LoRaWAN 86x/9xx Expansion Card

Product description

Model: CG2132

Contents

1. Introduction 2
2. Confidentiality 2
3. Version history 2
4. Product overview 3
5. Product specifications 3
6. Block diagram 4
7. Product description 5

1. Introduction

This document gives the product description of the product called LoRaWAN 86x/9xx Expansion Card (CG2132).

2. Confidentiality

3. Version history

Date	Version	Author	Remark
27/05/2021	V1.0	Jasna Papuga	Initial version

4. Product overview

LoRaWAN 86x/9xx Expansion card is a member of the CloudGate expansion cards family providing LoRaWAN capabilities to the gateways.

It is built around the Semtech SX1302 LoRa Gateway Baseband Processor.

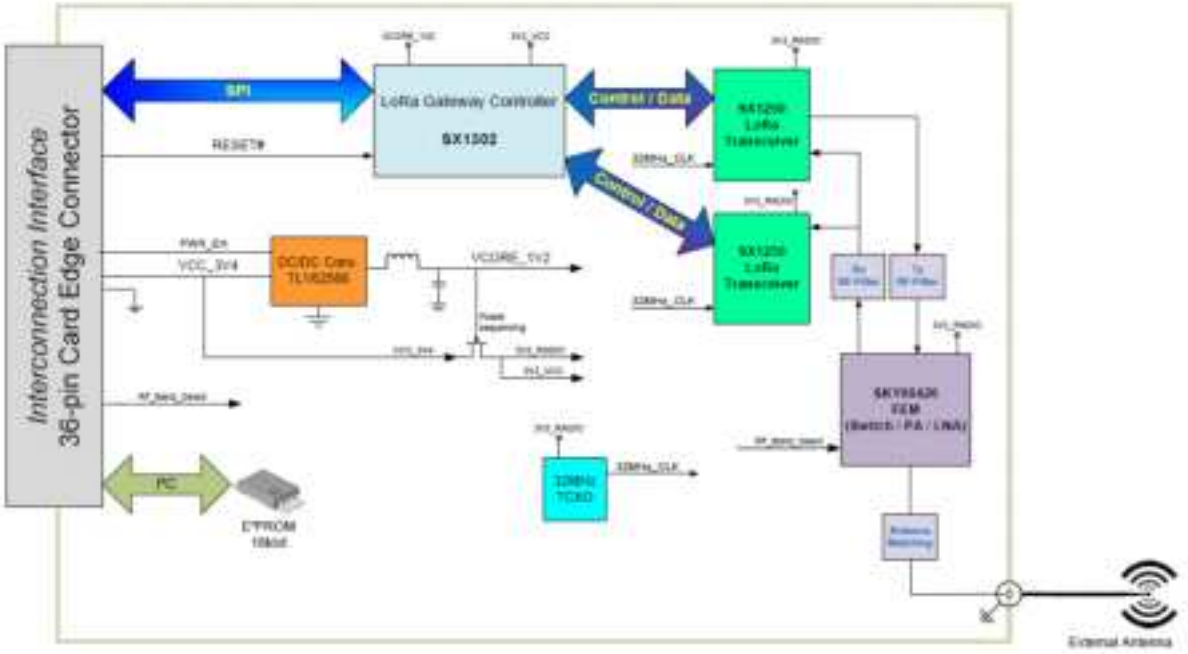
A typical application is a Smart Metering use case where the sensor data are sent to the gateway via LoRa link. Further, the gateway stores this data on a server, where it can be used for analysis.

The LoRaWAN 86x/9xx Expansion Card can connect to any IoT device that uses the LoRaWAN protocol.

5. Product specifications

- Radio protocol: LoRaWAN
- Available bands:
    - 868 MHz
    - 915 MHz
- Security: AES encryption (send/receive)
- Antenna: External; SMA RP (female) connector
- Operating temperature: -30°C to +70°C
- Humidity: 5 to 90% RH, non-condensing
- Storage temperature: -40°C to +85°C
- Certification:
    - CE
    - FCC (FCC ID: NCM-2132)
    - ISED (IC ID: 2734A-2132)

6. Block diagram



7. Product description

The LoRaWAN 86x/9xx Expansion card (CG2132) adds the LoRa functionality to the gateway of the CloudGate family from Option.

The card is built around the Semtech SX1302 microcontroller with integrated LoRa FEM SKY66420 (Skyworks). It is a dual band LoRa card with 868 MHz and 915 MHz available bands.

Digital processing of the signal is performed by the microcontroller (SX1302), while conversion from/to RF signal is done in the LoRa Transceivers (SX1250). The Front-End module (FEM)(SKY66420) includes the Tx/Rx switch, power amplifier and low-noise amplifier (LNA) for receiver. The card is using an external Tx/Rx antenna attached via an SMA RP connector.

The expansion card is attached to the host device via a Card Edge Connector with 36 pins. Serial Peripheral Interface (SPI) is used for communication between the microcontroller and the host device (gateway). In addition, identification of the LoRaWAN 86x/9xx Expansion Card by the host device is provided via erasable programmable read-only memory (EPROM) which is using I^2C interface to communicate over the Card Edge Connector.

Initial power line of 3.4 V gets split into two lines:

a) 3.4 V for the radio components

b) via a DC/DC converter 1.2 V line for the microcontroller (core-line).

There is a condition for power delivery according to which the core power needs to be provided first to the SX1302 before the radio components will receive the required 3.4 V.

The temperature compensated crystal oscillator (TCXO) is powered by 3.4 V and provides the 32 MHz clock signal to both transceivers (SX1250) compensating for a temperature-based frequency drift.