



RFU-400 Quick Start

RS-232/RS-485 to 429/433MHz Modem

1. Packing List

The RFU-400 Package includes the following items:

- RFU-400 Module
- ANT-104-01
- Screwdriver
- Quick Start

2. Specifications & Features

- Frequency Range: **429.1750 MHz ~ 429.9250 MHz** and **433.1 MHz ~ 434.6 MHz**
- Channel Spacing: 12.5 kHz for 429 MHz band and 100 kHz for 433 MHz band
- Channel Number: 16
- Output Power: 10 dBm / 19 dBm
- Modulation Technique: GFSK
- Group ID: 0 ~ 7
- RF Data Rate: 650, 9600, 38400, 115200 bps
- Communication distance: 1000 m (in open areas with 9600 bps RF Data Rate)
- Antenna Connector: SMA
- Serial Port: COM 0 (RS-232 and RS-485 bypass)
- COM Port Data Rate: 1200 ~ 115200 bps
- COM Port Data Format: N,8,1 / O,8,1 / E,8,1
- LED: PWR, RF_Tx, RF_Rx
- 2500 Vrms photocouple isolation on power.
- ± 4 kV ESD to contact.
- Reverse polarity protection and Short protection on power.
- Power requirement $+10 V_{DC} \sim +30 V_{DC}$.
- Power consumption 1 W @ 24 V_{DC} .
- Operating Temperature: $-25^{\circ}\text{C} \sim +75^{\circ}\text{C}$.
- Storage Temperature: $-30^{\circ}\text{C} \sim +80^{\circ}\text{C}$.
- Humidity: 10 to 90% RH (Non-condensing)
- Module Dimensions (not include antenna): 33 mm x 106 mm x 85 mm (W x L x H)
- Antenna Dimension: 108 mm x $\varnothing 10$ mm

3. Pin Assignment

	Pin	Description
	+Vs	+10 ~ +30 V _{DC}
	GND	Power Ground
	D+	RS-485 Logic High
	D-	RS-485 Logic Low
	F.G.	Frame Ground
	GND	RS-232 Ground
	TxD	RS-232 Transmit Data Pin
	RxD	RS-232 Received Data Pin

4. LED

LED	Behavior	Description
PWR	On	+10 ~ +30 V _{DC} Power On
	Off	Power Off
RF_Tx	On	RF is transmitting data
	Off	RF is no data to transmit
RF_Rx	On	RF is receiving data
	Off	RF is no data to receive

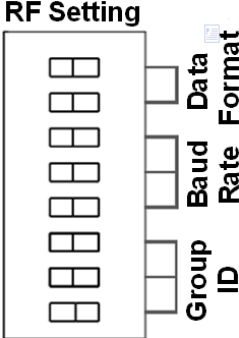

5. Rotary Switch

Switch Name	Description	
	** RF Rate (bps)	0 A Auto the same with COM data rate
		1 B 115200 bps
		2 C 38400 bps
		3 D 9600 bps
		4 E 650 bps
		F* Check Firmware Version
	RF Channel (MHz)	0: 429.8125 / 433.1000 1: 429.8250 / 433.2000
		2: 429.8375 / 433.3000 3: 429.8500 / 433.4000
		4: 429.8625 / 433.5000 5: 429.8750 / 433.6000
		6: 429.8875 / 433.7000 7: 429.9000 / 433.8000
		8: 429.9125 / 433.9000 9: 429.9250 / 434.0000
		A: 429.1750 / 434.1000 B: 429.1875 / 434.2000
		C: 429.2000 / 434.3000 D: 429.2125 / 434.4000
E: 429.2250 / 434.5000 F: 429.2375 / 434.6000		

* The com port will send firmware version string such as "V01.00" once per 2 seconds.

