CATALOG AUGUST 2024

ATREYO®

SOLUTIONS THAT SIMPLIFY

INDUSTRIAL PRODUCTS

Atreyo – Solutions That Simplify

ABOUT ATREYO

Atreyo Research and Development LLP is a technology company that designs and manufactures electronic products and provides software solutions in the fields of industrial automation, remote monitoring and infrastructure projects. We have our research and development department, where team of well-skilled engineers design our products and software solutions.

INDUSTRIAL PRODUCTS AND SOLUTIONS

We provide range of industrial computers, IoT gateways, interfaces and other industrial devices with software applications. At Atreyo, our industrial products are fortified with cutting-edge technology to withstand the most demanding environments. We prioritize durability by implementing optoisolation for serial interfaces and digital inputs in nearly all our products. Furthermore, our robust aluminum housings not only reinforce structural integrity but also facilitate effective cooling, ensuring superior performance and longevity.

INFRASTRUCTURAL PRODUCTS AND SOLUTIONS

Our commitment to betterment shines through in every aspect of what we do. Our innovative solutions and products benefit a wide range of areas, including roads, trains, energy networks, street lights, farms, parking spots, buses, and more. From optimizing transportation networks and ensuring efficient energy distribution to enhancing street lighting, our innovations permeate urban living. We're making everything run smoother and safer.

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Embedded Computers

Industrial computers
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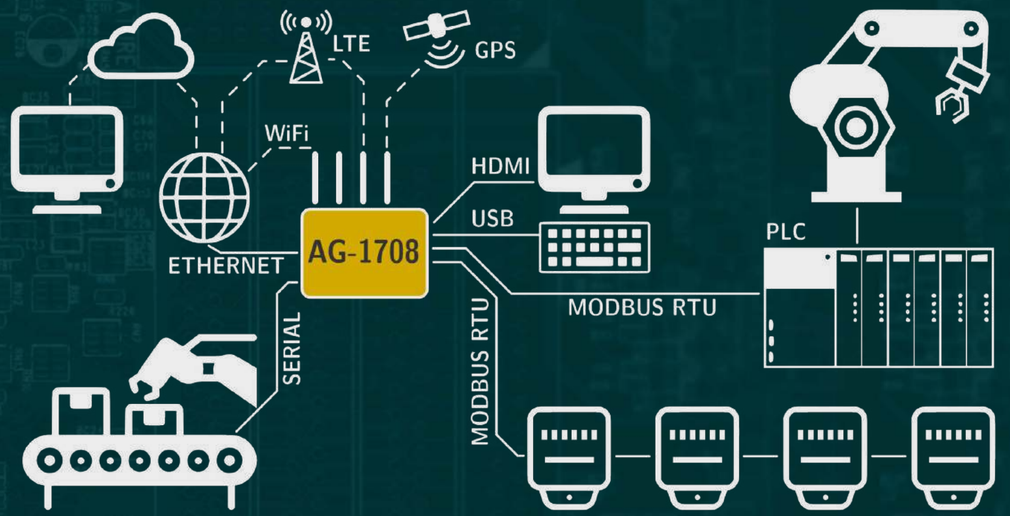


FACTORY REMOTE AND LOCAL MONITORING

Our industrial computers seamlessly integrate the versatility of a Linux-powered computer with advanced communication interfaces, including LTE, GSM, and WiFi. What distinguishes our computers is their fanless design, ensuring uninterrupted, long-term performance. These cutting-edge computers are a perfect fit for a wide spectrum of applications. Whether functioning as robust machine controllers or high-performance IoT gateways for remote management and monitoring, our computers excel in numerous fields, including ATCS, ITMS, IIoT, and smart city projects.

AIC-1708

Multipurpose industrial computer with inbuilt M.2 SSD storage for data. It is based on quad core ARM Cortex-A53 64bit processor. The computer is richly equipped with wireless interfaces. It has WiFi, LTE/GPRS and Bluetooth.

CONNECTIVITY

4G LTE, GSM, WiFi, 1Gbps Ethernet, 2x RS485, 4x USB, Bluetooth

INTERNAL STORAGE

Internal M.2 SSD and up to 64GB eMMC

COMPUTING POWER

64 bit 4 core 1.5GHz ARM processor with up to 4 GB RAM

FANLESS DESIGN

Aluminium enclosure with perfect heat dissipation

HARDWARE

CPU	Quad core 64-bit ARM Cortex-A53 processor, 1.5GHz
Storage	16/32/64GB eMMC, internal SSD on M.2
Memory	2/4GB RAM
Cellullar	4G LTE, GSM
SIM	1 x MicroSIM
Antenna connector	1 x SMA for cellular, 1 x SMA for GPS, 1 x SMA for WiFi and Bluetooth
Ethernet	1 x 10/100/1000 Ethernet port
GNSS	GPS, BDS, Galileo, GLONASS, QZSS
WiFi	802.11a/b/g/n/ac/ax (2.4GHz and 5GHz band)
Bluetooth	BT 5.0, 3Mbps, BR/EDR: 79 channels
Serial	2 x RS485
Other	4 x USB 2.0, 1 x HDMI with 4K display support
Status indicators	1 x connectivity, 1 x activity, 1 x SSD, 1 x power
Power	8-36V DC with reverse polarity protection
Operating temperature	-20°C to 75°C
Housing	Aluminium with screw mounting or DIN rail mounting option
Dimensions	135mm x 116mm x 38mm
Weight	600g

SOFTWARE AND FUNCTIONS

Operating system	Ubuntu Linux
Programming language	All supported by Linux
Network protocol support	All supported by Linux
VPN and tunneling	All supported by Linux
Configuration and management	All supported by Linux
Cloud solutions	All supported by Linux

AG-1629

Programmable industrial IoT Gateway with support for Debian Linux and OpenWRT Linux systems. It provides the ability to install custom scripts and use ready-made scripts. Also, it works under the control of OpenWRT system. Under the control of the NodeRED system, it gives unlimited possibilities for easy creation of gateway operation logic.

CONNECTIVITY
4G LTE, GSM, WiFi, Ethernet, GNSS, Bluetooth

SYSTEM
Debian Linux
NodeRED support

INTERFACES
2x RS485, 4x inputs, 2x output

REDUNDANT
Dual Ethernet
Dual SIM

HARDWARE

CPU	Quad core ARM Cortex-A7 processor
Storage	8/16/32/64 GB eMMC, up to 256GB microSD
Memory	512MB RAM
Cellular	4G LTE, GSM (3G optional)
SIM	2 x MicroSIM
Antenna connector	1 x SMA for cellular, 1 x SMA for GPS, 1 x SMA for WiFi and Bluetooth
Ethernet	2 x 10/100 Ethernet port
GNSS	GPS, BDS, Galileo, GLONASS, QZSS
WiFi	IEEE 802.11b/g/n (optional)
Bluetooth	V5.0+EDR (optional)
Serial	2 x opto-isolated RS485
Input/output	4 x opto-isolated digital input, 4 x digital output (interchangable with inputs)
Other	2 x USB host, 1 x USB type-C for debug, boot source selection switch
Status indicators	1 x activity (multicolor), 1 x cellular, 3 x user configurable
Power	8-48V DC with reverse polarity protection, PoE 37-57V isolated (optional)
Operating temperature	-25°C to 75°C
Housing	Aluminium with DIN rail mounting option
Dimensions	114mm x 104mm x 32mm
Weight	600g

SOFTWARE AND FUNCTIONS

Operating system	Debian Linux, OpenWRT Linux
Programming language	All supported by Linux
Network protocol support	All supported by Linux
VPN and tunneling	All supported by Linux
Configuration and management	All supported by Linux
Cloud solutions	All supported by Linux

AG-3303

Fully programmable industrial IoT Gateway with support for Debian Linux and OpenWRT Linux systems. It provides the ability to install custom scripts and use ready-made scripts. Also, it works under the control of OpenWRT system. Under the control of the NodeRED system, it gives unlimited possibilities for easy creation of gateway operation logic.

