

# TECHNICAL SPECIFICATION

Programmable OpenWRT LTE IoT Gateway with RS485, RS232 and I/O

**AG-702**



## Features

- OpenWRT system
- Fully programmable Linux environment
- Additional 512MB memory as overlay
- 4G LTE, GSM, WiFi and two Ethernet ports
- GNSS
- 2 opto-isolated digital inputs
- 1 potential free relay output
- Opto-isolated RS485 and RS232
- USB host with storage support
- Cellular signal strength indicator
- Wide power supply range
- Aluminium enclosure
- DIN rail mounting

AG-702 is an innovative 4G LTE cellular Gateway with 2 ethernet ports, WiFi, RS485, RS232 and digital I/Os 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/IP or RTU for industrial applications.

Description	Parameter
<b>Processor</b>	
Type	MIPS24KEc
Clock	580MHz
<b>RAM Memory</b>	
Memory size	256MB DDR2
Memory speed	1066max
<b>Storage</b>	
Internal flash	64MB+512MB ExtRoot support (overlay)
<b>USB</b>	
USB port number	1
USB type	USB 2.0, host with storage support
Connector	USB type A
Protection	IEC 61000-4-2 level 4: - 15 kV (air discharge)

Description	Parameter
	- 8 kV (contact discharge)
USB overload	500mA
<b>Serial RS485</b>	
Port number	1
Interface Type	RS485
Data Rate	600 - 460800 bps
Signals	A and B
Connector	Pluggable push-in
	Opto-isolated 2.5 kV RMS per UL 1577
Protection	IEC 61000-4-2 level 4: - 15 kV (air discharge)
	- 8 kV (contact discharge)
	Fail-safe receiver for bus open, short and idle

Description	Parameter
<b>Serial RS232</b>	
Port number	1
Interface type	RS232
Data rate	300 – 230400 bps
Signals	RX, TX, RTS, CTS
Connector	Pluggable push-in
Protection	Opto-isolated 2.5kV RMS per UL 1577
	IEC 61000-4-2 level 4: – 15 kV (air discharge) – 8 kV (contact discharge)
<b>Ethernet</b>	
Number	2
Type	10/100M port
Connector	RJ45 with LED indicators
PoE	Spare pair on ETH-1
<b>WiFi</b>	
WiFi type	2.4GHz
WiFi standard	IEEE 802.11/a/b/g/n, Access Points
Antenna connector	SMA female
<b>Cellular Modem<sup>1</sup></b>	
Band	Please refer table of cellular network on page 3 and 4.
SIM card	Dual nanoSIM, tray type anti-loss holder
	3V/1.8V
Antenna connector	SMA female
<b>GNSS<sup>2</sup></b>	
GNSS systems	GPS, BDS, Galileo, GLONASS, QZSS
Antenna connector	SMA female
<b>Digital Inputs</b>	
Input number	2
Input type	Opto-isolated 2.5kV
Configuration	Separate IN-GND
Connector	Pluggable push-in
Max $v_{in}$	30V DC
Logic 1 Voltage	3.5V to max $v_{in}$
<b>Relay Outputs</b>	
Output number	1
Output type	NO (normal open)
Load <sub>max</sub>	3A 160V AC or 3A 30V DC
Connector	Pluggable push-in
<b>System Functions Indicators</b>	
Indicators	ACT – activity
	Cellular signal level – 4 LED

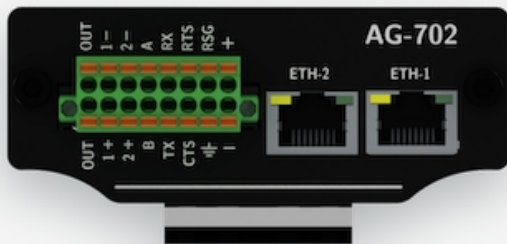
<sup>1</sup> Apply to LT models. Refer model selection chart. LTE/GSM Bands are mentioned for in Cellular table section on page 3 and 4.

<sup>2</sup> Apply to LT models. Refer ordering chart.

Description	Parameter
	Custom use
	Out enable
	Cellular
	WiFi
	IN-1 and IN-2 SIM-1 and SIM-2
<b>System</b>	
Operating systems	OpenWRT 23.05, Kernel 5.15.71, Atreyo Environment V1.01.02
Booting source	Flash memory
<b>Power Supply</b>	
Power supply	7-48V (or 14-60V or 8-36V DC <sup>3</sup> )
Power consumption	1.6W (24V without LTE and relay on)
Connector	Pluggable push-in (+, -, earthing)
PoE	Passive PoE over spare pairs. Not compatible with IEEE802.3af, 802.3at and 802.3bt standards
Protection	Reverse polarity, over Voltage
<b>Physical Characteristics</b>	
Installation	DIN-Rail, clamp
Housing	Aluminium
Weight	240g
Dimensions	88mm x 87mm x 35mm
<b>Environmental Specification</b>	
Operating temp.	-20 ~ 65°C (-4 ~ 149°F)
Storage temp.	-40 ~ 85°C (-40 ~ 185°F)
Ambient RH	5% ~ 95% (non-condensing)

<sup>3</sup> Refer ordering chart.

