

CloudGate



CloudGate User Guide

CloudGate LTE Americas (CG0199)

Table Of Content

1. CloudGate LTE Americas (CG0199)	3
1.1. Main Board	6
1.2. Front & Back View	8
1.3. Certifications & Approvals	11

CloudGate LTE Americas

Model: CG0199

The CloudGate LTE Americas is an LTE multiband M2M gateway providing internet connectivity at LTE Cat 3 data rates.

Customs code (used for shipping) for CloudGate LTE WW is 8517620090.

The base unit is designed around a main board and a WWAN module. Its main features are listed in the table below:

Feature	Description
WWAN 4G/3G/2G (PLS8-X)	<ul style="list-style-type: none"> • Penta band LTE: 700/700/850/AWS (1700/2100)/1900 MHz (FDD-Band 13, 17, 5, 4, 2) LTE 3GPP Release 9 • Triple band UMTS (WCDMA): 850/AWS (1700/2100)/1900 MHz (FDD-Band 5, 4, 2) UMTS / HSPA 3GPP release 8 • Quad band GSM / GPRS / EDGE: 850 / 900 / 1800 / 1900 MHz GSM / GPRS / EDGE 3GPP release 6
GPS	<ul style="list-style-type: none"> • Standalone GPS and GLONASS, Assisted GPS, GPS OneXTRA
CPU	<ul style="list-style-type: none"> • ARM926EJ-S @ 450 MHz <p>Memory available for customer applications:</p> <ul style="list-style-type: none"> - 30 Mb R/O flash for executables - 30 Mb R/W flash shared with system - 40 Mb free RAM - 1 Mb Configuration data

Feature	Description
Antenna connectors	<ul style="list-style-type: none"> • 1 x SMA: WWAN Main • 1 x SMA: WWAN Div/GPS with support of active GPS (switchable under FW control)
Ethernet (IEEE 802.3)	<ul style="list-style-type: none"> • 10/100Mb/s RJ45 Connector
Visual indicators	<ul style="list-style-type: none"> • Seven 3 color LEDs showing system status and signal strength
SIM	<ul style="list-style-type: none"> • USIM/SIM class B and class C
Power input	<ul style="list-style-type: none"> • DC input voltage: 9-33 V DC • Connector type: Micro-Fit 3.0™, Dual row, 4 circuits
Expansion Card Slots	<ul style="list-style-type: none"> • Two expansion card slots (one at the front and one at the back side of the device) • Expansion boards for I/O functions, such as Serial, USB, GPIO, WLAN, Accelerometer, etc.
Metal case	<ul style="list-style-type: none"> • Aluminum housing • Dimensions: 115 x 105 x 45 mm (excluding antenna connectors) • Weight: 285 g • Mounting: bulkhead - 6 x M4 mounting holes or DIN rail with adapter
Environmentals	<ul style="list-style-type: none"> • Operating temperature: -30°C to 70°C • Storage temperature: -40°C to 85°C • Humidity operational: 5% - 95% non condensing
Certification	<ul style="list-style-type: none"> • FCC/ISED, PTCRB, AT&T
Standard compliance	<ul style="list-style-type: none"> • ROHS, Reach
CloudGate Universe	<ul style="list-style-type: none"> • Device can be configured OTA using CloudGate Universe

(*) See Safety Warning in the Environmental Specifications section.

A more detailed hardware description can be found in the corresponding subsections.

A datasheet of the CloudGate LTE Americas can be found here.

The CloudGate LTE Americas has two expansion card slots that allow to insert a variety of expansion cards.

1.1. Main Board

The CloudGate LTE Americas is designed around a main board and a 4G WWAN module. The processor on the main board controls all the interfaces. The WWAN module provides the wireless connectivity to the internet.

The CloudGate also has two expansion board connectors to allow insertion of dedicated expansion cards.

The block diagram shows the overview.

