



**A T R E Y O**®

SOLUTIONS THAT SIMPLIFY



**INDUSTRIAL PRODUCTS**

# Atreyo – Solutions That Simplify

## ABOUT ATREYO

Atreyo Research and Development LLP is a technology company that designs and manufactures electronics products and software solutions in the field of industrial automation, remote monitoring and infrastructure projects. We have in-house hardware and software 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.

## INFRASTRUCTURE PRODUCTS AND SOLUTIONS

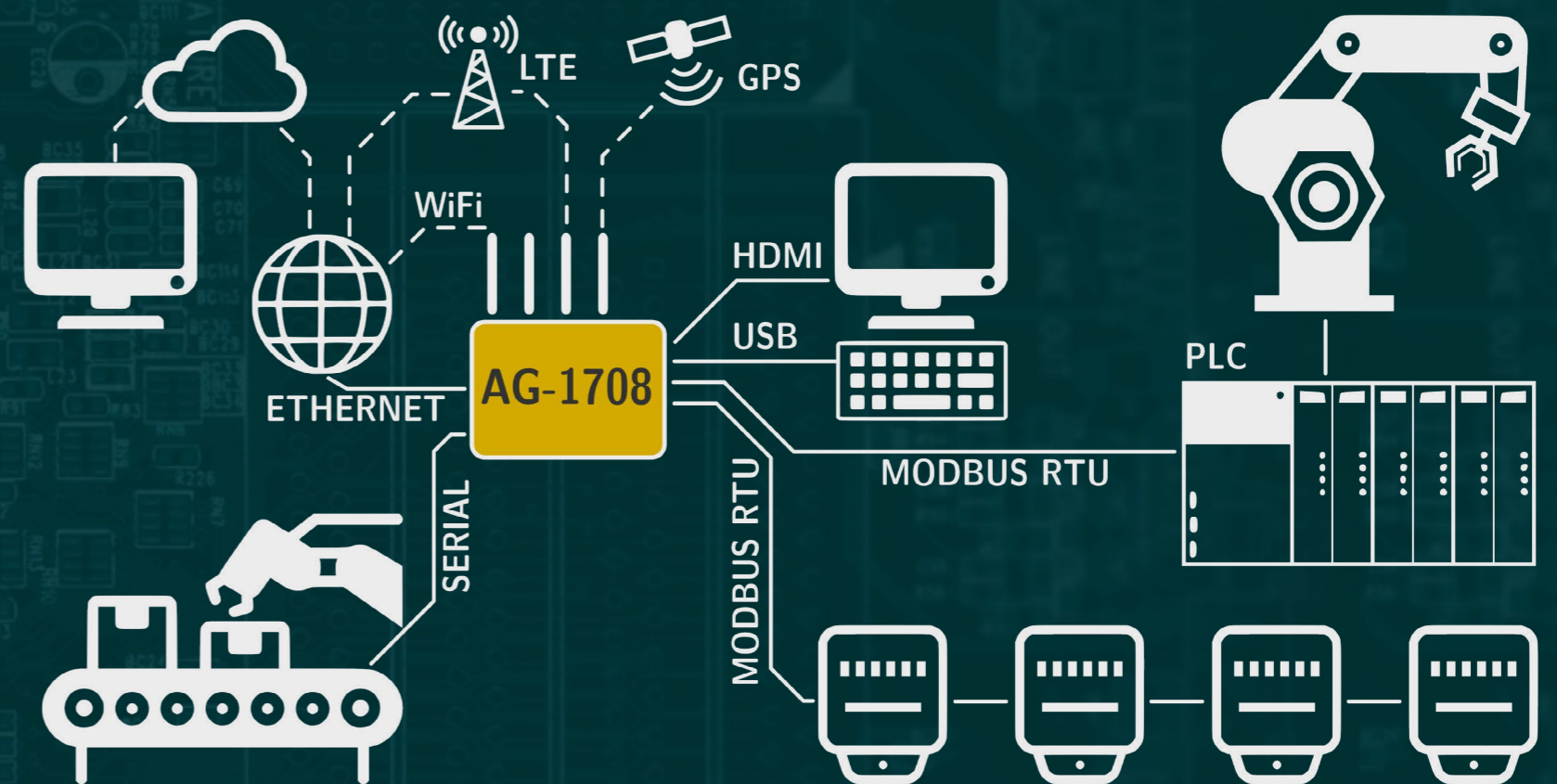
Our commitment to betterment shines through in every aspect of what we do. Our innovative solutions and products help lots of different places, like roads and trains, energy networks, street lights, farms, parking spots, buses, and more. From optimizing transportation networks and ensuring efficient 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  
IoT gateways



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 sets our computers apart is their fanless design, providing uninterrupted, long-term performance. These cutting-edge computers are a perfect fit for a wide spectrum of applications. Whether it's serving as a robust machine controller or a high-performing IoT gateway for remote management and monitoring, our computers excel in various domains, including ATCS, ITMS, IIoT, and smart cities projects.



