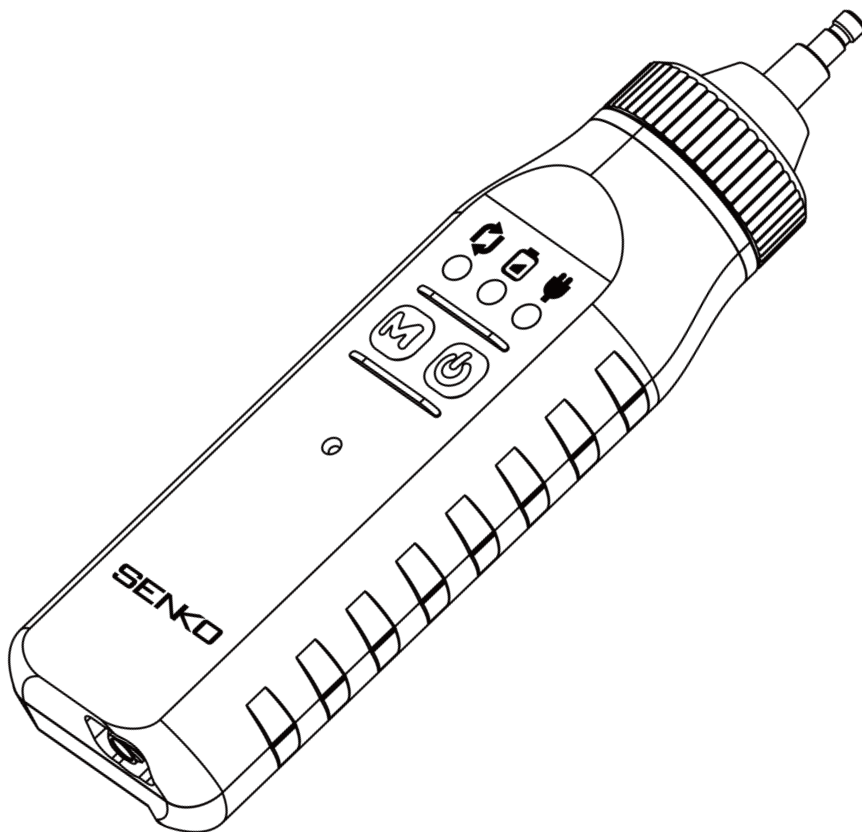


SP-Pump Ex

EXPLOSION-PROOF SAMPLING PUMP

USER MANUAL



SENKO

en.senko.co.kr

WARNING



READ BEFORE USE

- Do not attempt to repair or modify the product. The manufacturer assumes no liability for damage resulting from conditions outside the scope of normal use, including fire, lightning, or water ingress.
- Excessive vibration or impact may cause product failure.
- Do not use or store the product in wet areas or near liquids. Do not allow the end of the sampling line (probe) to come into contact with liquid.
- Do not charge the product in a potentially explosive atmosphere.
- Do not use accessories, batteries, or chargers that are not approved by SENKO.
- Read this manual carefully before use and follow all instructions.

