



**SRWF-8009 Wireless Meter Reading Module User
Manual**

Version 2.0



Content

1.	Product Overview.....	3
2.	Electric Characteristics and Parameter.....	3
3.	Software Function.....	5
3.1.	Measurement.....	5
3.2.	Communication Function.....	8
3.3.	Valve Control Function.....	8
3.4.	Battery voltage detection function.....	9
3.5.	Alarm function.....	10
4.	Brief Introduction of Compatibility.....	11
4.1.	Pulse Closing Time Requirements.....	11
4.2.	Pulse Number Requirements.....	11
4.3.	Valve Requirements.....	11
5.	Structure and Installation Size.....	13
5.1.	Structure of the Module.....	13
5.2.	Installation Size of the Module.....	13
6.	Communication Tools.....	14
6.1.	Handheld Unit.....	14
6.2.	WAMR NET SYSTEM.....	14
7.	Parameter setting.....	15
7.1.	Brief Introduction of parameter setting software.....	15
7.2.	Relative Terminology Explanation of Parameter Setting.....	15
8.	Certificates.....	15
8.1.	Pass CE、ROHS、R&TTE Certificates.....	16
8.2.	Conform to the IP68 Standard.....	16
9.	Trouble Shooting.....	16
9.1.	Common Malfunction.....	16
9.2.	Installation Reference.....	17



1. Product Overview

SRWF-8009 is a Wireless Remote Cold Water Meter Module which passed RoHS and meets CE certification, and supports two-way communication. It can remotely turn on/off the valve via background management system. The Background management system can read the meter maximally every 1.5S. Standby current is less than 30uA when no interference. ER18505M battery (3.3A/h) will guarantee 11 years of working time.

The modules would take on Anti-rust action for the Meter valve every 10 days to prevent valve stuck during remote valve controlling. Conforming to the IP68 standard test, the modules ensure well function even in humid environment.

Wireless Remote Water Meter Module can be compatible with Reed switch metering sensor, Pairs measured at the Hall element sensor, Hall element metering sensor, Photoelectric direct reading measurement sensor.

2. Electric Characteristics and Parameter

No.	Description	Parameter				Notes
		Unit	Min	Typical	Max	
1	Power supply	V	3.2	3.6	4.0	Power type lithium thionyl chloride battery
2	Working current	uA		110	120	
3	Reading interval	S		1	1.5	
4	Working temperature		- 25	25	65	
5	Transmit Frequency	MHz	470			
6	Reliable	m	200	250		Open field



ShangHai Sunray Technology Co.,Ltd

	Transmitting Distance					
7	Modulation mode	FSK				
8	Channel	1				User can't set the channel
9	Lifetime	year	10			
10	Driving current of valve	mA		100	250	
11	Reed switch module pin pull-up resistors	K Ω	1.98	2	2.02	
12	Hall component pin input impedance	M Ω			60	
13	Photoelectric direct reading module output voltage	V	3.2	3.6	4	
14	Photoelectric direct reading module output current	mA			100	Photoelectric meter power supply
15	UART Port compatibility level	V	3			

3. Software Function

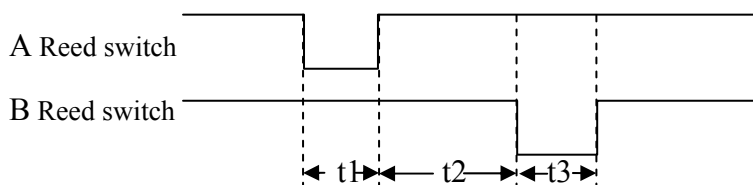
3.1. Measurement

3.1.1. Double Reed Switch

3.1.1.1 Reed switch module pin connection

NO	Wire Colour	Pin Function
1	Black	Common Ground
2	Purple	Reed switch B
3	Green	Reed switch A

3.1.1.2 A、B Reed switch pulse input timing diagram



NO	State	Input low pulse time requirement			
		Min	Typ	Max	
1	t1	A Closing Time	1.5S		
2	t2	AB opening Time	1S		
3	t3	B Closing Time	1.5S		

