maiwe

MaxGate500 Series Industrial Smart Gateway

Quick User Manual

Version : V1.0

Please read this user manual carefully before using this product

Trademark

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Clarification

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Version	Date	Reason
V1.0	2021.04	Create file

Safe Use Instructions

This product performance is excellent and reliable in the designed range of use, but it's necessary to avoidman-made damage or destroy for the equipment.

■ Read the manual carefully and keep this manual for reference if need afterwards.

■ Do not put the device close to the water sources or damp places.

■ Do not put anything on the power cable, it should be placed out of reach.

■ To avoid causing fire, do not knot or wrap the cable.

■ Power connector and other device connectors should be firmly connected with each other, frequently inspection is needed.

■ Please keep the fiber socket and plug clean. Do not look directly at the fiber section when the equipment is working.

■ Please keep the equipment clean and wipe it with a soft cotton cloth if necessary.

■ Please do not repair the equipment by yourself, unless there is clear instructions in the manual.

Under the following circumstances, please cut off power immediately and contact us.

■ Equipment water damage.

■ The equipment is broken or the casing is broken.

■ The equipment works abnormally or the performance has completely changed.

■ The equipment produces odor, smoke or noise.

Statement : **Information requiring explanation in use of the managed software.**

Attention : **Matters requiring specific attention in the use of the managed software.**

Product Introduction

1.1 Brief

MaxGate500 series industrial smart gateway is an industrial-grade communication gateway carefully designed by Wuhan Maiwei Communication Co., Ltd. It adopts high-performance and low-power ARM926EJ-S processor, with 128MByte DDR2, 8GByte eMMC, 32MByte SPI NOR Flash, and runs very smoothly. With abundant hardware resources and a variety of peripheral interfaces, the data collected by the terminal device can be transmitted on the two network ports of the same network segment or 4G cellular network of the device, which is especially suitable for applications in the Internet of Things industry. At the same time, this product supports positioning function and supports GPS + Beidou satellite navigation system by default. Its built-in low-noise amplifier (LNA) can achieve high sensitivity, high-precision positioning, and fast tracking and capturing of positioning signals.

Providing onboard 8GByte EMMC storage to facilitate the secondary development of customers. It supports 2 10/100Base-TX networlk ports, 4 RS485 interfaces, 2 DI interfaces and 1 DO interface. The above interfaces have reached industrial-grade standards in terms of isolation and pressure resistance, and can adapt to various harsh working environments. The communication performance is very stable.

It can be applied to power systems, industrial monitoring, traffic management, meteorology, water treatment, environmental monitoring, financial securities, coal mines, petroleum and other industries to complete on-site data collection and transmission, remote monitoring, on-site control and other tasks, providing users with a convenient Fast networking solution.

The specific models of this series of industrial gateways are as follows:

Model	Statement
MaxGate500-LTE-4D485-3IO	Support 4G full Netcom, 2 Ethernet ports, 4 RS458 ports, 2 DI and 1 DO
MaxGate500Pro-LTE-4D485-3IO	Support 4G full Netcom, 2 Ethernet ports, 4 RS458 ports, 2 DI and 1 DO, with 8GB EMMC and positioning module