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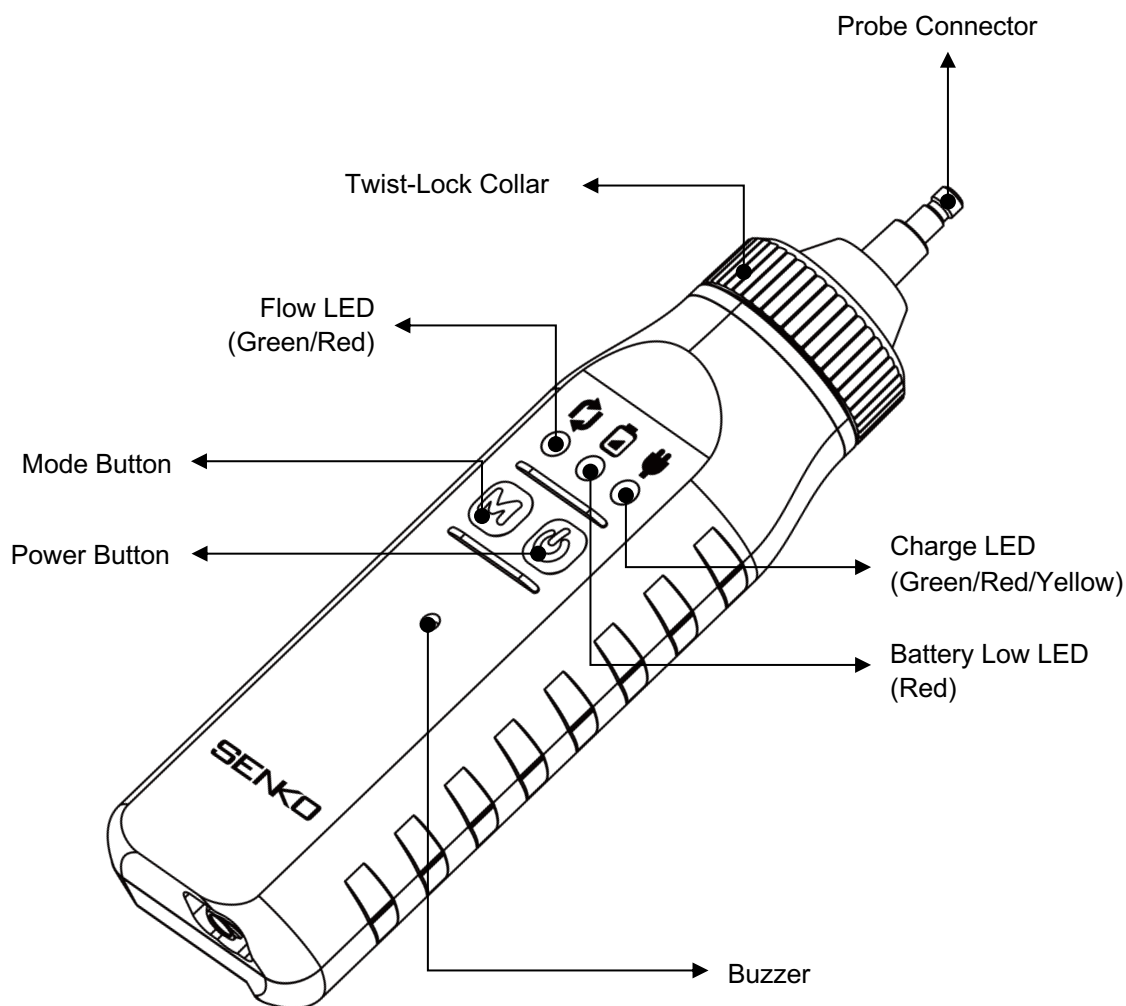
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1. Overview

1.1. Description

SP-Pump Ex is an external sampling pump designed for use with SENKO gas detectors. It draws gas from locations that are difficult for personnel to access, such as manholes and inside piping, through a probe (or sampling line) and delivers the sample to the gas detector, allowing gas leakage at remote locations to be checked.

1.2. Instructions and Parts



1. Overview

1.3. LED Status Indications

Icon	LED	Status	Description
	Flow	Flashing Green	Normal Operation
		Flashing Red	Flow Fault (inlet/sampling line blocked)
	Battery Low	Flashing Red	Low Battery Warning
		Solid Red	Battery fully depleted → Low Battery Shutdown
	Charge	Flashing Red	Charging
		Solid Green	Fully Charged
		Flashing Yellow	Charge Fault

2. Operation

NOTICE

SP-Pump Ex has a built-in rechargeable lithium-ion battery. Fully charge the unit before first use.

2.1. Power On / Off

Power On

1. Press and hold the Power button for approximately 1 second to turn on the unit.
2. The pump starts operating. Under normal conditions, the Flow LED flashes green.

Power Off

1. Press and hold the Power button for approximately 3 seconds to turn off the unit.
2. When the unit is turned off, the pump stops and the unit enters a low-power standby state.

2.2. Switching the Flow Rate

With the power on, briefly press the Mode button to switch the flow level in the following order:
Level 2 → Level 3 → Level 1 → Level 2

Select the appropriate level according to the operating conditions, such as the sampling line length and required flow rate.

