

## MaxGate800 Series

### DIN Rail ARM Cortex-A55 Industrial Communication Smart Gateway



- Support 2 Gigabit SFP ports, 8 Gigabit copper ports, 12 RS485, 4 CAN, 26 I/O (16 DI+8 DO+2 AI), 1 HDMI and 1 USB2.0, providing users with flexible networking methods
- 5G or 4G cellular network optional, dual SIM card single standby, customizable 5G LAN
- Dual-band Wi-Fi 6 optional, which can be used as a wireless client to access the wireless network
- Support ring network redundancy protocols such as MW-Ringv1/v2, ERPS, STP/RSTP, etc.
- Support serial port and CAN port terminal device networking, and can convert TCP, UDP, Modbus, HTTPD, WebSocket, MQTT and other protocols
- Support I/O digital/analog detection and control
- Provide application layer programming sample code to facilitate secondary development
- Support 2 channels of DC12~48V power input, dual input supports power redundancy
- High-strength aluminum alloy casing, IP40 protection level, fanless casing for heat dissipation, the device can reliably work in harsh industrial environments of -40°C ~+75°C





## Product Description

MaxGate800 series is a DIN rail ARM Cortex-A55 industrial communication intelligent gateway, integrating switches, Wi-Fi 6/4G/5G (optional), Modbus gateway, CAN gateway, and I/O Gateway and other functions, supporting 2 Gigabit SFP ports, 8 Gigabit copper ports, 12 RS485, 4 CAN, 26 I/O (16 DI+8 DO+2 AI), 1 channel HDMI, 1 channel USB2.0 and 1 channel dual Nano SIM card slot; using a high-performance low-power quad-core 64-bit ARM Cortex-A55 processor with a main frequency of 2GHz, paired with 2GByte DDR4 and 8GByte eMMC, running smoothly. With abundant hardware resources and a variety of peripheral interfaces, the data collected by the terminal device can be transmitted over the device's LAN, WAN, WLAN or cellular network.

This product has rich protocols, strong stability, good tailor ability and scalability, comprehensive support for various communication interface drivers, and supports multiple hardware platforms and architectures; it provides onboard 8GByte eMMC storage and external USB2.0 HOST interface, which facilitates customers' secondary development, has the possibility of application self-recovery, and can realize system redundancy function through multiple backup methods. The hardware adopts high-standard industrial protection design, with selected industrial-grade components and high-strength aluminum alloy casing, which is sturdy and durable; low power consumption, wide temperature and wide voltage design, fanless casing for heat dissipation, and supports -40°C~+75°C operating temperature, passed strict safety regulations and EMC tests to meet the application needs of harsh industrial environments. The products can be widely used in industrial automation, comprehensive energy, smart cities, smart transportation, smart mines, smart factories and other fields.



## Benefits and Features

- Adopt 4-core 64-bit ARM Cortex-A55 processor with a main frequency of up to 2GHz to meet edge computing needs
- Support 2GB DDR4 memory and 8GB eMMC storage, which facilitates secondary development and can be customized with larger memory and Flash
- Based on Debian10, using Linux4.0 or above kernel, supporting apt package manager, easy to download and install software
- Support Docker, making secondary development and deployment of own programs quick and easy
- Support network card, serial port, RS485, GPIO, eMMC, HDMI, I2C, RTC, built-in Watchdog, USB, Wi-Fi and other drivers, and provides application layer programming sample code and a general cross-compilation environment to facilitate secondary development.
- Built-in Modbus gateway, CAN gateway, IO gateway functions, and supports user secondary development
- Support switching function and provide a variety of network protocols, such as MW-Ringv1/v2, ERPS, STP/RSTP, VLAN, LACP, LLDP, SNMPv1/v2c/v3, RMON, QoS, 802.1X, IGMP Snooping, ACL, etc.
- The WAN port can connect to the external network through dynamic/static/PPPoE dial-up methods
- Support multiple network access modes such as wired, Wi-Fi 6, 4G/5G/5G LAN (only wired is supported by default)
- Support multiple file systems and multiple network protocols
- Support VPN client and server to build a private network
- Support MQTT to connect to Alibaba Cloud, OneNet, Tencent Cloud, Huawei Cloud, Maiwei Cloud or other cloud platforms to realize the interconnection of everything between the device and the cloud
- Support DDM digital diagnostic monitoring, which can detect DDM optical module temperature, voltage, current, transmit optical power, receive optical power, etc.
- Support RTC to provide accurate real-time clock, and the device can continue to maintain time even after power off.

