

DS01915

RHF1S051&RHF1S052 water meter product specification

V1.0

Document information

Info	Content
Keywords	<i>RHF1S051, RHF1S052, Specification</i>
Abstract	RHF1S051&RHF1S052 water meter product specification

目录

目录	2
1 概述	1
2 Specifications.....	2
2.1 Mechanical specifications	2
2.2 Operation conditions	2
2.3 Electronic specification	2
2.3.1 Water meter fundamental parameter.....	2
2.3.2 RF specification	2
2.3.3 User interface	3
2.3.4 Operation mode	3
2.3.5 DevEUI	3
2.3.6 LoRaWAN parameter.....	3
2.3.7 Device activation.....	4
2.3.8 LoRaWAN uplink message	4
2.3.9 LoRaWAN downlink	4
2.3.10 Alert function.....	4
2.3.11 Manual hall trigger uplink report.....	4
2.3.12 Backup battery switch	5
2.3.13 Other specifications	5
2.4 Time zone	5
3 Part number	5
Revision	6

1 概述

RHF1S051 & RHF1S052 is LoRaWAN Smart water meter designed by RisingHF, dual- input pulse counter to achieve water metering, built-in motor engine to support Valve control, use LoRaWAN for Wireless transmission.

Smart water meter will sense metering data real time, and uplink to server periodically.it is also available to read history metering data downlink. Besides metering data will save in database locally, this history database can be read out to enable backup metering data management.

RHF1S051 is designed for cold water meter which works in LoRaWAN class A, and doesn't have valve control. RHF1S052 is designed for hot/warm water meter which has valve control and works in LoRaWAN class B, to improve the downlink control respond time.

2 Specifications

2.1 Mechanical specifications

Dimension	RHF1S051: 170mm x 85mm x 96mm RHF1S052: 195mm x 115mm x 104mm
Weight	RHF1S051: about 1kg RHF1S052: about 1.55kg

2.2 Operation conditions

Temperature	0.1~85°C
Supply voltage	1.8v~3.6v
Power consumption	Sleep current 12uA, LoRa TX 56mA, LoRa RX 6mA
Battery life time*	Typical 10 years (RHF1S051) Typical 8 years (RHF1S052)

Note: * typical use case:

RHF1S051 uplink LoRaWAN message every 24 hours, use battery CR18505.

RHF1S052 uplink LoRaWAN message every hour, use battery CR26500.

2.3 Electronic specification

Unless otherwise specified, the condition below is 3v power supply, temperature 20°C.

2.3.1 Water meter fundamental parameter

Metering class	Class 2
Water pressure	≤1MPa
Pipe diameter	DN20 20mm
Q3 rate of flow	2.5 m ³ /h
Q2 rate of flow	0.04 m ³ /h
Q1 rate of flow	0.025 m ³ /h
Q3/Q1	100
IP grade	IP68
minimal reading	0.00005M ³
maximal reading	99999M ³
Metering tolerance	From Q1 inclusive up to but excluding Q2 is ± 5% Above Q2 is ± 2%

2.3.2 RF specification

Frequency range	902MHz~930MHz
RF TX power	Max 16dBm
RX sensitivity	-137dBm @SF12BW125

Antenna	0dBi Peak Gain
---------	----------------

2.3.3 User interface

Main Battery	2.54a main battery (CN4) : VBAT GND
Backup Battery	2.0a interface (CN5) : Vbackup GND
Hall sensor	User use a magnet close to this hall sensor, to trigger field test function. Or more than 10s to Reset the water meter.

2.3.4 Operation mode

LoRaWAN mode	LoRaWAN OTAA: Class A (RHF1S051) Class B (RHF1S052)
Application mode	RHF1S051: Uplink report accumulated flow data and battery level every 24 hours. Support hall sensor manual trigger field test function: report accumulated flow data and battery level. Support downlink query history flow data RHF1S052: Uplink report accumulated flow data and battery level every 24 hours. Support hall sensor manual trigger field test function: report accumulated flow data and battery level. Support downlink query history flow data Support downlink valve control

2.3.5 DevEUI

Each device will have a DEVEUI, the ID is used to identify the device in LoRaWAN network, this information will be indicated on the case of the water meter.

For example:

8CF957200000FDC4

2.3.6 LoRaWAN parameter

Frequency plan	LoRaWAN frequency plan optional: AS923 ID920 EU868
----------------	---

LoRaWAN Class	Class A/ Class B
LoRaWAN Activation	OTAA

Note:

- 1) RHF1S051 work in Class A.
- 2) RHF1S052 work in Class B.

2.3.7 Device activation

RHF1S051 and RHF1S052 will be in idle status during Warehousing stage and transportation. This will save power for the battery supply. Activation will be in need if water meter installed in field before using.

Simply Load the main battery, if it last for more than 30 seconds, the device will be activated automatically, then it will start to work, and Join network accordingly if gateway and LoRaWAN server is ready.