Level	Normal Flow Rate	Flow LED Flash Interval
Level 1	70% of Level 2	1 sec
Level 2	300 mL/min	0.5 sec
Level 3	130% of Level 2	0.2 sec

- ※ Actual flow rates may vary slightly from unit to unit depending on the individual calibration results.
- ※ Level 1 and Level 3 cannot be adjusted directly. Their flow rates are automatically adjusted according to the Level 2 setting. The Level 2 flow rate can be set up to 500 mL/min.

2.3. Pre-use Pump Check (Blockage Detection Check)

1. With the power on, completely block the end of the probe or sampling line with a finger or similar object.
2. Confirm that the pump stops, the Flow LED turns red, and the buzzer sounds.
3. If the alarm operates normally, remove the blockage and press the Power button for 1 second to reset the fault.

CAUTION

- Do not use the product if the blockage detection alarm does not operate. Gas may not be drawn to the detector, resulting in an incorrectly low reading.
- Do not allow liquid to enter the gas inlet of the probe (sampling line).

2. Operation

2.4. Low Battery Warning and Automatic Shutdown

- When the battery level becomes low, the Battery Low LED flashes red while the pump continues to operate.
- When the battery is fully depleted, the Battery Low LED remains solid red, and the pump automatically stops and enters the power off state.

CAUTION

- If a low battery warning occurs, move to a safe location before charging the product.
- Battery operating time may vary depending on battery age, ambient temperature, and other conditions.

2.5. Charging

1. Connect the SENKO charger to the unit.
2. Check the charging status using the Charge LED.
(Red = Charging, Green = Fully Charged, Yellow = Charge Fault)
3. If a charge fault (yellow) is indicated, disconnect and reconnect the charger to reset the charging cycle.

3. Calibration Mode

Calibration mode compensates for differences in the flow characteristics of individual pumps. It recalculates and stores the target flow rates and blockage (overcurrent) detection thresholds for Levels 1, 2, and 3 according to the individual device.

3.1. Calibration Setup

1. Before calibration, disconnect the probe or sampling line connected to the unit.
2. Connect a coil tube to the outlet of the unit, and connect the coil tube to a reference flowmeter. Make sure that all air discharged from the pump passes through the flowmeter.

3.2. Calibration Procedure

1. With the unit powered off, press and hold the Power button and Mode button simultaneously for approximately 3 seconds to enter Calibration Mode. Upon entering, the pump automatically operates at Level 2, and the Flow LED, Battery LED, and Charge LED all flash together to indicate Calibration Mode.
2. While checking the flowmeter reading, briefly press the Mode button to increase the pump output by 1%, or the Power button to decrease it by 1%. The adjustable range is approximately $\pm 10\%$ of the Level 2 reference value.
3. When the flowmeter reading reaches the Level 2 target flow rate of 300 mL/min, press and hold the Power button for approximately 3 seconds to confirm the setting. The pump output at the time of confirmation is stored as the Level 2 reference value.
4. Upon completion of calibration, the pump automatically stops and returns to the power-off state.

4. Maintenance

4.1. Cleaning and Inspection

- Wipe the product housing periodically with a soft, damp cloth.
- When replacing the filter or probe, take care to prevent foreign matter from entering the inlet.
- Perform the blockage detection check before each use. See section 2.3 for details.

4.2. Storage

When not in use, store the unit in a safe, dry place at a temperature between 0°C and 30°C.

4.3. Troubleshooting

If the product does not operate normally, check the following items first.

- Make sure the battery is sufficiently charged.
- Check the probe/sampling line connection and make sure there is no blockage.
- If the problem persists after checking the above items, contact the SENKO Service Center.

