CASCADEMIC solutions

InnovaTion towards Embedded Planet

MODBUS to LoRaWAN Converter

Highlights

Long Battery life

Low power

Long Range

Secure communication

Bridging MODBUS and LoRa

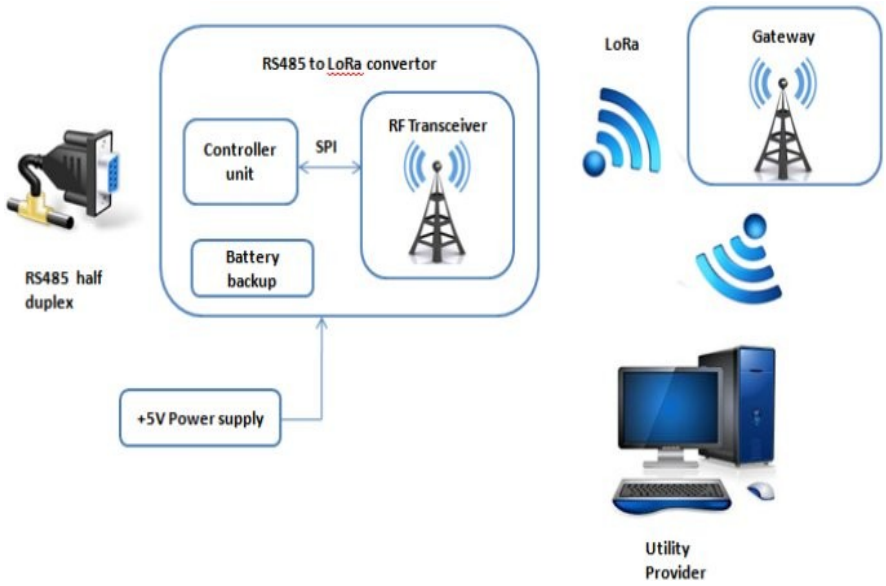
MODBUS to LoRa Converter, one of CASCADEMIC's latest and polupar offerings aims to combine the simplicity and robustness of the MODBUS protocol with the long-range and low power benefits of the LoRa by providing a bridge between these two.

Easily Customizable

MODBUS to LoRa Converter allows easy configuration and installation. It has a quick turnaround time due to customization on existing solution as per OEM's requirement. The Frequency is configurable in addition these parameters which can be configured through LoRa as well as UART : Parity, Baud rate, Modbus parameters (Function code, address, length) , RTC time synchronization and some LoRa parameters.

Operation

MODBUS to LoRa convertor replaces the wired approach for sending the sensor data to the centralized server. The device collects the data through MODBUS (RTU) protocol and sends it to the Gateway using LoRa, a modulation technique that provides long range communication. The Gateway sends the data to the server using Http protocol. The adapter takes the input from RS485 half duplex device (also supports full duplex). The MODBUS to LoRa adapter has inbuilt processing, sensing, storage and RF transmission unit.



Hardware	
Processor	• ARM Cortex M0+ based CPU
Operating Speed (Max)	• 48 MHz
Memory	• 32KB RAM, 256KB ROM
Storage	• 8MB SPI Flash
Power Supply	• 5V (Typical), 200mA without battery sensors excluded • Battery: Secondary Internal 3.7V 2600 mAh non rechargeable, 1100mAh rechargeable battery • Battery operation upto 1 year
Interface support	
Serial	• RS485/ TTL / RS232(MODBUS RTU)
Communication	
Modulation	LoRa
Frequency	EU - 863-870 MHz (European) US - 902-928 MHz (United States) AU - 915-928 MHz (Australia)
Transmit Power	14dBm, Up to 20 dBm
Bandwidth	7.8 to 500KHz (configurable) - For LoRaWAN 125 Khz
Bit rate	0.3 to 50 Kbps for LoRaWAN, can support up to 300 kbps
Spreading factor	7 to 12 automatic for LoRaWAN, configurable.
Sensitivity	Upto -148dBm
Antenna	Internal
Range	1.2 kms urban and 3 Km LOS

Protocol support	
RF	LoRaWAN 1.0.1 *
MODBUS	MODBUS v3.0.6
User Interface	
LED Indication	• RED: Power status • AMBER: MODBUS Slave device status • GREEN: LoRa Status
Environmental Parameters	
Operating Temperature	• 0 to 55 °**C**
Mechanical Parameters	
Enclosure Grade	• IP66
Dimension	• 94 x 65 x 55mm
Chassis	• Poly-carbonate grey material
Mounting	• Wall mounting

* Not certified

Applications

The MODBUS to LoRa Converter finds use in many PLC Applications and SCADA systems that use the MODBUS RTU protocol.

Smart remote metering

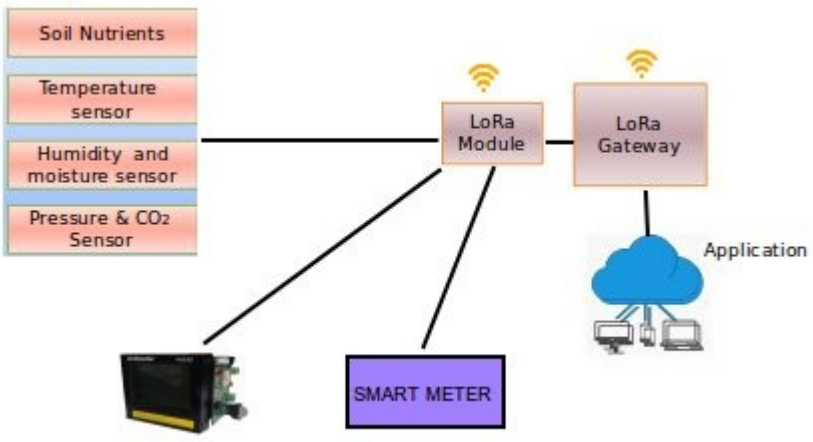
The Converter can be used in conjunction with Smart Meters (both gas and energy) with MODBUS outputs in remote metering applications. The meter reading can be relayed over LoRa to the remote application.

Water monitoring and measuring

Water is a precious resource on our planet and CASCADEMIC'S MODBUS to LoRa Converter can be used with sensors to detect water leakage and take preventive measures. It can also used in monitor the quantity of water used and control wastage.

Irrigation and agriculture industry

With agriculture being the backbone of the economy of many developing nations, there is always a need to reduce the operational costs and maximize the productivity and profits from the farm. CASCADEMIC'S MODBUS to LoRa Converter enables transmission of Soil moisture, Temperature and humidity data from the sensors on the farm to the Gateway through LoRa, and then on to the cloud, where there is considerable amount of analytics done based on the type of crops and the amount of water needed. This analysis is then fed to the Drip irrigation system to control and provide the optimum condition of soil for efficient growth of crops.



CASCADEMIC solutions

Industrial IoT Gateway

Energy Monitoring Solution

LoRa™

LoRa Connectivity Solution

InnovaTion towards Embedded Planet

Cloud Connectivity Solution

Azure
IBM Bluemix
amazon web services™

Environment Monitoring

Thermal Printer

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