# TECHNICAL SPECIFICATION

**ATREYO**®
SOLUTIONS THAT SIMPLIFY

## Programmable IoT Gateway with Quad core ARM processor

## AG-1629

### Features

- **Fully programmable Linux environment**
- **Quad core ARM Cortex A7**
- **4G LTE, GSM**
- **Two Ethernet ports**
- **WiFi and luetooth**
- **GNSS**
- **4 opto-isolated digital I/O**
- **Two opto-isolated RS485**
- **Two USB hosts**
- **Wide power supply range**
- **Aluminium enclosure**
- **DIN rail mounting**

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. In Debian under the control of the NodeRED system, it gives unlimited possibilities for easy creation of gateway operation logic. It also has a cellular modem with support for 2 SIM cards. It has two LAN, two isolated RS485 interfaces and four opto-isolated I/Os. It also has a USB type-C port for debugging and a boot source selector.

| Description | Specification |
|---|---|
| **Processor** | |
| **Type** | ARM Cortex-A7 |
| **Number of cores** | Quad core |
| **Clock** | Up to 960Mhz |
| **RAM Memory** | |
| **Memory size** | 512MB DDR3 |
| **Memory speed** | 1066MHz |
| **Storage** | |
| **Internal memory** | 8, 16 or 32GB eMMC |
| **SD card** | One microSD card slot (up to 256Gb) |
| **USB** | |
| **USB port number** | 2 |
| **USB type** | USB 2.0, host with storage support |

| Description | Specification |
|---|---|
| **Connector** | USB type A |
| **Protection** | IEC 61000-4-2 level 4: − 15 kV (air discharge) − 8 kV (contact discharge) |
| **USB overload** | 600mA |
| **Serial RS485** | |
| **Port number** | 2 |
| **Interface Type** | RS485 |
| **Data Rate** | 1200 bps ~ 460800 bps |
| **Signals** | A and B |
| **Connector** | Pluggable push-in |
| **Protection** | Opto-isolated 1.5kV RMS per UL 1577 |
| | IEC 61000-4-2 level 4: − 15 kV (air discharge) |

| Description | Specification |
|---|---|
| | – 8 kV (contact discharge) |
| | Fail-safe receiver for bus open, short and idle |
| **Ethernet** | |
| Port number | 2 |
| Type | 10/100M |
| Ethernet connector | RJ45 with LED indicators |
| PoE | On ETH-1 |
| **WiFi[1]** | |
| WL1 | 2.4Ghz and 5Ghz band |
| WL2 | 2.4Ghz |
| WL3 | 2.4Ghz |
| Antenna connector | SMA female |
| **Bluetooth[2]** | |
| Bluetooth | Only with WL1 and 2 WiFi module |
| **Cellular Modem[3]** | |
| Cellular bands | Refer cellular specification chart |
| SIM card | Dual nanoSIM, tray type anti-loss holder |
| | 3V/1.8V |
| Antenna connector | SMA female |
| **GNSS[4]** | |
| GNSS systems | GPS, BDS, Galileo, GLONASS, QZSS |
| Antenna connector | SMA female |
| **Digital Inputs** | |
| Input number | 4 interchangeable with outputs |
| Input type | Opto-isolated 2.5kV |
| Configuration | Separate IN-GND |
| Connector | Pluggable push-in |
| Max $_{Vin}$ | 30V DC |
| Logic 1 Voltage | 3.5V to max $_{Vin}$ |
| **Digital Outputs** | |
| Output number | 4 interchangeable with inputs |
| Output type | NO (normal open) optomosfet |
| Load$_{max}$ | 800mA 50V |
| Connector | Pluggable push-in |
| **System Functions Indicators** | |
| Indicators | ACT – activity (multicolor) |
| | Cellular modem |
| | Function 1 (user configurable) |
| | Function 2 (user configurable) |