CONNECTIVITY	SYSTEM	INTERFACES	REDUNDANT
4G LTE, GSM, WiFi, Ethernet, GNSS, Bluetooth	Debian Linux, OpenWRT NodeRED support	2x RS485, 4x inputs, 2x output	Dual Ethernet Dual SIM

HARDWARE

CPU	Quad core 64-bit ARM Cortex-A53 processor, 1.5GHz
Storage	8/16/32/64 GB eMMC, up to 256GB microSD
Memory	1-4 GB RAM
Cellular	4G LTE, GSM (3G option)
SIM	2 x MicroSIM
Antenna connector	1 x SMA for cellular, 1 x SMA for GPS, 1 x SMA for WiFi and Bluetooth
Ethernet	1 x 10/100M and 1 x 10/100/1000M
GNSS	GPS, BDS, Galileo, GLONASS, QZSS
WiFi	IEEE 802.11b/g/n (optional)
Bluetooth	V5.0+EDR (optional)
Serial	2 x opto-isolated RS485
Input/output	4 x opto-isolated digital input, 4 x digital output (interchangable with inputs)
Other	2 x USB host, 1 x USB type-C for debug
Status indicators	1 x activity, 1 x cellular, 3 x user configurable
Power	8-48V DC with reverse polarity protection, PoE 37-57V isolated (optional)
Operating temperature	-25°C to 75°C
Housing	Aluminium with DIN rail mounting option
Dimensions	114mm x 104mm x 32mm
Weight	600g

SOFTWARE AND FUNCTIONS

Operating system	Debian Linux, OpenWRT Linux
Programming language	All supported by Linux
Network protocol support	All supported by Linux
VPN and tunneling	All supported by Linux
Configuration and management	All supported by Linux
Cloud solutions	All supported by Linux

AG-1621

Small size multipurpose Industrial IoT Gateway/ Industrial Computer based on four core powerful ARM processor. For edge computing working on Debian and also support OpenWRT. In Debian, under the control of the NodeRED system, it gives unlimited possibilities for easy creation of gateway operation logic.

CONNECTIVITY

4G LTE, GSM, Ethernet, GNSS

SYSTEM

Debian LInux, OpenWRT Linux

INTERFACES

Isolated RS485, RS232, isolated input, relay output

COMPACT DESIGN

Aluminium enclosure 88mm x 87mm x 35mm

HARDWARE

CPU	Quad core ARM Cortex-A7 processor
Storage	8/16/32/64 GB eMMC, up to 256GB microSD
Memory	512MB RAM
Cellular	4G LTE, GSM
SIM	1 x MicroSIM
Antenna connector	1 x SMA for cellular, 1 x SMA for GNSS
Ethernet	1 x 10/100 Ethernet port
GNSS	GPS, BDS, Galileo, GLONASS, QZSS
Serial	Opto-isolated RS485, opto-isolated RS232
Input/output	2 x opto-isolated digital input, 1 x digital relay output
Other	1 x USB, 1 x HDMI, LTE modem on miniPCI express
Status indicators	1 x activity (dual colour)
Power	8-36V DC with reverse polarity protection, PoE (spare pair)
Operating temperature	-25°C to 75°C
Housing	Aluminium with DIN rail mounting option
Dimensions	88mm x 87mm x 35mm
Weight	240g

SOFTWARE AND FUNCTIONS

Operating system	Debian Linux, OpenWRT Linux
Programming language	All supported by Linux
Network protocol support	All supported by Linux
VPN and tunneling	All supported by Linux
Configuration and management	All supported by Linux
Cloud solutions	All supported by Linux

AG-6401

Small size multipurpose industrial computer / gateway based on four core powerful 64 bit Cortex-A53 ARM processor. The powerful processor, compact size, wide power supply range of 8-36V and battery backup make AG-6401 perfect choice for industrial control systems. 4K display support make this gateway useful for LED walls, LCD display and multimedia control.

CONNECTIVITY

4G LTE, GSM, Ethernet, WiFi, Bluetooth, GNSS

SYSTEM

Linux
OpenWRT Linux

INTERFACES

RS485, isolated input, isolated output

POWER BACKUP

Optional up to 1 h internal battery backup

HARDWARE

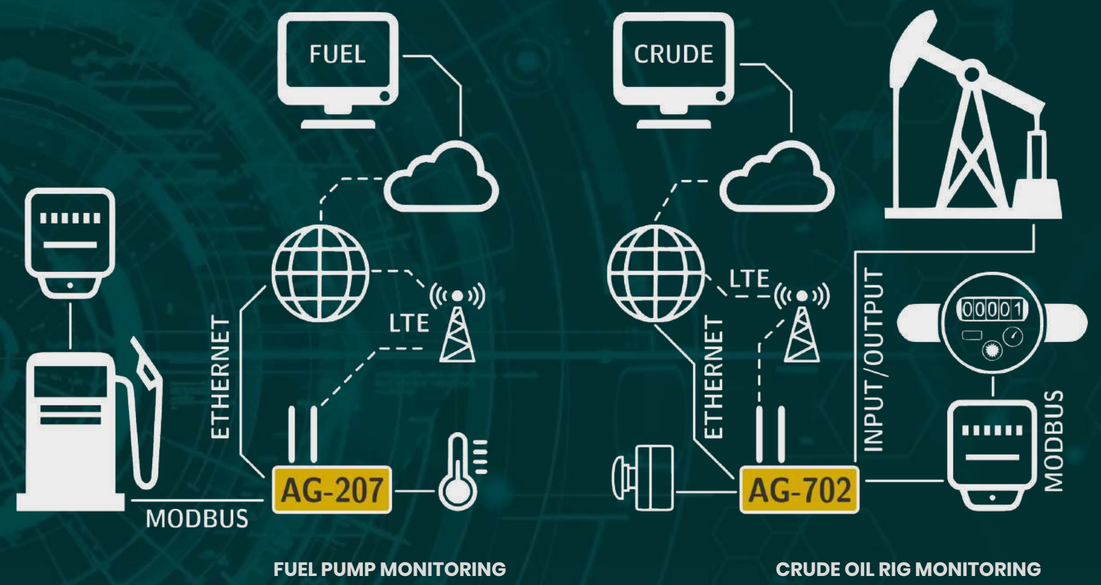
CPU	Quad core 64-bit Cortex-A53 ARM processor, 1.2GHz
Storage	16GB eMMC
Memory	1 or 2GB RAM
Cellular	4G LTE, GSM
SIM	1 x MicroSIM
Antenna connector	1 x SMA for cellular, 1 x SMA for GPS, 1 x SMA for WiFi and BLE
Ethernet	1 x 10/100 Ethernet port
GNSS	GPS, BDS, Galileo, GLONASS, QZSS
WiFi	IEEE 802.11b/g/n
Serial	1 x RS485
Input/output	1 x opto-isolated digital input, 1 x opto-isolated digital output
Other	1 x USB, 1 x HDMI (with 4K support)
Status indicators	4 x signal strength, 1 x RS, 2 x digital I/O, 2 x connectivity, 1 x activity (dual colour)
Power	8-36V DC with reverse polarity protection
Battery backup	Internal battery backup up to 1h (optional)
Operating temperature	0°C to 75°C
Housing	Aluminium with DIN rail mounting option
Dimensions	88mm x 87mm x 35mm
Weight	290g

