SI-H100

Sampling Type Fixed Gas Detector

USER MANUAL

SENKO

Better Safety, Better Life, Challenge, Innovation

Table of Contents

Table of Contents

⚠ WARNING

⚠ Any unauthorized attempt to repair or modify the product, or any other cause of damage beyond the range of the intended use including damage by fire, lightening, or other hazard, voids liability of the manufacturer.

⚠ Do not use if the device appears to be damaged.

⚠ Severe vibration or shock to the device may cause a sudden reading change and cause the device malfunction.

⚠ Do not leave or use the device at the watery place or at where there is any liquid.

⚠ Do not use a device which has been failed the test.

⚠ Read the manual thoroughly before using the device. This device must be used and maintained in accordance with the instructions. Failure to follow the instructions may result in device malfunction or risk to personal injury or life.

1. Overview

1.1 Description

SI-H100 sampling type Gas Detector measures sample gas by sensor cartridge in the case upon suction remotely on a real time basis. It is a device that assists to prevent or control a variety of gas related accidents including suffocation, intoxication, fire, explosion, corrosion and so on in multiple semiconductor or industrial sites.

SI-H100 measures the gas concentration on a real time basis constantly and shows alarm of dangerous concentration, FAULT status and so on, upon attaching on the wall. User can easily change the environmental settings of the device using the four buttons at the bottom of the screen.

The measured gas concentration is transmitted with 4-20mA output on a real time basis and external operation can be variously configured according to the desired situation through three internal relays. In addition, it is possible to output MODBUS/TCP and to solve data transmission and power at the same time only with a LAN cable (PoE).

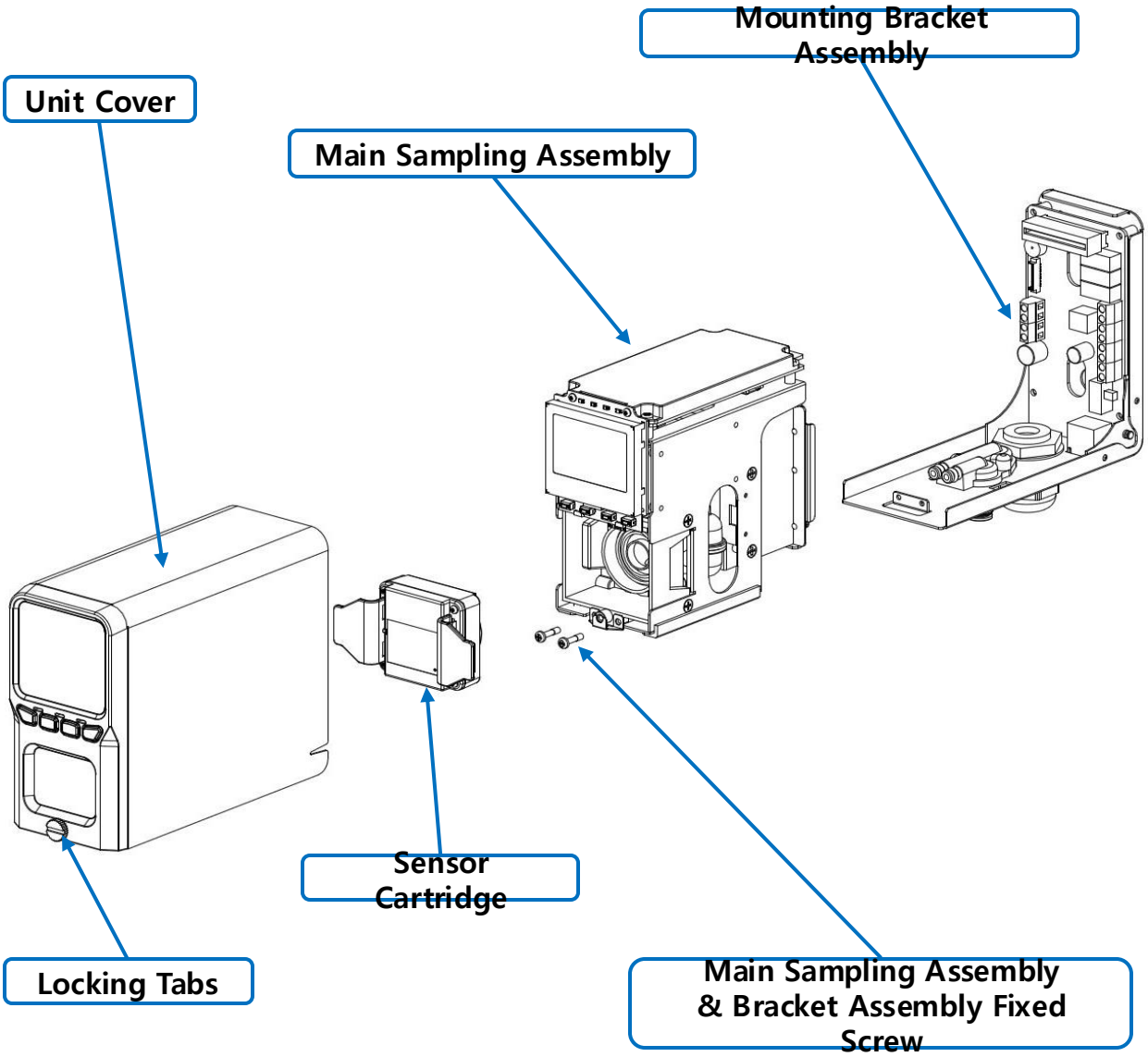
⚠Warning

Read the manual thoroughly before using the device. This device must be used and maintained in accordance with the instructions. Failure to follow the instructions may result in device malfunction or risk to personal injury or life.

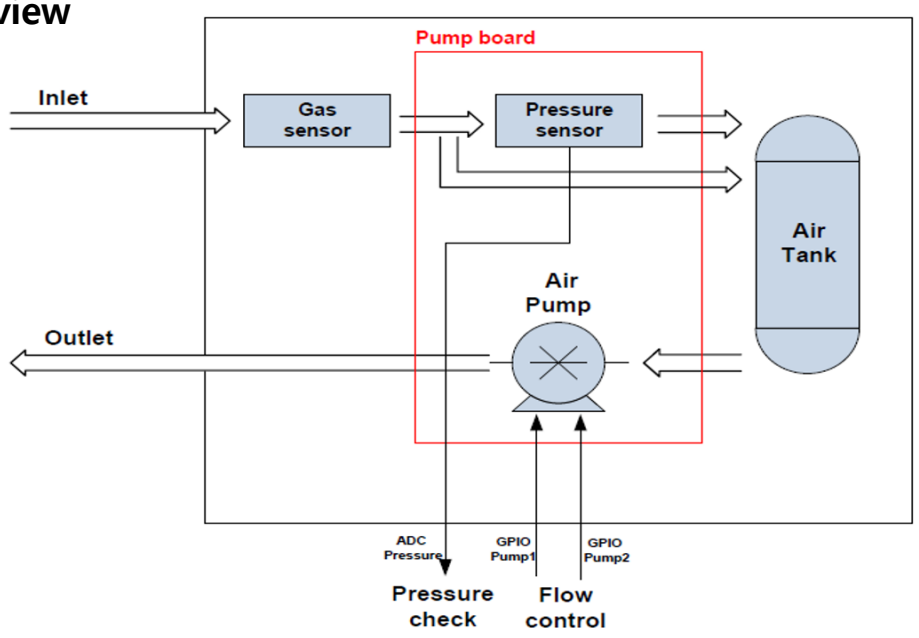
1.2 Product Composition

SI-H100 consists of 4 parts: case, sensor cartridge, main frame and mounting assembly base.

