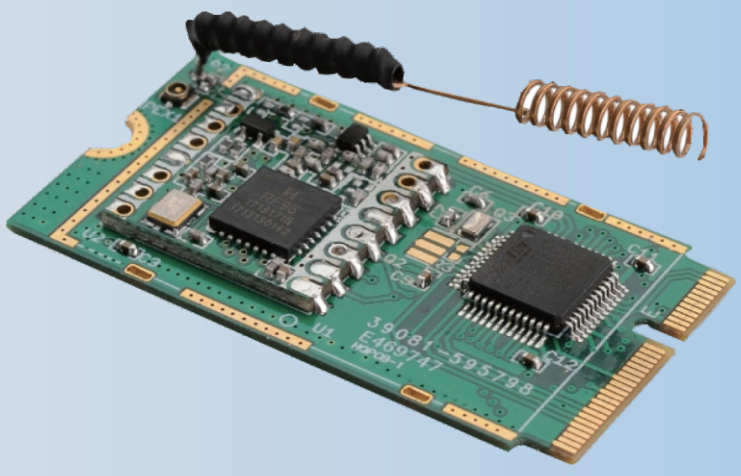
Open Source Long Range Wireless LoRa Transceiver

LoRaST



OVERVIEW:

LoRaST is a small IoT development board offers a very compelling mix of long range, low power consumption and secure data transmission.It is designed to facilitate developers to quickly deploy industrial level LoRa and IoT solutions. It help users to turn the idea into a practical application and make the Internet of Things a reality. It is easy to program, create and connect your things everywhere.

It is based on SX1276/SX1278 allows the user to send data and reach extremely long ranges at low data-rates.It provides ultra-long range spread spectrum communication and high interference immunity whilst minimising current consumption.It targets professional wireless sensor network applications such as irrigation systems, smart metering, smart cities, smartphone detection, building automation, and so on.

LoRaST use STM32l0x chip from ST, STML0x is the ultra-low-power STM32L072xx microcontrollers incorporate the connectivity power of the universal serial bus (USB 2.0 crystal-less) with the high-performance ARM® Cortex®-M0+ 32-bit RISC core operating at a 32 MHz frequency, a memory protection unit (MPU), high-speed embedded memories (192 Kbytes of Flash program memory, 6 Kbytes of data EEPa0 Kbytes of RAM) plus an extensive range of enhanced I/Os and peripherals via industrial standard M.2 (NGFF) pin interface.

LoRaST is an open source product, it is based on the STM32Cube HAL drivers, with customer application examples, user can program LoRaST via USART1 , USART2 or STLINK. The factory firmware supports LoRaWAN 1.0.2 specification and user can use AT Command to set up it and use for their project directly. User can re-compile the firmware to support different LoRaWAN Frequency, includes: EU868, AS925, AU915, CN470, CN779, EU433, IN865, KR920, US915.

Features:

- STM32L072CZT6 MCU
- SX1276/78 Wireless Chip
- Pre-load with ISP bootloader
- I2S,I2C,LPUSART1,SPI2,USB
- 22 x Digital I/Os
- 3 x 12bit ADC; 1 x 12bit DAC
- MCU wake up by UART or Interrupt
- LoRa™ Modem
- Preamble detection
- Baud rate configurable
- LoRaWAN 1.0.2 Specification
- Software base on STM32Cube HAL drivers
- Open source hardware & software
- Available Band:433/868/915/920 Mhz
- External Antenna via I-Pex 4 connector
- Ultra Low Power consumption
- AT Commands to setup parameters
- Industrial standard M.2 (NGFF) interface

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Dragino Technology Co., Limited

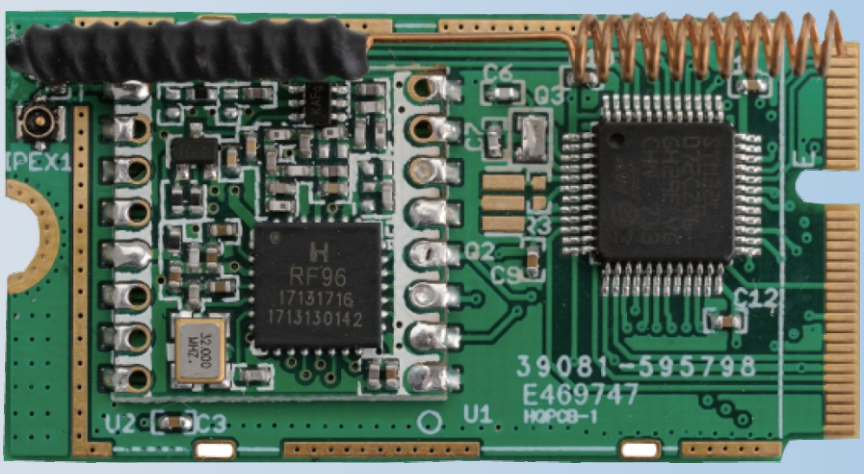
Room 1101, City Invest Commercial , No. 546 QingLinRoad
LongCheng Street, LongGang District; Shenzhen 518116, China
Direct: +86 755 86610829 Fax: +86 755 86647123

Creatio Energy Systems S.L.

Pol. Ind. Villalonquéjar, López Bravo 7, Naves CAM 45
09001 Burgos (Spain)
Tlf. + 34 947 47 30 12 - www.creatio-control.com

Pin Definition

LoRaST



Specifications:

MCU Side:

· MCU: STM32L072CZT6
· Flash: 192 KB
· RAM: 20KB
· EEPROM: 6 KB
· Clock Speed: 32MHz

LoRa Side:

· LoRa Chip: SX1276/SX1278
· 68 dB maximum link budget.
· +20 dBm - 100mW constant RF output vs.
· +14 dBm high efficiency PA.
· Programmable bit rate up to 300 kbps.
· High sensitivity: down to -148 dBm.
· Bullet-proof front end: IIP3 = -12.5 dBm
· 127 dB Dynamic Range RSSI.
· LoRaWAN 1.0.2 Sepecification

Absolute Maximum Ratings:

· VCC: 0.5v ~ 3.9v
· Operating Tempature: -40 ~ 85°C
· I/O pins: 0.5v ~ VCC+0.5V

Common DC Characteristics:

· Supply Voltage: 2.1v ~ 3.6v
· Operating Tempature: -40 ~ 85°C
· I/O pins: Refer to STM32L072 datasheet

Power Consumption:

· STOP Mode: 2.7uA @ 3.3v
· LoRa Transmit Mode:
125mA @ 20dBm
44mA @ 14dBm

Applications:

· Wireless Alarm and Security Systems
· Home and Building Automation
· Automated Meter Reading
· Industrial Monitoring and Control
· Long range Irrigation Systems, etc..

Dimensions:

· Size: 22 x 42 x 3.6mm
· Net Weight: 4g

Order Info- LSN50-XX-YY

· LoRaST-433: Best Tuned at 433Mhz
· LoRaST-470: Best Tuned at 470Mhz
· LoRaST-868: Best Tuned at 868Mhz
· LoRaST-915: Best Tuned at 915/920Mhz

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