WidelOT

Product Specifications



WG593

Industrial Intelligent Gateway

Multi-network, multi-serial port | Extensive library of protocols | Highly secure and reliable | Fully remote operations and maintenance

Product Overview



The WG593 Series Industrial Intelligent Gateway is an industrial-grade data acquisition and edge computing intelligent terminal developed by WidelOT for industrial digitalization applications. It focuses on industrial equipment data acquisition, protocol conversion, edge computing, cloud data transmission, and remote maintenance.

The gateway is equipped with 3*100Mbps Ethernet ports, 1 RS485/RS232 serial port, and multiple AI/AO/DI/DO interfaces. It supports multiple network access methods, including 5G RedCap, 4G, WiFi, LoRa, and wired Ethernet. It can collect data from various industrial devices, including PLC controllers, industrial instruments, and sensors.

The WG593 Series is widely used in various industries, including smart factories, intelligent equipment, energy management, smart cities, water conservancy and utilities, environmental monitoring, smart agriculture, mining, and oil fields. It serves as an important edge node for building Industrial Internet of Things (IIoT) and Industrial Internet platforms.

Product features

- ✓ **Industrial-grade reliability:** wide temperature and voltage range, multiple layers of electromagnetic isolation, ensuring uninterrupted operation in harsh industrial environments;
- ✓ **Full-scenario protocol compatibility:** Supports a wide range of industrial protocols, covering mainstream industry protocols and industry-specific standards across various sectors. Enables large-scale device data acquisition and data standardization;
- ✓ **Powerful edge computing:** Supports data pre-processing, data processing, data alerts and local decision-making at the edge, significantly reducing the load on central nodes and increasing the number of concurrent device connections they can handle;

- ✓ **Cloud-based data security:** Supports integration with various IoT platforms and industry-specific applications, and features open APIs to facilitate the development of custom platforms; offers multi-layered data access controls and encryption capabilities, including VPN encryption, TLS data encryption, and a choice of software and hardware encryption options; supports automatic reconnection in the event of a network outage and resume-from-breakpoint functionality;
- ✓ **Convenient operation and maintenance management:** Supports local and remote configuration management, as well as automatic fault diagnosis and recovery. It also supports a dedicated remote maintenance line to facilitate remote operation and maintenance, thereby significantly reducing on-site operational costs.

Typical topology



Methods of application

- The gateway collects data from on-site equipment and integrates it with various cloud platforms to enable data visualisation
- The gateway and device link form a remote maintenance system, enabling engineers to carry out remote maintenance on on-site equipment
- The gateway converts various protocols into OPC UA, Modbus, IEC 61850, BACnet, IEC 104 and other protocols
- The gateway incorporates various edge intelligence algorithms to enable real-time control and policy calculations at the field level