In addition, it also contains Pyrolyzer accessory for detection and measurement through thermal decomposition in case of substances that do not have a gas sensor that can be generally detected, such as NF3.

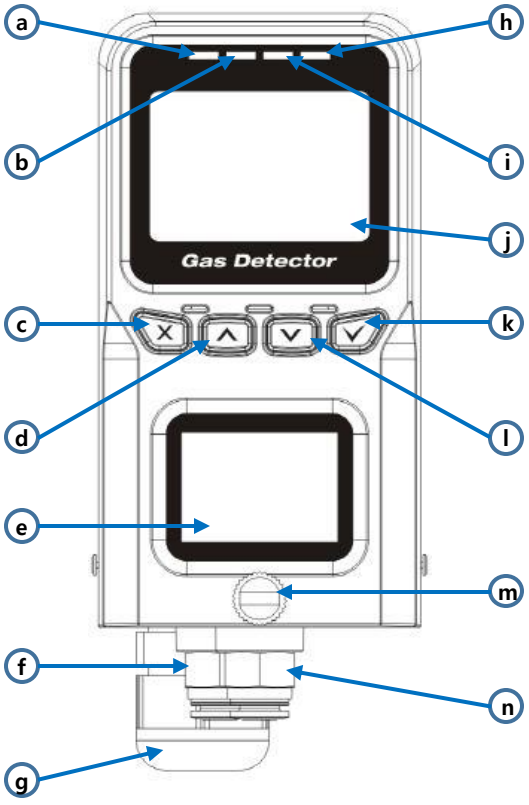


1.3 Overview



1.4 Instructions and Parts

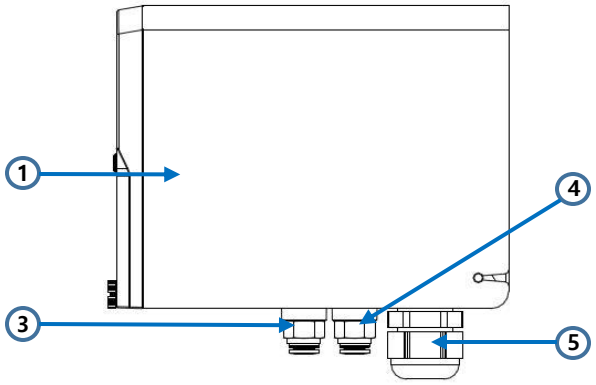
1.4.1 Front



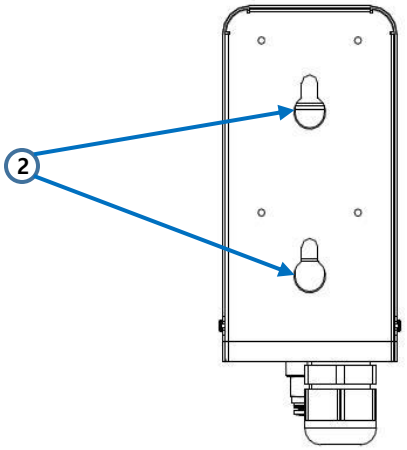
No	Description
a	Power LED (Green)
b	Low Alarm LED (Red)
c	Menu button
d	UP button
e	Sensor cartridge window
f	Gas outlet port
g	Cable gland
h	Fault LED (Red)
i	High Alarm LED (Red)
j	LCD
k	Select button
l	Down button
m	Thumb screw
n	Gas inlet port

SENKO
SenKo Co., Ltd

1.4.2 Side

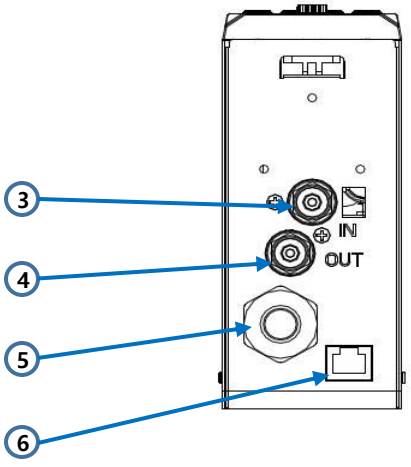


1.4.3 Back



No	Description
1	Unit cover
2	Mount bracket hole
3	Gas inlet port
4	Gas outlet port
5	Cable Gland
6	Ethernet/PoE socket

