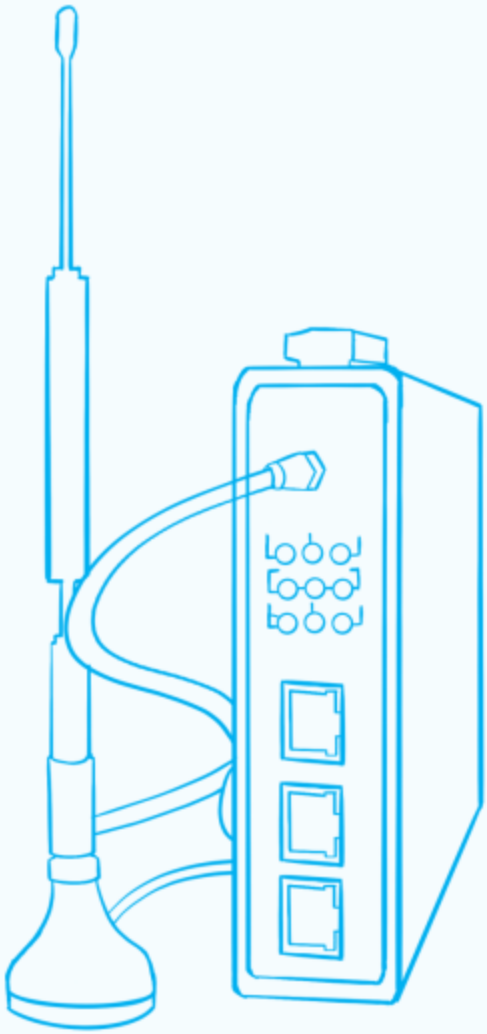
WidelOT

Industrial Intelligence Gateway

（WG583）



SPECIFICATION

WidelOT • 2011

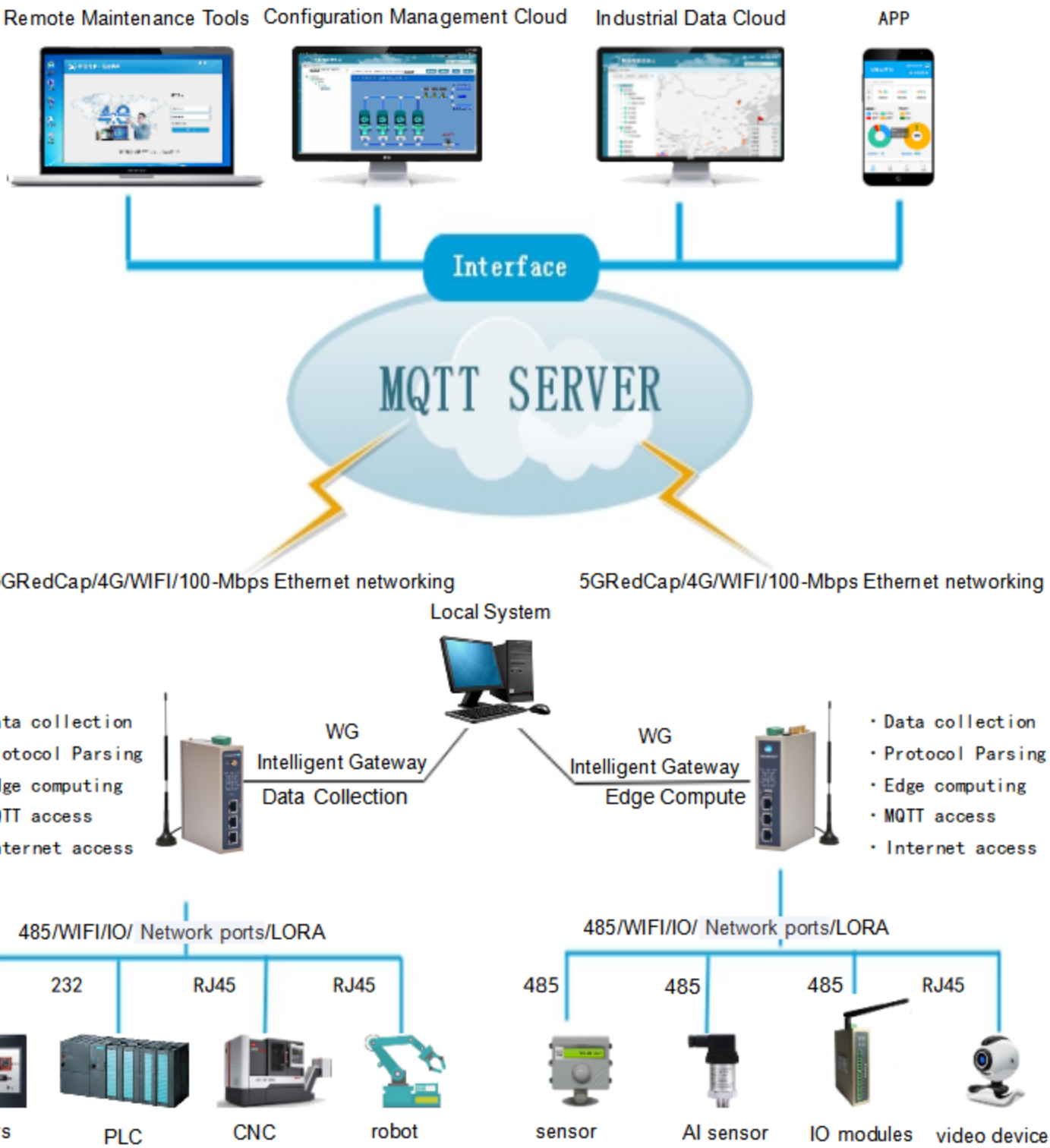
Product Introduction

The WG583 series of industrial intelligent gateways is an industrial - grade edge computing and high - reliability intelligent gateway for the integration of informatization and industrialization launched by WidelOT in the field of industrial Internet. It can not only provide reliable network access for industrial sites, but also offer rich functions such as data collection, edge computing, and cloud adaptation at the edge nodes for industrial applications.

The WG583 industrial intelligent gateway is equipped with three network ports and two serial ports. It supports multiple network access methods such as 5G RedCap/4G/WIFI/wired Ethernet, and can collect data from various industrial devices including PLCs, instruments, CNC machines, and robotic arms. It embeds various industrial protocols and edge - computing functions, and supports connection to various industrial Internet platforms and upper - computer software through protocols such as MQTT/MODBUS/OPC UA/HTTP. It also supports advanced functions such as serial port forwarding, data passthrough, remote maintenance, remote configuration management, and data encryption.

The WG583 industrial intelligent gateway, with its rich application functions and high - reliability features, is widely used in the following industries: Intelligent factories, Equipment manufacturers, Environmental monitoring, Energy monitoring, Municipal projects such as water supply, heating, and gas supply, Smart agriculture, Intelligent aquaculture, Intelligent buildings, Industrial automation...

Topological Graph



Application Methods

Scenario 1: Self - Developing a Cloud Platform with the Gateway

By using the WidelOT industrial intelligent gateway, users can independently develop and build an Internet of Things platform and an industrial Internet system according to the "Open Platform Format API" (MQTT protocol + JSON message) provided by WidelOT..

Scenario 2: Access the public IoT platform via a gateway

Adopt the WidelOT industrial intelligent gateway to directly connect to existing and mature third - party platforms. The WidelOT gateway has been adapted to platforms such as Azure IoT , Amazon IoT , Alibaba IoT , Huawei IoT , and others.

Scenario 3: Equipment Remote Maintenance and Management System

Use the WidelOT industrial intelligent gateway and the equipment maintenance express line to achieve remote diagnosis, remote debugging, and remote program uploading/downloading for remote on - site equipment (such as PLCs and intelligent controllers).