## Gateway



## Cellular modem specification of IN (India) version

IN version of gateway		Cellular network modem details	
<b>Band LTE FTD</b>	B1/ 3/ 5/ 8		
<b>Band LTE TDD</b>	B34/ 38/ 39/ 40/ 41		
<b>Band GSM</b>	B3/ 8 (900/1800MHz)		
<b>GPRS slot</b>	Multi-slot class 12/10		
<b>Bandwidth</b>	1.4/ 3/ 5/ 10/ 15/ 20 MHz		
<b>Output power</b>	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)	
<b>Maximum data rate</b>	LTE-FDD	10 Mbps (DL)/ 5 Mbps (UL)	
	LTE-TDD	8.96 Mbps (DL)/ 3.1 Mbps (UL)	
	GPRS	85.6 Kbps (DL)/85.6 Kbps (UL)	

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

EU version of gateway	Cellular network modem details	
<b>Band LTE FTD</b>	B1/3/5/7/8/20/28	
<b>Band LTE TDD</b>	B38/ 40/ 41	
<b>Band GSM</b>	B2/3/5/8 (900/1800MHz)	
<b>GPRS slot</b>	Multi-slot class 12/10	
<b>Bandwidth</b>	1.4/ 3/ 5/ 10/ 15/ 20 MHz	
<b>Output power</b>	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)
<b>Maximum data rate</b>	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)
<b>Power</b>	Compliant to GSM phase 2/2+	
	– Class 4 (2 W 900MHz)	
	– Class 1 (1 W 1800MHz)	

### Cellular modem specification of GL (global) version

GL version of gateway	Cellular network modem details	
<b>Band LTE FTD</b>	B1/B2/B3/B4/B5/B7/B8/B12/B13/B18/B19/B20/B25/B26/B28	
<b>Band LTE TDD</b>	B38/B39/B40/B41	
<b>Band WCDMA</b>	B1/B2/B4/B5/B6/B8/B19	
<b>Band GSM</b>	B2/B3/B5/B8	
<b>Output power</b>	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)
<b>Maximum data rate LTE</b>	LTE-FDD	150 Mbps (DL)/Max. 50 Mbps (UL)
	LTE-TDD	130 Mbps (DL)/Max. 30 Mbps (UL)
<b>Maximum data rate UMTS</b>	DC-HSDPA	42 Mbps (DL)
	HSUPA	5.76 Mbps (UL)
	WCDMA	384 kbps (DL)/Max. 384 kbps (UL)
<b>Maximum data rate GSM</b>	EDGE	296 kbps (DL)/Max. 236.8 kbps (UL)
	GPRS	107 kbps (DL)/Max. 85.6 kbps (UL)

## Standard model list

Model	Hardware Options				Supply Voltage	More information
	Cellular Network			GNSS		
AG-702	GPRS	3G	LTE			
AG-702-V60					14-60V	Without cellular modem
AG-702-LT-EU-V60	✓		✓	✓	14-60V	Model for India and EU
AG-702-LT-GL-V60	✓	✓	✓	✓	14-60V	Global model
AG-702-V36					8-36V	Without cellular modem
AG-702-LT-EU-V36	✓		✓	✓	8-36V	Model for India and EU
AG-702-LT-GL-V36	✓	✓	✓	✓	8-36V	Global model
AG-702-V48					7-48V	Without cellular modem
AG-702-LT-EU-V48	✓		✓	✓	7-48V	Model for India and EU
AG-702-LT-GL-V48	✓	✓	✓	✓	7-48V	Global model

## Table with model structure for ordering

Model Structure	
<b>Model structure example</b>	<b>AG-702-LT-EU-V48</b>
<b>Base model name</b>	
AG-702	
<b>Cellular communication modem</b>	
LT (cellular communication modem present)	
<b>LTE/GSM module regional information</b>	
IN (cellular modem for India)	
EU (cellular modem for India and Europe)	
GL (global cellular modem)	
<b>Power supply range</b>	
V60 (from 14V to 60V DC)	
V36 (from 8V to 36V DC)	
V48 (from 7V to 48V DC)	

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**Atreyo Research  
& Development LLP**

**+91 9727741417  
info@atreyo.in**

414, Sunrise Mall, Mansi Circle,  
Ahmedabad, Gujarat, India