

RYLR498

UART Interface
426/433/490MHz LoRa®
Antenna Transceiver Module

Datasheet



PRODUCT DESCRIPTION

The RYLR498 transceiver module feature the Lora long range modem that provides ultra-long range spread spectrum communication and high interference immunity whilst minimizing current consumption.

FEATURES

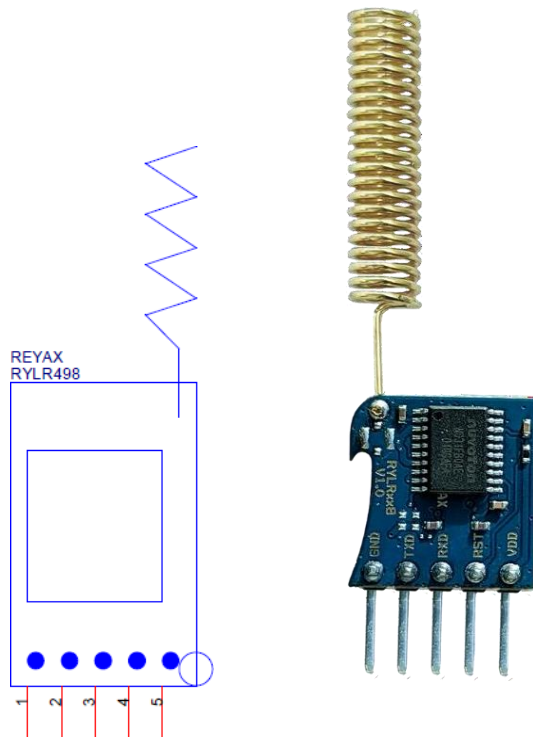
- NUVOTON MCU & Semtech LoRa Engine
- Excellent blocking immunity
- Smart receiving power saving mode
- High sensitivity
- Control easily by AT commands
- Built-in antenna

APPLICATIONS

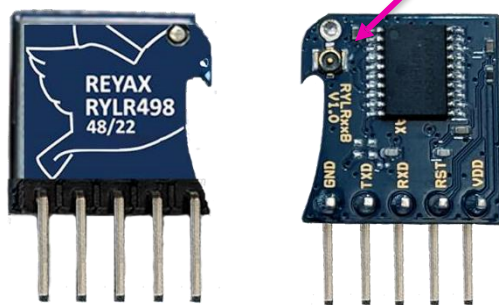
- IoT Applications
- Mobile Equipment
- Home Security
- Industrial Monitoring and Control Equipment

PIN DESCRIPTION

RYLR498



RYLR498_M4

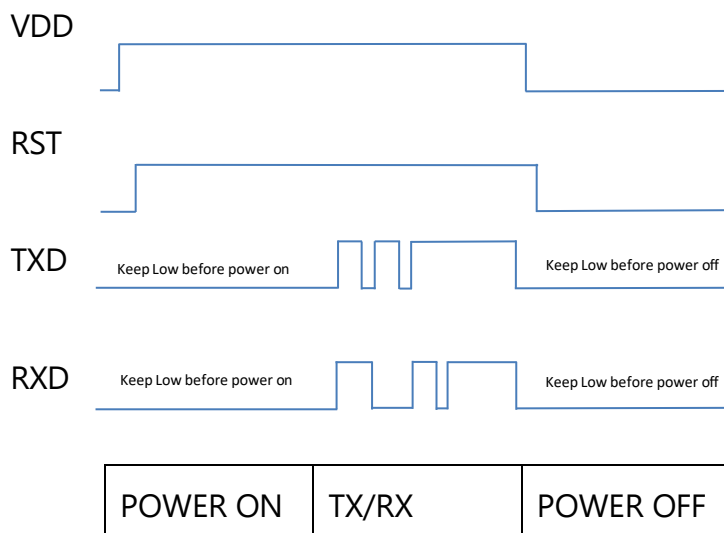


Connector slot that can use I-PEX® MHF4® connector to connect with External Antenna

