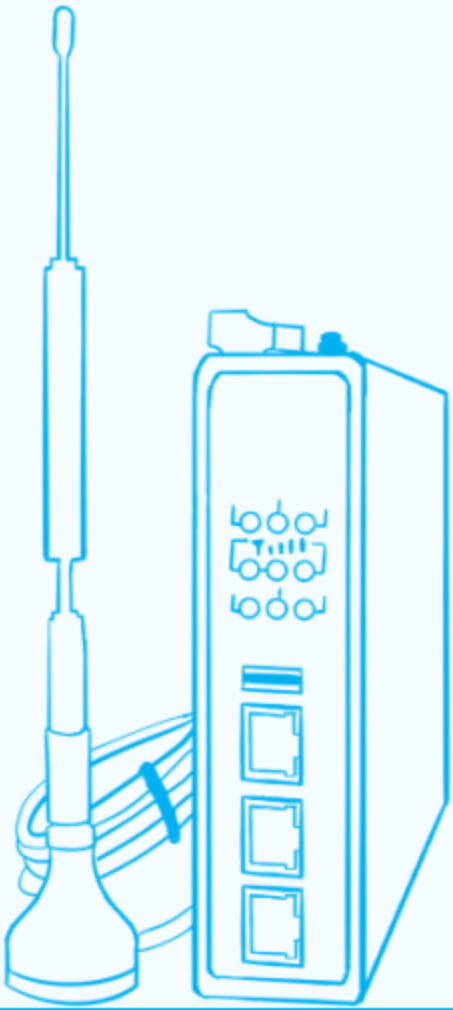
WidelOT

Industrial Intelligence Gateway

（WG783）



SPECIFICATION

WidelOT • 2011

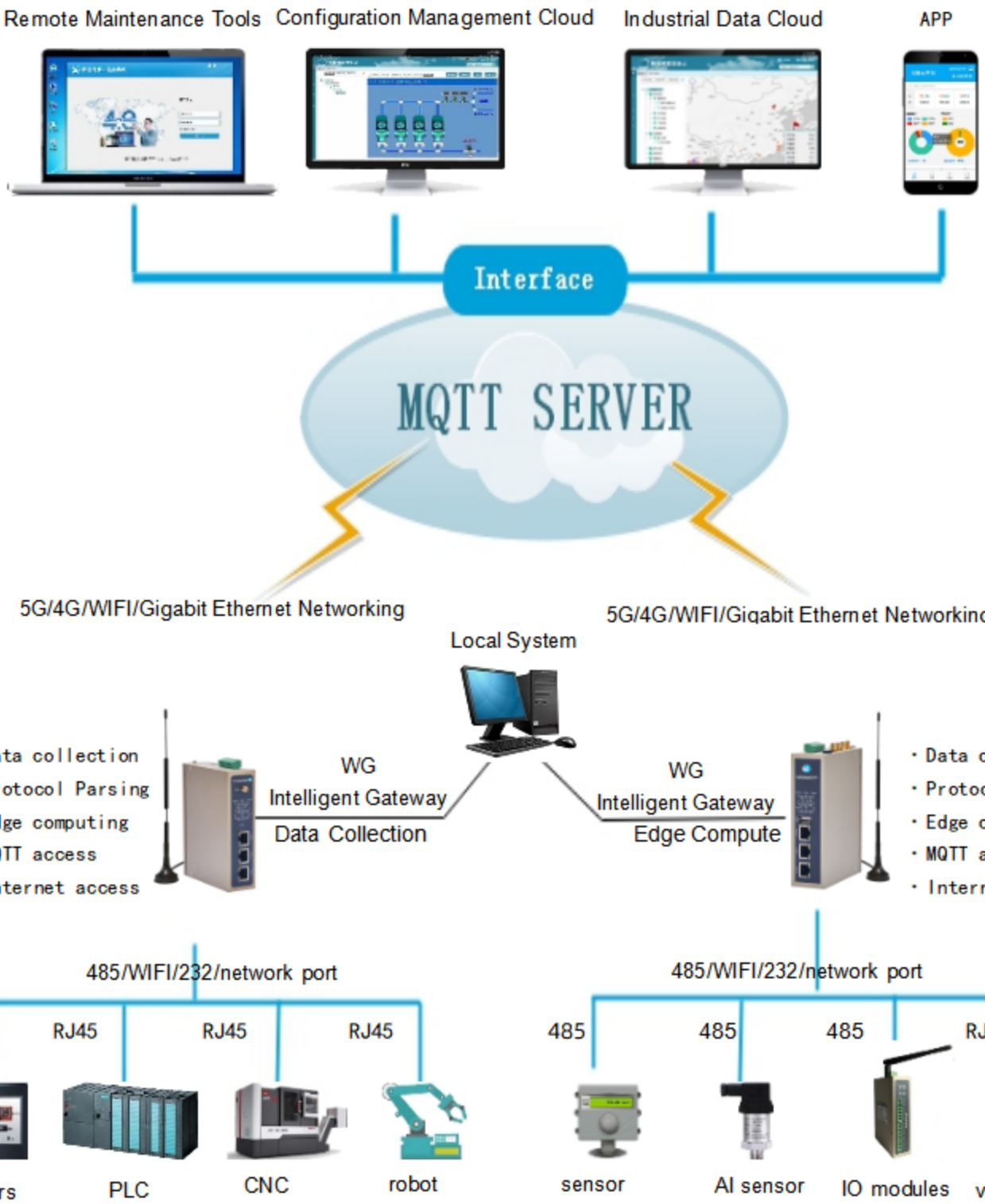
Product Introduction

The WG783 series of industrial intelligent gateways is a high-performance, industrial-grade edge computing and highly reliable intelligent gateway for the integration of industrialization and informatization, launched by WidelOT for the industrial Internet field. 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 edge nodes for industrial applications.

The WG783 industrial intelligent gateway is equipped with three network ports, two serial ports, and one USB interface. It supports multiple network access methods such as 5G/4G/WIFI (Dual-Band)/Wired Ethernet. It can collect data from various industrial devices including PLCs, instruments and meters, CNC machines, and robotic arms. It embeds various industrial protocols and edge computing functions, and supports connection to various industrial Internet platforms and host computer software through protocols such as MQTT/MODBUS TCP/OPC UA/IEC 104/HTTP. It also supports advanced functions such as serial port forwarding, data passthrough, remote maintenance, remote configuration management, and data encryption.

The WG783 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

Supports three Gigabit network ports, two serial ports (232/485), and one USB interface. It also supports multiple networking access methods such as 5G, 4G, dual-band

Powerful Protocol Collection Ability

It embeds a professional protocol engine to achieve south - bound data collection of various devices such as PLCs, instruments, machine tools, robotic arms, and power equipment. It also supports personalized protocol customization and development. Through local or cloud platforms, edge collection templates and collection strategies can be adjusted and optimized to achieve efficient data uploading to the cloud. A standardized engine is used to standardize data from different types of devices.

Flexible Cloud Adaptation and Access Capability

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

Rich Industrial Edge Application Functions