SOFTWARE AND FUNCTIONS

Operating system	Linux, OpenWRT Linux
Programming language	All supported by Linux
Network protocol support	All supported by Linux
VPN and tunneling	All supported by Linux
Configuration and management	All supported by Linux
Cloud solutions	All supported by Linux

IoT Gateways

OpenWRT gateways



FUEL PUMP MONITORING

CRUDE OIL RIG MONITORING

The IoT gateway serves as a vital bridge, facilitating connections via interfaces like Modbus RTU, Modbus TCP/IP, RS232, and more. It seamlessly links devices such as PLCs, CNC machine tools, control panels, electrical panels, sensors, and meters to a central server. This union empowers remote supervision and control, all fortified with robust security measures including VPN and SSL. At the heart of our IoT gateway lies the renowned OpenWRT system, known for its unwavering security and functionality. This choice provides the highest level of protection and operational excellence for critical systems. From power substations to city infrastructure, fuel pumps to crude oil systems, the IoT gateway stands as a safeguarding force, ensuring the secure and optimal performance of indispensable operations.

AG-207

AG-207 is an innovative RS485, 2 digital inputs and 4G LTE cellular Gateway with ethernet port and WiFi working on OpenWRT system. It can connect in multiple ways to the Internet with a range of advanced functions for mission critical IoT or M2M applications. AG-207 also support MQTT protocol for Cloud application and Modbus TCP/RTU for industrial applications.

CONNECTIVITY

4G LTE, GSM, Ethernet, WiFi, GNSS

MORE MEMORY

256 MB RAM and 32MB + 512MB internal storage

INTERFACES

RS485, USB, isolated inputs

REDUNDANT CONNECTIVITY

LAN/WAN, WiFi and 4G LTE connectivity

HARDWARE

CPU	580Mhz MIPS24KEc processor
Storage	64MB+512MB ExtRoot support (overlay)
Memory	256MB RAM
Cellular	4G LTE, GSM
SIM	1 x microSIM
Antenna connector	1 x SMA for cellular, 1 x SMA for GPS, 1 x SMA for WiFi
Ethernet	1 x 10/100 Ethernet with passive PoE, WAN/LAN
GNSS	GPS, BDS, Galileo, GLONASS, QZSS
WiFi	IEEE 802.11b/g/n
Serial	1 x RS485
Input/output	2 x opto-isolated digital input
Other	1 x USB with USB storage support
Status indicators	1 x or custom use, 1 x activity, 1x cellular, 1 x WiFi, 2 x input
Power	8-36V DC with reverse polarity protection, PoE (spare pair)
Operating temperature	-20°C to 65°C
Housing	Aluminium with DIN rail mounting option
Dimensions	88mm x 65mm x 35mm
Weight	220g

SOFTWARE AND FUNCTIONS

Operating system	OpenWRT 23.05, Kernel 5.15.71, Atreyo Environment V1.01.02
Programming language	Lazarus, C, C++, java, php, html, python, sql etc.
Network protocol support	TCP, UDP, IPv4, IPv6, ICMP, NTP, DNS, HTTP(S), FTP, SMTP, SSLv3, TLS 1.3, ARP, PPP, DHCP, Telnet
VPN and tunneling	OpenVPN, OpenConnect, IPsec, PPTP, SoftEther VPN, WireGuard
Configuration and management	WEB UI, CLI, SSH, CALL, SMS, TR-069, SNMP, JSON-RPC, MQTT(S), MODBUS, RMS
Modbus	TCP slave, TCP master, RTU master, RTU gateway
Cloud solutions	All supported by Linux for MIPS architecture

AG-702

AG-702 is an innovative RS485 and RS232, 2 digital I/O and 4G LTE cellular Gateway with 2 ethernet ports and WiFi working on OpenWRT system. It can connect in multiple ways to the Internet with dual SIM capability and a range of advanced functions for mission critical IoT or M2M applications. AG-702 also support MQTT protocol for Cloud application and Modbus TCP/RTU for industrial applications.