Application scenarios


Smart Factory


Intelligent Equipment


Energy Management


Smart City


Water Resources Management


Environmental Monitoring


Smart Agriculture


Mining and Oil & Gas Fields

Product specifications

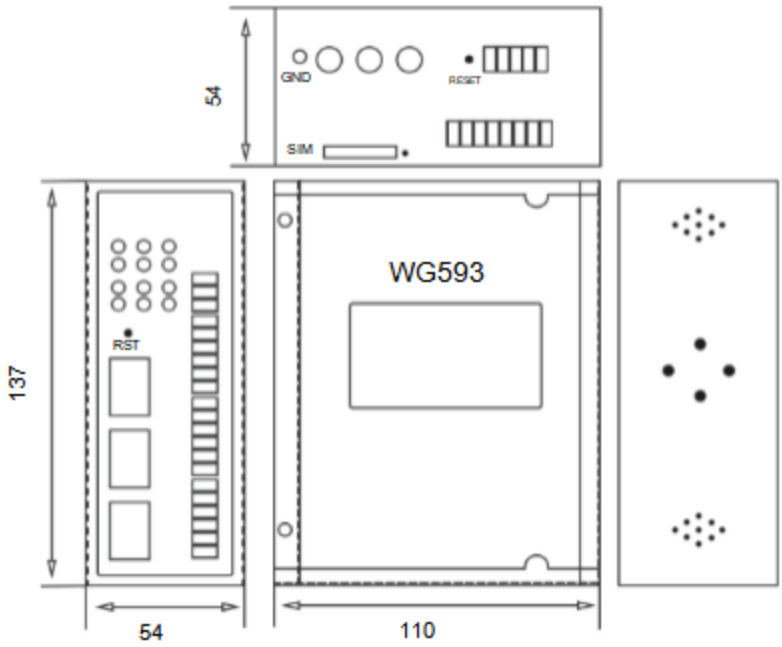
Hardware Parameters	
Hardware platform	
CPU Core	580MHZ single-core
Runtime storage	128MB DDR2
Programme storage	16MB|32MB SPI-FLASH
Data storage	8GB(8192MB)EMMC Optional
Interface specifications	
Power socket	DC 9V-35V (terminal block)
Ethernet port	3*10/100Mbps Ethernet ports,1.5KV Network isolation and transformer protection
Serial port	1*RS485 serial ports(RS232 optional),15 kV ESD protection
5G network	5G Redcap ,Maximum downlink speed 226Mbps,Maximum uplink speed 120 Mbps (optional)
4G network	LTE Cat4 ,Maximum downlink speed 150Mbps,Maximum uplink speed 50Mbps LTE Cat1 ,Maximum downlink speed 10Mbps,Maximum uplink speed5Mbps
WIFI network	2.4GHZ,Maximum speed 300Mbps,802.11b/g/n (optional)
GNSS network	Supports Beidou, GPS ,etc. positioning systems (optional)
SIM card slot	Drawer-type SIM card slot*1 (standard SIM card)
IO Port	8AI、4DI、4RO(Default);4AI、8DI、4RO;4AI、4DI、8DO;etc.
LORA Network	30dbm,Maximum outdoor line-of-sight distance: 12 km
Reset button	Pinhole reset button
Antenna connector	5G RedCap:SMA x 2/4G LTE:SMA x 1/WLAN: RP-SMA x 2
Mechanical properties	
Dimensions	137 x 110 x 54(mm)
Installation method	Rail-mounted
Equipment housing	Metal casing
Protection rating	IP30
Heat dissipation	Fanless heat dissipation
Weight	650g
Equipment operating environment	

Ambient humidity	5% ~ 95% (Non-condensing)
Storage temperature	-40 ℃~ 85℃
Operating temperature	-30℃ ~ 70℃
Indicator light	
4*3 indicator light	LIVE Status indicator (green),WARN Warning indicator (yellow),ERR Fault indicator (red),3*4G network signal strength indicators (green), WiFi indicator(blue),LTE indicator(blue) IO Module Indicator:I/O Module Power Indicator、Communication Indicator 、LoRa Communication Indicator
EMC Standards	
Electrostatic discharge immunity	GB/T17626.2-2018,level4
Electrical Fast Transient Pulse Immunity	GB/T17626.4-2018,level4
Oscillating magnetic field Immunity to interference	GB/T17626.18-2016,level4
Radio-frequency electromagnetic fields Radiated immunity	GB/T17626.3-2016,level4
Surge (transient) Immunity	GB/T17626.5-2019,level4
Power-frequency magnetic field Immunity	GB/T17626.8-2006,level4
Physical properties	
Vibration	GB/T2423.10-2008
Impact	GB/T2423.5-2019
Fall	GB/T2423.8-1995

Software specifications	
Network functions	
Network access	Supports 5G-RedCap/4G-Cat1/4G-Cat4,LoRa,WIFI(AP|STA|Relay,Ethernet access
Network certification	Supports CHAP/PAP authentication,Supports APN and VPDN access
Cellular network	GSM/GPRS/EDGEUMTS/HSPA+/CDMA2000-EVDO/TD-SCDMA/ TDD-LTE/FDD-LTE/5G-RedCap **For further details, please refer to the 'List of Cellular Network Bands'**
LAN protocol	Supports ARP and Ethernet
WAN protocol	Supports PPP, PPPoE, DHCP and static IP
IP Application	Supports Ping,Trace,DHCP Server,DHCP Relay,DHCP Client,DNS relay
IP routing	Supports static routing
NAT	Source NAT, Destination NAT, DMZ
Data acquisition functions	
Smart data collection	Supports a single gateway collecting data from multiple devices of different types, with the flexibility to define data acquisition projects
Protocol parsing	Supports protocol parsing for mainstream PLC controllers, instruments, sensors, and various industrial controllers,;for further details, **please refer to the 'Gateway Protocol Support List'** Supports data acquisition from major PLC brands, including Siemens, Schneider, Omron, Mitsubishi, Delta, Beckhoff, Allen-Bradley (AB), Keyence, and other commonly used PLCs; Supports data acquisition from various water meters, electricity meters, heat meters, gas meters, as well as sensors, frequency converters, and photovoltaic inverters
Edge computing	It supports data filtering, grouped data collection, alarm calculations, formula calculations, local programming and data storage, amongst other functions
Data standardisation	Supports merging multiple devices and splitting sub-devices;Supports various standardisation processes, including data format conversion
Cloud access	Supports simultaneous integration with multiple data centres of different types or of the same type Supports integration with WidelOT Cloud, Alibaba Cloud, Huawei Cloud, Microsoft Azure, MES, EMS, SCADA systems, as well as environmental monitoring platforms, water conservancy platforms, power management platforms, and other cloud platforms and monitoring software
Data forwarding	Conversion of southbound data from multiple protocols into a single northbound protocol, such as OPC UA, Modbus TCP, IEC 104, IEC 61850, BACnet, etc. Supports hydrology and water conservancy protocols such as SL651, SZY206, SL427, and others Supports HJ212 environmental monitoring protocol