## AG-1701

Multipurpose industrial computer with inbuilt SSD/HDD for data storage. It is based on quad core ARM Cortex-A53 64bit processor. The LTE module is in standard mini PCIe type and can be changed according to customer needs.

### CONNECTIVITY

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

### INTERNAL STORAGE

Internal SATA SSD or HDD up to 2TB 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 or HDD up to 2TB
Memory	2/4GB RAM
Cellular	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/HDD, 1 x power
Power	8-36V DC with reverse polarity protection
Operating temperature	-20°C to 75°C
Housing	Aluminium with DIN rail mounting option
Dimensions	135mm x 168mm x 38mm
Weight	800g

## SOFTWARE AND FUNCTIONS

Operating system	Ubuntu
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



# 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

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
Cellular	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
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-1612

Multipurpose industrial IoT gateway / industrial computer based on quad core powerful ARM processor. For edge computing. This computer supports multiple distributions of Linux systems like Raspberry Pi OS, Debian, Ubuntu and many other. We also provide OpenWRT compatybility.

### CONNECTIVITY

LTE, GSM, WiFi, Ethernet, GNSS

### SYSTEM

Debian, Raspberry Pi OS, OpenWRT

### INTERFACES

RS485, RS232, 2x inputs, relay output

### POWER BACKUP

Up to 4h inbuilt battery backup

## HARDWARE



CPU	Quad core ARM Cortex-A7 processor
Storage	8/16/32/64 GB eMMC, up to 256GB microSD
Memory	512MB RAM
Cellular	LTE, GSM
SIM	1 x MicroSIM
Antenna connector	1 x SMA for cellular, 1 x SMA for GPS, 1 x SMA for WiFi
Ethernet	2 x 10/100 Ethernet port
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 Inputs, 1 x digital relay output
Other	2 x USB, 1 x HDMI
Status indicators	4 x cellular signal strength, 1 x RS232, 1 x RS485, 1 x digital linput, 1 x digital output, 1 x WiFi, 2 x LTE, 1 x activity
Power	12-65V DC with reverse polarity protection, PoE
Power backup	Internal up to 4h battery backup (optional)
Operating temperature	-25°C to 75°C
Housing	Aluminium with DIN rail mounting option
Dimensions	135mm x 136mm x 38mm
Weight	700g

## SOFTWARE AND FUNCTIONS

Operating system	Raspberry Pi OS, Debian, OpenWRT
Programing 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 quad core powerful ARM processor. For edge computing and supports multiple distributions of Linux systems like Raspberry Pi OS, Debian and also support OpenWRT.

### CONNECTIVITY

LTE, GSM, Ethernet, GNSS

### SYSTEM

Raspberry Pi OS, Debian, OpenWRT

### 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	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	Raspberry Pi OS, Debian, OpenWRT
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

# HARDWARE



CPU	Quad core 64-bit Cortex-A53 ARM processor, 1.2GHz
Storage	16GB eMMC
Memory	2GB RAM
Cellular	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