CONNECTIVITY

4G LTE, GSM, dual Ethernet, WiFi, GNSS

MORE MEMORY

256 MB RAM and 32MB + 512MB internal storage

INTERFACES

Isolated RS485, USB, isolated RS232, I/O

REDUNDANT CONNECTIVITY

Dual SIM for communication without break

HARDWARE

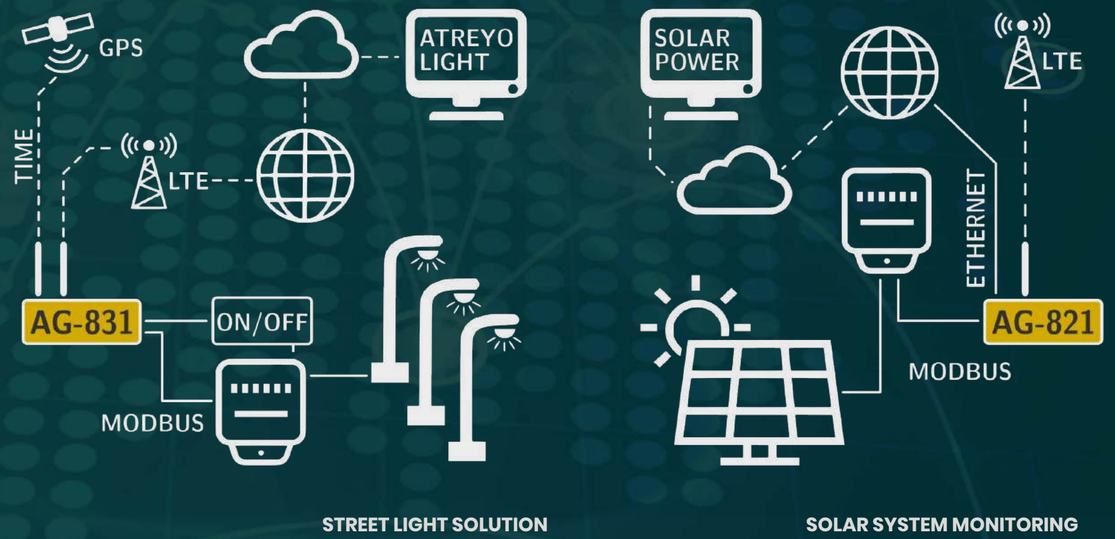
CPU	580Mhz MIPS24KEc processor
Storage	64MB+512MB ExtRoot support (overlay)
Memory	256MB RAM
Cellular	4G LTE, GSM
SIM	2 x nanoSIM, tray type anti-loss holder
Antenna connector	1 x SMA for cellular, 1 x SMA for GPS, 1 x SMA for WiFi
Ethernet	2 x 10/100 Ethernet, WAN and LAN, WAN with passive PoE
GNSS	GPS, BDS, Galileo, GLONASS, QZSS
WiFi	IEEE 802.11b/g/n
Serial	1 x opto-isolated RS485, 1 x opto-isolated RS232
Input/output	2 x opto-isolated digital input, 1 x relay output
Other	1 x USB with USB storage support
Status indicators	4 x signal strength, 2 x custom use, 1 x connectivity, 1 x activity, 1 x WiFi, 1 x output, 2 x input
Power	8-48V DC (or 8-36V/14-60V) with reverse polarity protection, PoE (spare pair)
Operating temperature	-20°C to 65°C
Housing	Aluminium with DIN rail mounting option
Dimensions	88mm x 87mm x 35mm
Weight	240g

SOFTWARE AND FUNCTIONS

Operating system	OpenWRT 23.05, Kernel 5.15.71, Atreyo Environment V1.01.02
Programming language	Lazarus, C, C++, java, php, html, python, sql etc.
Network protocol support	TCP, UDP, IPv4, IPv6, ICMP, NTP, DNS, HTTP(S), FTP, SMTP, SSLv3, TLS 1.3, ARP, PPP, DHCP, Telnet
VPN and tunneling	OpenVPN, OpenConnect, IPsec, PPTP, SoftEther VPN, WireGuard
Configuration and management	WEB UI, CLI, SSH, CALL, SMS, TR-069, SNMP, JSON-RPC, MQTT(S), MODBUS, RMS
Modbus	TCP slave, TCP master, RTU master, RTU gateway
Cloud solutions	All supported by Linux for MIPS architecture

Protocol Gateways

Modbus RTU gateways
RS232 gateways
Gateways with specific functions



Protocol gateways, often known as protocol translators, serve as the key to harmonizing various protocols and physical layers. In industrial landscapes, where devices from diverse manufacturers converge, these gateways play a pivotal role in ensuring seamless communication. Consider applications like street light management systems, feeder panel monitoring, solar system oversight, power panel coordination, control panel monitoring, and machine data analysis. In these scenarios, protocol gateways shine as the essential conduits that enable different systems to converse cohesively, ensuring efficiency, integration, and informed decision-making.

AG-201

Basic Modbus RTU Gateway for users seeking 4G LTE connectivity for their custom applications. This gateway features both RS485 and LTE/GPRS communication capabilities, complete with SMS support. AG-201 ensures bidirectional connectivity, enabling Modbus RTU data exchange with the cloud via MQTT.

CONNECTIVITY
4G LTE, GSM

INTERFACE
RS485

SMS CONTROL
Alerts, restart, configuration

CONFIGURATION
Simple and easy configuration by dedicated application or SMS

HARDWARE

CPU	ARM processor 500MHz
Memory	16MB RAM
Cellular	4G LTE, GSM
SIM	1 x microSIM
GNSS	GPS, BDS, Galileo, GLONASS, QZSS (optional)
Antenna connector	1 x SMA for cellular, 1 x SMA for GNSS (optional)
Serial	1 x RS485
Other	USB for system update
Status indicators	1 x activity, 1 x power, 1 x LTE
Power	8-36V DC with reverse polarity protection
Operating temperature	-25°C to 75°C
Housing	Aluminium with DIN rail mounting option
Dimensions	88mm x 65mm x 35mm
Weight	175g

SOFTWARE AND FUNCTIONS

Operating system	Embedded system
Network protocol support	MQTT(S), HTTP(S), TLS-1.2
System update	USB, over the air (OTA)

AG-1115

AG-1115 offers an exceptional platform for customization, catering to users in search of a dedicated LTE gateway solution for their unique applications. This gateway showcases a versatile array of features, including opto-isolated RS485, digital inputs and outputs, one analog input, and seamless 4G LTE/GPRS communication with SMS support.

CONNECTIVITY	INTERFACES	POWER BACKUP	CUSTOMISATION
4G TE, GSM, GNSS	4 x input, 1 x AC detection, 1 x analog input, isolated RS485, 2 x relay output	Optional inbuilt battery backup	Open to custom firmware development

HARDWARE

CPU	ARM processor 500MHz
Storage	Optional microSD card inside
Memory	16MB RAM
Cellular	4G LTE, GSM
SIM	2 x microSIM
Antenna connector	1 x SMA for cellular, 1 x SMA for GNSS
GNSS	GPS, BDS, Galileo, GLONASS, QZSS
Serial	1 x opto-isolated RS485
Input/output	4 x isolated digital Input, 1 x 230V sensing digital input, 1 x analog input, 2 x relay digital output
Other	USB for system update
Status indicators	5 x digital input, 1 x activity, 1 x power, 2 x output, 1 x LTE, 1 x antive antenna enable
Power	8-36V DC with reverse polarity protection
Power backup	SuperCAP backup for last message or long time battery backup (depend on customer requirement)
Operating temperature	-25°C to 75°C
Housing	Aluminium with DIN rail or panel mounting option
Dimensions	135mm x 75mm x 38mm
Weight	360g (models without backup option)

SOFTWARE AND FUNCTIONS

Operating system	Embedded system
Network protocol support	All functions are designed according to customer needs
System update	USB, over the air (OTA)

AG-821

The industrial gateway facilitates remote control via Modbus RTU, enabling data reading and writing to Modbus registers. Utilizing both LTE and GSM networks, the gateway ensures robust two-way communication. Furthermore, it offers two opto-isolated digital inputs equipped with SMS alert functionality, enhancing its capabilities for seamless monitoring and control.