| Description | Specification |
|---|---|
| | Function 3 (user configurable) |
| **Debug and Development** | |
| System debug | C-type USB to UART converter inbuilt |
| Reset | Reset push button |
| Default | Default push button |
| **System** | |
| Operating systems | Linux Debian |
| | OpenWRT |
| Booting source | Ibuilt eMMC memory |
| | microSD |
| | Support for automatic boot source selection |
| Whatchdog | External configurable whatchdog |
| **Applications** | |
| Language support | C, Python, Java and all supported by Linux |
| Local logic apps | NodeRED |
| | Any other custom app |
| Web interface | Luci app in OpenWRT |
| | Webmin in Debian |
| | Any other custom made |
| **Power Supply** | |
| Power supply | 7-48V DC (or 7-70V DC[5]) |
| Power consumption | Average 6W |
| Connector | Pluggable push-in (+, -, earthing) |
| PoE | Isolated EEE802.3af compliant 38-58V isolated (optional) |
| Protection | Reverse polarity, over Voltage |
| **Physical Characteristics** | |
| Installation | DIN-Rail, clamp |
| Housing | Aluminium |
| Weight | 350g approx |
| Dimensions | 114 x 104 x 32mm |
| **Environmental Specification** | |
| Operating temp. | –20 ~ 85°C (–4 ~ 185°F) |
| Storage temp. | –40 ~ 85°C (–40 ~ 185°F) |
| Ambient RH | 5% ~ 95% (non-condensing) |

1 WiFi is optional. There are 3 different options of WiFi card offered by Atreyo. Refer ordering chart and WiFi card selection chart.

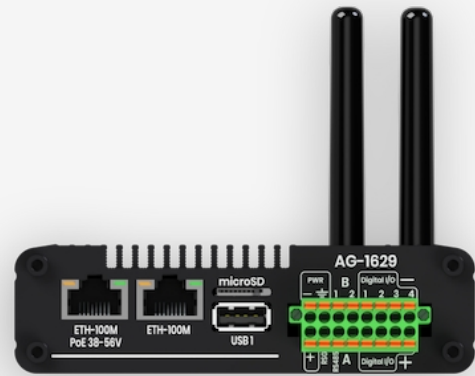2 Bluetooth is on WiFi card module. Available only with selected WiFi modules.

3 Apply to LT models. Refer ordering chart and cellular modem specification chart..

4 Apply to LT models. Refer ordering chart and cellular modem specification chart.

5 Apply to ES2 models. Table with model structure for ordering.

# Gateway

## Standard model list

Standard gateway models that are in regular production. If you have requirements for a different configuration, then select a specific specification from the table "Table with model structure for ordering". In the standard model, the gateway has 512MB RAM, 8GB eMMC, 2 RS485 and 4 digital inputs and 4 digital outputs and power supply 7-48V DC. These parameters are then not mentioned in the standard model number.

| Model | Hardware Options | | | | | | | | | | More information |
|---|---|---|---|---|---|---|---|---|---|---|---|
| AG-1629 | Memory GB | RAM GB | Cellular Network | | | GNSS | WiFi | Digital In | Digital Out | Supply V | |
| | | | GPRS | 3G | LTE | | | | | | |
| AG-1629 | 8GB | 512 | | | | | | 4 | 4 | 7-48V | Without cellular |
| AG-1629-LT-EU | 8GB | 512 | ✓ | | ✓ | ✓ | | 4 | 4 | 7-48V | For India and EU |
| AG-1629-LT-EU-WL1 | 8GB | 512 | ✓ | | ✓ | ✓ | ✓ | 4 | 4 | 7-48V | For India and EU |
| AG-1629-LT-GL | 8GB | 512 | ✓ | ✓ | ✓ | ✓ | | 4 | 4 | 7-48V | Global model |
| AG-1629-LT-GL-WL1 | 8GB | 512 | ✓ | ✓ | ✓ | ✓ | ✓ | 4 | 4 | 7-48V | Global model |

## WiFi and Bluetooth selection chart

Not all WiFi cards have all features in all operating systems offered. Therefore, before choosing a card, read the information on the documentation page or contact Atreyo.

| WiFi Option | | WiFI Specification | Bluetooth | Bluetooth Specification |
|---|---|---|---|---|
| WL1 | Standard | IEEE 802.11 a/b/g/n/ac (Access Points) | ✓ | V5.0+EDR |
| | Band | 2.4GHz and5Ghz | | BLE |
| | Speed | up to 433.3Mbps, 20, 40, 80MHz channels | Speed | V5.0 of 1, 2 and 3Mbps |
| | 2.4GHz: | ch1 ~ ch13 | | |
| | 5.0GHz: | 36, 40, 44, 48, 52, 56, 60, 64, 100, 104, 108, 112, 116, 120, 124, 128, 130, 132, 136, 140, 149, 153, 157, 161, 165 | | |
| WL2 | Standard | IEEE 802.11 a/b/g/n/d/e/h/i, Software AP | ✓ | V2.1+EDR/V4.0, V4.0 |
| | Band | 2.4GHz | | Ch. 0 ~78 |
| | Speed | 150Mbps downstream and 150Mbps | Speed | 1 Mbps for Basic Rate 2,3 Mbps ED 6,9,12,18,24,36,48,54Mbps HS |
| | 2.4GHz: | ch1 ~ ch14 | | |
| WL3 | Standard | 802.11b/g/n | | |
| | Band | 2.4GHz | | |
| | Speed | 54Mbps and 150Mbps for IEEE 802.11g and 802.11n OFDM | | |
| | 2.4GHz: | ch1 ~ ch14 | | |