☑☑☑ Specifications

System	
Processor	4-core 64-bit ARM Cortex-A55, clocked at 2GHz
OS	Debian10 (Linux4.19.219)
Memory	2GB DDR4
Storage	8GB eMMC
Software	
Industrial BUS	<p>Support Modbus RTU Master, Modbus RTU Slave, Modbus ASCII Master, Modbus ASCII Slave, UDP Client, UDP Server, UDP Multicast, TCP Server, TCP Client, RealCOM_MCP, RealCOM_CCP, RealCOM_MW, Pair Connection Master, Pair Connection Slave, HTTPD Client, WebSocket Client, MQTT and other serial port to network modes</p> <p>Support serial port forwarding, RFC2217</p> <p>Supports Modbus slave mapping, Modbus pre-reading, and Modbus address mapping batch reading and writing</p> <p>Supports CAN-to-network modes such as UDP Client, UDP Server, UDP Multicast, TCP Server, TCP Client, Pair Connection Master, Pair Connection Slave, Modbus TCP Slave, HTTPD Client, WebSocket Client, MQTT, etc.</p> <p>Supports packet length, packet interval, heartbeat packet, SSL encryption, and data encryption</p> <p>Support CAN ID filtering and restart without data</p>
I/O Controller	<p>Support DI, DO, AI detection and DO control</p> <p>DO supports restart hold, AI supports current type 4-20mA and voltage type 0-10V</p> <p>Support Modbus TCP instructions to read data and control, DI supports 02 function code, DO supports 01/05/0F function code, and AI supports 04 function code</p>
Routing Function	<p>Support 4G/5G cellular network or Wi-Fi6 wireless client optional</p> <p>Support static routing, link check, network diagnosis</p> <p>Support port forwarding, access control, custom rules, DMZ, QoS</p> <p>Supports VPN clients and servers, dynamic DNS, and cloud services</p>
Switching	<p>Support port configuration, port speed limit, storm suppression, storm detection, port aggregation, LACP, port statistics</p> <p>Support 802.1Q VLAN, port isolation, static unicast MAC binding</p> <p>Support fast ring network, ERPS, RSTP</p> <p>Support IGMP-Snooping, static multicast MAC binding</p> <p>Supports ACL, 802.1X authentication, email logs, alarms, and loopback detection</p> <p>Support SNMP, RMON, LLDP, port mirroring, network diagnostics, optical module DDM</p>

 Specifications

System Management	Support WEB, Telnet, SSH access control WAN supports DHCP, static address, PPPoE connection Support DNS, LAN DHCP server Support local/network clock synchronization, automatic adjustment to daylight saving time, system logs, scheduled tasks, and certificate management Support scheduled/immediate restart, configuration file upload and download, and system upgrade	
<b>Wi-Fi Radio Frequency Parameters (MaxGate800-W)</b>		
Wireless Standards	IEEE802.11b/g/n/ac/ax	
Working Frequency	2.4GHz~2.4835GHz、5.15GHz~5.835GHz	
Modulation	CCK, DQPSK, DBPSK, BPSK, QPSK, 16QAM, 64QAM, 256QAM, 1024QAM	
Band Bandwidth	20MHz/40MHz/80MHz	
Theoretical Transfer rate	2.4GHz : 574Mbps 5GHz : 1201Mbps	
Max. TX Power	802.11b : 18±1.5dBm 802.11g : 15±1.5dBm 802.11n HT20/HT40 : 15±1.5dBm 802.11ac HT80 : 13±1.5dBm	
RX Sensitivity	1Mbps: -95dBm@PER < 8% 11Mbps: -88dBm@PER < 8% 54Mbps: -73dBm@PER < 10% 65Mbps: -71.5dBm@PER < 10% 1201Mbps: -65dBm@PER < 10%	
<b>Cellular Network</b>	<b>4G(MaxGate800-4G)</b>	<b>5G(MaxGate800-5G)</b>
Network Format	LTE-FDD, LTE-TDD, WCDMA, GSM	5G NR SA/NSA, LTE-FDD, LTE-TDD, WCDMA
Working Frequency	LTE-FDD: B1/3/5/8 LTE-TDD: B34/38/39/40/41 WCDMA: B1/5/8 GSM: 900/1800MHz	5G NR SA: n1/28/41/77/78/79 5G NR NSA: n41/78/79 LTE-FDD: B1/2/3/5/7/8/20/28 LTE-TDD: B34/38/39/40/41 WCDMA: B1/2/5/8
MIMO	/	DL 4 × 4: n1/n41/n77/n78/n79 UL 2 × 2: n41/n77/n78/n79 DL 2 × 2: n28/LTE