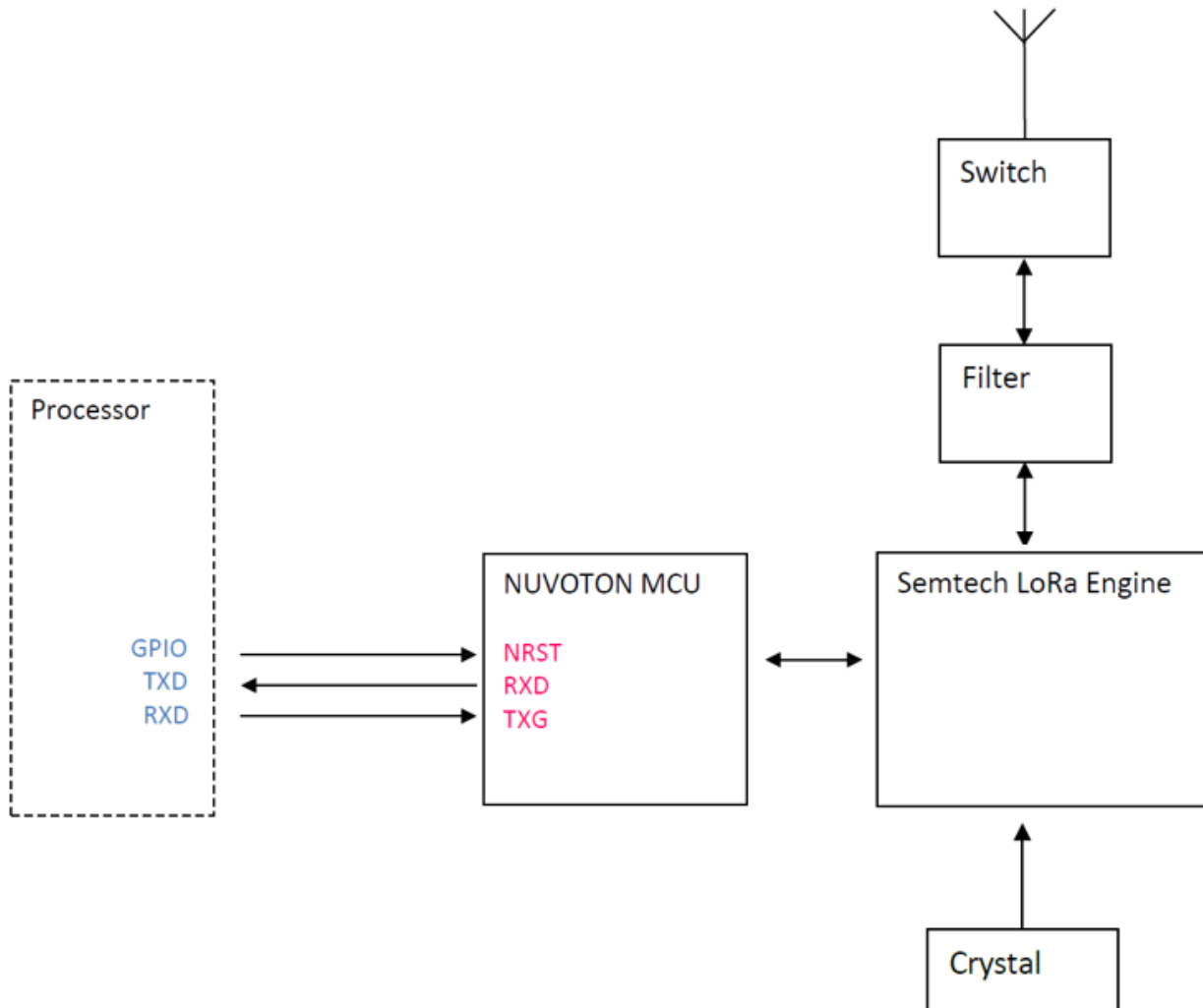
Pin	Name	I/O	Condition
1	VDD	I	Power Supply
2	NRST	I	RESET(Active Low) 100KΩ Internal pull up, Pull down at least 100ms
3	RXD	I	UART Data Input

4	TXD	O	UART Data Output
5	GND	-	Ground

TIMING DIAGRAM



BLOCK DIAGRAM



SPECIFICATION

Item	Min.	Typical	Max.	Unit	Condition
VDD Power supply	2.3	3.3	3.6	V	VDD
RF Output power range	0		22	dBm	
Filter insertion loss	1	2	3	dB	
RF Sensitivity	-129			dBm	
RF Input level			10	dBm	
Frequency range	390	490	525	MHz	
Frequency accuracy		±10		ppm	
Transmit Mode current		140		mA	RFOP = +22dBm
Receive Mode current		17.5		mA	@VDD=+3.3V
Sleep mode current		10		uA	AT+MODE=1 @VDD=+3.3V
Smart receiving power saving mode average current	0.06	2.65	5.5	mA	2.65mA @AT+MODE=2,1000,1000 If you need lower current consumption, you can adjust the AT+MODE=2 time duty.
Baud rate	300	115200	115200	bps	8, N, 1
Digital Input Level High	0.7*VDD		VDD	V	VIH
Digital Input Level Low	0		0.3*VDD	V	VIL
Digital Output Level High	0.9		VDD	V	VOH
Digital Output Level Low			0.1	V	VOL
Cycling (erase / write) Flash data memory		200		K	Cycles
Weight		2		g	
Operating temperature	-40	25	+85	°C	