## Cellular modem specification of EU (Europe and India) version

| EU version of gateway | Cellular network interface details | |
|---|---|---|
| Band LTE FTD | B1/3/5/7/8/20/28 | |
| Band LTE TDD | B38/ 40/ 41 | |
| Band GSM | B2/3/5/8 (900/1800MHz) | |
| GPRS slot | Multi-slot class 12/10 | |
| Bandwidth | 1.4/ 3/ 5/ 10/ 15/ 20 MHz | |
| Output power | LTE-FDD | Class 3 (23 dBm ±2 dB) |
| | LTE-TDD | Class 3 (23 dBm ±2 dB) |
| | EGSM900 | Class 4 (33 dBm ±2 dB) |
| | DCS1800 | Class 1 (30 dBm ±2 dB) |
| Maximum data rate | LTE-FDD | 10 Mbps (DL)/ 5 Mbps (UL) |
| | LTE-TDD | 8.96 Mbps (DL)/ 3.1 Mbps (UL) |
| | GSM | 85.6 kbps (DL)/ 85.6 kbps (UL) |
| Power | Compliant to GSM phase 2/2+ <br> – Class 4 (2 W 900MHz) <br> – Class 1 (1 W 1800MHz) | |

## Cellular modem specification of GL (global) version

| GL version of gateway | Cellular network interface details | |
|---|---|---|
| Band LTE FTD | B1/B2/B3/B4/B5/B7/B8/B12/B13/B18/B19/B20/B25/B26/B28 | |
| Band LTE TDD | B38/B39/B40/B41 | |
| Band WCDMA | B1/B2/B4/B5/B6/B8/B19 | |
| Band GSM | B2/B3/B5/B8 | |
| Output power | GSM850 | Class 4 (33 dBm ±2 dB) |
| | EGSM900 | Class 4 (33 dBm ±2 dB) |
| | DCS1800 | Class 1 (30 dBm ±2 dB) |
| | PCS1900 | Class 1 (30 dBm ±2 dB) |
| | GSM850 8-PSK | Class E2 (27 dBm ±3 dB) |
| | EGSM900 8-PSK | Class E2 (27 dBm ±3 dB) |
| | DCS1800 8-PSK | Class E2 (26 dBm ±3 dB) |
| | PCS1900 8-PSK | Class E2 (26 dBm ±3 dB) |
| | WCDMA | Class 3 (24 dBm +1/-3 dB) |
| | LTE-FDD | Class 3 (23 dBm ±2 dB) |
| | LTE-TDD | Class 3 (23 dBm ±2 dB) |
| Maximum data rate LTE | LTE-FDD | 150 Mbps (DL)/Max. 50 Mbps (UL) |
| | LTE-TDD | 130 Mbps (DL)/Max. 30 Mbps (UL) |
| Maximum data rate UMTS | DC-HSDPA | 42 Mbps (DL) |
| | HSUPA | 5.76 Mbps (UL) |
| | WCDMA | 384 kbps (DL)/Max. 384 kbps (UL) |
| Maximum data rate GSM | EDGE | 296 kbps (DL)/Max. 236.8 kbps (UL) |
| | GPRS | 107 kbps (DL)/Max. 85.6 kbps (UL) |

**Table with model structure for ordering**

This table is applicable when ordering larger quantities of gateways and to optimize the selection of certain components. Standard specifications are in the table of standard models.

| Model Structure | |
|---|---|
| Model example | AG-1629-8G-LT-EU-WL1-R42-I4-O4-ES3-PE-DEB |

**Base model name**

AG-1629

**Internal memory**

8G, 16G, 32G, 64G (eMMC)

**Cellular modem**

LT (cellular modem present)

**Cellular regional information**

EU (cellular modem for India and Europe)
GL (global cellular modem)

**WiFi version**

WL1 (refer WiFi selection chart)

**RS485 port number**

R4 + number of ports

**Digital inputs**

I + number of inputs

**Digital outputs**

O + number of outputs

**Power supply**

ES1: 7-48V, ES2: 7-75V, ES3: 8-36V

**PoE present**

PE (38-58V)

**Pre-installed OS**

DEB – Debian
WRT – OpenWRT

**For more details scan or click on QR code**

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