## ☑☑☑ Specifications

Theoretical Transfer rate	<ul style="list-style-type: none"> <li>LTE-FDD: DL 150Mbps/ UL 50Mbps</li> <li>LTE-TDD: DL 130Mbps/ UL 30Mbps</li> <li>UMTS(HSPA+/HSUPA) : DL 21Mbps/ UL 5.76Mbps</li> <li>WCDMA: DL/ UL 384 kbps</li> <li>GRPS: DL/ UL 85.6kbps</li> <li>EDGE: DL/ UL 236.8kbps</li> </ul>	<ul style="list-style-type: none"> <li>5G SA Sub-6: DL 2Gbps/ UL 1Gbps</li> <li>5G NSA Sub-6: DL 2.2Gbps/UL 575Mbps</li> <li>LTE: DL 600Mbps/UL 150Mbps</li> <li>UMTS(DC-HSDPA/HSUPA): DL 42.2Mbps/ UL 11Mbps</li> <li>WCDMA: DL/ UL 384 kbps</li> </ul>
Max. TX Power	<ul style="list-style-type: none"> <li>LTE-FDD: 23dBm±2dB</li> <li>LTE-TDD: 23dBm±2dB</li> <li>WCDMA: 24dBm+1/-3dB</li> <li>DCS1800(8-PSK): 26dBm±3dB</li> <li>EGSM900(8-PSK): 27dBm±3dB</li> <li>DCS1800: 30dBm±2dB</li> <li>EGSM900: 33dBm±2dB</li> </ul>	<ul style="list-style-type: none"> <li>5G NR n1/41: 23dBm±2dB</li> <li>5G NR n28: 23dBm+2/-2.5dB</li> <li>5G NR n77/78/79: 23dBm+2/-3dB</li> <li>5G NR n41/n78/n79 HPUE: 26dBm+2/-3dB</li> <li>LTE: 23dBm±2dB(LTE-TDD B41 HPUE: 26dBm±2dB)</li> <li>WCDMA: 23dBm±2dB</li> </ul>
RX Sensitivity	<ul style="list-style-type: none"> <li>LTE-FDD(10MHz): -97dBm(B1)/ -97.5dBm(B3)/ -98dBm(B5)/ -98dBm(B8)</li> <li>LTE-TDD(10MHz): -96.5dBm(B34)/ -97dBm(B38)/ -97dBm(B39)/ -97dBm(B40)/ -96dBm(B41)</li> <li>WCDMA: -108dBm(B1)/ -109dBm(B5)/ -110dBm(B8)</li> <li>DCS1800: -108dBm</li> <li>EGSM900: -108dBm</li> </ul>	<ul style="list-style-type: none"> <li>5G NR FDD(5MHz): -106.5dBm(n1)/-101dBm(n28)</li> <li>5G NR TDD(100MHz) : -92.5dBm(n41)/-92.5dBm(n77)/ -93dBm(n78)/ -92.5dBm(n79)</li> <li>LTE-FDD(10MHz): -101.5dBm(B1)/ -100dBm(B2)/ -100.5dBm(B3)/-100.6dBm(B5)/ -97.5dBm(B7)/ -101dBm(B8)/ -101.5dBm(B20)/-101dBm(B28)</li> <li>LTE-TDD(10MHz): -99.5dBm(B34)/-99.3dBm(B38)/ -100.3dBm(B39)/ -98.5dBm(B40)/-99.3dBm(B41)</li> <li>WCDMA: -112.8dBm(B1)/-112.5dBm(B2)/ -113dBm(B5)/-113.2dBm(B8)</li> </ul>
<b>Interface</b>		
1G Fiber Port	2 1000Base-X Gigabit SFP slots	
1G Copper Port	8 10/100/1000Base-T(X) adaptive Gigabit copper ports, supporting full/half duplex, MDI/MDI-X adaptive, among which G1 is the WAN port and the others are LAN ports	