# 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

LTE, GSM, Ethernet, WiFi, Bluetooth, GNSS

## SYSTEM

Ubuntu

## INTERFACES

RS485, isolated input, isolated output

## POWER BACKUP

Optional up to 1h internal battery backup

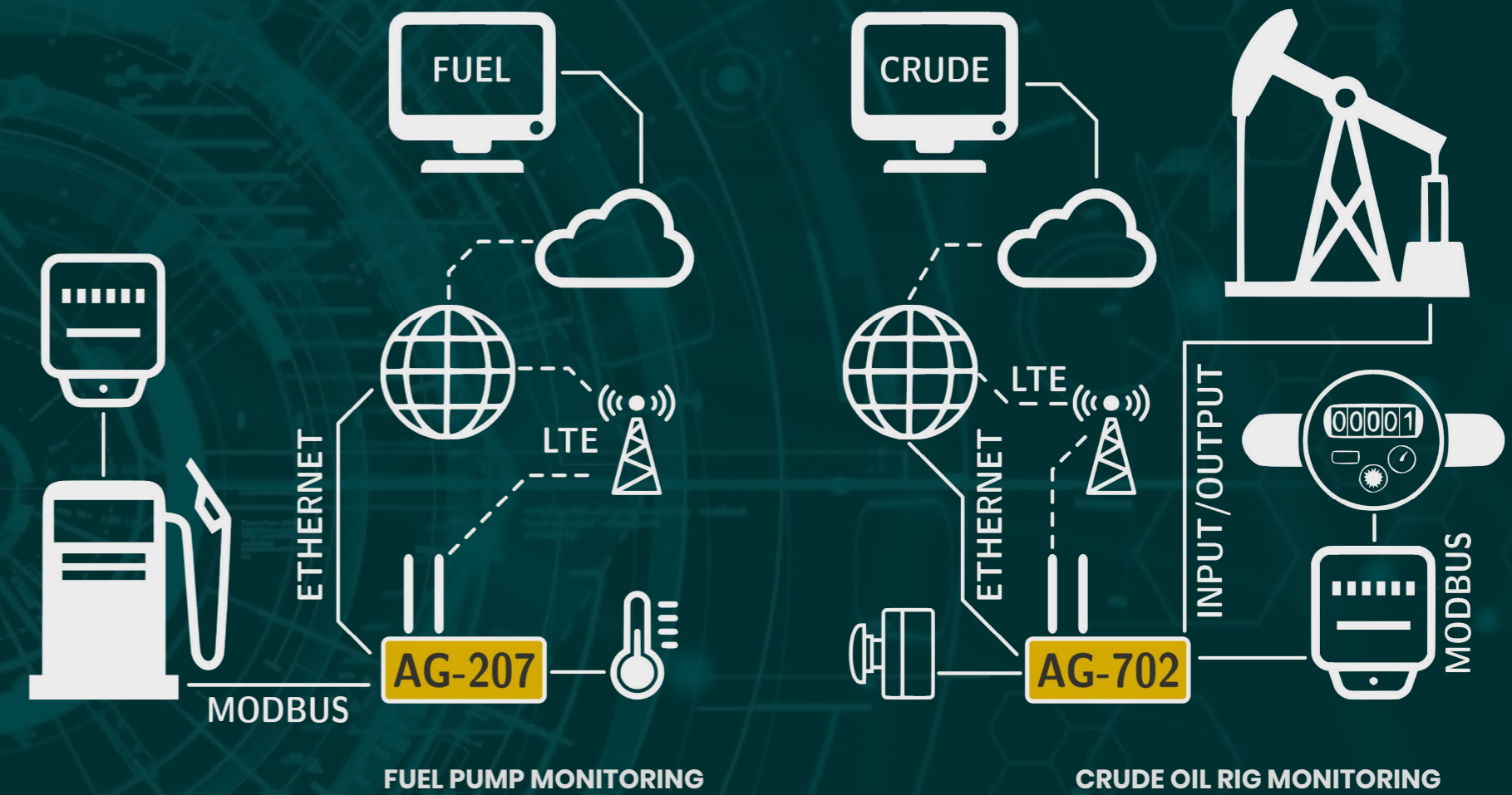
# SOFTWARE AND FUNCTIONS

Operating system	Ubuntu
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



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-702

With OpenWRT gain access to an expansive repository of over 6000 ready to use applications, This cutting-edge gateway features opto-isolated RS485 and RS232 ports, with two digital inputs and a relay output. Boasting enhanced built-in memory and RAM, the gateway unlocks limitless programming potential, empowering IOT projects like never before.

### CONNECTIVITY

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 MIPS processor
Storage	32MB+512MB ExtRoot support (overlay)
Memory	256MB RAM
Cellular	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, one 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 serial (or custom use), 1 x connectivity, 1 x activity, 1 x WiFi, 1 x output, 2 x input
Power	12-60V 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 87mm x 35mm
Weight	240g

