R5020 robustOS

High Speed Smart 5G Router

4 Eth + 1 RS232 + 1 RS485 + 1 DI + 1 DO

INTRODUCTION

The R5020 is Robustel's first 5G capable router supporting global 5G, 4G and 3G bands. The R5020 leverages the tried and tested high performance CPU platform and **RobustOS** – a mature and stable Operating System developed in-house by Robustel. R5020 is compatible with 3GPP Release 15 and targeted at the following applications: **In-vehicle Applications** – whether it is passenger Wi-Fi, CCTV debrief, ticketing or a similar "onboard" requirement, the R5020 offers a simple and effective to increase internet speeds and future-proof current installations well into the future. R5020 has achieved E-Mark certification for in-vehicle use and supports GNSS positioning. A version with vehicle ignition sensing is available to protect vehicle batteries when the engine is off.

Broadband Failover – R5020 can be configured to use Ethernet or Wi-Fi as primary internet and failover to 4G/5G in the event of an outage. This can help to provide resilience to outlets such as shops and small offices at a reasonable cost and provide sufficient bandwidth for multiple users. IPsec, DMVPN and OpenVPN protocols can be used for connections into core networks.

Primary Broadband – Cellular networks can now provide unlimited 5G tariffs at very reasonable prices, offering hundreds of Mbps internet over the air. For many, a chance to cut the cables and use a wireless internet connection can be technically or commercially favorable.
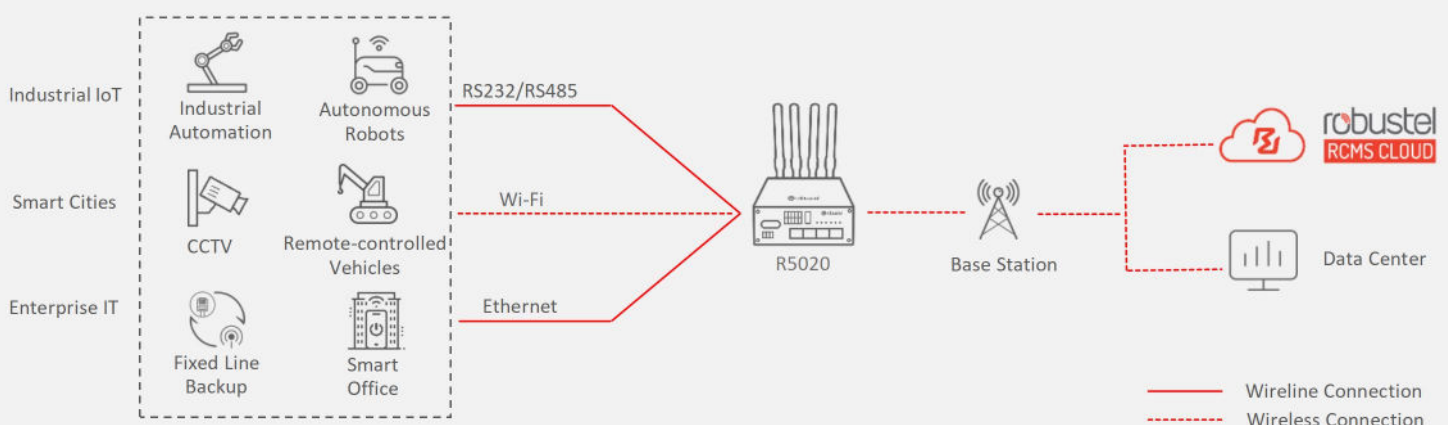
RCMS is Robustel's free router monitoring service that is fully compatible with the R5020. It allows customer to see a location overview of their routers quickly and simply on a map. Features such as data usage, signal strength, current network and much more can then be viewed on a per router basis. Over-the-air updates are supported for Firmware, router configuration and Apps serving as essential 'insurance' if anything was not quite right during deployment. You can try Robustel's free router management platform by signing up here: https://rcms-cloud.robustel.net

KEY FEATURES

➢ Global 5G/4G/3G cellular connections

➢ Supports Ethernet, Wi-Fi and 4G/5G internet with auto-failover

➢ Very cost-effective industrial 5G router solution

➢ Fully programmable Operating System with well documented SDK

➢ Multiple VPN options available including DMVPN & IPSec

➢ GNSS, ignition sense & E-mark make R5020 ideal for vehicles

➢ Free cloud management platform - RCMS

➢ Robust metal enclosure with small footprint – DIN-rail + wall mount options

APPLICATION EXAMPLE

SPECIFICATIONS

Cellular Interface

Number of antennas	4 (ANT0 + ANT1 + ANT2 + ANT3)
Connector	SMA-K
SIM	2 Mini SIM (2FF)

GNSS (Optional, required 4-in-1 Combo Antenna)

Number of antennas	1 (ANT3, Multiplexing cellular antenna interface)
Connector	SMA-K
GNSS technology	GPS/GLONASS/BeiDou (Compass)/Galileo
Horizontal position accuracy	< 2m

Ethernet Interface

Number of ports	4 x 10/100/1000 Mbps, 4 LAN by default, can be configured as 1 WAN + 3 LAN Support 802.3at PD feature on ETH0 (optional)
Magnet isolation protection	1 KV