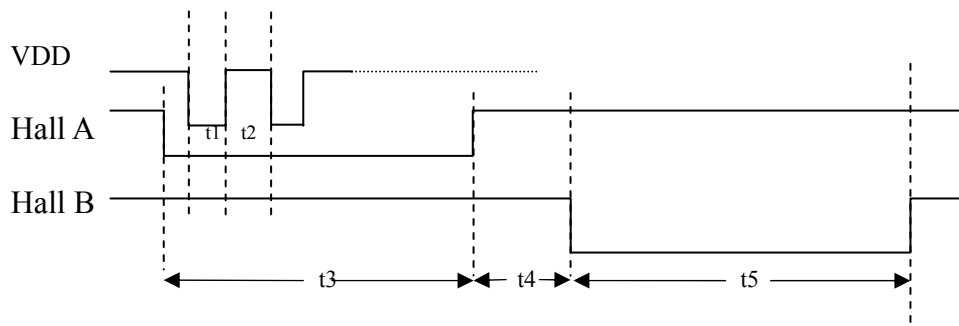
3.1.2. Double Hall Component

3.1.2.1 Hall module pin connection

NO	Wire Color	Pin Function	Test Frequency	Max driving current	Power supply frequency	Output level	Input level
1	Pink	Hall power supply terminal		1.5mA (Vcc-0.25)	10Hz	3V	
2	Black	Common Ground					

3	Green	Hall Input B	10Hz				CMOS
4	Purple	Hall Input A	10Hz				CMOS

3.1.2.2 Parameter Requirements of Hall Component



NO	State		Input low pulse time requirement		
			Min	Typ	Max
1	t_1	Hall meter head power supply time			16mS
2	t_2	Detection interval			100mS
3	t_3 , t_5	Hall low time	1.5S		
4	t_4	Two Hall high time	1S		

3.1.3. Three Hall Element

3.1.3.1 Double hall module pin connection

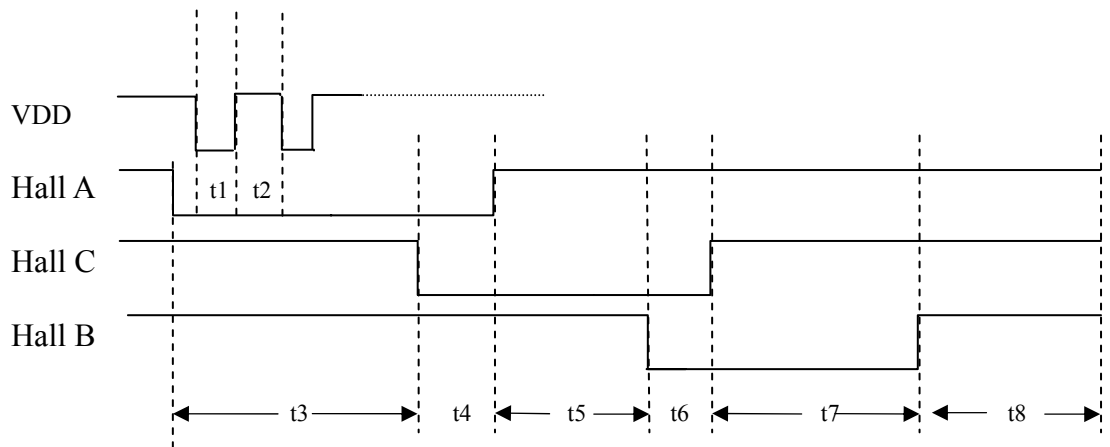
NO	Wire Color	Pin Function	Test Frequency	Maximal driving Current	Power supply frequency	Output level	Input level
1	Pink	Hall power supply terminal		1.5mA(VCC-0.25)	10Hz	3V	
2	Black	Common Ground					
3	Purple	Hall Input B	10Hz				CMOS
4	Green	Hall Input A	10Hz				CMOS



ShangHai Sunray Technology Co.,Ltd

5	White	Hall Input C	10Hz				CMOS
---	-------	--------------	------	--	--	--	------

3.1.1.4 Parameter of Hall Elements



NO	State	Input low pulse time		
		Min	Typ	Max
1	t1			16mS
2	t2			100m
3	t3+t4	1.5S		
4	t4+t5+t6	1.5S		
5	t6+t7	1.5S		
6	t8	5S		
7	t5	2S		