Main Board Block Diagram (PDF)

Power Input

- V_PWR: min 9V DC, max 33V DC

Internal Power Supply

- Power input: V_PWR, min 9V DC, max 33V DC
- Stable 3.4V power rail
- Reverse polarity protection
- Over-voltage protection up to 60V
- Current limiter at 1.2A
- One-time fuse of 2A

Main Board Processor

- Freescale i.MX280 @ 450 MHz
 - 128 MB RAM
 - 512 MB Flash memory
 - Ethernet interface
 - interfaces to the two expansion board connectors

Primary Expansion Card Slot

The primary expansion board has the following interfaces:

- Power supply: V_PWR, 3V4, 3V3
- 24 MHz clock signal
- Master reset signal
- High speed USB interface
- High speed OTG USB interface
- SDIO interface
- GPIO signals

- Serial interface
- I²C_AUX

Secondary Expansion Card Slot

The secondary expansion board has the following interfaces:

- Power supply: V_PWR, 3V4, 3V3
- 24 MHz clock signal
- Master reset signal
- High speed USB interface
- SDIO interface
- GPIO signals

WWAN module

The WWAN module in the CloudGate LTE Americas is the Cinterion PLS8-X module from Gemalto. It supports LTE Cat 3.

Front and Back View

The CloudGate Base Unit is assembled in the top half of the device. The bottom half is available to insert expansion cards.

The front and back side of the CloudGate housing are closed by means of metal panels that are secured with Torx T10 screws.

The top panels are designed by Option and cannot be changed, since they provide the interfaces of the base unit. The bottom panels can be customized to match the external interfaces of the expansion card.

Front View



Connectors and LED indicators on the top front panel

On the front side of the device we can see the following connectors:

1	WWAN Diversity and GPS antenna connector	SMA-female
2	Ethernet port	10/100 Mbps RJ-45

3	WWAN Main antenna connector	SMA-female
4	Torx T10 screws	-

A detailed description of the LEDs is given in the section about the LED Indicators.

Bottom Front Panel

The bottom front panel covers the front expansion slot and has to be removed when installing a Primary Expansion Card.

Option provides a custom panel for the following primary expansion cards:

- Low Cost Serial Card
- Industrial Serial Card
- Ethernet Switch
- Ethernet Switch with PoE
- Telematics Card
- Breadboard Card

Back View



Connector and button on the top back panel

1	Power connector	<ul style="list-style-type: none">• 9-33 VDC• Micro-Fit 3.0, dual row, 4 circuits
2	Reset button	<ul style="list-style-type: none">• The explanation on how to use the reset button is explained here

The functionality of the button is explained in the section about the Reset button

Behind the top back panel there is a socket for insertion of a SIM card.
Please also refer to the section about the SIM Card Interface for more details.

Bottom Back Panel

The bottom back panel covers the back expansion slot and has to be removed when installing a Secondary Expansion Card.

Option provides a custom panel for the following secondary expansion cards:

- WLAN Expansion Card
- WLAN Access Point Card

Certification information for CloudGate LTE Americas

Model: CG0199

This page offers an overview of the country certifications and operator approvals obtained per region. This CloudGate model is approved for use in the countries listed below. For use in other countries, please consult your sales contact.

- Canada
- United States

Before installing your CloudGate device, read the Safety Guidelines section in the CloudGate Installation Guide carefully. Not following these guidelines can cause harm to the CloudGate, yourself or other persons.

Canada

The CloudGate LTE Americas (CG0199) can be used in Canada and complies with the applicable Industry Canada regulations.

The product completed PTCRB certification.

The CloudGate LTE Americas (CG0199) CANNOT be used in Class I Div 2 Hazardous Locations.

INNOVATION, SCIENCE and ECONOMIC DEVELOPMENT CANADA (ISED) REGULATIONS

This digital apparatus complies with Canadian CAN ICES-3(B) / NMB-3(B) and RSS-210.:

Operation is subject to the following two conditions:

(1) This device may not cause harmful interference, and :

(2) this device must accept any interference received, including interference that may cause undesired operation of the device.