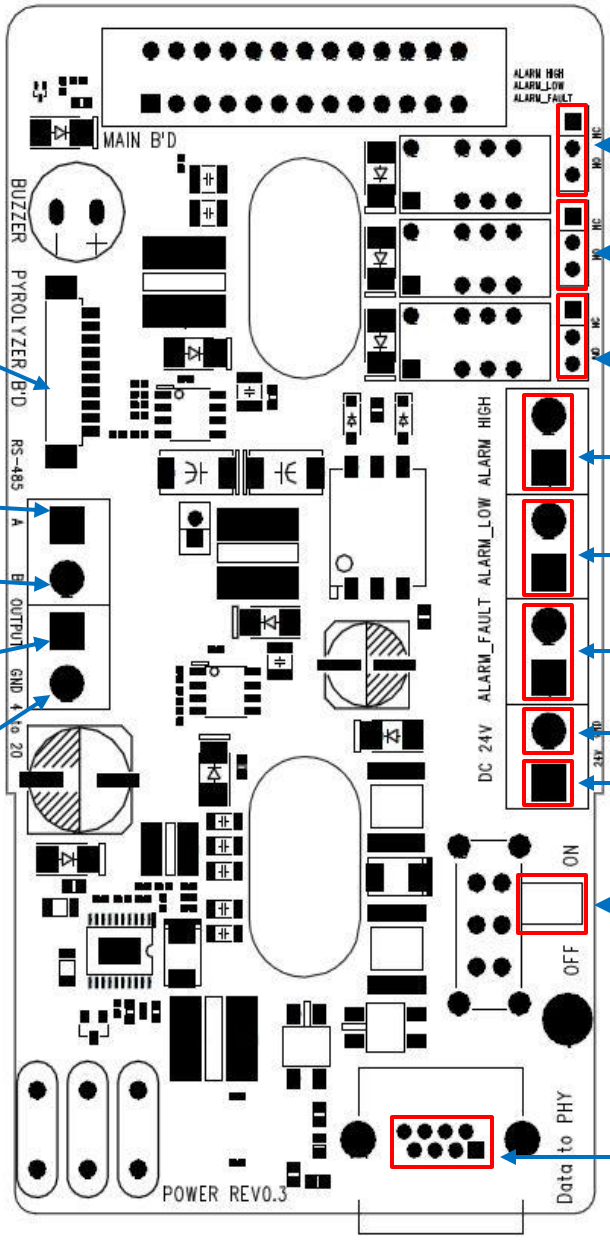
1.4.4 Underside



SENKO
SenKo Co., Ltd

2. Cable Connection

2.1 Power Board



Pyrolyzer power supply connector

RS-485 : A

RS-485 : B

4-20mA Signal

4-20mA Ground

High Alarm Jumper: 1-2: NC / 2-3: NO

Low Alarm Jumper: 1-2: NC 2-3: NO

Fault Jumper: 1-2: NC / 2-3: NO

High Alarm Relay

Low Alarm Relay

Fault Relay

Power cable: Ground

Power cable: DC 24V

Power ON/OFF switch

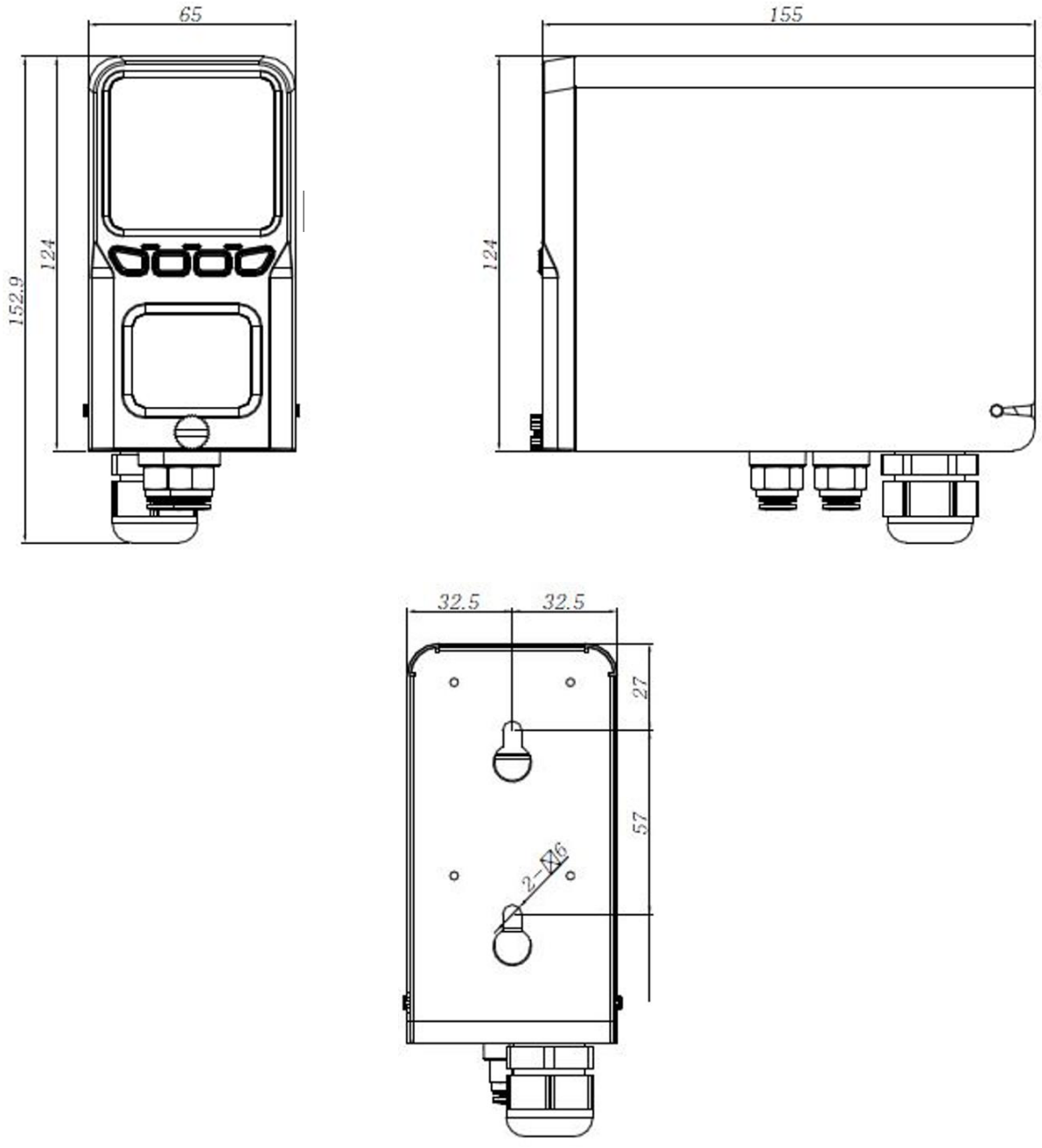
Ethernet/PoE socket

PoE switch hub must be used when powered by PoE

SENKO
SenKo Co., Ltd

3. Outline Drawing

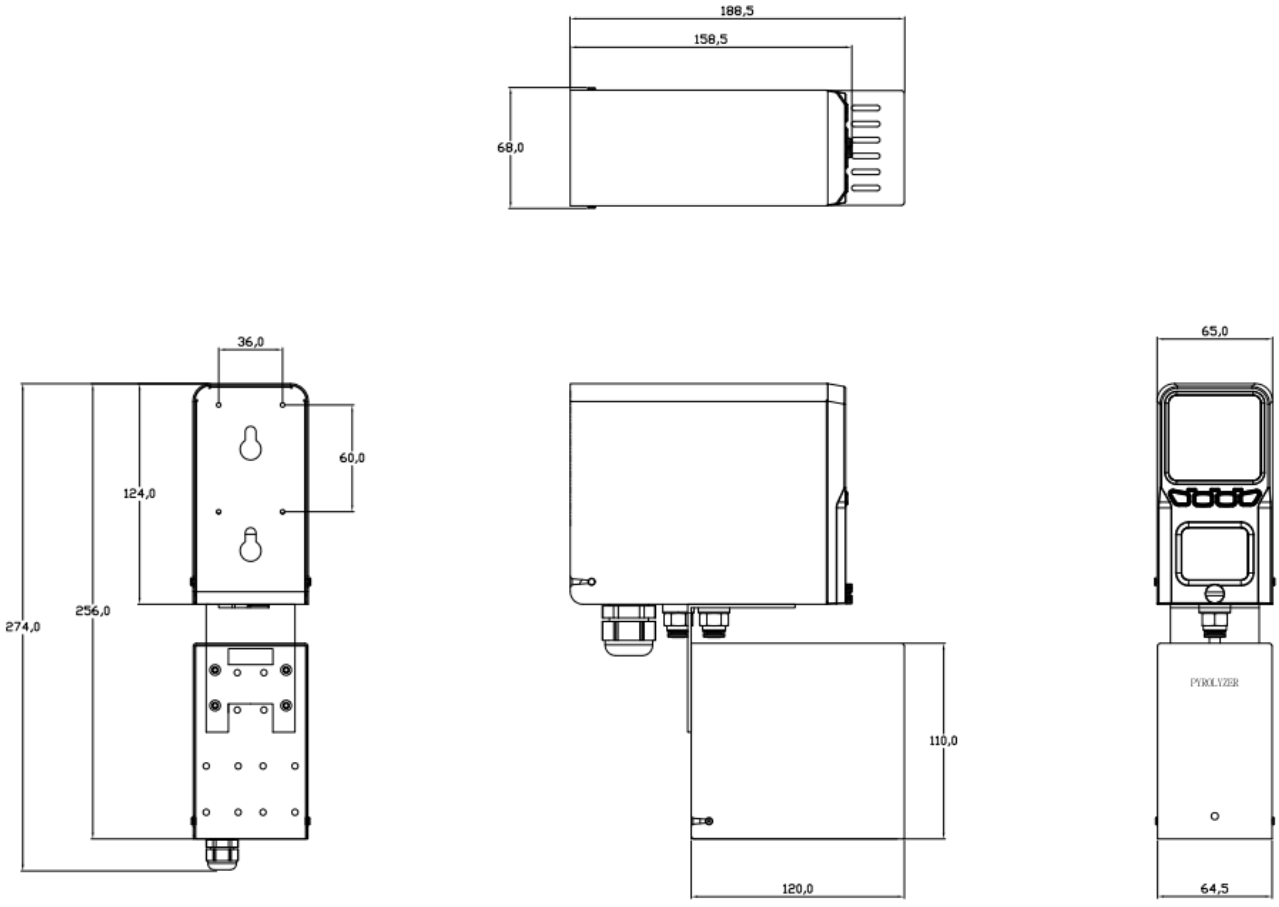
3.1 Dimensions



Note: Metric Unit of Measurement: millimeter (mm)

SenKo Co., Ltd

3.2 SI-H100 & Pyrolyzer



Note: Metric Unit of Measurement: millimeter (mm)

SenKo Co., Ltd

4. Specification

ITEM		Specs
Sensor	Type of Sensor	Electrochemical, IR, Catalytic, PID
Transmitter Dimension	Size (unit with Sensor)	124(H) X 65(W) X 155(D) mm
	Weight (unit with Sensor)	2kg
Pyrolyzer Dimension	Size (unit with Sensor)	110(H) X 64.5(W) X 120(D) mm
	Weight	684g
Power Requirements	Operating Voltage	DC : 24V ± 10%
	Operating Voltage with Power over Ethernet (PoE)	PoE : 36V~57V (Typical : 48V)
Power Consumption	Transmitter Unit	5.0W
	With Pyrolyzer (Option)	12.0W
Outputs	Visual	Graphic LCD (160 X 100), Gas Concentration, Flow, Alarm, Back light, Fault
	Relays	1st alarm, 2nd Alarm, Fault Alarm
	Analog	4-20mA
	Digital Communications	RS-485, TCP Ethernet