MaxGate500-LTE-4D485-3IO gateway does not support GNSS function；

1.2 Product Features

➢ Main functions

- Dual power supply redundancy design;
- Industrial hardware design: working temperature -40℃ ~ +75℃;
- 2 10M/100M adaptive network ports, built-in Switch, support cascading; 4G full Netcom;
- digital inputs and 1 digital output;
- Support GPS and Beidou multi-system hybrid positioning and time synchronization (not available for some models);
- Large-capacity dual storage [support 8G EMMC (not available for some models) and MicroSD card storage]; additional TF slot can meet TF card encryption and other extended applications;
- Support 4 RS485 serial ports, support registration packet and heartbeat packet detection, serial port/network restart without data and other functions;
- Support TCP/UDP/Modbus RTU /ASCII, Modbus TCP protocol, UDP multicast, RealCOM, Httpd Client, WebSocket Client, etc.; Support Modbus pre-reading;
- Support WEB login, upgrade mirroring and configuration backup; Support local system log, remote log;
- Support LED status indication, external watchdog, button restart and factory reset function; Support RTC hardware clock and NTP network automatic time calibration, timing restart function;
- Support DHCP, static IP, domain name resolution and other functions;
- Support Ping, Traceroute and Tcpdump (network packet capture tool); Support IP-MAC binding, static routing configuration;
- Support NAT, DMZ host, black and white list of access control, IP speed limit, MAC speed limit; Support port forwarding function, traffic speed limit function, QoS;
- Support time zone setting, NTP network automatic time calibration function;
- Support peanut shell intranet penetration and dynamic domain name resolution DDNS;
- Support SNMP v1/v2c/v3 protocol, SNMP Trap report and LLDP protocol;
- Support multiple VPN virtual private protocols (PPTP, L2TP, IPSec, OPENVPN, GRE, SSTP, etc.); support SMS service and email notification;
- Support JSON to Modbus RTU;
- Support connection detection, automatic reconnection function, dual SIM card redundancy and mutual backup, etc., to ensure that the 4G network is consistent online;

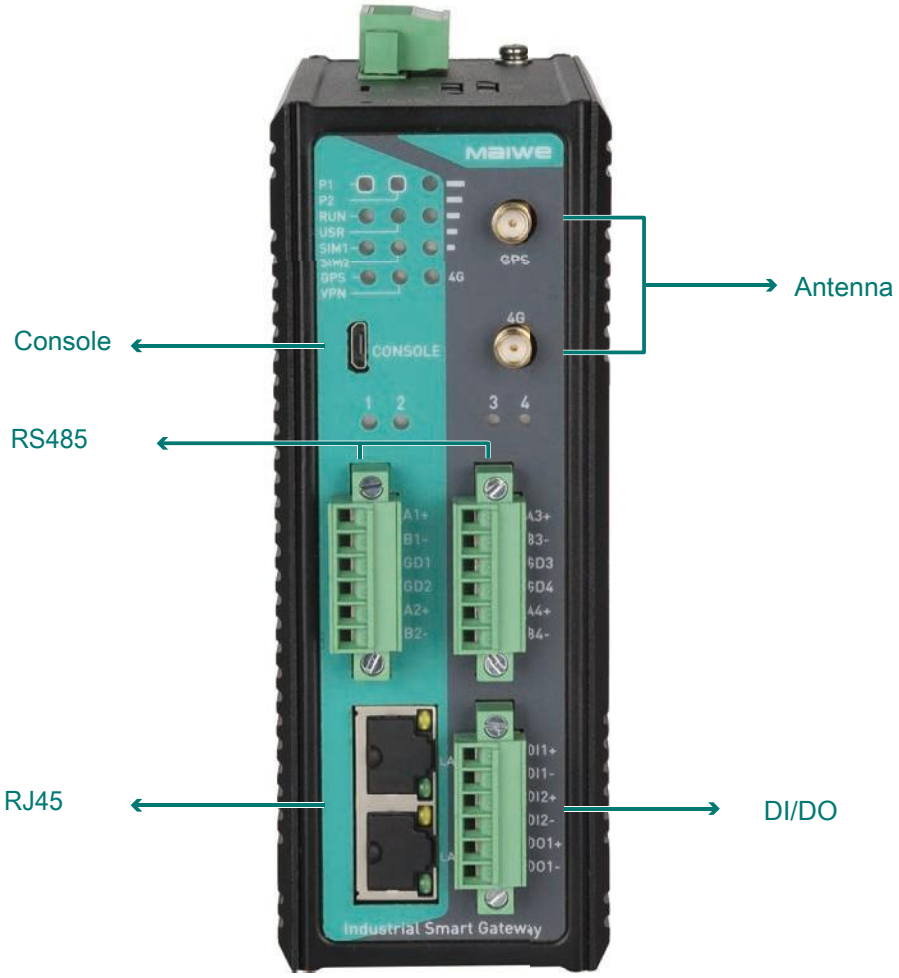
➢ Industrial-grade interface surge protection

