WidelOT

Product Specifications



WG785

Industrial Intelligent Gateway

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

Product Overview

The WG785 series of industrial intelligent gateways is an industrial-grade intelligent terminal for data acquisition and edge computing launched by WidelOT for industrial digitalisation applications. Designed specifically for data acquisition, protocol parsing, edge computing, cloud data transmission and remote maintenance of industrial equipment, it features 5 Gigabit Ethernet ports and 3 RS485/RS232 serial ports (with an optional configuration of 1 DI + 1 DO + 2 serial ports).



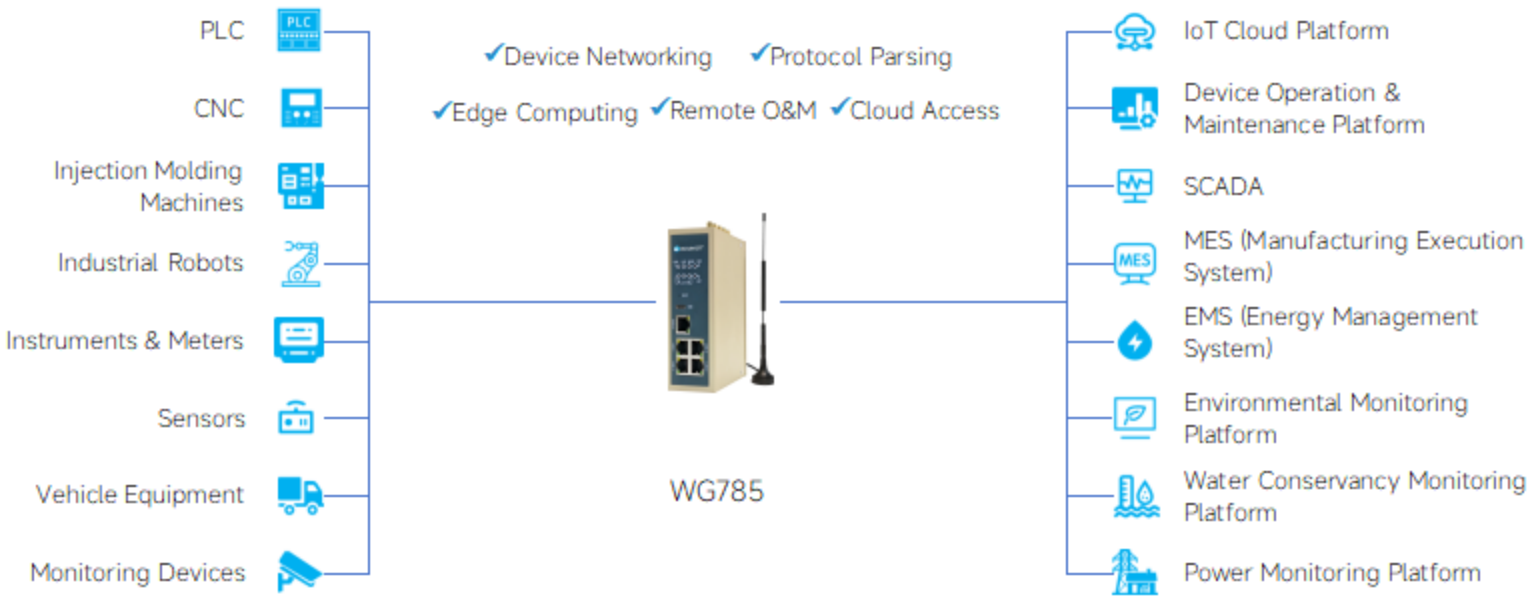
It supports multiple network access methods including 5G, 4G and Wi-Fi, and is capable of collecting data from various PLC controllers, energy and power equipment, various meters (electricity, water, heat, gas, etc.) and sensors, as well as various CNC machine tools. It is widely used in numerous industries such as smart factories, smart cities, vehicle management, power grids, photovoltaic/wind farms, charging stations/battery swap stations, smart buildings, oil wells and mines, water conservancy and environmental protection, and smart agriculture, serving as a vital edge node for building industrial IoT and industrial internet networks.

Product features

- ✓ **Industrial-grade reliability:** wide temperature and voltage range, multiple layers of electromagnetic isolation, ensuring uninterrupted operation in harsh industrial environments;
- ✓ **Extensive connectivity options:** supports 5G NR, 5G RedCAP, 4G CAT4/CAT1, Wi-Fi 5, Wi-Fi 6, etc.;
- ✓ **Comprehensive protocol compatibility:** Supports a wide range of industrial protocols, covering mainstream protocols and industry-specific standards across various sectors, enabling the collection of vast amounts of device data and its standardisation;