Transport System	Input / Output Tube Dimension	1/4" Teflon tube
	Flow Rate	500mL/min (MAX 900)
	Sample Line Tubing	FEP tube
	Tubing Length	Length of input gas tube: up to 30m
	Exhaust Line Tubing	FEP tube
	Exhaust Length	Length of exhaust gas tube: up to 30m
Operating Temperature	Unit with Sensor	0°C ~40°C
	Unit with Sensor and Pyrolyzer	0°C ~40°C
Wiring requirement	Instrument	4 to 20mA / DC Power / Relay : Max 14 AWG
Certificate	Instrument	CE, ROHS2
Alarm Buzzer	Instrument	90dB
Alarm Output Signal	Instrument	Dry contact relay(NC, NO) / A1, A2, Fault
Warranty	Transmitter Unit	2 years
	Sensor cartridge	2 years
	Pyrolyzer	2 years

5. Key Information

5.1 Key Description

Key	Name	Description
	**Menu**	Menu/Cancel & Return to previous step
	**Up**	Move List Focus and change value
	Up Long	Move List Focus and Display settings
	**Down**	Move List Focus and change value
	Down Long	Move List Focus and Display settings
	**Select**	Select and Save

5.2 Key State

State	Pressed time	Description
Normal click	100ms below	Menu and Set value changes
Long click	1000ms over	Movement of focus Forward/Backward in each setting

6. Set up and Operation

6.1 Power On

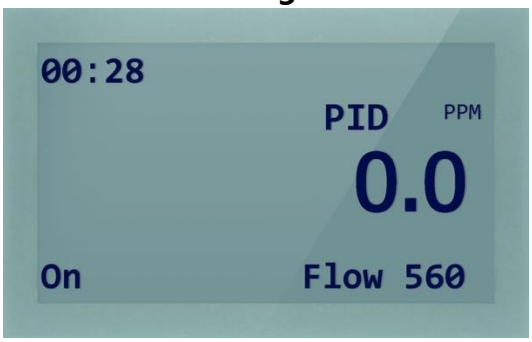
① ⚠ **Warning** Check the power supply voltage before wiring.

② The firmware version will be displayed when power LED (green) turns on.

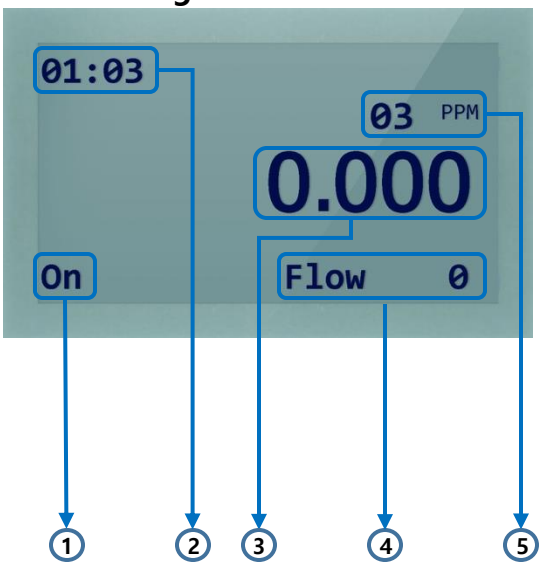
③ Automatically goes to "Measuring Mode" after warm-up about 15 seconds.