 Specifications

Serial	<p>Serial port type: 12 RS485                  Connection method: 2 10-position 3.5mm pitch terminal blocks with locks                  Baud rate: 300bps~460800bps                  Data bits: 7bit, 8bit                  Stop bit: 1bit, 2bit                  Check digit: None, odd parity, even parity</p>
CAN	<p>Number of channels: 4 CAN                  Connection method: 2 10-position 3.5mm pitch terminal blocks with locks                  Baud rate: 5kbps~1000kbps</p>
Digital Input	<p>Number of channels: 16 DI inputs                  Connection method: 2 10-position 3.5mm pitch terminal blocks with locks                  Signal type: NPN                  Level range: wet contact (logic level 0: DC18~30V external power input;                  logic level 1: no external power input)                  dry contact (logic level 0: shorted to ground;                  logic level 1: floating)</p>
Digital Output	<p>Number of channels: 8 DO outputs                  Connection method: 2 10-position 3.5mm pitch terminal blocks with locks                  Output type: relay output (dry contact)                  Output mode: normally open                  Contact impedance: 2.0A @24VDC                  Contact resistance: ≤100mΩ                  Initial insulation resistance: 1000MΩ (min.) @500VDC                  Electrical life: 50,000 operations (rated load)</p>
Analog Input	<p>Number of channels: 2 AI inputs                  Connection method: 210 positions 3.5mm pitch with locking terminal blocks, AI occupies 2x2 positions                  Input mode: voltage mode (0~10VDC), current mode (4mA~20mA)                  Noise-free resolution: 12 bits                  Accuracy: 1%</p>
Wi-Fi Antenna	<p>2 SMA-K (external thread internal hole) antenna interface, used to connect 2.4GHz/5GHz dual-band Wi-Fi antenna (MaxGate800-W)</p>
4G Antenna	<p>1 SMA-K (external thread internal hole) antenna interface for connecting to 4G cellular antenna (MaxGate800-4G)</p>
5G Antenna	<p>4 SMA-K (external thread internal hole) antenna interface for connecting to 5G cellular antennas (MaxGate800-5G)</p>
SIM Card	<p>1 dual Nano SIM card slot, dual SIM card single standby (MaxGate800-4G, MaxGate800-5G)</p>
CONSOLE	<p>1 CONSOLE port, using Type-C USB interface, used for device debugging</p>
USB	<p>1 Type-A USB 2.0 interface (HOST), expandable storage</p>

 Specifications

HDMI	1 HDMI interface, supports 1080p@120Hz or 4096x2304@60Hz video output
Button	Restart or restore factory settings with one click
Indicator	Power indicator, operation indicator, alarm indicator, Ethernet interface indicator, copper port speed indicator, network indicator, CELL indicator, CAN indicator, serial port indicator
<b>Power Supply</b>	
Input Voltage	DC12~48V, supports dual power supply redundancy, no polarity
Power Consumption	<22W @DC24V (5G)
Connection	5-position 5.08mm pitch lock terminal block
<b>Physical Characteristics</b>	
Dimensions	160×100×128(mm)(excluding rail)
Installations	35mm standard DIN rail installation
IP Code	IP40
Weight	About 1.75kg (excluding antenna)
<b>Working Environment</b>	
Operating Temp	-40°C~+75°C (MaxGate800-5G: -40°C~+60°C)
Storage Temp	-40°C~+85°C
Relative Humidity	5%~95% (no condensation)
<b>Industry Standard</b>	
EMC	IEC 61000-4-2 (ESD): Level 4 (contact discharge ±8kV, air discharge ±15kV) IEC 61000-4-5 (Surge): Level 3 (power supply: common mode ±2kV, differential mode ±2kV; Network port: common mode ±6kV, differential mode ±2kV; Serial port, CAN: common mode ±4kV, differential mode ±2kV) IEC 61000-4-4 (EFT): Level 4 (power supply: ±4kV; communication port: ±2kV)





## Ordering Information

Standard Model	1G Fiber Port	1G Copper Port	Wi-Fi Antenna	4G Antenna	5G Antenna	RS485	CAN	DI	DO	AI	Power
MaxGate800	2	8	/	/	/	12	4	16	8	2	Dual DC12~48V power input
MaxGate800-W	2	8	2	/	/	12	4	16	8	2	
MaxGate800-4G	2	8	/	1	/	12	4	16	8	2	
MaxGate800-5G	2	8	/	/	4	12	4	16	8	2	

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