2.3.8 LoRaWAN uplink message

Each LoRaWAN uplink message, including below information:

- ✓ Accumulated metering flow and device status
- ✓ Battery level
- ✓ The last Downlink RSSI/SNR

2.3.9 LoRaWAN downlink

- ✓ Change period
- ✓ Set/calibration water metering flow data
- ✓ Valve control
- ✓ Query accumulated flow data
- ✓ Query historical flow data
- ✓ Query battery level

2.3.10 Alert function

- ✓ Battery low capacity alert: Less than 20% will trigger Battery low capacity alert, this alert will report every 24 hours, until it is above 20%.
- ✓ Backup battery switch alert: It means the power supply is switched to backup battery, main battery is exhausted.
- ✓ Valve abnormal alert
- ✓ Strong magnetic field alert
- ✓ Hall sensor fault alert

2.3.11 Manual hall trigger uplink report

Manual trigger the metering data uplink for field test and maintenance, including metering flow data and battery level.

2.3.12 Backup battery switch

When main battery voltage is less than 2.3v, or main battery is removed, backup battery will 设备自动 be activated automatically, Backup battery switch alert will be reported.

When device is in backup battery, water meter will only have below limited function to save power:

- ✓ Keep metering data locally and store the data into database every hour, no LoRaWAN uplink anymore.
- ✓ When Backup battery switch alert reported, valve will be closed automatically.
- ✓ Backup battery will support water meter more than 7days, it is highly suggested to replace a new main battery if battery switch is happened.
- ✓ If a new main battery loaded again, valve will open automatically.
- ✓ If a new main battery loaded again, water meter will recover with full function.

2.3.13 Other specifications

Low voltage status: When Battery level is lower than 2.5v, the low voltage status bit will be set to indicate device status.

2.4 Time zone

RHF1S051 and RHF1S052 will synchronize the time with GPS time via LoRaWAN network. And time zone is configurable, to make sure the local time is correct.

If any special time zone needed, please contact RisingHF when order.

3 Part number

Ordering information:

Part number	Description
RHF1S051	Smart water meter, without valve control, for cold water use case
RHF1S052	Smart water meter, with valve control, for hot/warm water use case

Revision

V1.0 2019-12-05
+ create

Please Read Carefully:

Information in this document is provided solely in connection with RisingHF products. RisingHF reserve the right to make changes, corrections, modifications or improvements, to this document, and the products and services described herein at any time, without notice.

All RisingHF products are sold pursuant to RisingHF's terms and conditions of sale.

Purchasers are solely responsible for the choice, selection and use of the RisingHF products and services described herein, and RisingHF assumes no liability whatsoever relating to the choice, selection or use of the RisingHF products and services described herein.

No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted under this document. If any part of this document refers to any third party products or services it shall not be deemed a license grant by RisingHF for the use of such third party products or services, or any intellectual property contained therein or considered as a warranty covering the use in any manner whatsoever of such third party products or services or any intellectual property contained therein.

UNLESS OTHERWISE SET FORTH IN RISINGHF'S TERMS AND CONDITIONS OF SALE RisingHF DISCLAIMS ANY EXPRESS OR IMPLIED WARRANTY WITH RESPECT TO THE USE AND/OR SALE OF RisingHF PRODUCTS INCLUDING WITHOUT LIMITATION IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE (AND THEIR EQUIVALENTS UNDER THE LAWS OF ANY JURISDICTION), OR INFRINGEMENT OF ANY PATENT, COPYRIGHT OR OTHER INTELLECTUAL PROPERTY RIGHT.

RISINGHF PRODUCTS ARE NOT DESIGNED OR AUTHORIZED FOR USE IN: (A) SAFETY CRITICAL APPLICATIONS SUCH AS LIFE SUPPORTING, ACTIVE IMPLANTED DEVICES OR SYSTEMS WITH PRODUCT FUNCTIONAL SAFETY REQUIREMENTS; (B) AERONAUTIC APPLICATIONS; (C) AUTOMOTIVE APPLICATIONS OR ENVIRONMENTS, AND/OR (D) AEROSPACE APPLICATIONS OR ENVIRONMENTS. WHERE RISINGHF PRODUCTS ARE NOT DESIGNED FOR SUCH USE, THE PURCHASER SHALL USE PRODUCTS AT PURCHASER'S SOLE RISK, EVEN IF RISINGHF HAS BEEN INFORMED IN WRITING OF SUCH USAGE, UNLESS A PRODUCT IS EXPRESSLY DESIGNATED BY RISINGHF AS BEING INTENDED FOR "AUTOMOTIVE, AUTOMOTIVE SAFETY OR MEDICAL" INDUSTRY DOMAINS ACCORDING TO RISINGHF PRODUCT DESIGN SPECIFICATIONS. PRODUCTS FORMALLY ESCC, QML OR JAN QUALIFIED ARE DEEMED SUITABLE FOR USE IN AEROSPACE BY THE CORRESPONDING GOVERNMENTAL AGENCY.

Resale of RisingHF products with provisions different from the statements and/or technical features set forth in this document shall immediately void any warranty granted by RisingHF for the RisingHF product or service described herein and shall not create or extend in any manner whatsoever, any liability of RisingHF.

RisingHF and the RisingHF logo are trademarks or registered trademarks of RisingHF in various countries.

Information in this document supersedes and replaces all information previously supplied.

The RisingHF logo is a registered trademark of RisingHF. All other names are the property of their respective owners.

© 2019 RISINGHF - All rights reserved

<http://www.risinghf.com>