Supports serial port forwarding function to achieve multi-master - one - slave calls of serial ports, supports protocol forwarding function to convert multiple protocols into protocols such as Modbus for rapid access to local systems, supports device time calibration function, gateway anti-removal function, network disconnection reconnection, breakpoint resume, link encryption, and firewall functions.

Powerful Edge - Computing Function

Supports various edge computing functions such as intelligent collection, data filtering, alarm calculation, jump trigger, 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 robustness and high concurrency of the system. After eliminating device heterogeneity and achieving standardization, it can greatly save the R & D and construction costs of projects.

High reliability embedded system design

It embeds multiple software and hardware watchdogs, which is very suitable for high - reliability applications in harsh industrial environments. Through methods such as watchdogs, network disconnection reconnection, breakpoint resume transmission, and function monitoring, it realizes all - round and multi - dimensional device anomaly monitoring and self - healing function design from the system layer, network layer, and application layer, ensuring the real - time online and always - online status of devices and applications, which 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. Together with the WidelOT equipment operation and maintenance express line and the equipment maintenance cloud platform, it builds a safe and reliable data channel to the remote device site for users, enabling functions such as remote configuration, remote debugging, remote diagnosis, and remote program update of on - site devices. At the same time, together with the WidelOT gateway management cloud platform, it can realize remote configuration, monitoring, diagnosis, and program update of gateways distributed around the world.

Easy - to - Integrate API Interface

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

Powerful Security Function

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

2）Network Protection Security: It has a powerful firewall function and 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 identity 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, which ensure that devices or applications can only operate certain resources when they have the corresponding access rights.