## SOFTWARE AND FUNCTIONS

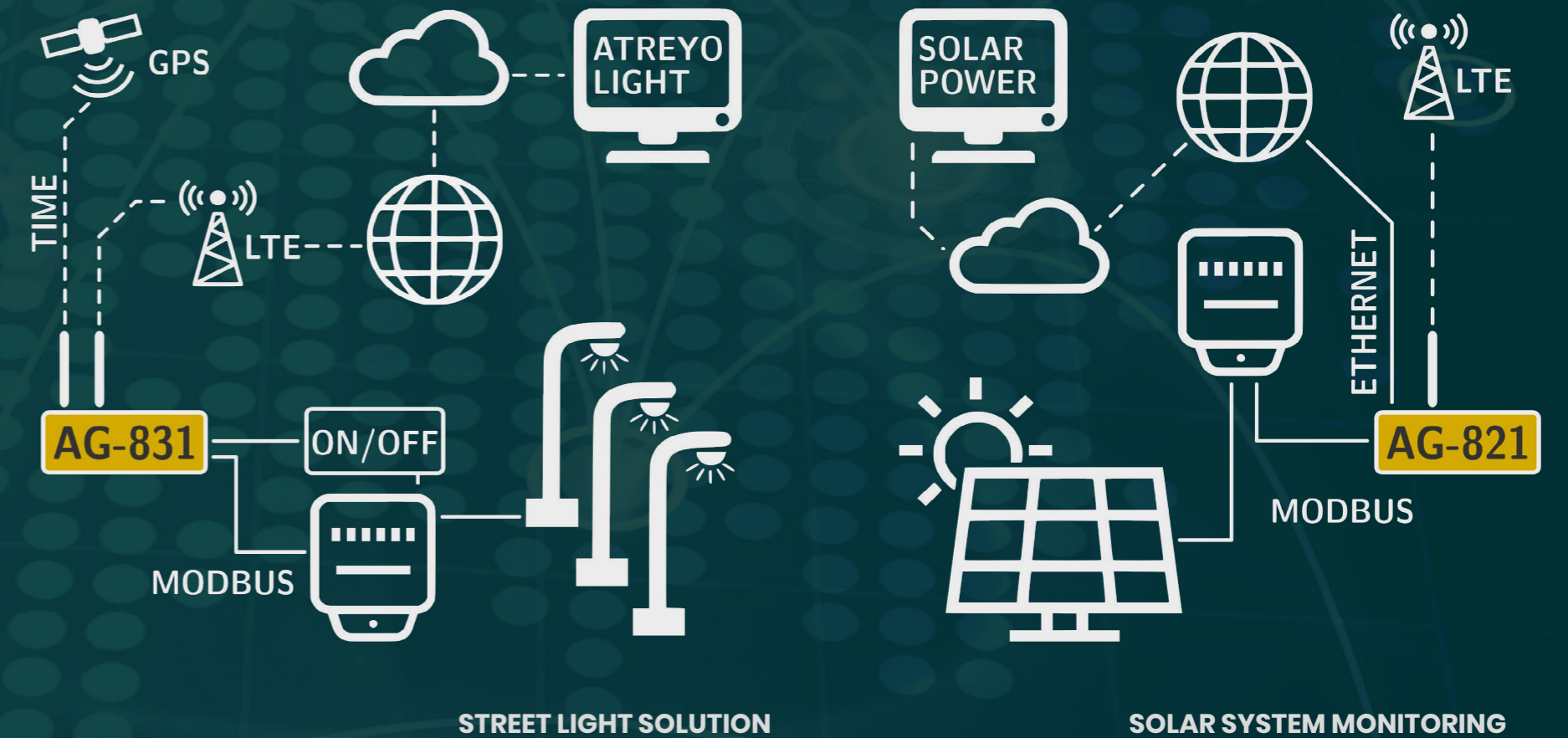
Operating system	OpenWRT 23.05, Kernel 5.15.71, Atreyo Environment V1.01.02
Programming language	Lazarus, C, C++, java, php, html, python, sql etc.
Network protocol support	TCP, UDP, IPv4, IPv6, ICMP, NTP, DNS, HTTP(S), FTP, SMTP, SSLv3, TLS 1.3, ARP, PPP, DHCP, Telnet
VPN and tunneling	OpenVPN, OpenConnect, 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 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

LTE, GSM

### INTERFACE

RS485

### SMS CONTROL

Alerts, restart, configuration

### CONFIGURATION

Simple and easy configuration by dedicated application or SMS

## HARDWARE



CPU	ARM processor 500MHz
Storage	64MB
Memory	128MB RAM
Cellular	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)

## PROTOCOL GATEWAYS



# 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 LTE/GPRS communication with SMS support.

### CONNECTIVITY

LTE, GSM, GNSS

### INTERFACES

4 x input, 1 x AC detection, 1 x analog input, isolated RS485, 2 x relay output

### POWER BACKUP

Optional inbuilt battery backup

### CUSTOMISATION

Open to custom firmware development

## HARDWARE



CPU	ARM processor 500MHz
Storage	64MB and optional microSD card
Memory	128MB RAM
Cellular	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 Inputs, 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)

## PROTOCOL GATEWAYS



# 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

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	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

## PROTOCOL GATEWAYS



# 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 astronomical 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