CONNECTIVITY

4G LTE, GSM, Ethernet

INTERFACES

Isolated Modbus RTU,
2x isolated digital inputs

CONFIGURATION

Internal WebUI and SMS

POWER BACKUP

SuperCAP backup for power failure message

HARDWARE

CPU	ARM Cortex-M4
Storage	8MB
Cellular	4G LTE, GSM
SIM	1 x MicroSIM
Antenna connector	1 x SMA for cellular
Ethernet	1 x 10/100 Ethernet port
Serial	1 x opto-isolated RS485
Input/output	2 x opto-isolated digital Input
Status indicators	1 x LTE, 4 x signal strength, 2 x RS485, 2 x digital input, 1 x activity, 1 x power
Power	8-36V DC with reverse polarity protection, PoE (spare pair)
Power backup	SuperCAP backup for last message (depend on product variant)
Operating temperature	-25°C to 75°C
Housing	Aluminium with DIN rail mounting option
Dimensions	88mm x 87mm x 35mm
Weight	240g

SOFTWARE AND FUNCTIONS

Operating system	Embedded system
Network protocols	TCP, IPv4, ICMP, NTP, DNS, HTTP, ARP, JSON, SSLv3, TLS 1.2
SMS Functions	Configuration, input alerts, device status, restart
Configuration	by internal website, by SMS, commands from server, file from server (depend on product variant)
Configuration backup	Configuration backup save and load from internal website
Modbus	RTU master, RTU gateway, Modbus to JSON, custom TCP/IP to Modbus
Access security	Internal website password, mobile number access list

AG-831

This gateway effortlessly interfaces with servers via LTE/GSM or Ethernet, ensuring robust and reliable data exchange. Gateway features a built-in timer with the flexibility of creating 10 ON/OFF schedules within a 24-hour cycle. Additionally, it includes an auto-configurable atronomical timer, utilizing precise location data for enhanced efficiency. With a Modbus RTU interface to communicate with a wide array of devices, including energy meters, PLCs, and various other Modbus devices.

CONNECTIVITY

4G LTE, GSM, Ethernet, GNSS

INTERFACES

Isolated Modbus RTU, 2x inputs, 3 relay outputs

ADVANCED TIMER

Standard and astronomical ON/OFF timer

POWER BACKUP

SuperCAP backup for power failure message

HARDWARE

CPU	ARM Cortex-M4
Storage	8MB
Cellular	4G LTE, GSM
SIM	1 x MicroSIM
Antenna connector	1 x SMA for cellular, 1 x SMA for GNSS
Ethernet	1 x 10/100 Ethernet port
GNSS	GPS, BDS, Galileo, GLONASS, QZSS
Serial	1 x opto-isolated RS485
Input/output	2 x isolated digital Input, 3 x relay output contolled by server, timer or SMS
Status indicators	2 x RS485, 2 x digital input, 1 x activity, 1 x power, 3 x output, 1 x LTE
Power	8-36V DC with reverse polarity protection, PoE (spare pair)
Power backup	SuperCAP backup for last message (depend on product variant)
Operating temperature	-25°C to 75°C
Housing	Aluminium with DIN rail mounting option
Dimensions	88mm x 87mm x 35mm
Weight	260g

SOFTWARE AND FUNCTIONS

Operating system	Embedded system
Network protocol support	TCP, IPv4, ICMP, NTP, DNS, HTTP, ARP, JSON, SSLv3, TLS 1.2
SMS Functions	Configuration, input alerts, output control, device status, restart
Configuration	by internal website, by SMS, commands from server, file from server (depend on product variant)
Configuration backup	Configuration backup save and load from internal website
Modbus	RTU master, RTU gateway, Modbus to JSON, custom TCP/IP to Modbus
Access security	Internal website password, mobile number access list
Timer and outputs	3 channel 10 schedule timer, astronomical timer, remote control of 3 outputs

LoRaWAN® Gateways

LoRaWAN® gateways for industry and infrastructure

LORA GATEWAY WORKING EXAMPLE

LoRaWAN® stands as a modern wireless communication system, featuring an impressive combination of long-range transmission and low power consumption. The combination of this two is a highly appealing solution for various sectors, including the IoT and IIoT industries, as well as applications like smart lighting and water management. At the heart of this ecosystem, LoRaWAN® gateways play a pivotal role. They serve as an essential link between nodes and the broader network. Subsequently, they seamlessly relay this data to a web server, either over the internet or through a private network infrastructure.

ALWG-1638

Multichannel LoRaWAN® gateway, powered by ARM Cortex-A7 processor with an IP67 enclosure to handle tough environments. Standout features include an isolated power supply for protection and power backup. The gateway's dual SIMs ensures network connectivity redundancy. Moreover, its multiple VPN support adds an extra layer of security, serving to diverse communication needs.

LORAWAN®
Multichannel LoRaWAN® class A/B/C

CONNECTIVITY
4G LTE, GSM, WiFi, Ethernet, GNSS

POWER BACKUP
SuperCAP backup for power failure message

OUTDOOR DESIGN
Aluminium die casting IP67 enclosure

HARDWARE

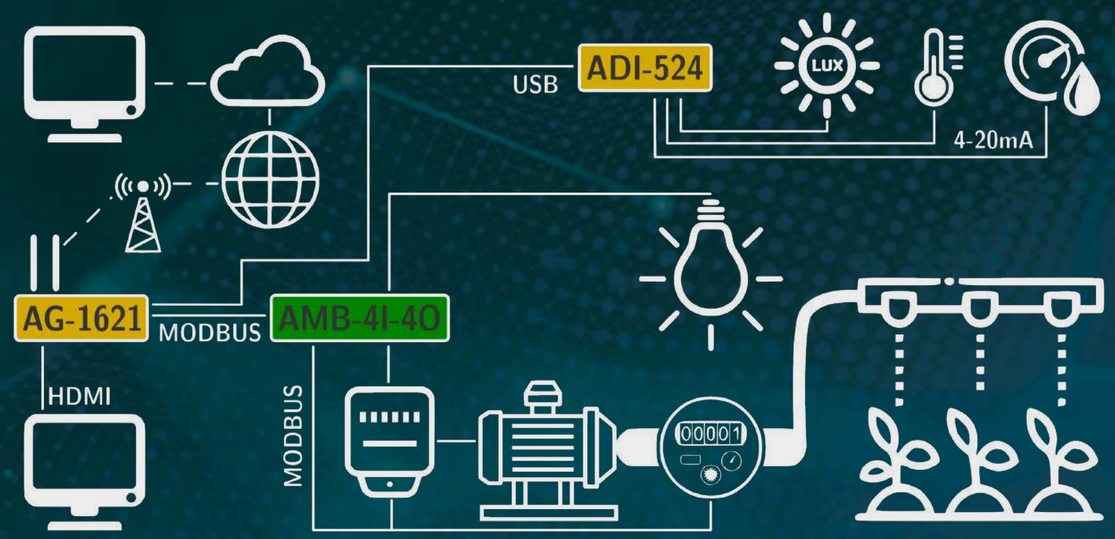
CPU	Quad core ARM Cortex-A7 processor
Storage	8GB eMMC
LoRaWAN®	LoRaWAN® Class A/B/C, 8 x 8 channels LoRa packet detectors
LoRaWAN® RF	TX power up to 27 dBm, RX sensitivity down to -139 dBm
Cellular	4G LTE, GSM (3G depend on product variant)
SIM	2 x nanoSIM
Antenna connector	1 x N-type for LoRa
Antenna	High gain fiber antenna for LoRa Cellular, GNSS, WiFi antennas within enclosure
Ethernet	1 x 10/100 Ethernet port
GNSS	BeiDou, Galileo, GLONASS, GPS, QZSS
WiFi	IEEE 802.11b/g/n
Status indicators	1 x RGB LED for indicate all functions
Other interfaces	1 x USB for debug (type-C)
Power	38-58V DC by isolated EEE802.3af compliant PoE
Power backup	SuperCAP backup for last message and clean shutdown
Operating temperature	-25°C to 75°C
Housing	IP67 aluminium housing resistant to all weather conditions
Dimensions	220mm x 122mm x 70mm (without antenna and clamp)
Weight	920g (without antenna and clamp)