Product Specifications

Software Specifications

Network Function	Network Access	Supports 5G, 4G, WIFI, and Ethernet access
	Network Authentication	Supports CHAP/PAP authentication and APN access
	Network Standard	GSM/GPRS/EDGE/UMTS/HSPA+/CDMA2000-EVDO/TD-SCDMA/ TDD-LTE/FDD LTE/NR 5G. (specific frequency band information please refer to the order information table)
	LAN Protocols	Supports ARP
	WAN Protocols	Supports PPP
	IP Application	Supports Ping, Tracer, DHCP Server, DHCP Relay, DHCP Client, DNS relay, DDNS, ROUTE, NAT, DMZ
	IP Routing	Support static routing
WIFI function (optional)	Protocol Standard	Supports IEEE 802.11b/g/n or IEEE 802.11ac/b/g/n
	Working Mode	Support FAT AP, FIT AP, STA, Relay, etc.
	Band Rate	Supports 2.4G/5.8G dual bands and optional rates from 300Mbps to 1300Mbps
	Security Features	Support open system, shared key, WPA/WPA2 authentication
		Support WEP/TKIP/AES encryption
	Transmission Distance	100 - 300m (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	Software and hardware watchdogs support device operation self - inspection technology, and the device can self - repair in case of operation failures
	Function Security Guard	Real - time monitors various function modules, predicts and handles possible errors, and self - heals
Intelligence	Intelligent Collection	Patented fast and stable collection algorithms ensure stable, reliable, and efficient data collection. One gateway can collect data from multiple different types of devices
	Protocol Parsing	Supports the protocol parsing of mainstream PLC controllers, instruments, collectors, and various controllers (Siemens, Schneider, Omron, Mitsubishi, Delta, Modbus, etc.)
	Edge Computing	Can realize functions such as data filtering, grouped collection, alarm calculation, and time - series error correction
	Standardization	Standardizes data of various protocols and builds device models for standardized applications
	Cloud Access	Supports 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	Supports data penetration function, and realizes data passthrough applications in conjunction with the equipment express line
	Remote Maintenance	In conjunction with the equipment maintenance express line, it can realize remote diagnosis, remote debugging, and upgrade of on - site devices
	Protocol Forwarding	Converts 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	Divides real master devices into multiple virtual sub - devices according to business needs through virtual sub - devices
	Breakpoint Resume	Supports breakpoint resume transmission, with the storage medium being memory
	Data Storage	Historical data can be stored in memory, EMMC, or hard disk SSD
	Bidirectional control	Supports various controls such as data timed reporting, immediate read, immediate write, batch read, and batch write
	Channel Monitoring	Supports reporting the online status and heartbeat of devices and gateways to monitor the link status

