

Wide coverage indoor IoT gateway



Main features

- Two 1-Wire ports for integration with sensors
- Two Ethernet ports for increased availability in data transmission
- GSM Module for two 3G or 4G SIM cards*
- Module for wireless communication with endpoints using IEEE 802.15.4 or LoRaWAN™*

* Optional feature - optional items are available at an additional cost. The modules can be purchased separately.

Applications

Khomp's line of ITG gateways can be used in the most different market segments, such as in projects for:

- hospitals and clinics
- agribusiness
- industries
- corporate
- Electric
- Commercial

Overview

Khomp's line of ITG gateways was developed to integrate the most different IoT solutions, meeting needs and optimizing processes that were previously unfeasible.

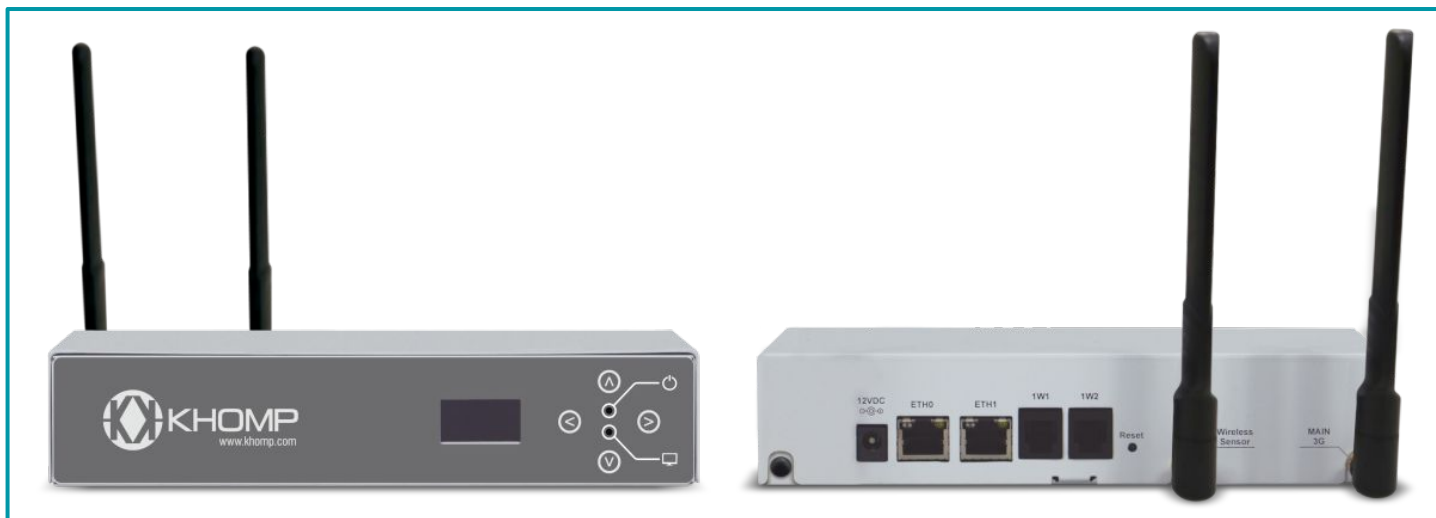
The ITG manages the information from sensors connected to the endpoints, in which it transmits it to an external server of the client, through the secure MQTT integration protocol.

This information can be used by different applications, developed by the client, allowing the creation of the most diverse monitoring platforms.

The line of ITG gateways has two 1-Wire ports, allowing the integrated use with sensors supplied by Khomp (which support this type of connection). The ITG can be connected, for example, with temperature sensors and a dip switch, providing monitoring of the opening of doors.

The ITG 200 gateway is a device with dimensions that favor its installation. In addition, it has a 4-button OLED display, allowing you to view and navigate through different system information.