SOFTWARE AND FUNCTIONS

Operating system	OpenWRT Linux with LoRaWAN® gateway system based on Chirpstack
Inbuilt LNS	Chirpstack internal server and NodeRED
VPN and tunneling	OpenVPN and other VPN providers
Cloud solution	LoRaWAN® compatible servers

Data Interfaces & I/O Expanders

4-20mA industrial interfaces I/O expanders



PLANT IRRIGATION AND LIGHTING SYSTEM

Data interfaces are used in order to assure data transfer and convert an incompatible interface into one that is compatible with the rest of the industrial system. We provide interfaces like USB to RS232, 4-20 mA, and others.
I/O expanders are devices that enhance the number of inputs and outputs in a computer, gateway, industrial controller, or PLC so that it can operate more peripherals as the system requires.

ADI-524

Converter for 4-20mA analog input to Modbus RTU over RS485 or USB. It includes an RS485/USB output and 4 opto-isolated analog inputs. Additional isolated 24V power supply for 4-20mA sensors and devices, along with a DIP switch to set the baud rate and address.

ISOLATED ADC
4 x 4-20mA isolated inputs

DUAL INTERFACE
RS485 Modbus and USB

CONFIGURATION
Device address and baudrate via DIP switch

COMPACT SIZE
88mm x 44mm x 35mm

HARDWARE

Input interface	4 x 4-20mA isolated inputs
Conversion resolution	16bit
Output interface	Modbus RTU and Modbus RTU by inbuilt USB to serial converter
Baudrate	9600, 19200, 38400, 115200
Modbus address range	1-15
Configuration	6 way DIP switch for serial baudrate and Modbus address
Status indicators	4 x 4-20mA, 1 x serial data, 1 x power (dual colour)
Other option	24V DC isolated power for 4-20mA sensors
Power	8-36V DC with reverse polarity protection, 8-24V AC or 5V from USB port
Operating temperature	-25°C to 75°C
Housing	Aluminium with DIN rail mounting option
Dimensions	88mm x 55mm x 35mm
Weight	130g

SOFTWARE AND FUNCTIONS

Operating system	Embedded system
Operating system support USB	Linux, Windows, MAC OS
Drivers	USB to serial driver to use by USB interface
Operating system support by serial Modbus RTU	All type PLC, gateways, computers etc. with Modbus RTU masters functionality.

AMB-12I-40

Input/output expander with Modbus RTU interface. It has 12 isolated digital inputs with range up to 30VDC and 4 relay NO output with up to 230V/5AC and 30V/5A DC range. The use of DC/DC technology for supplying relays enables a wide range of supply voltage.

DIGITAL INPUT

12 isolated inputs with LED indicators

RELAY OUTPUT

4 relay outputs with LED indicators

CONFIGURATION

Device address and baudrate via DIP switch

WIDE POWER SUPPLY

8-36V DC or 8-24V AC

HARDWARE

Digital inputs	12 x opto-isolated digital input up to 30V DC
Outputs	4 x NO relay output 5A 230V or 5A 30V DC
Serial interface	1 x RS485
Baudrate	2400, 4800, 9600, 14400, 19200, 28800, 38400, 57600, 115200, 128000
Modbus address range	1 ~ 255
Configuration	4 way DIP switch for serial baudrate and 8 way DIP switch for Modbus address
Status indicators	12 x input, 4 x output, 2 x serial data, 1 x power, 1 x activity
Other option	120 Ohm RS485 termination jumper
Power	8-36V DC with reverse polarity protection or 8-24V AC
Operating temperature	-10°C to 75°C
Housing	PVC DIN rail mount
Dimensions	120mm x 90mm x 50mm
Weight	160g

SOFTWARE AND FUNCTIONS

Operating system support	All Modbus masters

AMB-4I-4O

Input/output expander with Modbus RTU interface. It has 4 isolated digital inputs with range up to 30VDC and 4 relay NO output with up to 230V/5AC and 30V/5A DC range. The use of DC/DC technology for supplying relays enables a wide range of supply voltage.

DIGITAL INPUT

4 isolated inputs with LED indicators

RELAY OUTPUT

4 relay outputs with LED indicators

CONFIGURATION

Device address and baudrate via DIP switch

WIDE POWER SUPPLY

8-36V DC or 8-24V AC

HARDWARE

Digital inputs	4 x opto-isolated digital input up to 30V DC
Outputs	4 x NO relay output 5A 230V or 5A 30V DC
Serial interface	1 x RS485
Baudrate	2400, 4800, 9600, 14400, 19200, 28800, 38400, 57600, 115200, 128000
Modbus address range	1 ~ 255
Configuration	4 way DIP switch for serial baudrate and 8 way DIP switch for Modbus address
Status indicators	4 x input, 4 x output, 2 x serial data, 1 x power, 1 x activity
Other option	120 Ohm RS485 termination jumper
Power	8-36V DC with reverse polarity protection or 8-24V AC
Operating temperature	-10°C to 75°C
Housing	PVC DIN rail mount
Dimensions	80mm x 90mm x 50mm
Weight	110g

SOFTWARE AND FUNCTIONS

Operating system support	All Modbus masters

AMB-8I

Digital input expander to Modbus RTU with high voltage range of 60V AC to 500V AC. The input also accepts DC voltage within the same range. Used when it is necessary to detect the presence of high voltage in electrical panels. The power supply accepts either DC or AC voltage and has a range of 8 to 36V.

INPUTS

8 inputs capable up to 500V AC or DC

LED INDICATORS

8 input presence indicators

CONFIGURATION

Device address and baudrate via DIP switch

WIDE POWER SUPPLY

8-36V DC or 8-24V AC

HARDWARE

Digital inputs	8 x opto-isolated digital inputs 60 to 500V AC or DC
Serial interface	1 x RS485
Baudrate	2400, 4800, 9600, 14400, 19200, 28800, 38400, 57600, 115200, 128000
Modbus address	1 ~ 255
Configuration	4 way DIP switch for serial baudrate and 8 way DIP switch for Modbus address
Status indicators	8 x input, 2 x serial data, 1 x power, 1 x activity
Other option	120 Ohm RS485 termination jumper
Power	8-36V DC with reverse polarity protection or 8-24V AC
Operating temperature	-10°C to 75°C
Housing	PVC DIN rail mount
Dimensions	80mm x 90mm x 50mm
Weight	100g

SOFTWARE AND FUNCTIONS

Operating system support	All Modbus masters

AMB-16I

Digital input expander to Modbus RTU with high voltage range of 60V AC to 500V AC. The input also accepts DC voltage within the same range. Used when it is necessary to detect the presence of high voltage in electrical panels. The power supply accepts either DC or AC voltage and has a range of 8 to 36V.