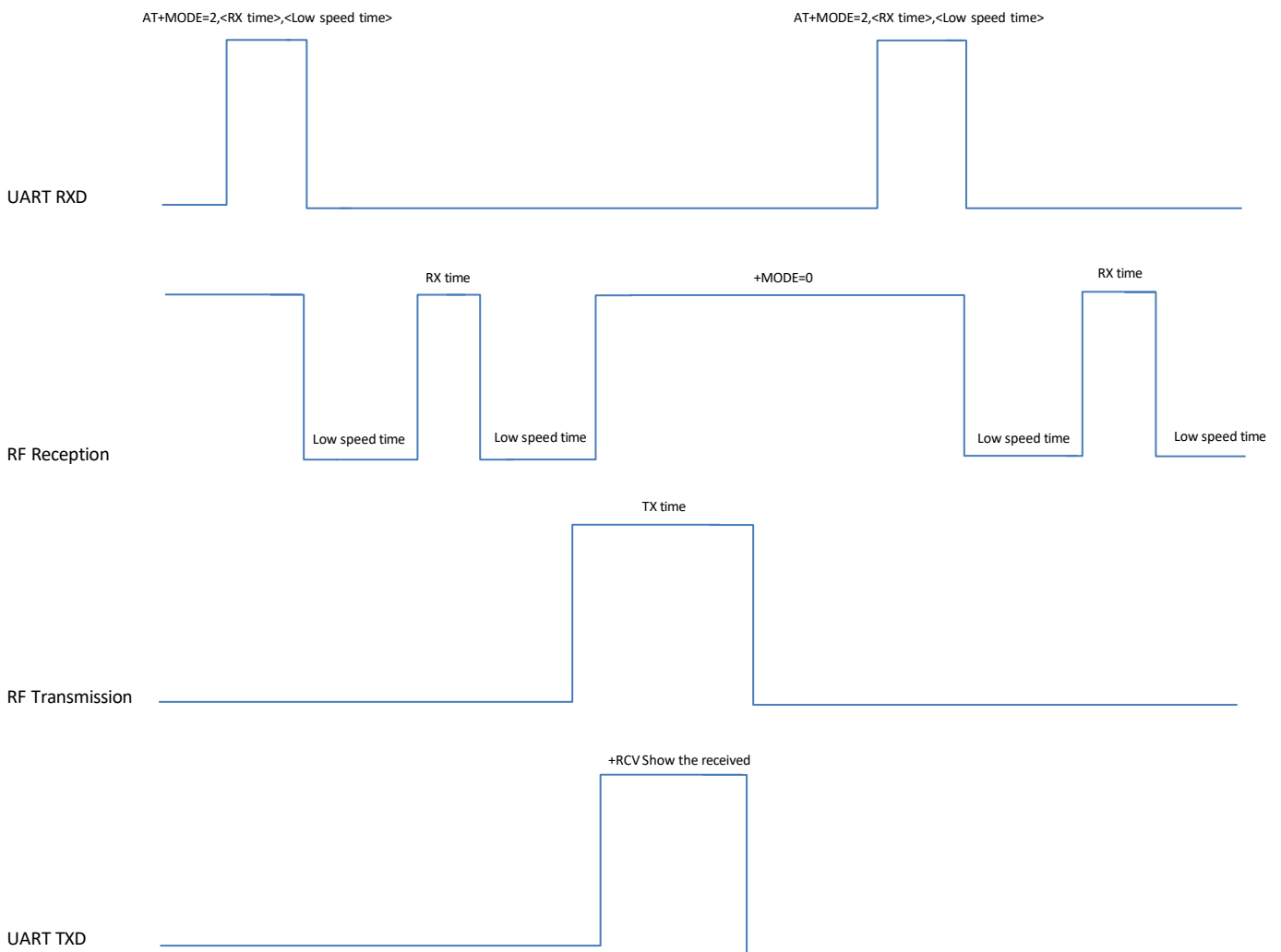
TRANSMIT POWER CONSUMPTION TEST

AT+CRFOP (dBm)	Typical Current (mA) VDD=3.3V	
0	41.3	
1	43.2	
2	46.0	
3	47.9	
4	51.5	
5	53.9	
6	57.1	
7	61.1	
8	64.6	
9	68.6	
10	72.7	
11	77.2	
12	82.2	
13	88.5	
14	94.6	
15	101.1	
16	109.5	
17	117.7	
18	125.7	
19	131.5	
20	136.1	
21	140.0	
22	144.5	