Product images



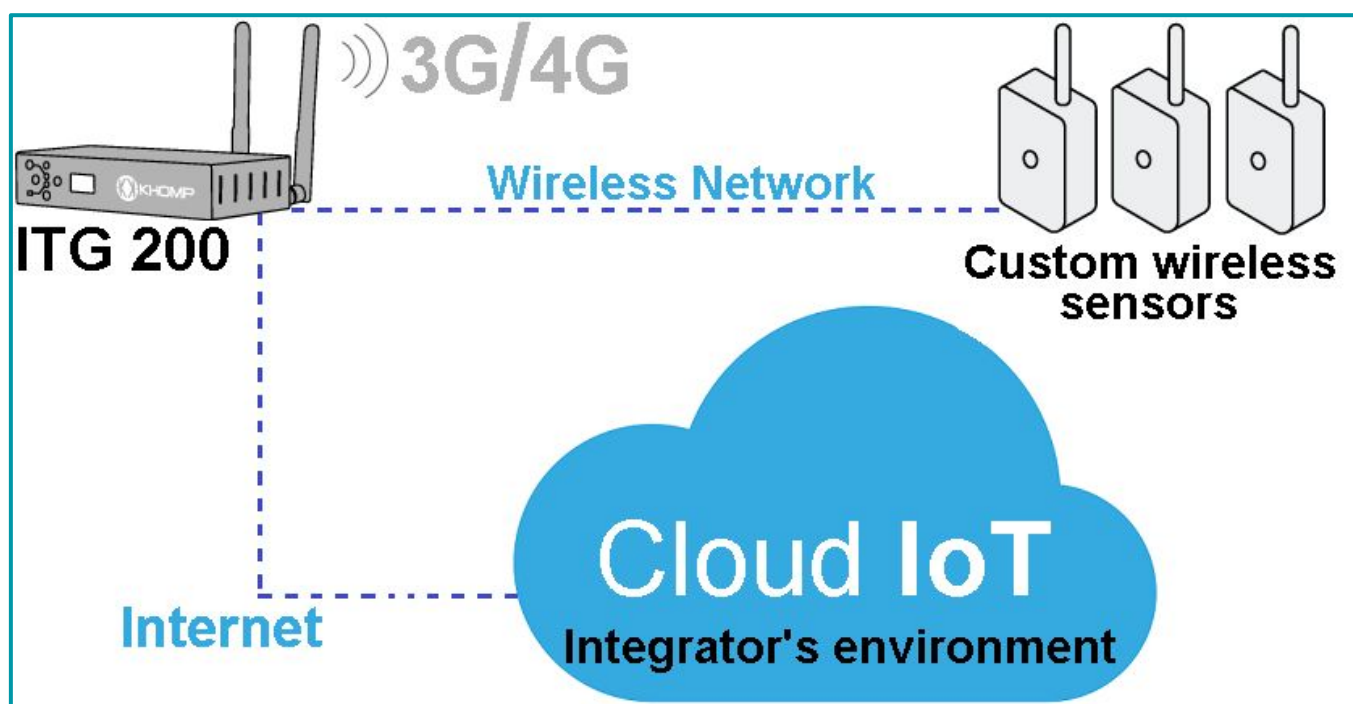
Front view.

Rear view.

Main features

- Access via Web Interface in English or Portuguese
- Fallback from LAN to Modem
- FailOver between installed SIM cards
- Can operate on 3G and 4G
- Local buffering of messages in eventual network failures or during the Ethernet/modem transition. Local buffering supports up to 500,000 messages
- Automatic clock synchronization
- Remote version upgrade (provided the gateway has access to Cloud Khomp)
- Importing and exporting settings
- Dashboard that displays the latest messages received
- OpenVPn Client
- DHCP
- Secure integration protocol via MQTT

The main purpose of the ITG gateway is to receive the messages from the endpoint sensors (IEEE 802.15.4 or LoRa) and send them to a server (Broker or NetWork Server), as shown in the following image.



3G or 4G for greater security in sending data

The ITG gateway line allows a 3G or 4G module to be installed, which accepts up to two Sim Cards in order to provide a fallback system. This module increases the guarantee in the delivery of information, creating a system with greater reliability. The mobile data network (3G or 4G) in a first scenario is normally used when the Ethernet network is unavailable and a second option is to use the gateway disconnected from a local network, sending data only via 3G or 4G module (**optional item**).

Wireless communication

Modules for wireless communication (optional items) with endpoints provide high scalability to the gateway, making it possible to expand the number of reading sensors and the monitoring area by installing sensors in locations far from the gateway.

There are two modules to choose from:

IEEE 802.15.4: It is suitable for indoor projects that need to monitor smaller areas, around a few tens of meters, with up to 200 endpoints, such as an industry, for example.

LoRaWAN™: Allows you to monitor larger areas, usually outdoors for a few kilometers (depending on the region), with up to 500 endpoints using the gateway's Internal Network Server or an even greater number if the gateway is used to send messages to a Network Server External. In this case, this amount depends on how often the messages are sent by the endpoints and can reach a few thousand, depending on the network configuration. In view of this, a possible scenario of use, among many others, is in the industry, in which it usually has monitoring points in different places in the same region, such as cold rooms, through the monitoring of electrical energy, temperature and humidity.