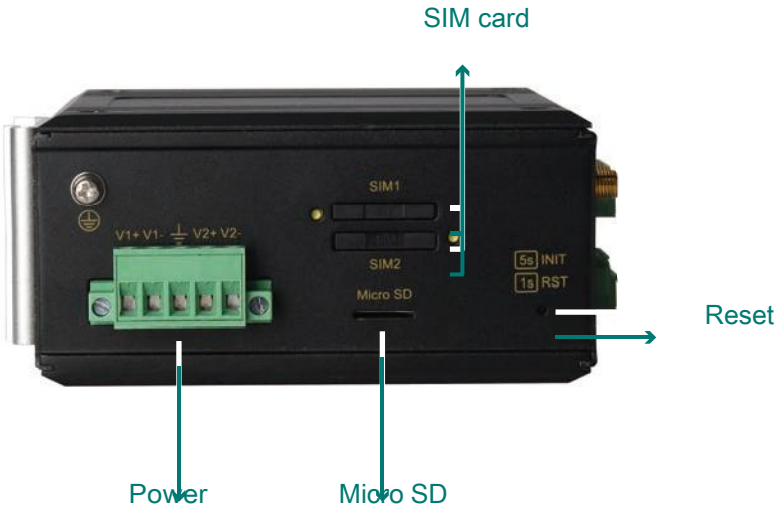
- Ethernet interface lightning protection up to DM ±6kV, CM ±2kV (10/700us) protection;

➢ Industrial wide voltage power supply design

- Provide DC9~36V power input interface;
- With anti-reverse connection protection;
- The lightning protection is up to DM ±4kV, CM ±4kV (1.2/50us) protection.

1.3 Display


Antenna
Console
RS485
RJ45
DI/DO
Industrial Smart Gateway


SIM card
Reset
Power
Micro SD
SIM1
SIM2
Micro SD
INIT
RST

➢ Antenna interface

4G cellular network antenna interface and GPS/BEIDOU positioning antenna interface.

➢ Console

Provide 1 USB debugging port, adopt the form of Micro-USB interface, use a USB adapter cable to connect one end to the computer and the other end to connect to the device. Note that the computer needs to install the corresponding CH340 driver. The debugging serial communication parameters are as follows: baud rate: 115200, data bit: 8, parity bit: none, stop bit: 1, flow control: none.

➢ RS485 interface

RS485 uses 6-bit 3.81mm pitch wiring terminals. The first terminal is defined as shown in Table 1.

Table 1 RS485 wiring terminal definition

NO.	Signal	Statement
1	A1+	The first RS485 connection A+
2	B1-	The first RS485 connection B-
3	GD1	The first RS485 signal ground
4	GD2	2nd RS485 signal ground
5	A2+	The second RS485 connection A+
6	B2-	The second RS485 connection B-

The second terminal is defined as shown in Table 2 below.

Table 2 RS485 wiring terminal definition

NO.	Signal	Statement
1	A3+	The 3rd RS485 connection A+
2	B3-	The 3rd RS485 connection B-
3	GD3	The 3rd RS485 signal ground
4	GD4	The 4th RS485 signal ground
5	A4+	The 4th RS485 connection A+
6	B4-	The 4th RS485 connection B-

➢ RJ45 interface

10Base-T/100Base-TX adaptive Ethernet RJ45 interface, support automatic MDI/MDI-X connection. Refer to the figure below for the pin distribution of the RJ45 interface: the pin definition is shown in Table 3 below.

Table 3 RJ45 interface pin definition

PIN NO.	MDI signal name	MDI-X signal name
1	Send data+ (TD+)	Receive data+ (RD+)
2	Send data (-TD-)	Receive data (-RD-)
3	Receive data+ (RD+)	Send data+ (TD+)
6	Receive data (-RD-)	Send data (-TD-)
4，5，7，8	Unused	Unused

➢ DI/DO interface

The digital (DI/DO) port uses 6-bit 3.81mm pitch terminal blocks, and the pin definitions are shown in Table 4.