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



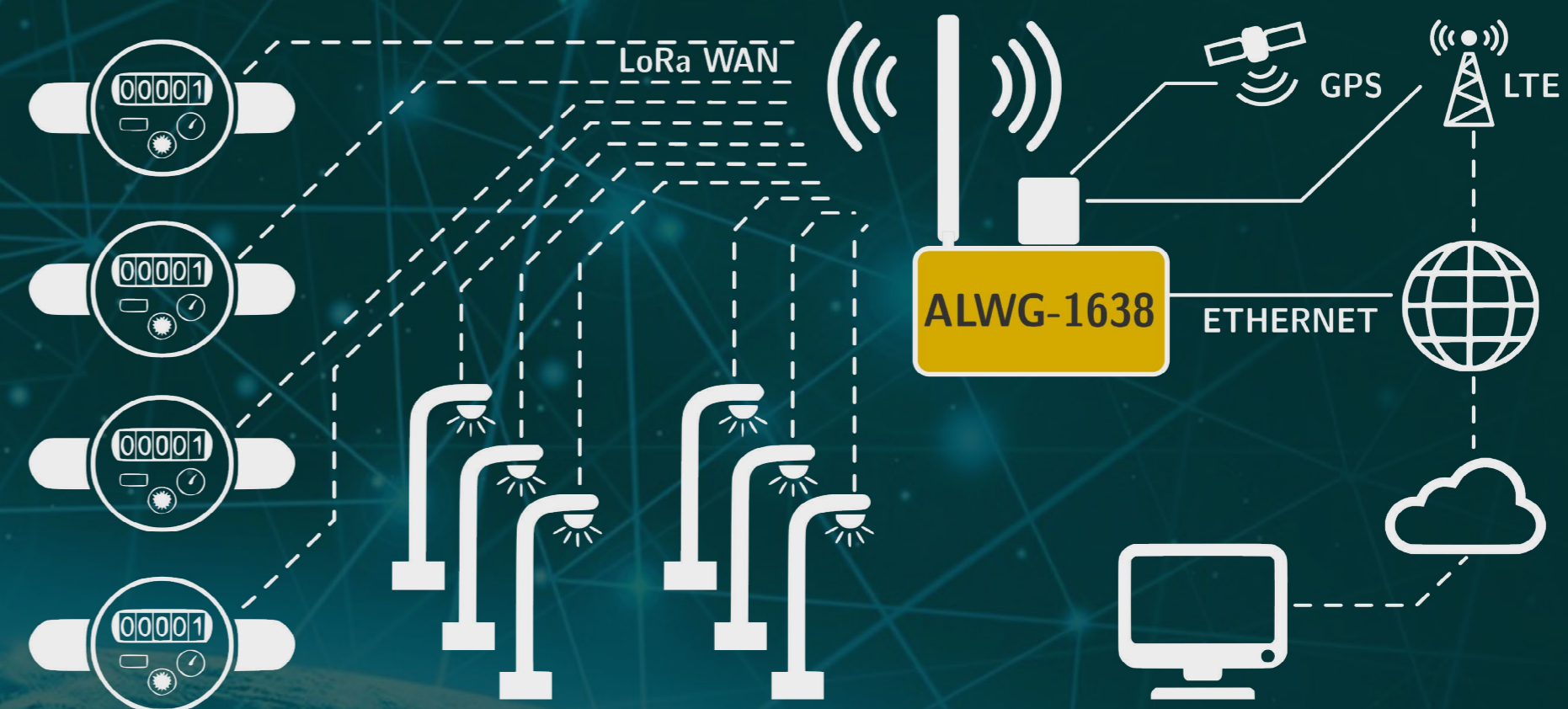
CPU	ARM Cortex-M4
Storage	8MB
Cellular	LTE, GSM
SIM	1 x MicroSIM
Antenna connector	1 x SMA for cellular, 1 x SMA for GNSS
Ethernet	1 x 10/100 Ethernet port
GNSS	GPS, BDS, Galileo, GLONASS, QZSS
Serial	1 x opto-isolated RS485
Input/output	2 x isolated digital Inputs, 3 x relay outputs controlled by server, 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