Scenario 4: Overall Internet of Things Application and Industrial Digital Solution

Use the WidelOT gateway to connect to the application cloud platform of WidelOT, realizing remote data monitoring, video monitoring, and operation screen monitoring of on - site equipment.

Scenario 5: Protocol Conversion for Local Interconnection and Intercommunication

Employ the WidelOT gateway to convert multiple protocols into a standard protocol, such as Modbus TCP or OPC UA, enabling mutual communication among different local devices..

Product Features

Abundant Networking Functions and Interfaces

Support three network ports and two serial ports, as well as multiple networking access methods including 5G RedCap, 4G, WIFI, and wired Ethernet.

Powerful Protocol Collection Ability

Embed a professional protocol engine to achieve south - bound data collection from various devices such as PLCs, instruments, machine tools, robotic arms, and power equipment. It also supports customized protocol development. Through local or cloud platforms, it is possible to adjust and optimize edge - collection templates and collection strategies to achieve efficient data uploading to the cloud. The standardization engine can standardize data from different types of devices.

Flexible Cloud Adaptation and Access Capability

Support simultaneous access to different types of cloud platforms and software. For north - bound access, it supports connecting to remote software platforms through methods such as MQTT, MODBUS, OPC UA, SQL, and HTTP databases. The platform types include self - developed cloud platforms by customers, WidelOT equipment maintenance management platform, WidelOT configuration cloud platform, Azure IoT , Amazon IoT , Alibaba IoT , Huawei IoT , etc.

Rich Industrial Edge Application Functions

Support serial - port forwarding function to achieve multi - master - to - one - slave calling of serial ports, support protocol - forwarding function to convert multiple protocols into protocols like Modbus for rapid access to local systems, support device time - calibration function, gateway anti - disassembly function, network - disconnection resume, breakpoint - resume, link encryption, and firewall functions.

Powerful Edge - Computing Function

Support various edge - computing functions, such as intelligent collection, data filtering, alarm calculation, jump - change triggering, formula calculation, and grouping strategies. After establishing device models and standardizing data, it can greatly reduce the pressure on the cloud service center, improve the system's robustness and high concurrency. By eliminating device heterogeneity and achieving standardization, it can significantly save the R & D and construction costs of projects..

High reliability embedded system design

Embed multiple software and hardware watchdogs, which is very suitable for high - reliability applications in harsh industrial environments. Through watchdogs, network - disconnection reconnection, breakpoint - resume, and function monitoring, it can realize all - round and multi - dimensional device anomaly monitoring and self - healing function design from the system layer, network layer, and application layer, ensuring real - time and always - online status of devices and applications. It is very suitable for unattended distributed site applications.

Convenient Remote Operation and Maintenance Function

The WidelOT industrial intelligent gateway embeds a remote operation and maintenance module. In cooperation with the equipment operation and maintenance express line and the equipment maintenance cloud platform of WidelOT, it can build a safe and reliable data channel to the remote equipment site for users, realizing functions such as remote configuration, remote debugging, remote diagnosis, and remote program update of on - site equipment. At the same time, in cooperation with the gateway management cloud platform of WidelOT, it can achieve remote configuration, monitoring, diagnosis, and program update for gateways distributed around the world.

Easy - to - Integrate API Interface

The WidelOT gateway provides rich API interfaces for software developers. Through the open - platform - format API of WidelOT, it can achieve data collection, two - way control, and remote management of on - site devices, allowing users to quickly build advanced and professional industrial application systems.

Powerful Security Function

1） Data Transmission Security: Support L2TP, PPTP, IPSec VPN, Open VPN, and CA certificates to ensure secure data transmission.

2） Network Protection Security: Have a powerful firewall function, which can customize comprehensive protection strategies according to customer requirements. For example, it supports SPI full - state detection, Secure Shell (SSH), intrusion protection (Ping - prohibited), DDoS defense, attack defense, IP - MAC binding, and other firewall functions to protect the network from external attacks.

