi 2.4/5.0GHz, BLE, CAN bus and GPS with Dead Reckoning

Long-term Availability - Designed for markets and applications where long-term availability and support is a must have requirement

Highly Customizable - Modular design that can be tailored to the application, including interfaces, connectors, and wireless connectivity options

Description

The BoltMAR 20-28 delivers a Cisco 5921 Embedded Software Router in a rugged EN50155 device, enabling resilient radio connectivity on vehicles. It is the building block for on-demand networking in a wide range of applications, including commercial, industrial, homeland security, emergency response and mobile IoT.

Features include WAN optimization for improved performance and radio-aware routing (RAR), to manage critical traffic under degraded conditions, such as when radio link quality is compromised.

Installed on a vehicle, the BoltMAR 20-28 enables self-forming and self-healing networks that support a wide range of traditional and IoT services, such as remote sensor management, vehicle to vehicle communications, passenger high speed networks, on-board and track-side crew communications and much more.

The BoltMAR 20-28 supports one LTE cellular modem with dual SIM, to provide better roaming coverage and multiple carriers; it also offers dual Gigabit Ethernet, 802.11 a/b/g/n Wi-Fi, Bluetooth Low Energy, CAN bus and GPS with Dead Reckoning.

Designed for harsh environments, the BoltMAR 20-28 ensures the highest level of physical resilience, by employing rugged circular connectors and a fanless IP66 design that allows operation in Class TX temperatures (-40° to +70°C). The Class S2 power supply is very reliable, supporting 9VDC to 137.5VDC and being able to cope with 10ms power outages, while isolation of serial and digital I/O ports adds extra protection to the system.

Professional Services are available for the BoltMAR 20-28, such as design personalization and inclusion of new features and technologies, additional certifications, system development and production.

Specifications		
ROUTING	Software Router	Cisco 5921 Embedded Services Router (ESR)
	Routing Protocols	Routing Information Protocol (RIP) Versions 1 and 2, Open Shortest Path First (OSPF) – Enhanced Interior Gateway Routing Protocol (EIGRP)-IP, Border Gateway Protocol (BGP) – Cisco Discovery Protocol, IP Policy Routing – IP Multicast Protocol Independent Multicast (PIM) Versions 1 and 2 – Internet Group Management Protocol (IGMP) Versions 1, 2, and 3 – IP Multicast Load Splitting, Cisco Group Management Protocol (GMP)
	Radio-Aware Routing	Optimizes IP routing over fixed or temporary radio networks, Factors radio link metrics into route calculations – Immediately recognizes and adapts to changes in network neighbor status – Supports Dynamic Link Exchange Protocol (DLEP), Supports Router Radio Control Protocol (R2CP) – Supports RFC 5578 (authored by Cisco)
	Mobile Ad-Hoc Networks	OSPFv3 enhancements for mobile ad-hoc networks
PROCESSOR	CPU	Atom E3845, 1.91GHz, Quad Core
MEMORY	RAM	4GB 1333MHz (DDR3L-ECC)
STORAGE	Embedded	8GB eMMC
	Other	1x microSD Slot (User Accessible)
I/O INTERFACES	Ethernet	2x 10/100/1000Mbps - M12 X-coded Connector
	USB	2x USB 2.0 Noise and Surge Protected, 1x USB 2.0 (Service Panel)
	Serial	1x RS-232/RS-422/RS-485 (9 Wires) Isolated, 1x TTL Console (Service Panel)
	CAN 2.0B	1x CAN bus 100mA with 5V Power Out, Isolated
	Digital I/O	4x Digital Input, 4x Digital Output, 1x Odometer, 1x Ignition Key (All DI/O EN50155 Isolated)
	Video	1x Micro HDMI (Service Panel)
EXPANSION	MiniPCIe Slots	3x Full/Half-Size Mini PCIe Slots (PCIe/USB, USB)
RADIO INTERFACES	Cellular	1x LTE Cat 4 Modem
	GPS	GPS/QZSS/GLONASS/BeiDou/Galileo with Dead Reckoning
	Wi-Fi / BT	802.11b/g/n, 4.0 BLE
	Antennas (External)	2x SMA Cellular, 2x RP-SMA Wi-Fi/Bluetooth, 1x SMA GPS
OTHER	RTC	Yes, with SuperCAP (up to 2 Months Retain), Fast Reboot Support
	System Watchdog	Yes, Discrete Chip
	TPM	Factory Option: TPM 1.2/2.0
	Sensors	Accelerometer, Temperature
	LEDs	1x Power, 3x MiniPCIe Slot, 2x Programmable (Dual Color Green/Amber)
	Buttons	1x Reset, 1x Programmable (Service Panel)
	SIM Slot	2x Single SIM, Switchable for Bandwidth Aggregation and Carrier/Cellular Backup (Service Panel)
POWER	Input	Wide Input Range EN50155 Class S2 (9V - 137.5V)
	Consumption	30W Max
ENVIRONMENT	Operating Temp.	TX according to EN50155
	Storage Temp.	- 40 to +85°C
CERTIFICATIONS	Regulatory	CE, FCC, ISED
	Safety	EN 62368, UL 60950 (§)
	Vertical	EN50155, EN45545 (Fire and Smoke)
	Environmental	RoHS2, REACH
	Wi-Fi / BT Radio	CE (RED), FCC, ISED
	Cellular Radio	CE (RED), FCC, ISED, PTCRB, AT&T
	Ingress	IP66
MECHANICAL	Enclosure	Material: Aluminium - Color: Black Anodized
	Dimensions	268x141x85mm (LxWxH), with Connectors

(§) UL, NRTL listing Factory Option.

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