Booting and Warm Up

Measuring Mode



Measuring Mode LCD Definition



No	Description
1	Sensor On/Off State
2	Time: 24-hour system
3	Concentration of measured gas - Decimal point changes depending on the measuring range of the sensor.
4	Current flow rate of Pump
5	Gas type / measurement unit - O3: gas type (Ozone) - PPM: measurement unit

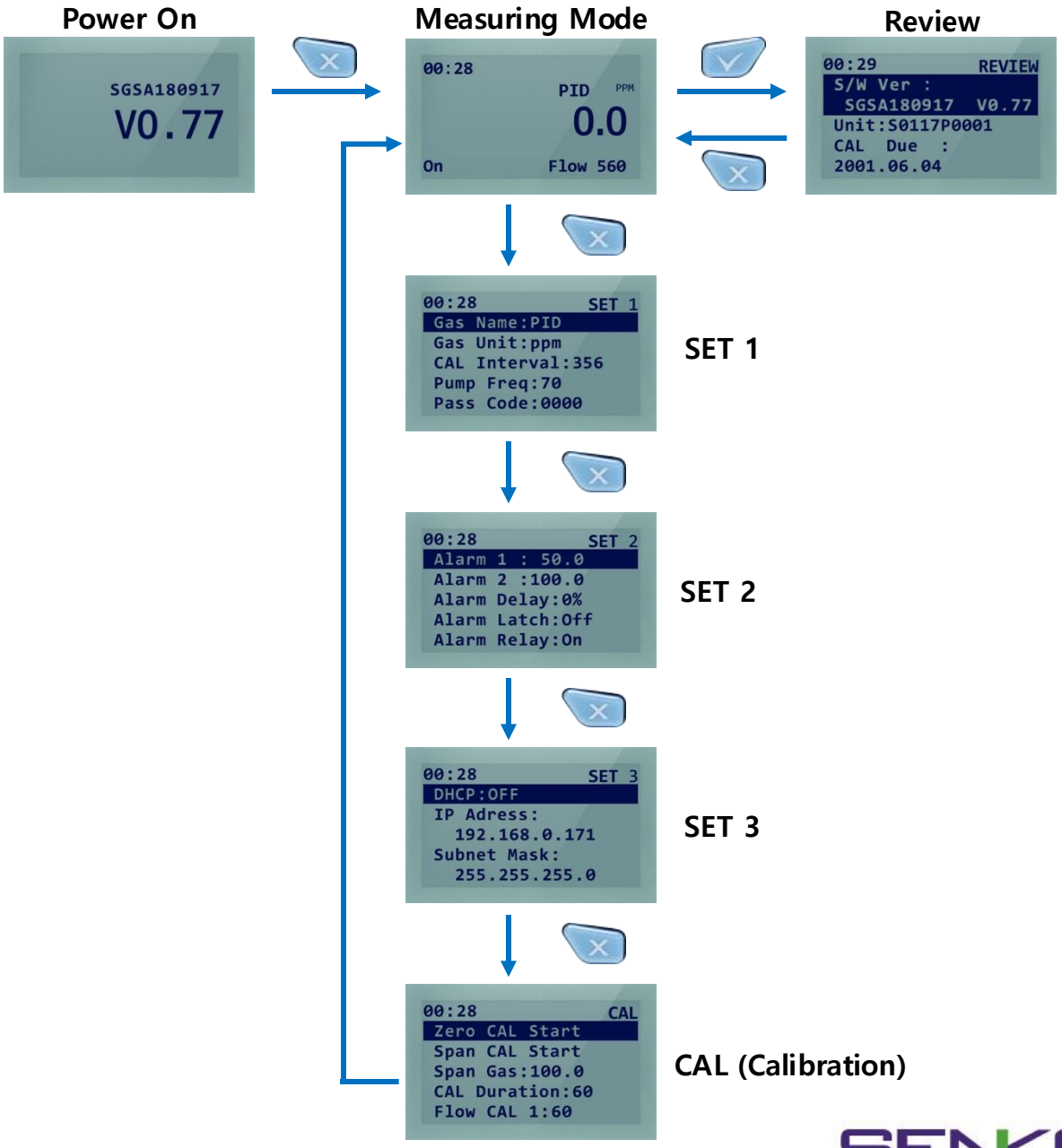
7. Operational Menu

7.1 Menu Overview

① By pressing Menu key, cycle through Normal → SET1 → SET2 → SET3 → CAL.

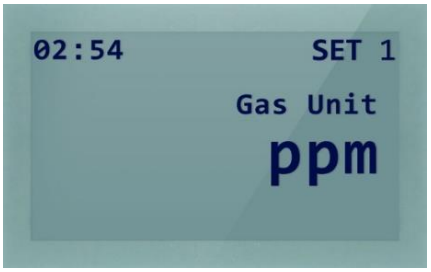
② "Select" key plays a role in accessing the "Review menu" and "Menu" key returns to Normal.

7.2 Menu Tree



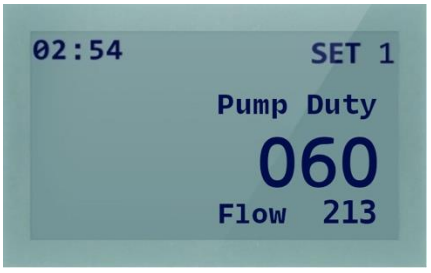
SENKO
SenKo Co., Ltd

7.2.1 SET1

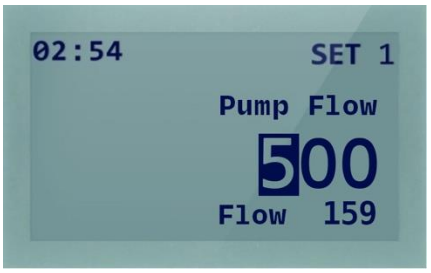


Gas Unit
- Gas measurement unit
- Adjust measuring unit with Up/Down key
- Cancel: Menu key / Save: Select key
- Possible to set ppm/ppb/vol/LEL
- Default: ppm

CAL Interval
- Periodic calibration setting
- Number can change 0~9 with Up/Down key
- Cancel: Menu key / Save: Select key
- Move Focus with Up/Down Long key
- Possible settings up to 0~999 days
- Default: 365 days