3） All nodes provide authentication and end - to - end encryption services. These nodes include the device side and various cloud services. The Internet of Things suite also provides device - level permission - granularity services, ensuring that only devices or applications with corresponding access rights can operate certain resources.

Product Specifications

Software Specifications

Network Function	Network Access	Support 5G RedCap, 4G, WIFI, and Ethernet access
	Network Authentication	Supports CHAP/PAP authentication and APN access
	CAT1 Network	TDD - LTE/FDD LTE. （For specific frequency band information, please refer to the order information table）
	CAT4 Network	GSM/GPRS/EDGEUMTS/HSPA+/CDMA2000-EVDO/TD-SCDMA/ TDD-LTE/FDD LTE. （For specific frequency band information, please refer to the order information table）
	LAN Protocols	Supports ARP
	WAN Protocols	Supports PPP
	IP Application	Supports Ping、Trace、DHCP Server 、DHCP Relay、DHCP Client、DNS relay、DDNS ，ROUTE，NAT，DMZ
	IP Routing	Support static routing
WIFI function (optional)	Protocol Standard	Support IEEE 802.11b/g/n
	Working Mode	Support FAT AP, FIT AP, STA, Relay, etc.
	Band Rate	Support 2.4G single -band,150M/300Mbps(single - antenna/double - antenna)
	Safety Features	Support open system, shared key, WPA/WPA2 authentication
		Support WEP/TKIP/AES encryption
	Transmission Distance	100m (the actual transmission distance depends on the site environment)
Security	Protection Security	Support full - state packet inspection (SPI), prevent Denial - of - Service (DoS) attacks, filter multicast/Ping probe packets, source - port mapping, destination - port mapping, DMZ, access control function (ACL), IP - MAC binding
	Data Security	Support L2TP VPN/PPTP VPN/OPEN VPN/IPSec VPN (optional)
	Security Authentication	TLS security encryption, username - password, and certificate - based access authentication

	Firewall	Built - in firewall function for comprehensive network isolation and protection
Reliability	Link Detection	Support sending heartbeat detection packets for detection and automatic reconnection in case of disconnection
	Watchdog Protection	Multiple software and hardware watchdogs to achieve self - repair of device operation failures
	Function Security Guard	Real - time monitor of various function modules, predict and handle possible errors, and achieve self - healing
Intelligence	Intelligent Collection	Proprietary fast - collection and stable - collection algorithms to achieve stable, reliable, and efficient data collection. Support one gateway collecting data from multiple different types of devices
	Protocol Parsing	Support protocol parsing of mainstream PLC controllers, instruments, collectors, and various controllers (Siemens, Schneider, Omron, Mitsubishi, Delta, Modbus, etc.)
	Edge Computing	Can achieve data filtering, grouping, alarm reporting, jump - change triggering, and formula calculation
	Standardization	Standardize data of various protocols and build object models for standardized applications
	Cloud Access	Support simultaneous connection to multiple different or the same type of data centers (WidelOT Cloud, Azure IoT , Amazon IoT , Alibaba IoT , Huawei IoT etc.)
	Data Penetration	Support MQTT data - penetration function for data analysis and application in the cloud
	Remote Maintenance	Cooperate with the equipment maintenance express line to achieve remote diagnosis, remote debugging, and upgrade of on - site equipment
	Protocol Forwarding	Convert different protocols into a unified protocol, such as Modbus TCP
	Serial - Port Forwarding	Forward serial - port data to another serial port to achieve multi - master - to - one - slave architecture data
	Sub device Model	Divide real master devices into multiple virtual sub - devices according to business needs through virtual sub - devices
	Breakpoint Resume	Support breakpoint resume, and the supported storage media include memory/SSD/EMMC
	Data Storage	Historical data can be stored in memory, TF card, hard - disk SSD, or EMMC
	Bidirectional control	Support various controls such as timed data reporting, immediate read, immediate write, batch read, and batch write

