

New generation Smart RF modem
enabling extremely long range communication

429 MHz-band specified low power radio for Japan [Under development]
SLR-429D / SLR-429M

Sample available in summer 2016

What the Smart RF modem SLR-429, Circuit Design, Inc. newly offers, is a new generation radio modem which is compact and designed for ease of use while achieving such extremely long range communication that overturns the traditional idea of specified low power radio. In addition to the conventional FSK mode, the SLR-429 has "LoRa mode" which makes ultralong range communication possible, albeit at low bit rate.

Its superior sensitivity expands the possibility of wireless communication even in an environment where it was considered to be difficult for radio waves to penetrate.

There are two types of SLR-429: dongle type that can be easily connected via USB and embedded module type. Both types have been approved for use in Japan and ready for customer's evaluation.

Compact size and battery operable with UART/USB serial interface.
8-switching signal control is also possible with the SLR-429M.
The sample shipment starts in summer 2016.

Ultra long range communication

Flatland area 18 km

Between underground in manhole and above ground 1.5 km

*According to our field test result

Features

- Technical Regulations Conformity Certification obtained in Japan
- ARIB STD-T67 compliant
- Extremely long range operation achieved by LoRa mode
- Higher resistance to urban noise compared to our conventional products, enabling long range operation
- Switchable between FSK mode and LoRa mode
- UART interface
- Transmission of up to 8 switching signals (SLR-429M)
- Low power consumption makes battery operation possible.
- Command compatible with the MU-1/MU-2 series
- Compact size

Applications

- Data transmission, air conditioning control in buildings
- Debris flow monitoring at mudslide-control dams
- River water level / dam gate management
- Rice field water level/temperature monitoring
- Greenhouse temperature/humidity monitoring and control
- Sensor data transmission from underground or manhole
- Monitoring of tunnels and bridges
- Mountaineer's radio locating system

USB dongle
Smart RF modem
SLR-429D

Embedded radio module
Smart RF modem
SLR-429M



Main specifications

USB dongle SLR-429D



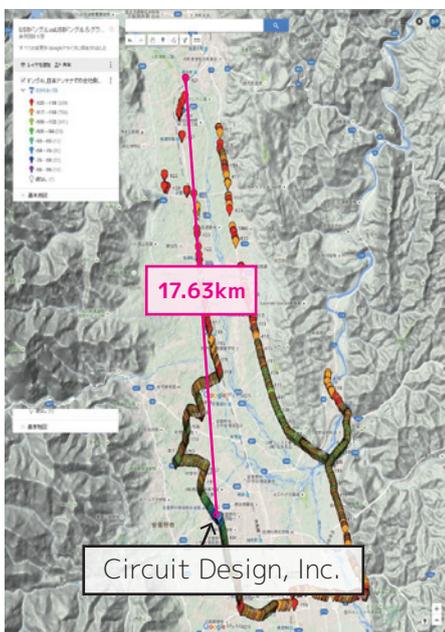
Parameter	Specification
Applicable standard	ARIB STD-T67
Operation frequency	429.25 to 429.7375 MHz, 40 channels with 12.5 kHz step
RF output	< 10 mW
Communication method	Simplex or half-duplex
Emission type	F1D
Modulation method	Binary FSK or LoRa
RF bit rate	4800 bps (FSK) or 15 to 5245 bps (actual speed with LoRa / depends on the chip rate)
Receiver sensitivity	Below -118 dBm (FSK), below -135 to -150 dBm (LoRa)
Rated supply voltage	5 V±10% (via USB)
Operating voltage range	3.5 to 5.5 V
Supply current	TX : 52mA (Typ) , RX : 38mA (Typ)
Attached antenna	1/4λ whip antenna
Other usable antennas	Nippon Antenna BR-450 Please ask about types.
Dimensions	60.6 x 29 x 6.2 mm (±0.3) (Not including the antenna)

Embedded type SLR-429M



Parameter	Specification
Applicable standard	ARIB STD-T67
Operation frequency	429.25 to 429.7375 MHz, 40 channels with 12.5 kHz step
RF output	< 10 mW
Communication method	Simplex or half-duplex
Emission type	F1D
Modulation method	Binary FSK or LoRa
RF bit rate	4800 bps (FSK) or 15 to 5245 bps (actual speed with LoRa / depends on the chip rate)
Receiver sensitivity	Below -118 dBm (FSK), below -135 to -150 dBm (LoRa)
Number of sw inputs	8
Operating voltage range	3.3~5.5V
Supply current	TX : 29mA (Typ) , RX : 17mA (Typ)
Attached antenna	1/4λ whip antenna
Other usable antennas	Nippon Antenna BR-450 Please ask about types.
Dimensions	40 x 29 x 6.2 mm (±0.3) (Not including the antenna)

Range test in LoRa mode [1]
in the area around Circuit Design premises



Range test in LoRa mode [2]
between underground in manhole and above ground