External antennas

Under Industry Canada regulations, this radio transmitter may only operate using an antenna of a type and maximum (or lesser) gain approved for the transmitter by Industry Canada. To reduce potential radio interference to other users, the antenna

type and its gain should be so chosen that the equivalent isotropically radiated power (e.i.r.p.) is not more than that necessary for successful communication.

This radio transmitter, IC 7830A-PXS8, has been approved by Industry Canada to operate with the antenna types listed below with the maximum permissible gain and required antenna impedance for each antenna type indicated. Antenna types not included in this list, having a gain greater than the maximum gain indicated for that type, are strictly prohibited for use with this device.

To comply with Industry Canada regulations limiting both maximum RF output power and human exposure to RF radiation, maximum antenna gain must not exceed:

- 0.16 dBi in low bands (band 5, 13 and 17)
- 5.5 dBi in band 4
- 2.51 dBi in band 2 (1900MHz)

In addition the product shall be installed in a way that a distance of at least 20 cm is maintained between the antennas and the user's body.

REGULATIONS INNOVATION, SCIENCE and ECONOMIC DEVELOPMENT CANADA

L'émetteur/récepteur exempt de licence contenu dans le présent appareil est conforme aux CNR d'Innovation, Sciences et Développement Economique Canada applicables aux appareils radio exempts de licence.

L'exploitation est autorisée aux deux conditions suivantes:

(1) l'appareil ne doit pas produire de brouillage, et

(2) l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

Antennas externes

Conformément à la réglementation d'Industrie Canada, le présent émetteur radio peut fonctionner avec une antenne d'un type et d'un gain maximal (ou inférieur) approuvé pour l'émetteur par Industrie Canada. Dans le but de réduire les risques de brouillage radioélectrique à l'intention des autres utilisateurs, il faut choisir le type d'antenne et son gain de sorte que la puissance isotrope rayonnée équivalente (p.i.r.e.) ne dépasse pas l'intensité nécessaire à l'établissement d'une communication satisfaisante.

Le présent émetteur radio, IC 7830A-PXS8, a été approuvé par Industrie Canada pour fonctionner avec les types d'antenne énumérés ci-dessous et ayant un gain admissible

maximal et l'impédance requise pour chaque type d'antenne. Les types d'antenne non inclus dans cette liste, ou dont le gain est supérieur au gain maximal indiqué, sont strictement interdits pour l'exploitation de l'émetteur.

- 0.16 dBi dans les bandes 5, 13 et 17
- 5.5 dBi dans la bande 4
- 2.51 dBi dans la bande 2 (1900MHz)

En plus, le produit doit être installé de manière à assurer une distance de séparation de 20 cm minimum entre le corps de l'utilisateur et les antennes.

United States

The CloudGate LTE Americas (CG0199) can be used in the USA and complies with the applicable FCC rule parts.

The product completed PTCRB certification and has been approved by the following network operators:

- AT&T

The CloudGate LTE Americas (CG0199) CANNOT be used in Class I Div 2 Hazardous Locations.

FCC REGULATIONS

This device complies with Part 15 of the FCC rules.

Operation is subject to the following two conditions:

- (1) This device may not cause harmful interference, and
- (2) this device must accept any interference received, including interference that may cause undesired operation.

Federal communications commission notice

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in

a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Exposure Information to Radio Frequency Energy

Users concerned with the risk of Radio Frequency exposure may wish to limit the duration of their calls and to position the antenna as far away from the body as is practical.

Modifications

Any changes or modifications made to this device that are not expressly approved by Option could void the user's authority to operate the equipment.

External antennas

To comply with FCC regulations limiting both maximum RF output power and human exposure to RF radiation, maximum antenna gain must not exceed:

- 3.25 dBi in low bands (band 5, 13 and 17)
- 5.5 dBi in band 4
- 2.51 dBi in band 2 (1900MHz)

In addition the product shall be installed in a way that a distance of at least 20 cm is maintained between the antennas and the user's body.



PTION

WIRELESS TECHNOLOGY