Wi-Fi Interface

Number of antennas	2 (Wi-Fi1 + Wi-Fi2)
Connector	RP-SMA-K
Standards	802.11 b/g/n/ac, 2 x 2 MIMO, supports AP and Client modes
Frequency bands	2.412 - 2.472 GHz (2.4 GHz ISM band) 5.15 - 5.825 GHz (5 GHz ISM band)
Security	WPA, WPA2, WEP, WPA3
Encryption	AES, TKIP, WEP64

Serial Interface

Number of ports	1 x RS232 + 1 x RS485
Connector	2 x 5-pin 3.5 mm female socket
ESD protection	$\pm$8 KV air discharge, $\pm$4 KV contact discharge
Baud rate	300 bps ~ 115200 bps
Signal definition	RS232: TXD, RXD, GND RS485: Data+ (A), Data- (B), Ground (GND)

DI/DO

Type	1x DI + 1 x DO, wet contact
Connector	2 x 5-pin 3.5 mm female socket
Isolation	3.75 KVDC (opto-isolator)
Absolute maximum VDC	"V+" +30 VDC (DI), +30 VDC (DO)
Absolute maximum ADC	100 mA (DO)
Signal definition	IN, OUT, IGND, OGND

Others

Reset button	1 x RST
Expansion	1 x USB 2.0 Host; 5 V/500 mA
LED indicators	1 x RUN, 1 x Modem, 1 x USR, 1 x RSSI, 1 x NET, 1 x WiFi
Watchdog	Built-in

Software (Basic features of RobustOS)

Network protocols	PPP, PPPoE, TCP, UDP, DHCP, ICMP, NAT, HTTP, DNS, NTP, SMTP, Telnet, HTTPs, ARP, VLAN, SSH2, DDNS, etc.
VPN tunnel	IPsec, OpenVPN, GRE, Wireguard
Firewall	DMZ, anti-DoS, Filtering (IP/Domain name/ MAC address), Port Mapping, Access Control
Remote management	Web, CLI, SMS
Serial port	Transparent, TCP Client/Server, UDP, Modbus RTU to TCP
Others	Smart Roaming v2

SDK

Supported programming languages	C, C++
Flash available for SDK	5 MB
RAM available for SDK	256 MB

App Center (Available Apps for RobustOS)

Apps*	L2TP, PPTP, DMVPN, VRRP, QoS, SNMP, Language, RCMS, Dynamic Route, Captive Portal, Modbus Master, TR069

*Request on demand. For more Apps please visit www.robustel.com.

Power Supply and Consumption

Connector	3-pin 3.5 mm female socket with lock
Input voltage	9 ~ 36 V DC, 42.5 ~ 57 V (POE-PD) 10 ~ 30 V DC (ACC)
Power consumption	Idle: 520 mA@12 V Data link: 1.8 A (peak) @12 V

Physical Characteristics

Ingress protection	IP30
Housing & Weight	Aluminum, 500 g
Dimension	125 x 100 x 48 mm
Installations	Desktop, wall mounting and DIN rail mounting
Operating temperature	-20 ~ +55°C (Normal operation) -25 ~ +70°C (Extended operation)
Storage temperature	-40 ~ +85°C
Relative humidity	5 ~ 95%RH

Regulatory and Type Approvals

Environmental	RoHS2.0, WEEE
EMI	EN 55032 Conducted Emission Class A EN 55032 Radiated Emission Class A
EMS	EN 61000-3-2 (Harmonic Current) EN 61000-3-3 (Voltage Flicker) EN 61000-4-2 (ESD) Contact Level 2, Air Level 3 EN 61000-4-3 (RS) Level 2 EN 61000-4-4 (EFT) Level 2 EN 61000-4-5 (Surge) Line to line Level 3, Line to ground Level 1 EN 61000-4-6 (CS) Level 2 EN 61000-4-11 (Dips) Class 2

ORDERING INFORMATION

Model	PN	GNSS	ACC	POE-PD	Frequency Bands*	Country/Region	Certification (*In progress)
R5020-5G-A09GL-A	B064803	*	✓	-	**5G**: NR NSA/NR SA: n1/n2/n3/n5/n7/n8/n12/n20/n25/n28/n38/n40/n41/n48/n66/n71/n77/n78/n79 **4G**: LTE FDD: B1/B2/B3/B4/B5/B7/B8/B12(B17)/B13/B14/B18/B19/B20/B25/B26/B28/B29/B30/B32/B66/B71 LTE TDD: B34/B38/B39/B40/B41/B42/B43/B48 **3G**: WCDMA: B1/B2/B3/B4/B5/B6/B8/B19	Global	E-Mark, FCC, CE, IC, RCM, UKCA, CB, TDRA, NTC
R5020-5G-A09GL-B	B064802	*	-	✓			E-Mark, FCC, CE, IC, RCM, UKCA, PTCRB, AT&T, CB, TDRA, POSTEL, SIRIM, NTC

* GNSS: Required 4-in-1 Combo Antenna.
* For more information about frequency bands in different countries, please contact your Robustel sales representative.

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