5. Specifications

Model	SP-Pump Ex
Flow Rate	Maximum 500 mL/min
Alarm Indications	Flow LED(Red/Green), Battery Low LED(Red), Charge LED(Red/Green/Yellow), Buzzer
Buttons	2-Button (Power / Mode)
Operating Temperature	-20°C to +50°C
Charging Temperature	0°C to +45°C
Storage Temperature	0°C to +30°C
Operating Humidity	15% ~ 90% relative humidity, non-condensing
Battery	Rechargeable lithium-ion battery
Continuous Operating Time	30 hours or more at 25°C, based on a flow rate of 300 mL/min
Charging Time	4 hours
Sampling Line	Max. 23 m
Materials	PC, TPU, SUS304
IP Rating	IP66
Dimensions	51 x 182 x 37 mm (W x H x D)
Weight	218 g
Certifications	In progress
Warranty Period	1 year

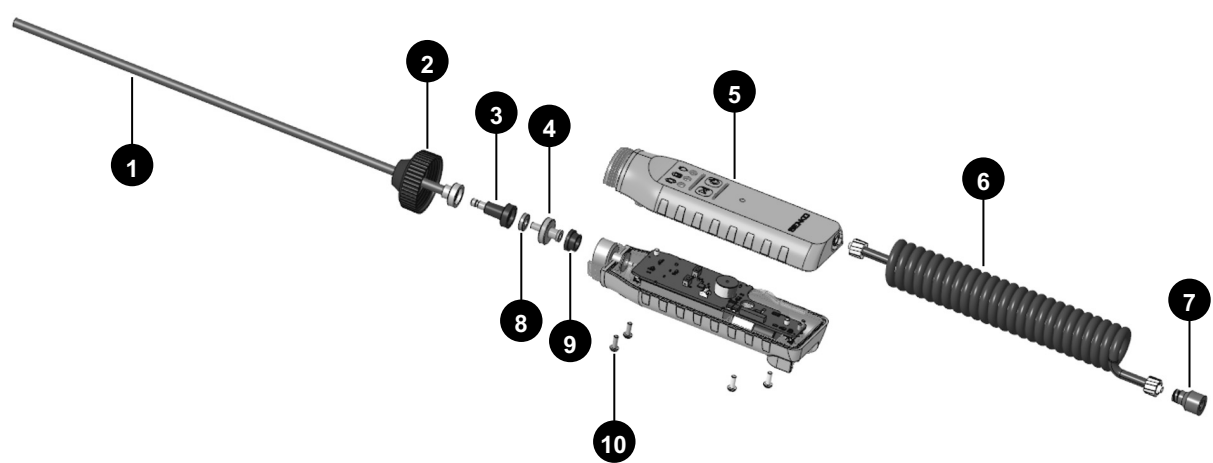
6. Accessories and Replacement Parts

6.1. Accessories

Part	Part Number
SPARE FILTERS, SP-Pump Ex 200E (3PCS/BAG)	
TUBING, SAMPLE LINE (3M)	
UNIVERSAL CHARGING ADAPTER	
PROBE_BAR (30cm)	
PROBE_INSERT	
QUICK_DISCONNECT	
COIL TUBE (1.5M, 4Ø, Urethane)	
CAL_CAP_ADAPTOR	

6.2. Replacement Parts

No.	Part	Part Number
1	PROBE_BAR (30cm)	
2	PROBE_CAP	
3	PROBE_INSERT	
4	SPARE FILTERS, SP-Pump Ex 200E (3PCS/BAG)	
5	UPPER_CASE	
6	COIL TUBE (1.5M, 4Ø, Urethane)	
7	CAL_CAP_ADAPTOR	
8	PROBE_BUSHING	
9	PROBE_BUSHING_FITTING	
10	PAN_HEAD_SCREW M3xL8	



Limited Warranty

SENKO warrants this product to be free from defects in materials and workmanship under normal use and service for one year from the date of purchase from the manufacturer or an authorized dealer.

The manufacturer assumes no liability under this warranty if testing and inspection show that the product has no defect, or that the defect resulted from misuse, neglect, improper installation, testing, or calibration by the purchaser (or a third party). The manufacturer is also released from liability for unauthorized repair or modification, or for damage caused by fire, lightning, water ingress, or other conditions outside the scope of normal use.

If the product does not operate normally in accordance with the manufacturer's specifications during the warranty period, contact an authorized dealer or the SENKO Service Center below (+82-31-492-0445) for repair/return instructions.

SENKO

445, Doksanseong-ro, Osan-si, Gyeonggi-do, 18111, Republic of Korea

Tel : +82-31-492-0445

Fax : +82-31-492-0446

E-mail : sales@senko.co.kr

Web : en.senko.co.kr