SIM card configuration

The functionality of the SIM card is an extremely important point for the correct functioning of the ITG line gateways, not only in terms of the quality and stability of the network, but also in terms of the data plan associated with the chip and its correct configuration on the gateway.

The quality of the network is a very particular characteristic of the operator (supplier) and the place where the gateway is installed. As an example, it is common to come across situations where the ITG works more stably with "operator1" and less stable with "operator2". Knowing this information, it is up to the system administrator to verify and validate the SIM card, even before activating the project.


Regarding the data plan, it is not an easy task to initially estimate which data plan best suits the project. In the first few weeks, to stabilize the system, remote access is common for monitoring/configuring the endpoint network and the ITG gateway itself. To get an idea of the likely traffic generated by the gateway, see the "Data consumption" topic of this datasheet.

You must correctly specify the "APN", "username" and "password" associated with the SIM card. The supplier of the SIM card purchased must indicate the type of SIM card application, the type of network or data plan, the region, among other information on the chip. Khomp has tested and approved the SIM cards noted below. When used, they must be configured according to the table:

| Provider | Model | APN | User | Password |
|------------------|--------------|--------------------|---------|----------|
| Algar | M2M IoT | algar.br | algar | algar |
| Linksfild | M2M | lf.br | lf | lf |
| NLT | 2G, 3G or 4G | nlt.com.br | nlt | nlt |
| Arqia | IoT GO | m2m.arqia.br | arqia | arqia |
| Arqia | Broadband | bl.arqia.br | arqia | arqia |
| Arqia | IoT Connect | iot4u.br | arqia | arqia |
| Arqia | Move | iot4u.br | arqia | arqia |
| Vivo | 3G or 4G | zap.vivo.com.br | vivo | vivo |
| Vivo | M2M | inlog.vivo.com.br | datatem | datatem |
| Claro | 3G or 4G | claro.com.br | claro | claro |
| Claro | M2M | inlog.claro.com.br | claro | claro |
| Tim | 3G or 4G | tim.br | tim | tim |
| Tim | M2M | datatem.tim.br | datatem | datatem |

Due to the great diversity of models of SIM cards available in the market, it is extremely important that the administrator of the ITG gateway confirms with the chip supplier, whether the information in the table can be used by the SIM card purchased or not, since the fact of configuring a Wrong APN can cause the gateway to not be operational/accessible via mobile data network or access to be slower than it should be, compromising ITG performance.

The APNs previously configured on the gateways are mere examples. Delete this information (if it is not useful) and configure the information of the SIM cards installed in the gateways.

| | | |
|---|-------------|---|
|  | Note | After changing any information associated with the modem, you will need to restart ITG for the new settings to take effect. |
|---|-------------|---|

Modem Configuration

SIM Card Selection

SIM Card 1:



SIM Card 2:



Edit Current Configurations

SSL:



Automatic Failover:



APN 1:

Username APN 1:

Password APN 1:

SIM 1 Default:



SIM 2 Default:



APN 2:

Username APN 2:

Password APN 2:

SIM 1 Default:



SIM 2 Default:



APN 3:

Username APN 3:

Password APN 3:

SIM 1 Default:



SIM 2 Default:



APN 4:

Username APN 4:

Password APN 4:

SIM 1 Default:



SIM 2 Default:



Submit Configuration

Clear Configuration

Discard Changes

Data consumption

In this section, we highlight two real scenarios, whose traffic via modem was monitored for several weeks and allowed us to estimate a volume of data sent to the Cloud of your project.

| | LoRa® technology | IEEE 802.15.4 technology |
|--|------------------|--------------------------|
| Endpoint | NIT 21LI | NIT 21ZI |
| Number of endpoints | 5 | 5 |
| Frequency of sending messages to the Cloud | 5 minutes | 5 minutes |
| Daily intake | ± 4.5 Mb | ± 16.5 Mb |
| Weekly consumption | ± 31.5 Mb | ± 115.5 Mb |
| Monthly consumption | ± 135 Mb | ± 495 Mb |