LTE, GSM, WiFi, Ethernet, GNSS

## POWER BACKUP

SuperCAP backup for power failure message

## OUTDOOR DESIGN

Aluminium die casting IP67 enclosure

# HARDWARE



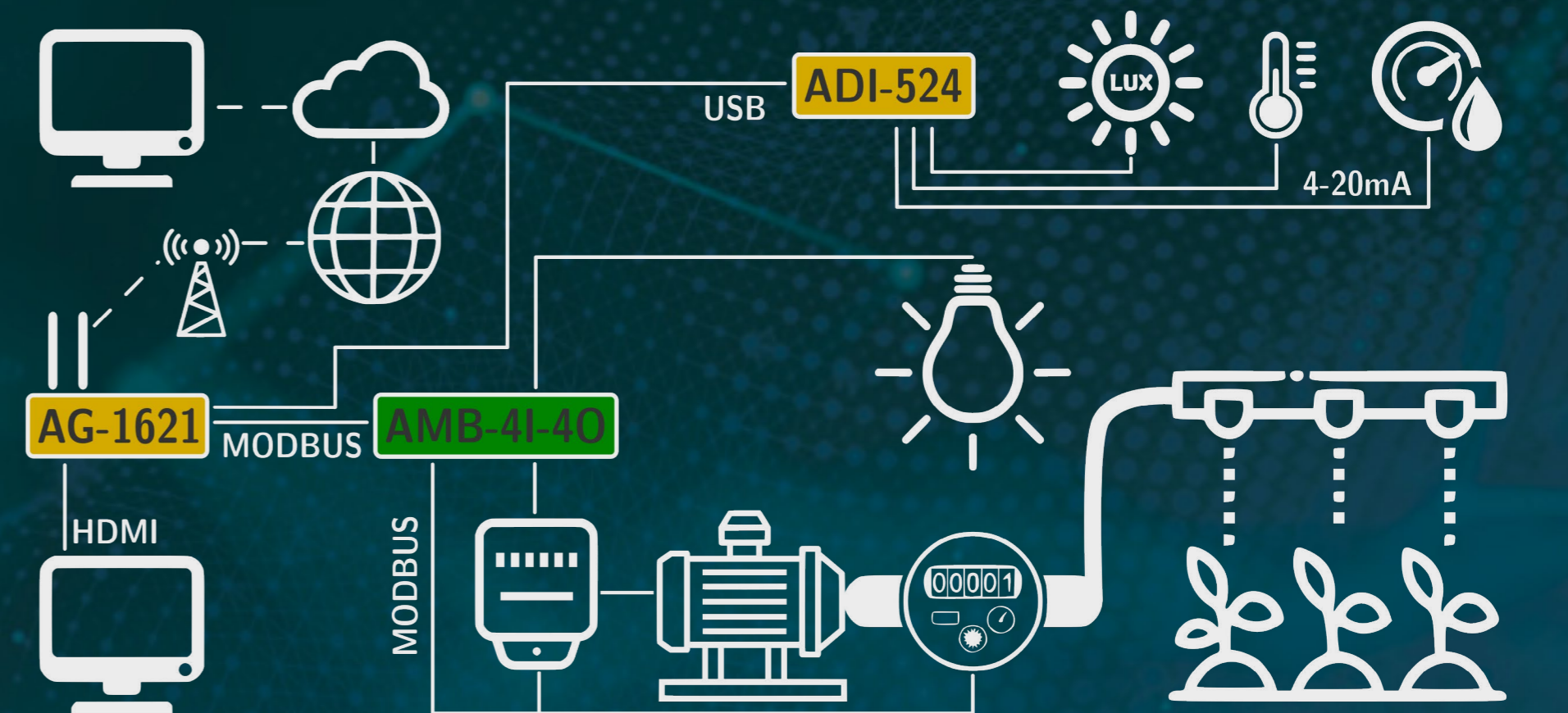
CPU	Quad core ARM Cortex-A7 processor
Storage	8GB eMMC
LoRaWAN®	LoRaWAN® Class A/B/C, 8 x 8 channels LoRa packet detectors
LoRaWAN® RF	TX power up to 27 dBm, RX sensitivity down to -139 dBm
Cellular	LTE, GSM (3G depend on product variant)
SIM	2 x nanoSIM
Antenna connector	1 x N-type for LoRa
Antenna	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	17-60V DC by isolated 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
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 44mm x 35mm
Weight	130g

## SOFTWARE AND FUNCTIONS

Operating system	Embedded system
Device compatibility	Linux, Windows, MAC OS
Drivers	USB to serial driver to use by USB interface



## 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
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# AMB-4I-40

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
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## 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
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## 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