Table 4 Pin definition of digital quantity interface

NO.	Signal	Statement
1	DI1+	Positive terminal of the first switch input wiring
2	DI1-	Negative terminal of the first switch input wiring
3	DI2+	Positive terminal of the 2nd switch input wiring
4	DI2-	Negative terminal of the 2nd switch input wiring
5	DO1+	Positive terminal of the first switch output wiring
6	DO1-	Negative terminal of the first switch output wiring

➢Power interface

Use standard phoenix terminals to connect the power input, support to dual power, input voltage range: DC9~48V. Support over-current, over-voltage and other protections.

Important hint:

Power-on operation: first connect the power cord to the power terminal of the device according to the definition shown in the figure above, and then power on;

Power-off operation: first unplug the power plug, and then remove the power cord;

Please pay attention to the sequence of operations above

➢ Micro SD

The gateway provides 1 Micro SD card interface, which can support Micro SD card, which is convenient for users to store data. Micro SD is prepared by users.

SIM card interface

The standard SIM card is supported by default. If you use a MicroSIM or NanoSIM card, you need to use a card tray.

Reset

Press the "Reset/Restore Factory Settings Button" to restart or restore the factory settings; press it for less than 1 second, the device will restart; press it for more than 5 seconds (the RUN light flashes once for 0.2s), the device will restore the factory settings.

Panel indicator

The panel indicators indicate the current working status of the device, and the specific functions are shown in Table 5:

Table 5 Definition of panel indicators

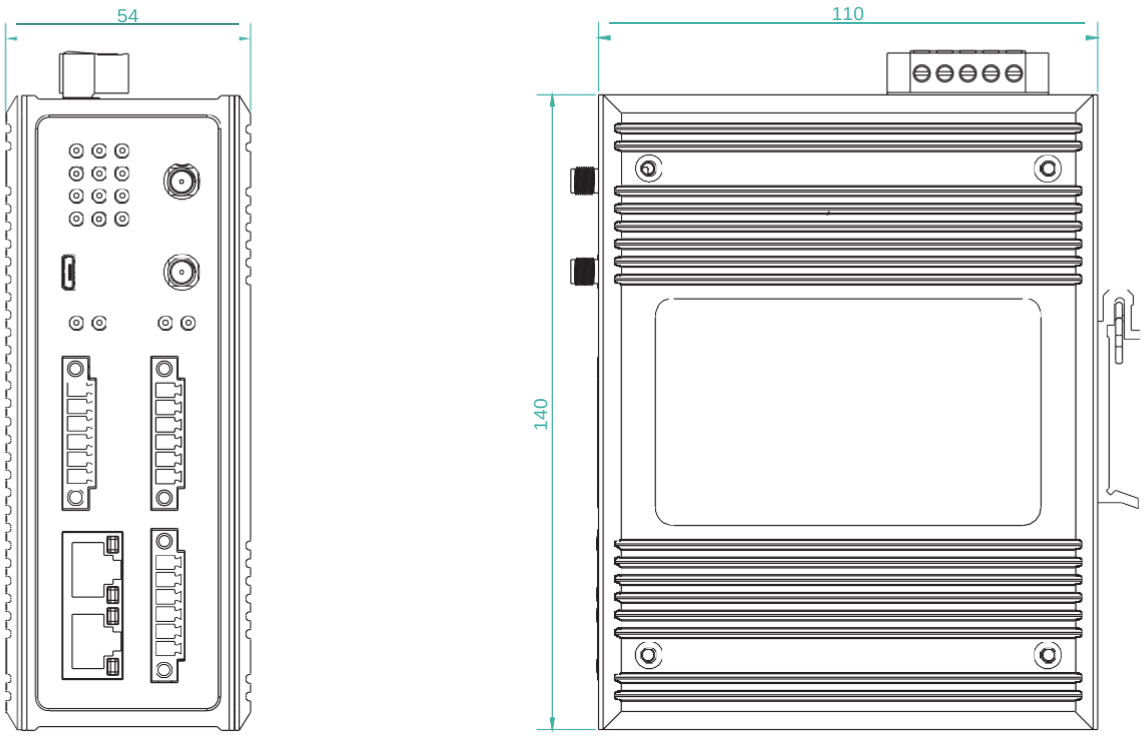
Indicator lights	States	Statement
P1~P2	Red	Power Indicator. Steady on means that P1 or P2 power supply is normal; off means that P1 or P2 is not powered or the power supply is abnormal
RUN	green	Running lights. When the device is operating normally, it flashes once in 0.5 seconds; always on or off means the device is operating abnormally
USR	green	User-defined indicator
COM1~COM4	green	Serial port indicator. Flashing when there is data transmission; off when there is no data
4G	green	4G networking status light. When the 4G network is successfully connected, it will always be on; if it is off, it means the connection has failed. (Not available for some models)
SIG	green	4G signal strength indicator. The 3 signal strength indicator lights go from bottom to top. The more they light up, the stronger the signal. If they are all off, it means there is no signal. (Not available for some models)
SIM1~SIM2	green	Steady on indicates that the gateway is currently using SIM1 or SIM2 to dial, and off indicates that SIM1 or SIM2 is not currently used for dialing. (Not available for some models)
VPN	green	It is always on when the VPN is connected, and it is off when there is no VPN connection. (Not available for some models)
GPS	green	It is always on when GPS positioning is normal, it is off when it is off, and it flashes when searching for stars. (Not available for some models)
LINK/ACT	Flashing	The network port is connected normally and there is data transmission
	On	The connection is normal and there is no data transmission
	Off	The connection is abnormal.