3.1.4. Photoelectric direct reading

3.1.4.1 Photoelectric meter and the module pin connection

NO	Wire Color	Pin Function	Maximum driving current	Power Supply Frequency	Output level	Input level
1	Red	Module power supply terminal		Depend on meter reading frequency	3.6V	
2	Green/Black	Controlled public ground	100mA (VSS+0.2)			

3	White/Black	Receive data				3.6VCMOS
4	Yellow/Black	Transmit data	5mA			3VCMOS

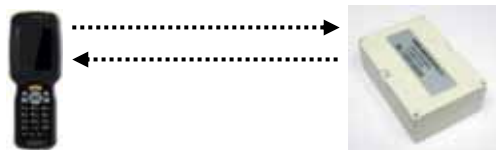
3.1.4.2 Please see item 14, 15, 16 in Electric Characteristics and Parameter for detailed interface parameter

3.1.4.3 For question related to UART Protocol, please contact the manufacturer.

3.2 Communication Function

3.2.1. Direct Reading

3.2.1.1. Handheld unit direct reading

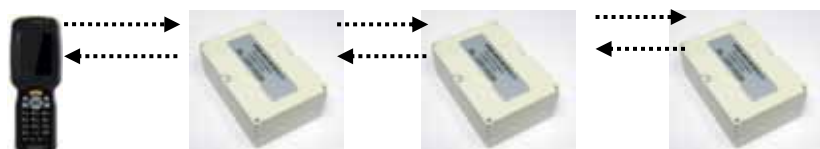


3.2.1.2. Routing

3.2.1.2.1 Handheld unit reading though 1 layer routing



3.2.1.2.2 Handheld unit reading though 2 layer routing



3.3 Valve Control Function

3.3.1. Wireless Valve control

3.3.1.1 Remotely open/close valve

When the modules received command of open/close valve, it first return acknowledgment signal, then conduct valve-control action.

3.3.2. Automatically open/close valve to prevent rust

When the module is working in water meter, modules will turn on/off valve automatically once every 10 days in order to prevent the valve to get rusty.

3.3.3. Open/close valve during Magnetic attack

3.3.3.1. Double reed switch and double hall component meter

When two reed switch (Hall) turn off at the same time (low output), module will report magnetic interference immediately and turn off the valve. The module will open automatically after the magnetic attacks disappeared for some time (depending on the setting).

3.3.3.2. Three Hall meter

When A Hall and C Hall give out the low output at the same time, module will report magnetic interference immediately and turn off the valve. The module will open automatically after the magnetic attacks disappeared for some time.

3.4 Battery voltage detection function

3.4.1.Power-on voltage detection

Once cold start-up, module will detect battery voltage once (load 47Ω resistance). Low voltage will be reported if battery voltage is below 3.15V

3.4.2. Voltage Detection while Continuous Working

The module loads the 47Ω resistance to detect the battery voltage every 48 hours, and it will report low voltage when battery voltage is below 3.15V. At the same time, voltage data is updated

3.5 Alarm function

3.5.1. Low voltage Alarm

“Low voltage mark” will be set once battery voltage is below 3.15V, while system will not actively upload the alarm information.

3.5.2. Alarm during magnetic attack

When magnetic attack detection function of module is enabled, it will report magnetic interference during magnetic attack. The alarm information and also upload alarm information according to uploading enable status

3.5.3. Anti disassembling alarm

When detecting function for disassembling is enabled, it will report “disassembling” during magnetic attack (detected continuous changes from four direction of sensor), and it will also upload alarm information according to uploading enable status

3.5.4. Valve failure alarm

When driver’s opening in place and closing in place are detected at the same time before valve control or after valve control, module will report failure in place and will not actively upload alarm information,

4 Brief Introduction of Compatibility

4.1. Pulse Closing Time Requirements

See relevant introduction in software functions for details.

4.2. Pulse Number Requirements

Modules support , three pulse modes.

1 pulse for 1 cubic meter ,

10 pulse for 1 cubic meter ,

100 pulse for 1 cubic meter.