SMART RECEIVING POWER SAVING MODE

When UART RXD interface receives AT+MODE=2,<RX time>,<Low speed time> command, RF Reception will enter the <RX time>/<Low speed time> according to the parameters, When RF Transmission is at <RX time> the data will be decoded. Then the data will be output on UART TXD interface, The RYLRx98 will return to +MODE=0 at same time.

If you want to enter “Smart receiving power saving mode” again, you need to execute AT+MODE=2,<RX time>,<Low speed time> command.

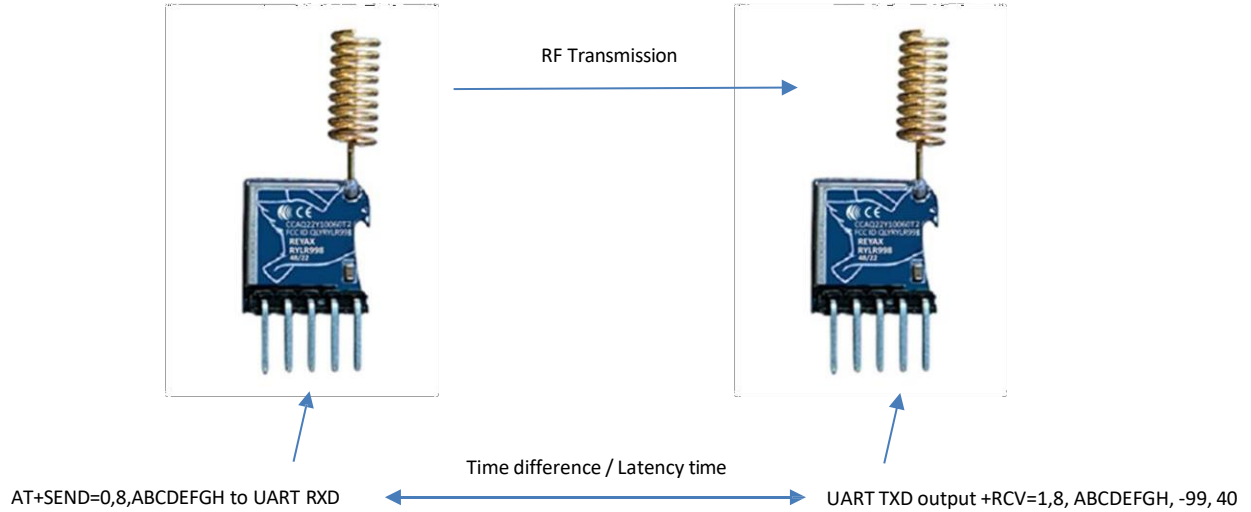


SMART RECEIVING POWER SAVING MODE CURRENT TEST

Time duty	Average current(mA)	Parameter
AT+MODE=2,30,60000	0.057	AT+PARAMETER=5,7,1,12 only
AT+MODE=2,100,60000	0.061	Any
AT+MODE=2,100,50000	0.063	Any
AT+MODE=2,100,40000	0.065	Any
AT+MODE=2,100,30000	0.067	Any
AT+MODE=2,100,20000	0.069	Any
AT+MODE=2,100,10000	0.071	Any
AT+MODE=2,100,1000	0.525	Any
AT+MODE=2,1000,1000	2.65	Any