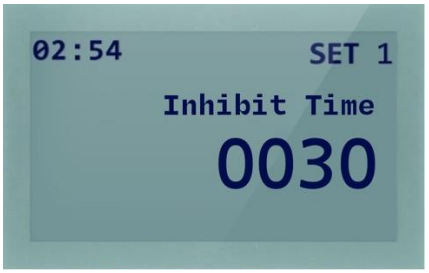
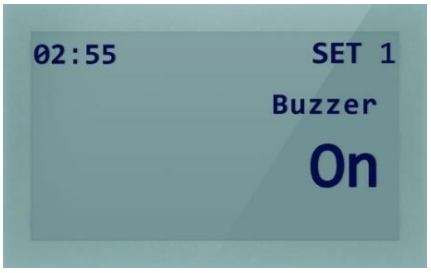
Pump Duty
- Number can change 0~9 with Up/Down key
- Continuously adjust the value with Up/Down keys.
- Cancel: Menu key / Save: Select key
- Flow : Displays the current flow rate.
- Default : 60 ~ 80(may vary during production)



Pump Flow
- Number can change 0~9 with Up/Down key
- Move Focus with Up/Down Long key.
  - Move the focus to the left with Up Long key.
  - Move the focus to the right with Up Long key.
- Cancel: Menu key / Save: Select key
- Flow : Displays the current flow rate.
- Default : 500(may vary during production)

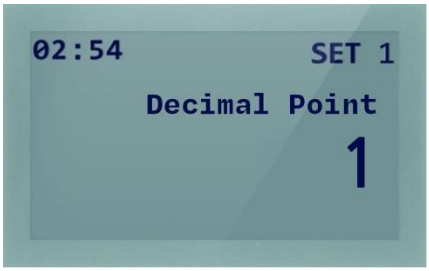
Pass Code
- Number can change 0~9 with Up/Down key
- Move Focus with Up/Down Long key
- Cancel: Menu key / Save: Select key
- Enter the same pass code twice to set it up
- Passcode other than 0000 requires installed passcode to enter setting with the Menu key
- Default: 0000

7.2.1 SET1

	**Inhibit** • Set Inhibit item with Up/Down key • Cancel: Menu key / Save: Select key • None: No Inhibit - Alm: Alarm Inhibit - Alm & Flt: Alarm & Fault Inhibit • Full: Inhibit all items • Default: None
	**Inhibit Tm** • Number can change 0~9 with Up/Down key • Continuously adjust the value with Up/Down keys • Cancel: Menu key / Save: Select key • Default : 30(may vary during production)
	**Buzzer** • Set Buzzer ON/OFF with Up/Down key • Cancel: Menu key / Save: Select key • ON: Buzzer activates in case of Alarm • OFF: Buzzer doesn`t activate in case of Alarm • Default: ON
	**Resp Factor** • Number can change 0~9 with Up/Down key • Move Focus with Up/Down Long key • Cancel: Menu key / Save: Select key • The set value outputs by multiplying the final con centration • Default: 1.00
	**Unique Addr** • Number can change 0~9 with Up/Down key • Continuously adjust the value with Up/Down keys • Cancel: Menu key / Save: Select key • RS485 Address(ID) : 1 ~ 247 • Default : 1

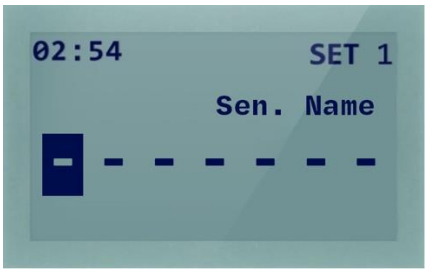
7.2.1 SET1

Hidden Area
- Number can change 0~9 with Up/Down key
- Move Focus with Up/Down Long key
- Cancel: Menu key / Save: Select key
- Values below the set range are considered as 0 (if the range of gas is 100ppm and set to 2.00%, the value below 2ppm shows as 0)
- Default: 0.00 (%)



Decimal Point
- Number can change 0~9 with Up/Down key
- Continuously adjust the value with Up/Down keys
- Cancel: Menu key / Save: Select key
- Default: 0~3(Depends on gas)

MODBUS Type
- Number can change 0~9 with Up/Down key
- Cancel: Menu key / Save: Select key
- Type: TCP/RTU/ASCII
- Default : TCP



Sen. Name

Number can change 0~9, A~Z with Up/Down key
- Move Focus with Up/Down Long key.
  - Move the focus to the left with Up Long key.
  - Move the focus to the right with Up Long key.
- Cancel: Menu key / Save: Select key
- Up to 7 letters can be stored
- Default: none

7.2.2 SET2

Alarm 1
- Number can change 0~9 with Up/Down key
- Move Focus with Up/Down Long key
- Cancel: Menu key / Save: Select key
- Maximum Alarm level 1: 0~9999.9 ppm
- Default: 50.0 ppm

Alarm 2
- Number can change 0~9 with Up/Down key
- Move Focus with Up/Down Long key
- Cancel: Menu key / Save: Select key
- Maximum Alarm level 1: 0~9999.9 ppm
- Default: 100.0 ppm

Alarm Delay
- Number can change 0~9 with Up/Down key
- Move Focus with Up/Down Long key
- Cancel: Menu key / Save: Select key
- Alarm Delay: 0~99 seconds
- Default: 0 second

Alarm Latch
- Set Alarm Latch with Up/Down key
- Cancel: Menu key / Save: Select key
- On: Alarm condition remains even after alarm is r eleased
- Off: Alarm condition cleared when alarm off
- Default: Off

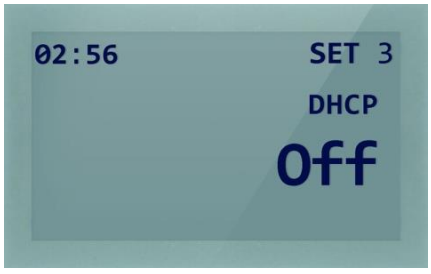
Alarm Relay
- Set Alarm Relay with Up/Down key
- Cancel: Menu key / Save: Select key
- On: Relay operates when alarm occurs
- Off: Relay doesn`t operate when alarm occurs
- Default: On

7.2.2 SET2

Fault Latch
- Set Fault Latch with Up/Down key
- Cancel: Menu key / Save: Select key
- On: Fault condition remains even after Fault is rel eased
- Off: Fault condition cleared when Fault off
- Default: Off

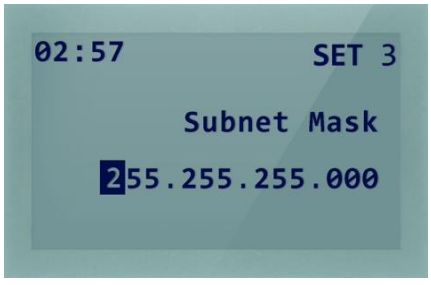
Fault Relay
- Set Fault Relay with Up/Down key
- Cancel: Menu key / Save: Select key
- On: Relay operates when alarm occurs
- Off: Relay doesn`t operate when alarm occurs
- Default: On