4.3. Valve Requirements

4.3.1. Valve control driver connection mode

NO	Valve Type	Wire Color	Module & Pin Function	Relative feature	Signal Type
1	Photoelectric position valve	Yellow	Positive pole during opening valve	Maximal driving Current 250mA	
2		Red Black	Negative pole during opening valve		
3		Gray	Opening in place	Input Resistance 60MΩ	TTL
4		Brown	Closing in place	Input Resistance 60MΩ	TTL
5		Blue	Controllable ground	100mA(VSS+0.25)	
		Red	3.6V power output		
	Mechanical position valve	Yellow	Positive pole during opening valve	Maximum Driving Current 250mA	
		Red Black	Negative pole during opening valve		

		Gray	Opening in place	3V Pull up 2K Resistance	switch value
		Brown	Closing in place	3V Pull up 2K Resistance	switch value
		Black	Common Ground		
	No position signal valve	Yellow	Positive pole during opening valve	Maximum Driving Current 250mA	
		Red / Black	Negative pole during opening valve		

4.3.2. Valve control circuit parameters

NO	Status		Input low pulse time requirements		
			Min	Typ	Max
1	Valve control time	unit : S			24
2	Valve control current	unit : mA			250
3	Current when valve stuck	unit : mA	1.5S		250

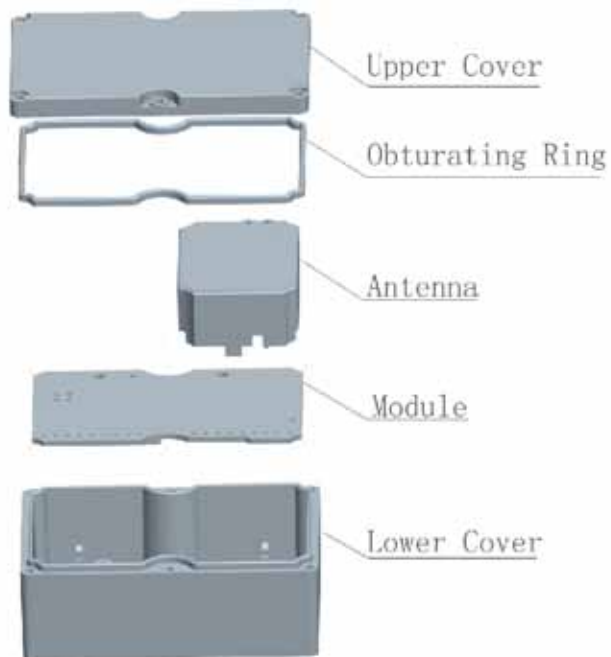
4.3.3. Supported valve type

NO	Valve Type			Support
1	Type of valve in place	Closing valve when Over current	Valve Type	Support
2	Photoelectric in place	Yes	Ball valve	Support
3	Photoelectric in place	No		Support
4	Mechanic in place	Yes		Support
5	Mechanic in place	No		Support
6	None in position	Yes		Support
7	None in position	No		Support
8	Photoelectric in place	Yes	Pilot valve	Support
9	Photoelectric in place	No		Support
10	Mechanic in place	Yes		Support
11	Mechanic in place	No		Support
12	None in position	Yes		Support
13	None in position	No		Support
14	None in position	Yes	Electromag	Support