Technical specifications

Physical/Environmental

- Two ports RJ45 fast Ethernet 10/100 Mbps
- Two ports RJ11 1-Wire
- OLED Display with 4 buttons
- Reset button
- Power LED
- Device status LED
- Dimensions (WxHxL): 8"x1,6"x4"
- Approximate weight: 1,3 lb (without packaging)
- Connector for 12 VDC power source adapter
 - P4 jack type
 - Inner Diameter of 2.50 mm
 - 6.30 mm outside diameter
 - Maximum current of 5 A
- Power adapter:
 - Input: 100–240 VAC, 50/60 Hz
 - Output: 12 VDC
 - Power: 5 W
- Operating temperature: 32–122 °F
- Operating humidity: 10–90% non-condensing
- Storage temperature: 0–85 °C
- Storage humidity: 10–90% non-condensing

Antennas

- Two omnidirectional antennas:
 - 3G or 4G mobile data network
 - 802.15.4 or LoRa® network
- Gain: 5 dBi
- Impedance: 50 Ohms
- Power: 50 W
- Polarization: vertical
- Connectors: SMA Female

LoRa® module *

- LoRaWAN™ 1.0.3 Protocol
- Frequency bands: 868 or 915 MHz
- Channels: 8
- Power:
 - Up to +25 dBm (868 MHz)
 - Up to +28 dBm (915 MHz)

IEEE 802.15.4 module *

- Operating Frequency: 2405 MHz to 2480 MHz
- Transmission power: 10 dBm
- Sensitivity -102.7 dBm
- OPQSK-DSSS Modulation
- Maximum number of endpoints: 200, with a message frequency of 10 minutes
- Maximum number of jumps: 30
- Maximum number of direct child devices: 32

Warranties and certifications

- Total warranty (legal + Khomp warranty): 1 year
 - Legal warranty: 90 days
 - Khomp warranty: 9 months
- Anatel certification
- ISO 9001 certified industry

3G module *

- 3G operation bands: B5, B8, B2, B1, B4
- Frequency bands: 800/850, 900, AWS1700, 1900, 2100 MHz
- SIM Card size: mini SIM (2FF)
- Protocol for secure integration via HTTPS or MQTT
- Transfer rate (DL/UL):
 - HSPA: 21/5.7 Mbps
 - WCDMA: 384/384 Kbps
 - EDGE: 296/236 Kbps
 - GPRS: 107/85.6 Kbps

4G module *

- Supports 2 SIM cards of the Nano SIM standard (4FF)
- Operating/frequency bands:
 - LTE B1: -99.5 dBm (10 MHz)
 - LTE B2: -99.9 dBm (10 MHz)
 - LTE B3: -99.7 dBm (10 MHz)
 - LTE B4: -99.7 dBm (10 MHz)
 - LTE B5: -99.9 dBm (10 MHz)
 - LTE B7: -99.2 dBm (10 MHz)
 - LTE B8: -99.8 dBm (10 MHz)
 - LTE B12: -99.8 dBm (10 MHz)
 - LTE B13: -99.5 dBm (10 MHz)
 - LTE B18: -100 dBm (10 MHz)
 - LTE B19: -99.9 dBm (10 MHz)
 - LTE B20: -99.8 dBm (10 MHz)
 - LTE B25: -100 dBm (10 MHz)
 - LTE B26: -99.5 dBm (10 MHz)
 - LTE B28: -99.6 dBm (10 MHz)
 - LTE B38: -99 dBm (10 MHz)
 - LTE B39: -99.5 dBm (10 MHz)
 - LTE B40: -99.2 dBm (10 MHz)
 - LTE B41: -99 dBm (10 MHz)
 - WCDMA B1: -109.2 dBm
 - WCDMA B2: -110 dBm
 - WCDMA B4: -109.5 dBm
 - WCDMA B5: -110.4 dBm
 - WCDMA B6: -110.5 dBm
 - WCDMA B8: -109.5 dBm
 - WCDMA B19: -110.1 dBm
 - GSM850: -108 dBm
 - EGSM900: -108 dBm
 - DCS1800: -107.4 dBm
 - PCS1900: -107.5 dBm
- Transfer rate (DL/UL)
 - LTE:
 - LTE-FDD: 150/50 Mbps
 - LTE-TDD: 130/30 Mbps
 - UMTS:
 - DC-HSDPA: 42 Mbps (DL)
 - HSUPA: 5.76 Mbps (UL)
 - WCDMA: 384/384 kbps
 - GSM:
 - EDGE: 296/236.8 kbps
 - GPRS: 107/85.6 kbps

Optional items *

- 4G data module for up to 2 SIM cards
- 3G data module for up to 2 SIM cards
- Module for IEEE 802.15.4 wireless communication
- Module for LoRaWAN™ wireless communication

* *Optional items are available at an additional cost. Modules can be purchased separately.*

Application model