7.2.3 SET3



DHCP
- Set DHCP with Up/Down key
- Cancel: Menu key / Save: Select key
- On: Automatically assign network IP address
- Off: Manually assign network IP address
- Default: Off

IP Address
- Number can change 0~9 with Up/Down key
- Move Focus with Up/Down Long key
- Cancel: Menu key / Save: Select key
- Default: 192.168.000.200



Subnet Mask
- Number can change 0~9 with Up/Down key
- Move Focus with Up/Down Long key
- Cancel: Menu key / Save: Select key
- Default: 255.255.255.000

7.2.3 SET3

	**Gateway** • Number can change 0~9 with Up/Down key • Move Focus with Up/Down Long key • Cancel: Menu key / Save: Select key • Default: 192.168.000.001
	**Time** • Number can change 0~9 with Up/Down key • Move Focus with Up/Down Long key • Cancel: Menu key / Save: Select key • Selectable Date: 2000.01.01 ~ 2099.12.31 • Selectable Time: 00:00 ~ 23:59
	**Backlight** • Set DHCP with Up/Down key • Cancel: Menu key / Save: Select key • Single: White backlight in case of alarm/fault • Multi: Alarm 1 (Green), Alarm 2 (Orange) • Fault (White + Green + Orange) • Default: Off

7.2.4 CAL (Calibration)

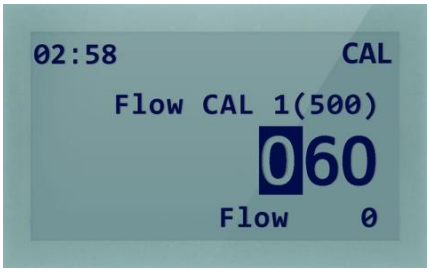
	**Zero CAL Start** • Clicking Menu key cancels the process • When CAL Duration time is over, Zero Calibration will be completed automatically and returns to pr evious Menu
	**Span CAL Start** • Clicking Menu key cancels the process • When CAL Duration time is over, Span Calibration will be completed and returns to previous Menu

7.2.4 CAL (Calibration)

Span Gas
- Number can change 0~9 with Up/Down key
- Move Focus with Up/Down Long key
- Cancel: Menu key / Save: Select key
- Selectable range: 0~999.9 ppm
- Default: 10 ppm

Gas Range
- Number can change 0~9 with Up/Down key
- Move Focus with Up/Down Long key
- Cancel: Menu key / Save: Select key
- Gas Range: 0~60,000 ppm
- Default: 10 ppm(Depends on gas)

CAL Duration
- Number can change 0~9 with Up/Down key
- Move Focus with Up/Down Long key
- Cancel: Menu key / Save: Select key
- Selectable time range: 0~999 seconds
- Default: 60 seconds

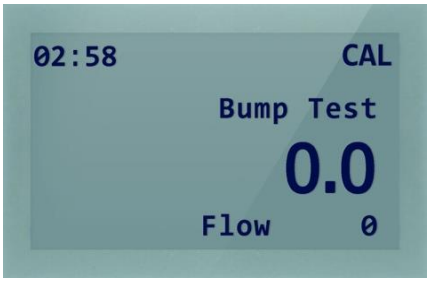


Flow CAL
- Adjust number with Up/Down key
- Adjust number continuously with Up/Down Long k ey
- Cancel: Menu key / Save: Select key
- Flow: Current flow rate of Pump
  - Save settings when reaching 500 cc/min
- Default: 60 Hz

4mA CAL
- Number can change 0~9 with Up/Down key
- Move Focus with Up/Down Long key
- Cancel: Menu key / Save: Select key
- Selectable range: 0 ~ 9999
  - Adjust to measure with 4mA by ammeter
- Default: 1000

7.2.4 CAL (Calibration)

20mA CAL
- Number can change 0~9 with Up/Down key
- Move Focus with Up/Down Long key
- Cancel: Menu key / Save: Select key
- Selectable range: 0 ~ 9999
  - Adjust to measure with 20mA by ammeter
- Default: 1000

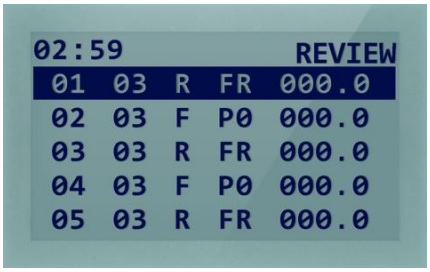


Bump Test
- To test Alarm/Fault
- To check the accuracy of the reading
- Requires Test Gas

7.2.5 Review

Review

- S/W Ver: Firmware Version information
- Unit: Version information of Cartridge
- CAL Due: Indication of calibration date
- Cartridge Expire: Life of the Cartridge (not related to shelf life of sensor)
- Last CAL: Last Calibration time
- Event Log: Recent 10 event Log list
- Zero ADC: Zero Calibration ADC value of the installed smart sensor
- Span ADC: Span Calibration ADC value of the installed smart sensor



Review

- Move the List with Up/Down key
- Clicking Menu key returns to previous page
- Sensor type No. (Ex. 03 -> O3 sensor)
- Event types
  - R: Power On/Alarm/Fault Reset occurrence
  - A: Alarm occurrence
  - F: Fault occurrence
  - I: Information of sensor detection and etc.
- Event State
  - PO : Power On
  - RA : Reset All (Factory Reset)
  - A1 : Alarm 1 (Low alarm)
  - A2 : Alarm 2 (high alarm)
  - AR : Alarm Reset
  - FR : Fault Reset
  - JS : Sensor detection
- Event Gas concentration
  - Gas concentration in case of event occurs

8. Test Mode

8.1 Entering to Test Mode

① In Measuring mode, press **Down** + **Select** keys simultaneously for 3 seconds to enter Test Mode.

② It increases by 1% of Max Range (4-20mA signal also reads).

③ To exit from TEST mode, simply press the Menu key.

④ If there is no input for 5 minutes in TEST mode, it returns to normal Measuring mode.

⑤ If the gas type is PID, there is no TEST mode function.