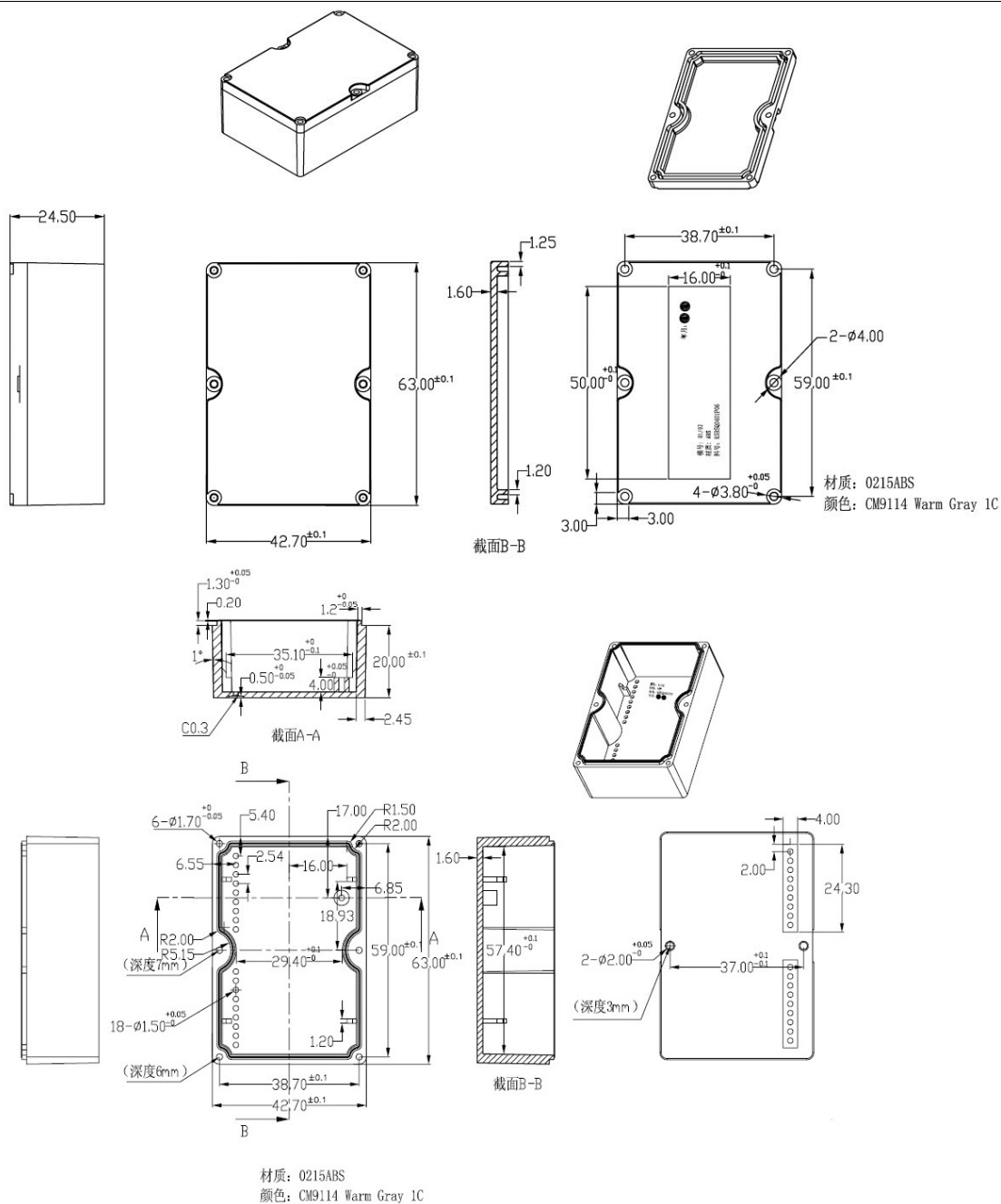
15	None in position	No	netic valve	Support
----	------------------	----	-------------	---------