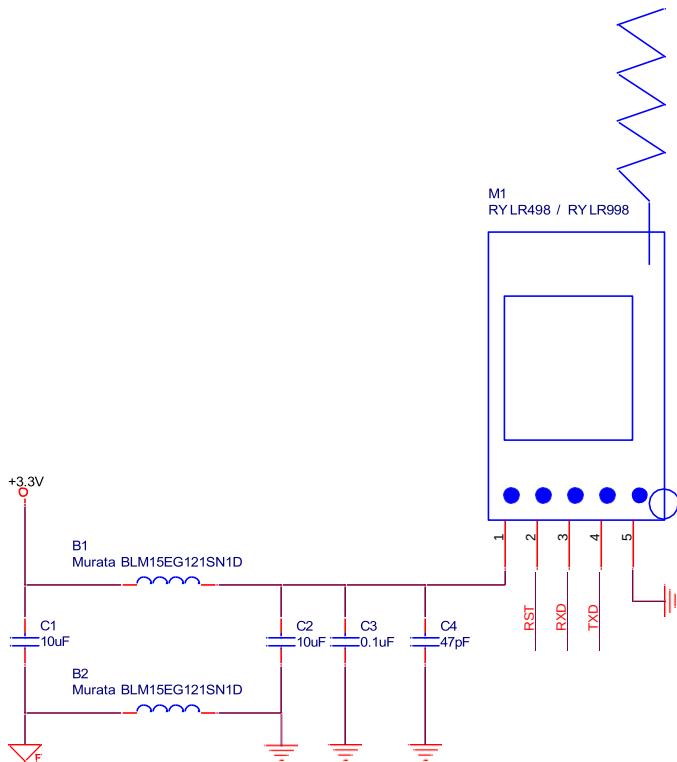
DATA LATENCY TIME TEST

Measure the time difference between the UART RXD receiving the AT+SEND command and the UART TXD outputting +RCV data.

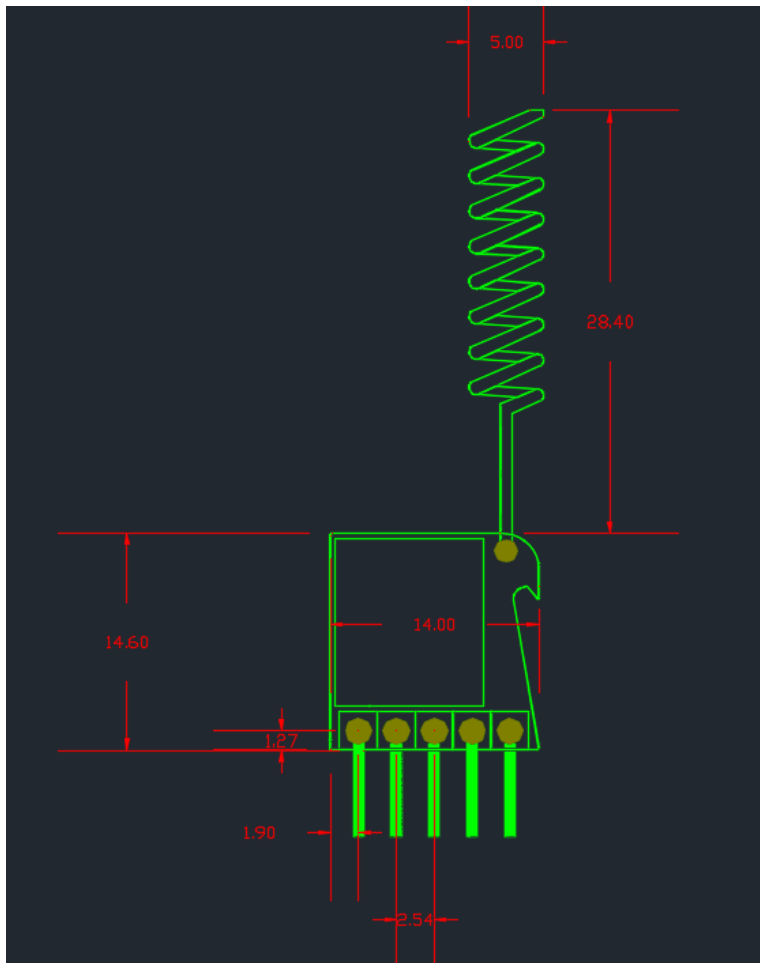


Parameter	Latency time(mSec)
AT+PARAMETER=5,9,1,4	9.52
AT+PARAMETER=5,8,1,12	13.62
AT+PARAMETER=9,8,1,12	98.85
AT+PARAMETER=9,7,1,12	190.7
AT+PARAMETER=11,9,1,24	220.2

APPLICATION SCHEMATIC



DIMENSIONS



Unit : mm

ORDER INFORMATION

Ordering No.	Pin Header	Antenna or I-PEX MHF4 Connector
RYLR498	90 Degree Angle	Antenna
RYLR498_M4	90 Degree Angle	I-PEX MHF4 Connector
RYLR498_NP	Not mount	Antenna
RYLR498_M4_NP	Not mount	I-PEX MHF4 Connector

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