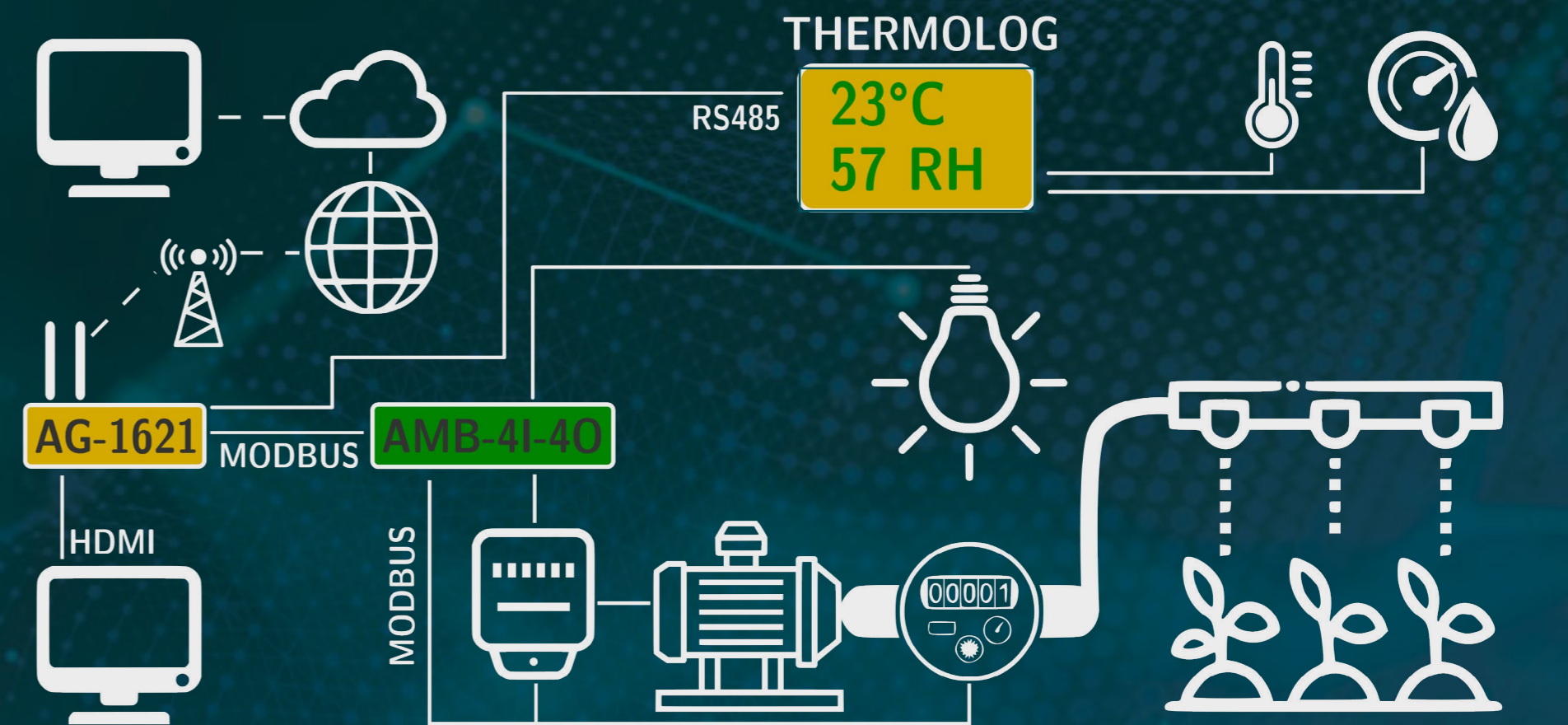
Digital inputs	16 x opto-isolated digital input 60 to 500V AC or DC
Serial interface	1 x RS485
Baudrate	2400, 4800, 9600, 14400, 19200, 28800, 38400, 57600, 115200, 128000
Modbus address	1 ~ 255
Configuration	4 way DIP switch for serial baudrate and 8 way DIP switch for Modbus address
Status indicators	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
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# 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-0

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 status

### 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% I <sub>o</sub> , self-recovery
Short circuit protection	Hiccup, continuous, self-recovery and output fuse
Voltage accuracy	±5.0 %
Line regulation	±1.5 %
Phase selector 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
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# COMPUTER COMPARISON

Computers / Gateways						
Product Features	AG-1701	AIC-1708	AG-1612	AG-1651	AG-1621	AG-6401
<b>CPU (MHz)</b>	1500	1500	960	960	960	1500
<b>CPU core</b>	4	4	4	4	4	4
<b>RAM</b>	2/4GB	2/4GB	512 MB	512MB	512MB	1 or 2GB
<b>Flash/eMMC/Storage</b>	16/64GB	16/64GB	8GB	8-32GB	8GB	8-16GB
<b>HDD/SSD</b>	SSD SATA	SSD M.2				
<b>4G/LTE</b>	✓	✓	✓	✓	✓	✓
<b>3G</b>	optional	optional			optional	
<b>2G</b>	✓	✓	✓	✓	✓	✓
<b>SIM card slots</b>	1	1	1	2	1	1
<b>Ethernet ports</b>	1	1	2	2	1	1
<b>Ethernet (Mbps)</b>	10/100/1000	10/100/1000	10/100	10/100	10/100	10/100
<b>Passive PoE</b>			✓	✓	✓	
<b>WiFi standard</b>	802.11a/b/g/n/ ac/ax	802.11a/b/g/n/ ac/ax	802.11b/g/n	802.11b/g/n		802.11b/g/n
<b>WiFi hotspot</b>	✓	✓	✓	✓		✓
<b>GNSS</b>	✓	✓	✓	✓	✓	✓
<b>RS485</b>	2	1	1 x isolated	2 x isolated	1 x isolated	1
<b>RS232</b>			1 x isolated	4 x isolated	1 x isolated	
<b>Digital inputs</b>			2 x isolated	7 x isolated	2 x isolated	1 x isolated
<b>Digital outputs</b>			1 x relay	4 x relay	1 x relay	1 x optomos
<b>Analog inputs</b>				5x isolated		
<b>Bluetooth</b>	✓	✓		✓		✓
<b>USB</b>	4	4	2	3	1	1
<b>HDMI</b>	1 (4K)	1 (4K)	1	1	1	1 (4K)
<b>MicroSD card</b>	inside	inside	✓	✓	✓	inside
<b>Battery backup</b>			✓	✓		✓
<b>superCAP backup</b>						
<b>Power supply (V)</b>	8-36	8-36	12-65	12-65	8-36	8-36
<b>Enclosure material</b>	aluminium	aluminium	aluminium	aluminium	aluminium	aluminium
<b>DIN Rail mounting</b>	✓	✓	✓	✓	✓	✓
<b>Earthing terminal</b>	✓	✓	✓	✓	✓	✓
<b>RMS support</b>	✓	✓			✓	
<b>Operating system</b>	Linux	Linux	Linux	Linux	Linux	Linux
<b>Custom scripts</b>	✓	✓	✓	✓	✓	✓