5 Structure and Installation Size

5.1. Structure of the Module



5.2. Installation Size of the Module



6. Communication Tools

6.1. Handheld Unit

See "TP1100 User manual" for details

6.2. WAMR NET SYSTEM

See "WAMR NET SYSTEM User manual" for details

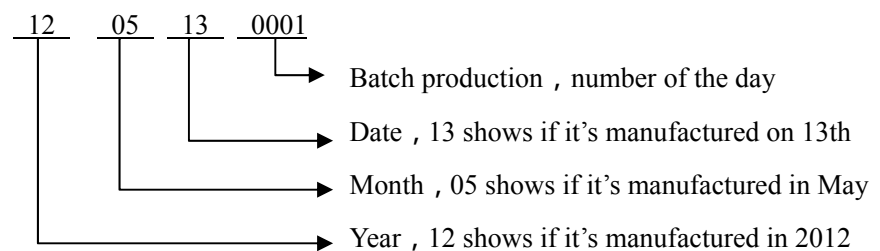
7. Parameter setting

7.1. Brief Introduction of parameter setting software

See “WAMR NET SYSTEM User manual” for details

7.2. Relative Terminology Explanation of Parameter Setting

7.2.1. Meter ID : Set the meter ID , Maximum 10 BCD Code , e.g.1205130001



7.2.2. Pulse number: corresponding pulse number for 1 m³ water , can choose among 1, 10, 100

7.2.3. Magnetic interference time: Valve will be opened after the set “magnetic interference time”, the magnetic interference time is calculated when the magnetic interference disappeared, the unit is: second. Set range: 0-127 S default value is: 50 S

7.2.4. Usage: set the initial value of modules, namely, electronic number is the same with what mechanical dial shows.

7.2.5. Valve control time: set the 100 milliseconds as base for the action time, such as set 4S as the action time of valve for water meter module, a table should be filled in 20 (range: 0-127). The actual action time of valve is 2 S*2 = 4 S, the maximum valve control time can be set as 25.4 S..

7.2.6. Meter type: Choose a meter type according to the application of module, this module is only applicable to water meter.

7.2.7. Pulse type: Choose according to meter.type

7.2.8. Threshold current: mA is the unit. Parameters data is the result that the actual value is divided by 2. For example, set threshold value as 120 mA, 60 shall be filled in, its range: 0-127, maximal threshold current that can be set is 254 mA

8. Certificates

8.1. Pass CE、 ROHS、 R&TTE Certificates

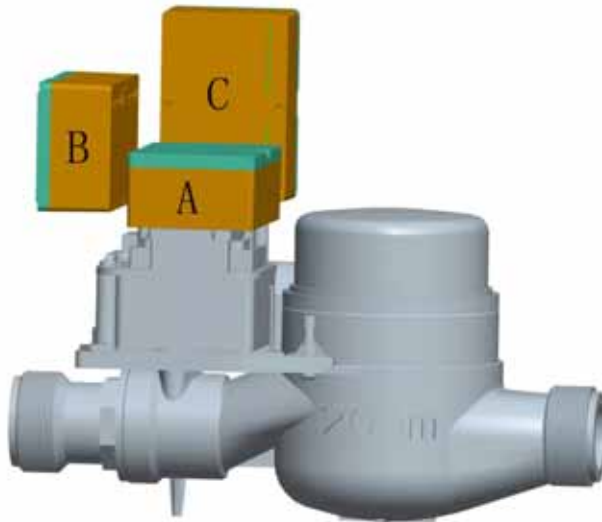
8.2. Conform to the IP68 Standard.

9. Trouble Shooting

9.1. Common Malfunction

NO	Problem	Solution	Notes
1	Unable to read the meter	Check whether the ID of the meter is same to the one on label	
		Check whether the ID of the meter is input correctly	Or if there is ID setting of the meter
2	Unable to open/close the valve	Check whether the cable of motor is conversely connected	
		Common ground of in-position line is open or not(apply for photoelectric valve)	
		Check whether the motor is stuck	
3	Can't close the valve after positioned(Large current consumption)	Check whether there is in-position line on valve	
		Check whether the in-position line is reversely connected or not	
		Check if the set threshold current exceed the range	
4	Valve control not consistent with command	Motor cable is reversely connected	
5	Unable to measure	Check whether the measure sensor type is correct	
6	Electrical and mechanical inconsistencies	Check whether module pulse number is consistent with the meter's	
		Check whether the measure sensor of meter failed	
7	Low reading rate	Check whether the antenna of the module is abnormal	
		Low battery	
8	Abnormal Battery Pressure	Low battery	Check whether the battery type is correct
		Return to manufacturer	

9.2. Installation Reference



communication distance.

- A. The normal installation (module antenna up and parallel), maximize the communication distance of the module
- B. Abnormal Installation , not good for the communication of the modules(shortens the communication distance).
- C. Abnormal Installation , not good for the communication of the modules, shortens the



NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.

This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:(1)This device may not cause harmful interference, and (2)this device must accept any interference received,including interference that may cause undesired operation.

Caution: The user is cautioned that changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.