	Supports integration with MySQL and SQL Server databases
Remote maintenance	In conjunction with the WideIOT Equipment Management Platform and the Equipment Maintenance Express, this enables remote diagnostics, remote debugging and upgrades of on-site gateways or equipment
Open API	Data interface supporting MQTT (JSON format),easy integration with various platforms
Security	
Safety and Security	Built-in firewall functionality, providing comprehensive network isolation and protection: supports stateful packet inspection (SPI), protection against denial-of-service (DoS) attacks, ping probe packets, source port mapping, destination port mapping, DMZ, access control lists (ACLs) and IP-MAC binding
Data security	Supports L2TP VPN,PPTP VPN,Open VPN,IPSec VPN,ZeroTier VPN,etc.
Security certification	TLS encryption, with access via username and password or certificate authentication
Reliability	
Link detection	Supports sending ping packets for network monitoring and automatically reconnects if the connection is lost
Multi-network redundancy	Supports automatic switching between multiple networks, including Ethernet, Wi-Fi, 4G and 5G Redcap
Watchdog protection	Software and hardware watchdogs support the device's self-test technology and enable self-repair in the event of operational faults
Application care	Monitor all application modules in real time, anticipate and handle potential errors, and perform self-healing
Management and maintenance	
Configuration Engineering	Supports both local and remote configuration of data acquisition projects
App update	Supports local and remote software updates, as well as rapid product feature releases and iterations
Remote maintenance	Supports remote O&M gateways and devices connected to the gateways (such as PLCs) via Device Express and WideIOT Cloud
Logging function	Supports comprehensive and detailed logging functionality, facilitating rapid troubleshooting and diagnosis
Import and Export	Supports the import and export of engineering files, facilitating diagnostics and batch configuration
Diagnostic commands	Supports a comprehensive diagnostic command interface, enabling local self-diagnosis
Status Enquiry	System status, module status, network connection status, application status, etc.

Product dimensions



Order details

Hardware Selection	
Order number	WG593-<CELL>-<Module>-<IO>-<SoftWare>
CELL	LL02:4G Cat1; LL07:4G Cat4; NF02:5G Redcap
Module	W:WIFI Network; R4: China LoRa; R9: Global LoRa; E:EMMC Storage; G:GNSS Positioning;
IO (I/O Module)	M0844：8AI、4DI、4DO； M0484：4AI、8DI、4DO； M0448：4AI、4DI、8DO
SoftWare	MQTT(Universal version),CNC(CNC version),WCONN(Device Express),EMS(Energy version)
Example	WG593-LL07-M0844-MQTT (4G Cat4, Universal Gateway) WG593-LL02-W-M0844-MQTT (4G Cat1 + 2.4G Wi- Fi, Universal Gateway) WG593-NF02-WR4-M0844-MQTT (5G RedCap + 2.4G Wi- Fi + China LoRa, Universal Gateway) .....

*This table is for reference only. The exact model selection shall be determined by the engineering team

For further information, please visit the WidelOT website: https://www.wideiot.com.

Alternatively, please contact us via the following methods:

Email: info@wideiot.com

© Xiamen WidelOT Technology Co., Ltd. All rights reserved.

No organisation or individual may, without the written permission of the Company, extract or reproduce any part or all of the contents of this document, nor may they disseminate it in any form.

The information contained in this document is subject to change without notice due to product version updates or other reasons.

About WidelOT

Founded in 2011 and headquartered in Xiamen, China, WidelOT is a specialist provider of industrial IoT products and digital solutions, focusing on sectors such as smart factories, smart equipment, energy management, hydrology and water resources, smart water management, and smart cities; The company offers a comprehensive range of products, including industrial wireless routers, industrial switches, industrial smart gateways, industrial data terminals, smart I/O modules, industrial converters, AI edge computers and IoT data cloud platforms. It is a high-tech enterprise integrating R&D, production, sales and service.