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
<b>CPU (MHz)</b>	580	580	960
<b>CPU core</b>	1	1	4
<b>RAM</b>	256MB	256MB	512MB
<b>Flash/eMMC/Storage</b>	32+512MB	32+512MB	8GB
<b>4G/LTE</b>	✓	✓	✓
<b>3G</b>	optional	optional	optional
<b>2G</b>	✓	✓	✓
<b>SIM card slots</b>	2	1	2
<b>LoRa / LoRaWAN®</b>			✓
<b>Ethernet ports</b>	2	1	1
<b>Ethernet (Mbps)</b>	10/100	10/100	10/100
<b>Passive PoE</b>	✓	✓	✓
<b>WiFi standard</b>	802.11b/g/n	802.11b/g/n	802.11b/g/n
<b>WiFi hotspot</b>	✓	✓	✓
<b>GNSS</b>	✓	✓	✓
<b>RS485</b>	1 x isolated	1	
<b>RS232</b>	1 x isolated		
<b>Digital inputs</b>	2 x isolated	2	
<b>Digital outputs</b>	1 x relay		
<b>USB</b>	1	1	1 debug
<b>HDMI</b>			
<b>microSD card</b>			
<b>Battery backup</b>			
<b>SuperCAP backup</b>			✓
<b>Power supply (V)</b>	12-60	8-36	17-60
<b>Enclosure material</b>	aluminium	aluminium	aluminium
<b>DIN Rail mounting</b>	✓	✓	
<b>Earthing terminal</b>	✓	✓	
<b>Atra RMS support</b>	✓	✓	
<b>Operating system</b>	openWRT	openWRT	Linux
<b>Custom scripts</b>	✓	✓	✓

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
<b>CPU (MHz)</b>	500	500	180	180	180
<b>CPU core</b>	1	1	1	1	1
<b>RAM</b>	128MB	128MB	256kB	256kB	256kB
<b>Flash/eMMC/Storage</b>	64MB	64MB	8MB	8MB	8MB
<b>4G/LTE</b>	✓	✓	✓	✓	✓
<b>3G</b>					
<b>2G</b>	✓	✓	✓	✓	✓
<b>SIM card slots</b>	2	1	1 or 2	1 or 2	1 or 2
<b>Ethernet ports</b>			1	1	1
<b>Ethernet (Mbps)</b>			10/100	10/100	10/100
<b>Passive PoE</b>			✓	✓	✓
<b>GNSS</b>	✓			✓	✓
<b>RS485</b>	1 x isolated	1	1 x isolated		1 x isolated
<b>RS232</b>				1 x isolated	
<b>Digital inputs</b>	5 x isolated		2 x isolated	2 x isolated	2 x isolated
<b>Digital outputs</b>	2 x relay				3 x relay
<b>Analog inputs</b>	1				
<b>USB</b>	1 x device	1 x device	1 x host	1 x host	1 x host
<b>microSD card</b>	inside				
<b>Battery backup</b>	optional				
<b>superCAP backup</b>	optional		optional	optional	optional
<b>Power supply (V)</b>	8-36	8-36	8-36	8-36	8-36
<b>Enclosure material</b>	aluminium	aluminium	aluminium	aluminium	aluminium
<b>DIN Rail mounting</b>	✓	✓	✓		✓
<b>Earthing terminal</b>	✓	✓	✓		✓
<b>RMS support</b>					
<b>Operating system</b>	embedded	embedded	embedded	embedded	embedded
<b>Custom scripts</b>	custom firmware				

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



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