INPUTS

16 inputs capable up to 500V AC or DC

LED INDICATORS

8 input presence indicators

CONFIGURATION

Device address and baudrate via DIP switch

WIDE POWER SUPPLY

8-36V DC or 8-24V AC

HARDWARE

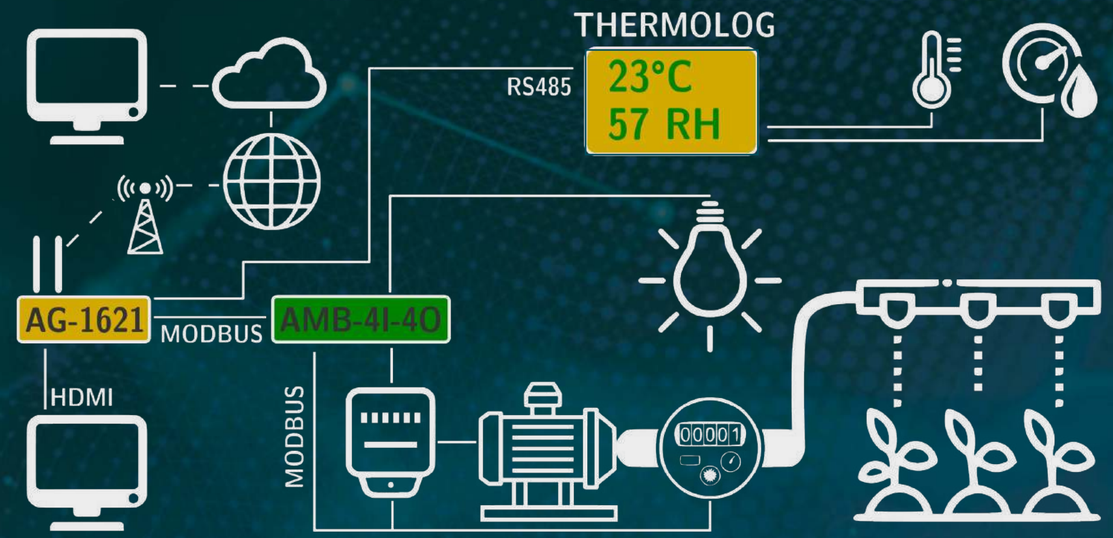
Digital inputs	16 x opto-isolated digital input 60 to 500V AC or DC
Serial interface	1 x RS485
Baudrate	2400, 4800, 9600, 14400, 19200, 28800, 38400, 57600, 115200, 128000
Modbus address	1 ~ 255
Configuration	4 way DIP switch for serial baudrate and 8 way DIP switch for Modbus address
Status indicators	16 x input, 2 x serial data, 1 x power, 1 x activity
Other option	120 Ohm RS485 termination jumper
Power	8-36V DC with reverse polarity protection or 8-24V AC
Operating temperature	-10°C to 75°C
Housing	PVC DIN rail mount
Dimensions	120mm x 90mm x 50mm
Weight	140g

SOFTWARE AND FUNCTIONS

Operating system support	All Modbus masters

Other Industrial Products

Data loggers
Sensors
Displays
Power supply
and other products



PLANT IRRIGATION AND LIGHTING SYSTEM

Find a wide variety of other products offered by Atreyo, such as data loggers, relays, various types of sensors, industrial displays, power supply, etc. dedicated to industrial solution and infrastructure management.

THERMOLOG V3-T

An application-specific temperature with data log storage in non-volatile memory. For applications that require visual temperature inspection. The range of the permitted temperature can be set using on-screen menu. It has feature to set alarm for threshold temperature range.

LOGGING
1.5 years log in internal memory

USB PORT
Host USB for log file download

BIG COLOUR DISPLAY
320 x 160 mm, 7 colours

ALARM
Relay output for external alarm buzzer/light

HARDWARE

Display size	320 x 160mm
Display type	RGB LED SMD type, high brightness, 7 colours
Measurement range	-50°C to 120°C
Resolution	0.1°C
Accuracy	±0.5°C from -10°C to +85°C
Serial	1 x RS485 - Modbus slave
Temperature alarm	NO/NC relay output triggered when temperature falls outside permitted range
Alarm output	NO/NC potential free up to 230V and 3A load
Status indicators	1 x power, 1 x activity
Power	8-36V DC
RTC battery	CR2032 user replaceable
Operating temperature	-10°C to 75°C
Housing	Aluminium powder coated
Dimensions	325mm x 165mm x 46mm
Weight	1100g

SOFTWARE AND FUNCTIONS

LOG storage	More than 1.5 year, older data is overwritten
LOG resolution	1 minute
View mode	Temperature and date in fix, scrolling and two lines display mode
Thermolog software	Thermometer - dedicated software for view and export data to CSV or Excel
Configuration	Push switches with on-display menu
Log backup	Download to an USB storage

APS-10W-O

Power supply specifically designed for usage in IoT, industrial controls, gateways, electrical panel controllers, and other applications that require constant power sources. Work with single, dual and three phase connection make ideal for critical equipment. This model offers 230V phase selector output for powering 230V devices like energy meters etc.

PHASE SELECTOR

Single 230V out for auxiliary supply

WIDE VOLTAGE RANGE

85V to 440V AC

INDICATORS

4 LED status indicators with output selector satus

COMPACT SIZE

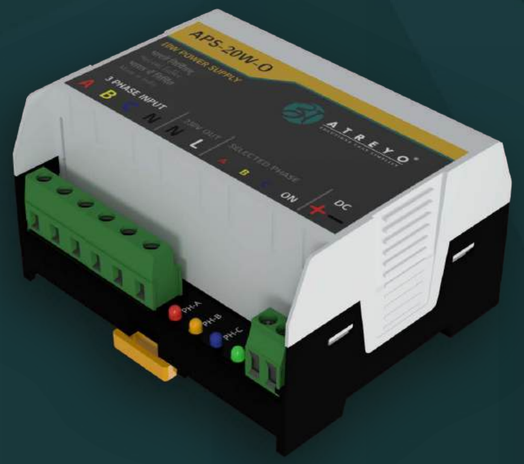
Compact design DIN rail mounting

HARDWARE

Power input	85V AC to 440V AC (PH to N), 85V AC to 520V AC (PH to PH)
Output Voltage	5V, 12V or 24V DC (depends on product variant)
Output power	10W
Input protection	Fuse and MOV for every phase
Over-current protection	≥110% Io, self-recovery
Short circuit protection	Hiccup, continuous, self-recovery and output fuse
Voltage accuracy	±5.0 %
Line regulation	±1.5 %
Phase selecetor out	230V single phase, 50W maximum
Status indicators	1 power out, 3 x current selected phase in phase selector
Operating temperature	-25 ~ 70°C
Housing	Industrial grade ABS for DIN rail mounting
Dimensions	90mm x 75mm x 50mm
Weight	130g

FUNCTIONS

Phase selector	Single phase output selector for powering additional devices such as power meters



APS-20W-O

20W power supply specifically designed for usage in IoT, industrial controls, gateways, electrical panel controllers, and other applications that require constant power sources. Work with single, dual and three phase connection make ideal for critical equipment. This model offers 230V phase selector output for powering 230V devices like energy meters etc.