- ✓ **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


Smart City


Vehicle Management


Electricity Grid


Solar/wind farms


Charging/battery swap stations


Oil Wells and Mines


Water Resources and Environmental Protection

Product specifications

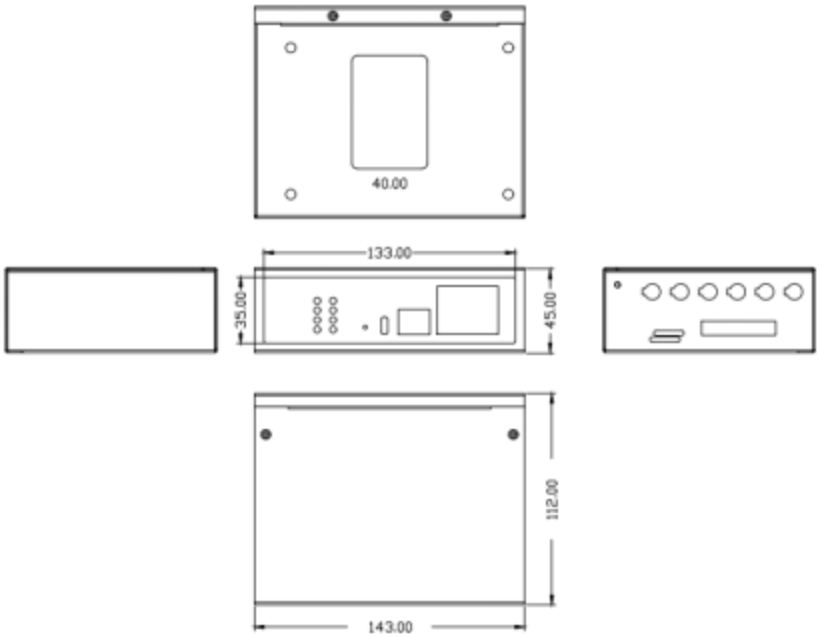
Hardware Parameters	
Hardware platform	
CPU Core	880 MHz dual-core
Runtime storage	256MB DDR3
Programme storage	32MB SPI-FLASH
Data storage	4GB|8GB Optional
Interface specifications	
Power socket	DC 9V-35V （terminal block）
Ethernet port	5*10/100/1000Mbps Ethernet ports , 1.5KV Network isolation and transformer protection, supports WAN/LAN
Serial port	3 RS485/RS232 serial ports (optional configurations: 2 serial ports + 1 DI + 1 DO, or 1 serial port + 2 DI + 2 DO), 15 kV ESD protection, with a theoretical capacity of 255 slave devices per bus
5G network	5G or 5G RedCap (optional)
4G network	LTE Cat4 or LTE Cat1 (optional)
WIFI network	2.4 GHz and 5.8 GHz dual-band, WIFI 5 and WIFI 6 modules (optional)
GNSS network	Supports Beidou, GPS ,etc. positioning systems (optional)
SIM card slot	Nano-SIM * 2 （eSIM optional）
Reset button	Pinhole reset button
Antenna connector	5G network：SMA x 4、4G network：SMA x 2、WLAN: RP-SMA x 2 (Up to 6)
Power consumption	
Power	4.5W
Mechanical properties	
Dimensions	143 x 112 x 45 (mm)
Installation method	Rail-mounted
Equipment housing	Metal casing
Protection rating	IP30
Heat dissipation	Fanless heat dissipation

Weight	608g(Weights vary depending on the configuration)
Equipment operating environment	
Ambient humidity	5% ~ 95% (Non-condensing)
Storage temperature	-40 ℃~ 85℃
Operating temperature	-30℃ ~ 70℃
Indicator light	
3*3 indicator light	PWR power indicator (red)、LIVE Status indicator (green)、WARN Warning indicator (yellow)、ERR Fault indicator (red) 3 mobile network signal strength indicators (green)、NET Network indicator (Green)
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/5G-RedCap/4G-Cat4/4G-Cat1,WIFI(AP|STA|Relay) and Ethernet access
Network certification	Supports CHAP/PAP authentication , Supports APN and VPDN access
Cellular network	TDD-LTE/FDD-LTE/5G-RedCap/5G, etc. **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 Applications	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 a wide range of device protocols, including the mainstream Modbus, DTL645, CJ188, PLCs, instruments and sensors; **for further details, please refer to the 'Gateway Protocol Support List'**; supports data collection from various water meters, electricity meters, heat meters and steam meters; as well as various sensors, variable frequency drives, photovoltaic inverters, power distribution and substation equipment, etc.
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 various cloud platforms and monitoring software, including the WidelOT Cloud, EMS energy management platforms, BMS building management systems, MES manufacturing execution systems, SCADA IoT monitoring platforms, water management platforms and power management platforms
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.
Remote maintenance	In conjunction with the WidelOT 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（SD-WAN optional）
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
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	WG785-<CELL>-<Module>-<SoftWare>
CELL	LL02:4G Cat1; LL07:4G Cat4; NF02:5G RedCap NF38:5G
Module	W: WIFI Network; (optional) E: EMMC Storage; (optional) G: GNSS Positioning;
SoftWare	MQTT（Universal version）, EMS（Energy version）, CNC （CNC version）.....
Example	WG785-LL07-MQTT:Supports 4G CAT4 with full network compatibility, Universal gateway (supports Modbus, CJ188, PLC and other protocols) WG785-LL02-W-EMS: Supports 4G CAT1 and Wi-Fi, Energy gateway (supporting IEC 104 and IEC 61850 protocols) WG785-NF02-MQTT: Supports 5G RedCap, 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:

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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.



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