** RF Rate switch 0 ~ 4 are 429 MHz band, and A ~ E are 433 MHz band.

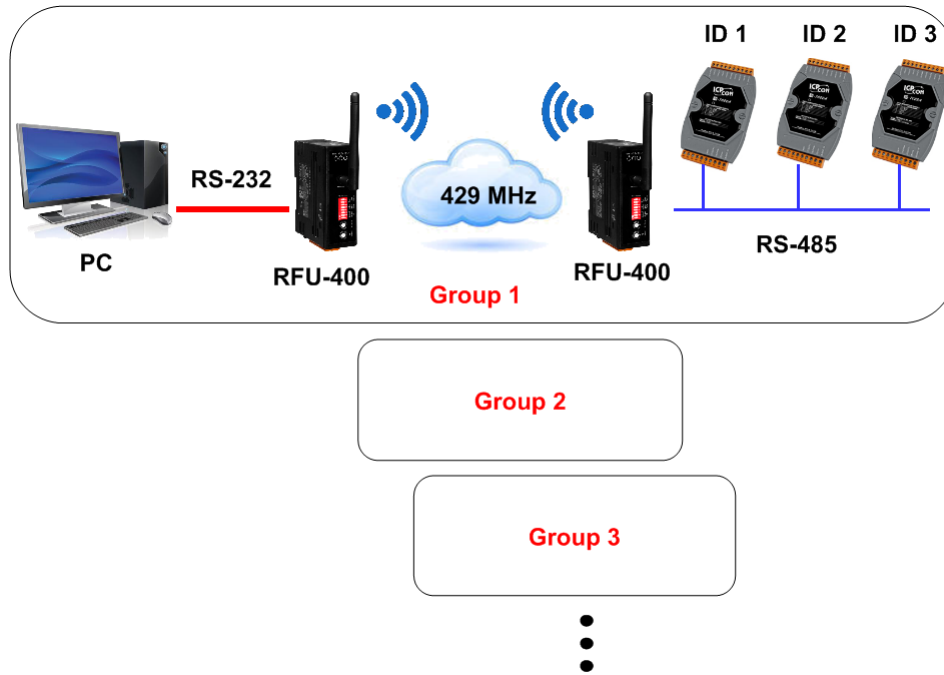
6. DIP Switch

	Pin	Switch Name	Discription																																				
 <p>RF Setting</p> <p>Group ID</p> <p>Baud Rate</p> <p>Data Format</p>	1 ~ 3	Group ID	RFU-400 of the same ID can communicate with each other.																																				
	4 ~ 6	COM Baud Rate	<table border="1"> <thead> <tr> <th>Baud Rate</th> <th>4</th> <th>5</th> <th>6</th> </tr> </thead> <tbody> <tr> <td>115200</td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> <tr> <td>57600</td> <td><input checked="" type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> <tr> <td>38400</td> <td><input type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> <tr> <td>19200</td> <td><input checked="" type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> <tr> <td>9600</td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> </tr> <tr> <td>4800</td> <td><input checked="" type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> </tr> <tr> <td>2400</td> <td><input type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> </tr> <tr> <td>1200</td> <td><input checked="" type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> </tr> </tbody> </table> <p>Black: On White: Off</p>	Baud Rate	4	5	6	115200	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	57600	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	38400	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	19200	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	9600	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	4800	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	2400	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	1200	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	Baud Rate	4	5	6																																			
115200	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>																																				
57600	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>																																				
38400	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>																																				
19200	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>																																				
9600	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>																																				
4800	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>																																				
2400	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>																																				
1200	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>																																				
7 ~ 8	COM Data Format	<table border="1"> <thead> <tr> <th>Data Format</th> <th>7</th> <th>8</th> </tr> </thead> <tbody> <tr> <td>N, 8, 1</td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> <tr> <td>O, 8, 1</td> <td><input checked="" type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> <tr> <td>E, 8, 1</td> <td><input type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> </tr> <tr> <td>*Repeater</td> <td><input checked="" type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> </tr> </tbody> </table> <p>Black: On White: Off</p>	Data Format	7	8	N, 8, 1	<input type="checkbox"/>	<input type="checkbox"/>	O, 8, 1	<input checked="" type="checkbox"/>	<input type="checkbox"/>	E, 8, 1	<input type="checkbox"/>	<input checked="" type="checkbox"/>	*Repeater	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>																						
Data Format	7	8																																					
N, 8, 1	<input type="checkbox"/>	<input type="checkbox"/>																																					
O, 8, 1	<input checked="" type="checkbox"/>	<input type="checkbox"/>																																					
E, 8, 1	<input type="checkbox"/>	<input checked="" type="checkbox"/>																																					
*Repeater	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>																																					
 <p>PA</p> <p>off ← → on</p>	Adjust RF Power		<table border="1"> <tbody> <tr> <td>On</td> <td>Maximum RF Power</td> </tr> <tr> <td>Off</td> <td>Normal RF Power</td> </tr> </tbody> </table>	On	Maximum RF Power	Off	Normal RF Power																																
On	Maximum RF Power																																						
Off	Normal RF Power																																						

*** Repeater Mode only supports 1 hub.**

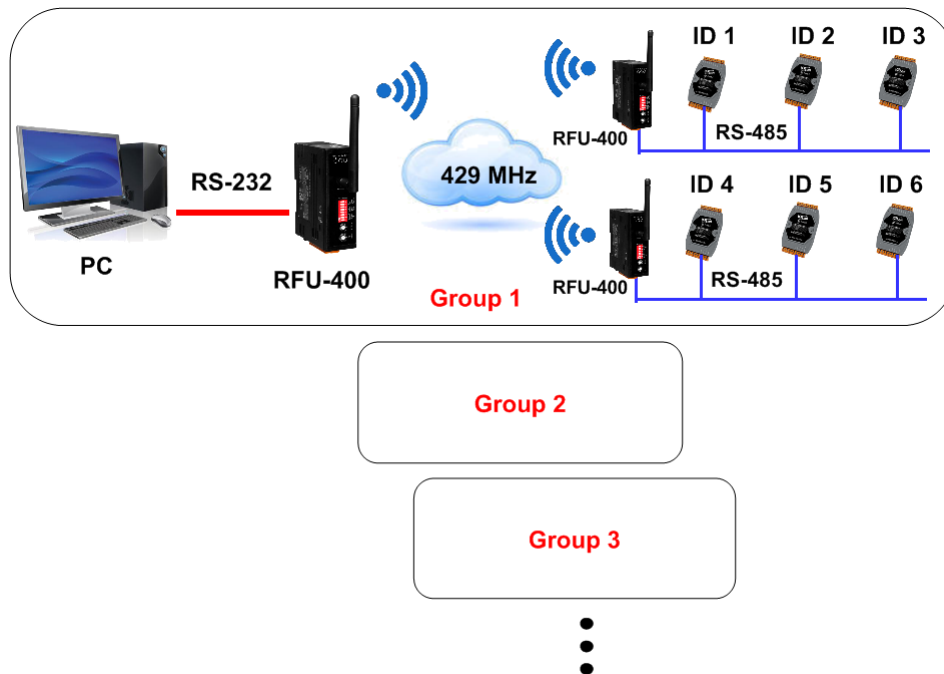
7. Application Example

Ex1: 1 - 1 Transfer



PC controls RS-485 modules 1 ~ 3 through RFU-400.

Ex2: Multi - 1 Transfer



PC controls RS-485 modules 1 ~ 3 through a RFU-400 and modules 4 ~ 6 through another RFU-400 with the same group ID.