PHASE SELECTOR

Single 230V out for auxiliary supply

WIDE VOLTAGE RANGE

85V to 440V AC

INDICATORS

4 LED status indicators with output selector satus

COMPACT SIZE

Compact design DIN rail mounting

HARDWARE

Power input	85V AC to 440V AC (PH to N), 85V AC to 440V AC (PH to PH)
Output Voltage	5V, 12V or 24V DC (depends on product variant)
Output power	20W
Input protection	Fuse and MOV for every phase
Over-current protection	≥150% Io, self-recovery
Short circuit protection	Hiccup, continuous, self-recovery
Voltage accuracy	±2.0 %
Line regulation	±1.0 %
Phase selecetor out	230V single phase, 50W maximum
Status indicators	1 power out, 3 x current selected phase in phase selector
Operating temperature	-25 ~ 70°C
Housing	Industrial grade ABS for DIN rail mounting
Dimensions	90mm x 75mm x 50mm
Weight	190g

FUNCTIONS

Phase selector	Single phase output selector for powering additional devices such as power meters

Computer Comparison

	Computers / Gateways					
Product Features	**AIC-1720**	**AIC-1708**	**AG-1629**	**AG-1621**	**AG-3303**	**AG-6401**
CPU (MHz)	1500	1500	960	960	1200	1200
CPU core	4	4	4	4	4	4
RAM	2/4GB	2/4GB	512 MB	512MB	1/4GB	1/2GB
Flash/eMMC/Storage	16/64GB	16/64GB	8-64GB	8GB	8-64GB	8/16GB
HDD/SSD	SSD SATA	SSD M.2				
4G/LTE		✓	✓	✓	✓	✓
3G		GL model	GL model	GL model	GL model	
2G		✓	✓	✓	✓	✓
SIM card slots		1	2	1	2	1
Ethernet ports	1	1	2	1	2	1
Ethernet (Mbps)	10/100/1000	10/100/1000	10/100	10/100	10/1000	10/100
PoE			✓	Passive	✓	
WiFi standard	802.11a/b/g/n/ ac/ax	802.11a/b/g/n/ ac/ax	802.11a/b/g/n/ ac (WL1)		802.11a/b/g/n/ ac (WL1)	802.11b/g/n
WiFi hotspot	✓	✓	✓		✓	✓
GNSS	✓	✓	✓	✓	✓	✓
RS485	2	2	2 x isolated	1 x isolated	2 x isolated	1
RS232				1 x isolated		
Digital inputs			4 x isolated	2 x isolated	4 x isolated	1 x isolated
Digital outputs			4 x optomos	1 x relay	4 x optomos	1 x optomos
Audio out	✓	✓				
Bluetooth	✓	✓	(WL1/2)		(WL1/2)	✓
USB	4	4	2	1	2	1
HDMI	1 (4K)	1 (4K)		1		1 (4K)
MicroSD card	✓	inside	✓	✓	✓	inside
Battery backup						✓
superCAP backup						
Power supply (V)	8-36	8-36	12-65	8.36	8-36	8-36
Enclosure material	aluminium	aluminium	aluminium	aluminium	aluminium	aluminium
DIN Rail mounting	✓	✓	✓	✓	✓	✓
Earthing terminal	✓	✓	✓	✓	✓	✓
RMS support	✓	✓		✓	✓	
Operating system	Linux	Linux	Linux	Linux	Linux	Linux
Custom scripts	✓	✓	✓	✓	✓	✓

Legend: blank - not applicable/available, ✓ - available, optional - in selected product versions

IoT Gateways Comparison

	IoT Gateways		LoRa WAN®
Product Features	**AG-702**	**AG-207**	**ALWG-1638**
CPU (MHz)	580	580	960
CPU core	1	1	4
RAM	256MB	256MB	512MB
Flash/eMMC/Storage	64+512MB	64+512MB	8GB
4G/LTE	✓	✓	✓
3G	GL model	GL model	optional
2G	✓	✓	✓
SIM card slots	2	1	2
LoRa / LoRaWAN ®			✓
Ethernet ports	2	1	1
Ethernet (Mbps)	10/100	10/100	10/100
Passive PoE	✓	✓	✓
WiFi standard	802.11b/g/n	802.11b/g/n	802.11b/g/n
WiFi hotspot	✓	✓	✓
GNSS	✓	✓	✓
RS485	1 x isolated	1	
RS232	1 x isolated		
Digital inputs	2 x isolated	2 x isolated	
Digital outputs	1 x relay		
USB	1 host	1 host	1 debug
HDMI			
microSD card			
Battery backup			
SuperCAP backup			✓
Power supply (V)	12-60	8-36	17-60
Enclosure material	aluminium	aluminium	aluminium
DIN Rail mounting	✓	✓	
Earthing terminal	✓	✓	
Atra RMS support	✓	✓	
Operating system	openWRT	openWRT	openWRT
Custom scripts	✓	✓	✓
VPN support	✓	✓	✓

Legend: blank - not applicable/available, ✓ - available, optional - in selected product versions

Protocol Gateways Comparison

	Protocol Gateways				
Product Features	**AG-1115**	**AG-201**	**AG-821**	**AG-822**	**AG-831**
CPU (MHz)	500	500	180	180	180
CPU core	1	1	1	1	1
RAM	16MB	16MB	256kB	256kB	256kB
Flash/eMMC/Storage			8MB	8MB	8MB
4G/LTE	✓	✓	✓	✓	✓
3G					
2G	✓	✓	✓	✓	✓
SIM card slots	2	1	1	1	1
Ethernet ports			1	1	1
Ethernet (Mbps)			10/100	10/100	10/100
Passive PoE			✓	✓	✓
GNSS	✓			✓	✓
RS485	1 x isolated	1	1 x isolated		1 x isolated
RS232				1 x isolated	
Digital inputs	5 x isolated		2 x isolated	2 x isolated	2 x isolated
Digital outputs	2 x relay				3 x relay
Analog inputs	1				
USB	1 x device	1 x device	1 x host	1 x host	1 x host
microSD card	inside				
Battery backup	optional				
superCAP backup	optional		optional	optional	optional
Power supply (V)	8-36	8-36	8-36	8-36	8-36
Enclosure material	aluminium	aluminium	aluminium	aluminium	aluminium
DIN Rail mounting	✓	✓	✓		✓
Earthing terminal	✓	✓	✓		✓
Atra RMS support					
Operating system	embedded	embedded	embedded	embedded	embedded
Custom scripts	custom firmware				

Legend: blank - not applicable/available, ✓ - available, optional - in selected product versions

REV-0.1

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