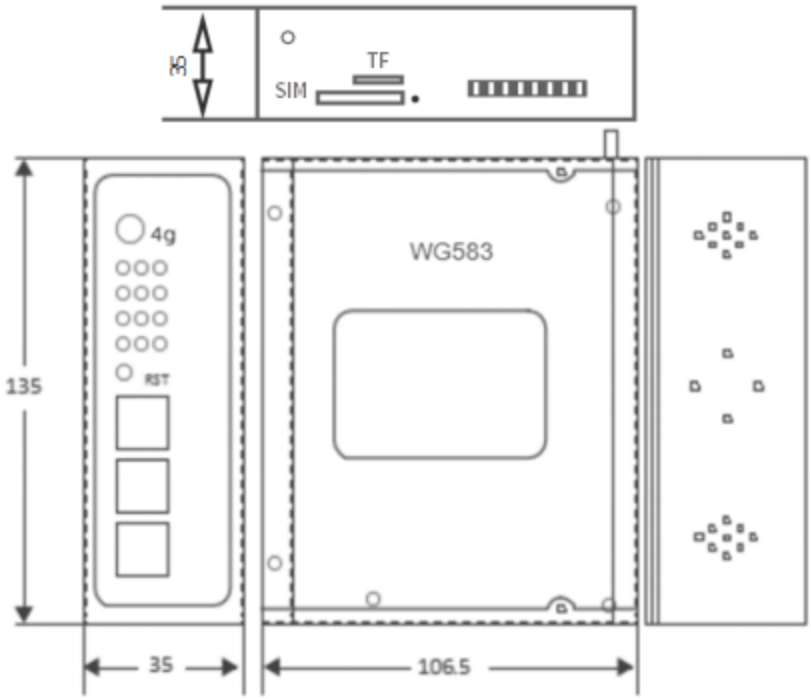
	Channel Monitoring	Support online status and heartbeat reporting of devices and gateways to monitor link status
	Bus Adaptation	Support adapting different algorithms according to different buses to ensure stable and reliable transmission
	Location Information	Support base - station positioning and GPS/BD positioning (optional)
	IO Quantity Collection	Support digital and analog quantity collection (optional)
Management and Maintenance	Configuration Project	Support local and remote configuration of data - collection projects
	Application Upgrade	Support local and remote program upgrades for rapid product - function release and iteration
	Remote Diagnosis	Support remote diagnosis and recovery of gateway failures
	Log Function	Support complete and detailed log functions for quick troubleshooting and diagnosis
	Import/Export	Support import and export of project files for convenient diagnosis and batch configuration
	Diagnostic Command	Support rich diagnostic - command interfaces for local self - diagnosis
	Status Query	System status, module status, network - connection status, application status, etc.
Application Development	Custom Development	Support WidelOT to customize and develop edge applications on the gateway according to user requirements
	Edge Developmentt	Support users' engineers to develop edge - computing application programs on the gateway
	Cloud Development	Provide rich API interfaces for upper - computer software development by development engineers

Hardware specifications

Hardware Platform	CPU Core	580MHZ single - core
	Running Memory	128MB (1Gb)
	Program Memory	16MB (128Mb)
	Data Storage	8GB (8192Mb) EMMC storage (optional)
Interface Characteristics	Power Interface	DC 6V - 35V (terminal block)
	Ethernet Port	3 * 10/100Mbps fast Ethernet ports, LAN/WAN ports with 1.5KV network - isolation and voltage - transformation protection
	Serial Port	2 selectable RS - 232/485 interfaces (terminal block) with 15KV ESD protection
	5G RedCap	5G NR bands N1/N3/N5/N8/N28/N41/N78/N79 LTE - FDD bands B1/B3/B5/B8 LTE - TDD bands B34/B38/B39/B40/B41 Transmission rate: Downlink 226Mbps / Uplink 120Mbps
	4G Network Standard	LTE Cat4, maximum downlink rate 150Mbps, maximum uplink rate 50Mbps LTE Cat1, maximum downlink rate 10Mbps, maximum uplink rate 5Mbps
	SIM Card Holder	Drawer - type card holder * 1 (large - format card)
	Reset Button	Pin - hole - type reset button
	Antenna Connector	4G network: SMA x 1; WLAN: RP - SMA x 1; 5G RedCap: SMA x 2
	Expansion Interface	Support hard - disk, GPS/BD (optional)
Mechanical Characteristics	Dimensions	136x106.5x35(mm)
	Installation Method	Rail - mounted
	Shell	Metal shell (gold - colored)
	Protection Level	IP30
	Heat -	Fan-less heat dissipation