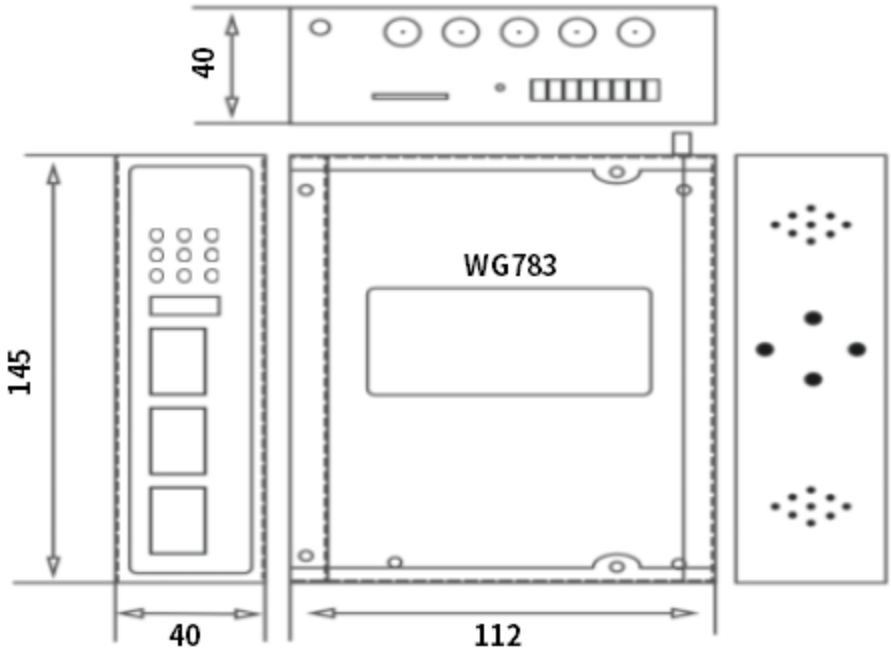
	Status Reporting	Supports reporting of online/offline status, device status, and gateway heartbeat mechanism
	Bus Adaptation	Supports adapting different algorithms according to different buses to ensure stable and reliable transmission
Management and Maintenance	Configuration Project	Supports local and remote configuration of data collection projects
	Application Upgrade	Supports local and remote program upgrades for rapid product function release and iteration
	Remote Diagnosis	Supports remote diagnosis and recovery of gateway failures
	Log Function	Supports complete and detailed log functions for easy and quick troubleshooting
	Import/Export	Supports the import and export of project files for convenient diagnosis and batch configuration
	Diagnostic Command	Supports rich diagnosis 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	880MHZ Dual-core
	Running Memory	256MB (2Gb)
	Program Memory	16MB (128Mb)
	Data Storage	8GB (8192Mb) EMMC storage, optional
Interface Characteristics	Power Interface	DC 9V - 35V (Terminal block), commonly used 12V or 24V
	Ethernet Port	3 * 10/100/1000Mbps high-speed Ethernet ports with 1.5KV network isolation transformer protection. The 3 network ports have data exchange function, and FE0 supports WAN/LAN settings
	Serial Port	2 RS-232/485 interfaces (Terminal block) optional with 15KV ESD protection. Each 485 interface can mount up to 31 slave stations
	5G Network Standard (Choose one)	5G Sub-6 GHZ, supports 5G NSA and 5G SA modes 5G NSA: Downlink max 2.5Gbps, Uplink max 650Mbps 5G SA: Downlink max 2.1Gbps, Uplink max 900Mbps LTE: Downlink max 1.0Gbps, Uplink max 200Mbps WCDMA: Downlink max 42Mbps, Uplink max 5.76Mbps
	4G Network Standard (Choose one)	LTE Cat4, max downlink rate 150Mbps, max uplink rate 50Mbps LTE-TDD/LTE-FDD/DC-HSDPA+/HSPA/HSDPA/HSUPA/WCDMA/CDMA, etc
	SIM Card Holder	Direct insertion card slot * 1 (Medium card)
	Expansion Interface	GPS
	Reset Button	Pin - hole - type reset button
	Real-time Clock	RTC real-time clock (with built-in battery)
	Antenna Connector	5G Network: SMA x 4; 4G Network: SMA x 2; WLAN: RP-SMA x 2 (5 in total)
Mechanical Characteristics	Dimensions	145 x 112 x 40 (mm)
	Installation Method	Rail - mounted
	Shell	Metal shell (gold - colored)
	Protection Level	IP30

	Heat - Dissipation Method	Fan-less heat dissipation
	Weight	608g (Weight varies with different configurations)
Device Power	Standby Power	150mA - 250mA@12V
	Operating Power	250mA - 350mA@12V (4G)/250mA - 1200mA@12V (5G)
	Peak Power	350mA@12V (4G)/625mA@12V (WIFI)/875mA@12V (WIFI + 4G)/1200mA@12V (5G + WIFI)
Environment Humidity	Environment Humidity	5% ~ 95% (no condensation)
	Storage Temperature	-40℃~ 85℃
	Operating Temperature	-20℃ ~ 70℃
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	WG783-<N>-<F>-<S>-<T>
N (Network Type)	NF15: NR (5G for overseas), NF65: NR (5G for domestic), LQO5: LTE(4G), AP/STA: WiFi
F (Function)	WMQTT (WidelOT platform), MQTT (Modbus version), MQTT (General MQTT), WCONN (Equipment Express Line)
S (Serial Port)	485: 485 Serial Port, 232: 232 Serial Port
T (Expansion Module)	16TF (16G TF Card), 16SSD (16G SSD Hard Disk), GPS (with positioning)
Example	WG783-NF65-MQTT-485: Supports 5G network (domestic chip), supports the general MQTT platform WG783-NF15-MQTT-485: Supports 5G network (Qualcomm chip), supports the general MQTT platform WG783-LQ05-MQTT-485: Supports 4G network , supports the general MQTT platform WG783-MQTT-485: Ethernet access, supports the general MQTT platform WG783-LQ05-WMQTT-485: Supports 4G network , supports the WidelOT cloud platform

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.

Xiamen WidelOT Technology Co. Ltd.

Company Website： www.wideiot.com

Contact Phone: +86-0592-2031080

Contact Email: info@wideiot.com

Contact Address: Xiamen Software Park Phase III, China