1.4 Parameters

	Model	MaxGate500-LTE-4D485-3IO	MaxGate500Pro-LTE-4D485-3IO
System	CPU	ARM ARM926EJ-S, main frequency 300MHz	
	RAM	128MB DDR2	
	Flash	32MB SPI Nor Flash	
	EMMC/SD	Micro SD card interface	8GB EMMC and Micro SD card interface
	OS	Linux 3.0 and above	
Power	Operating Voltage	DC9~48V	
	power	2.6W@ DC12V	
	quantity	Two-way power supply redundancy design	
Network	Network port type	10/100Mbps, RJ45 interface, adaptive MDI/MDIX	
	Isolation protection	1.5KV isolation protection	
Console	Number of serial ports	1 way USB debugging port, using Micro-USB interface form	
	parameter	Baud rate: 115200, data bits: 8, Check bit: none, stop bit: 1, flow control: none	
Serial port	Number of serial ports	4*RS485/422	
	parameter	1200~460800 (bps); 1/2 stop bit; 5/6/7/8 data bit; none, odd parity, even parity, three validation methods	
	Isolation voltage	2KVAC/3KVDC	
TF card	quantity	1	
	size	MicroSD	
DI	Number of channels	2 way	
	Input type	Level signal	
	Level range	logic level 0: no external power input; logic level 1: external 9~30V external power input	
DO	Number of channels	1 way	
	Output type	Relay output (dry contact)	
	output method	Default normally open	
	Contact impedance	1.0A @24VDC, 1000 MΩ(min)@500VDC	

4G Wireless	Network standard	Network standard CAT4: China Mobile/Unicom/Telecom 4G, China Mobile/Unicom 2G (4 modes and 14 frequencies)	
SIM card slot	quantity	2	
	Voltage	3V, 1.8V	
GPS	Default galaxy configuration	no	GPS + BeiDou
	Freq.	no	GPS L1 C/A：1575.42 ±1.023 MHz BeiDou B1I：1561.098 ±2.046 MHz
Realiability	ESD	±8kV(contact)±15kV(air)	
	Surge	Power supply: ±4kV/common mode ±2kV/differential mode RS485/482: ±4kV/common mode ±4kV/differential mode Network port: ±6kV/common mode ±4kV/differential mode	
	EFT	Power supply: ±4kV Communication port: ±4kV	
Button	Reset	You can restart or restore factory settings through the "Reset/Restore Factory Settings Button"; within 1 second, the device will restart; Press for more than 5 seconds (RUN light flashes once for 0.2s), the device will restore factory settings	
Others	Size(L*W*H)	140×54×110 (mm)	
	Working environment	-40℃ ~ +75℃ 5% ~ 95% RH	
	Storage temperature	-40℃ ~ +85℃ 5% ~ 95% RH(	

1.5 Installation Size



unit : mm