	Dissipation Method	
	Weight	500g
Environment Humidity	Environment Humidity	5% ~ 95% (no condensation)
	Storage Temperature	-40℃~ 85℃
	Operating Temperature	-20℃ ~ 70℃
Indicator Lights	3*3 indicators	POWER light (red), STATUS light (green), WARN light (yellow), ERR light (red), WiFi indicator light (blue), 4G signal - strength light (green)
EMC Index	Electrostatic Discharge Immunity	GB/T17626.2 - 2018, level4
	Electrical Fast Transient Pulse Group Immunity	GB/T17626.4 - 2018, level4
	Oscillatory Wave Magnetic Field Immunity	GB/T17626.18 - 2016, level4
	Radio - Frequency Electromagnetic Field Radiation Immunity	GB/T17626.3 - 2016, level4
	Surge (Impact) Immunity	GB/T17626.5 - 2019, level4
	Power - Frequency Magnetic Field Immunity	GB/T17626.8 - 2006, level4
Physical Characteristics	Vibration	GB/T2423.10 - 2008
	Shock	GB/T2423.5 - 2019
	Drop	GB/T2423.8 - 1995

Product Size



Product Selection

Hardware Selection	
Order number	WG583-<N>-<M>-<P>-<S>-<T>
N (Network Type)	L: LTE, WLAN: WiFi; N: 5G RedCap
M (Wireless Module)	L07: 4G CAT4 (TDD - LTE and FDD - LTE, etc.), Chinese version; L09: 4G CAT4 (TDD - LTE and FDD - LTE, etc.), Overseas version; Q2S: 4G CAT1 (only supports TDD - LTE and FDD - LTE), Chinese version; F61: 4G CAT1 (only supports TDD - LTE and FDD - LTE), Chinese version; T57: 5G RedCap
P (Platform and Protocol)	WMQTT (WidelOT Platform), MMQTT (Modbus Version), MQTT (General MQTT), WCONN (Equipment Express Line)
S (Serial Port Interface)	485: RS485 serial port; 232: RS232 serial port
T (Extension Module)	-EMMC (8GB), -16TF (16GB TF card), -16SSD (16GB SSD hard drive), -GPS (with positioning)
Example	WG583-LL07-MQTT-232: Supports 4G CAT4 and the general MQTT platform, with a RS232 serial port. WG583-LQ2S-WMQTT-485: Supports 4G CAT1 and the WidelOT MQTT platform, with a RS485 serial port. WG583-NT57-MQTT-485: Supports 5G RedCap and the general MQTT platform, with a RS485 port.

Company Introduction

Established in 2011, WidelOT is a leading provider of industrial Internet of Things products and industrial digital solutions. It focuses on offering products and solutions such as wireless data terminals, industrial intelligent gateways, equipment remote systems, and industrial application cloud platforms for equipment manufacturers, smart factories, and industry projects. It helps customers achieve digital operation management and tap new values in the industrial Internet.

The products of WidelOT are widely used in various industrial fields, including smart factories, equipment manufacturers, the environmental protection industry, the energy industry, municipal engineering, industrial automation, smart agriculture, and building intelligence. They are favored by top - tier domestic and foreign customers such as BOE, Foxconn, ASD, TCL, Schneider, Shanghai Electric, Shougang Group, Water Affairs Group, and Southern Power, as well as a large number of small and medium - sized enterprises.

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