9. Analog Output Signal

- Measuring Mode : 4-20mA
- Fault: 0mA
- Maintenance: 4mA
- Boot : 3mA
- Inhibit: 4mA
- Calibration(Zero/Span): 3mA

10. MODBUS Address map

10.1 RS485 Interface setting

- Baud rate: 9600 bps
- Data format: RTU
- Data bit: 8 bits
- Stop bit: 1 bit
- Party: None

10.2 TCP Interface setting

- IP: 192.168.0.200 (Default)
- Subnet Mask: 255.255.0.0 (Default)
- Gateway: 192.168.0.1 (Default)

11. MODBUS RS485/TCP Register

11.1 3000X Register Read

Item	Address	Bits	Description
Concentration of measured gas	30001	BIT15~0	Measured gas value (Integer/Decimal Point application required)
Gas Range	30002	BIT15~0	Gas Range (Integer/Decimal Point application required)
Alarm 1 set value	30003	BIT15~0	Set value of Alarm 1 (Integer/Decimal Point application required)
Alarm 2 set value	30004	BIT15~0	Set value of Alarm 2 (Integer/Decimal Point application required)
Alarm 1 Active	10001	BIT7~0	Alarm 1 Active state
Alarm 2 Active	10002	BIT7~0	Alarm 2 Active state
Fault Active	10003	BIT7~0	Fault Active state
Maintenance Mode	10004	BIT7~0	Maintenance Mode state
Test Mode	10005	BIT7~0	Test Mode state
Calibration Mode	10006	BIT7~0	Calibration Mode state
Decimal Point	10007	BIT7~0	Decimal Point (0~3)
Heartbeat	10008	BIT7~0	Heartbeat Bit(2 second interval Toggle)

11.2 4000X Register Read

Item	Address	Bits	Description
Monitoring Status	40001	BIT0~3	0 : Warmup
			1 : Measuring Mode
			2 : Inhibit Alarm
			3 : Inhibit Alarm/Fault
			4 : Inhibit Full
			5 : Reserved
			6 : Test Mode
			7 : 4-20mA Calibration Mode
			8 : Flow Calibration Mode
			9-15 : Reserved
		BIT4	Fault Active Status
		BIT5	Reserved
		BIT6	Alarm 1 Active
		BIT7	Alarm 2 Active
		BIT8	Alarm 1 Relay energized
		BIT9	Alarm 2 Relay energized
		BIT10	Fault Relay energized
		BIT11	Heartbeat Bit (2 second interval Toggle)
		BIT12	Over Range
		BIT13	Span Calibration due date
		BIT14	Sensor lifetime Expired
		BIT15	Reserved
Cartridge Selection	40002	BIT0~7	Gas ID (Sensor Type)
		BIT8~15	Reserved
Measured gas concentration (real number)	40003	BIT0~15	Real number gas concentration (upper 2 bytes)
	40004	BIT0~15	Real number gas concentration (lower 2 bytes)
Measured gas concentration (integer)	40005	BIT0~15	Integer type gas concentration measuremen t
Fault Code	40006	BIT0~15	Fault Code

Item	Address	Bits	Description
Decimal Point and Units	40007	BIT0~2	Decimal Point Indicator (0~3)
		BIT3~7	Reserved
		BIT8~15	1 : ppm (concentration unit)
			2 : ppb (concentration unit)
			3 : % volume (concentration unit)
			4 : %LEL (concentration unit)
			16 : mA
Temperature measurement	40008	BIT0~15	Measured value of the temperature (Signed 16bit Integer)
Time Stamp	40009	BIT0~15	Current time Stamp (upper 2 bytes)
	40010	BIT0~15	Current time Stamp (lower 2 bytes)
Flowrate	40011	BIT0~15	Flowrate (cc/min)
Heartbeat	40012	BIT0~15	Detector Heartbeat
Alarm 1 set value (real number)	40013	BIT0~15	Real number Alarm 1 concentration (upper 2 bytes)
	40014	BIT0~15	Real number Alarm 1 concentration (lower 2 bytes)
Alarm 2 set value (real number)	40015	BIT0~15	Real number Alarm 2 concentration (upper 2 bytes)
	40016	BIT0~15	Real number Alarm 2 concentration (lower 2 bytes)
State value	40017	BIT0	Alarm 1 Active
		BIT1	Alarm 2 Active
		BIT2	Fault Active
		BIT3	Maintenance Mode
		BIT4	Test Mode
		BIT5	Calibration Mode
		BIT6	IPA Set
		BIT7	Cartridge Error
		BIT8	Flow Error
		BIT9	Internal Communication Error
		BIT10	Pyrolyzer Error
		BIT11~15	Reserved
Reserved	40018	BIT0~15	Reserved
Gas Range (real number)	40019	BIT0~15	Real number Gas Range (upper 2byte)
	40020	BIT0~15	Real number Gas Range (lower 2byte)

Item	Address	Bits	Description
Detector Serial Number	40031	BIT0~7	Detector Serial Number 1/10
		BIT8~15	Detector Serial Number 2/10
	40032	BIT0~7	Detector Serial Number 3/10
		BIT8~15	Detector Serial Number 4/10
	40033	BIT0~7	Detector Serial Number 5/10
		BIT8~15	Detector Serial Number 6/10
	40034	BIT0~7	Detector Serial Number 7/10
		BIT8~15	Detector Serial Number 8/10
	40035	BIT0~7	Detector Serial Number 9/10
		BIT8~15	Detector Serial Number 10/10
Sensor Serial Number	40036	BIT0~7	Sensor Serial Number 1/10
		BIT8~15	Sensor Serial Number 2/10
	40037	BIT0~7	Sensor Serial Number 3/10
		BIT8~15	Sensor Serial Number 4/10
	40038	BIT0~7	Sensor Serial Number 5/10
		BIT8~15	Sensor Serial Number 6/10
	40039	BIT0~7	Sensor Serial Number 7/10
		BIT8~15	Sensor Serial Number 8/10
	40040	BIT0~7	Sensor Serial Number 9/10
		BIT8~15	Sensor Serial Number 10/10

11.3 4000X Register Write

Item	Address	Bits	Description
Alarm 1 value	40013	BIT0~15	Alarm 1 set value (upper 2 bytes)
	40014	BIT0~15	Alarm 1 set value (lower 2 bytes)
Alarm 2 value	40015	BIT0~15	Alarm 2 set value (upper 2 bytes)
	40016	BIT0~15	Alarm 2 set value (lower 2 bytes)
Alarm 1 Setting	40021	BIT15~0	Alarm 1 set value (No Integer/Decimal)
Alarm 2 Setting	40022	BIT15~0	Alarm 2 set value (No Integer/Decimal)
Reset Alarm & Fault	40023	BIT0	Reset Alarms and Faults
		BIT1~15	Reserved

Note:

Ex.1) To set Alarm at 0.25ppm when decimal point is 2, set 0.25 X 102 = 25

Ex.2) To set Alarm at 30.0ppm when decimal point is 1, set 30.0 X 101 = 300

12. Installation

12.1 Installation cable length

The maximum length between SI-H100 and power supply is determined by specification of the wire.

- Maximum installation length = VMAXDROP ÷ IMAX ÷ WIRER/m ÷ 2

12.1.1 Length explanation

- VMAXDROP: Maximum Power Loop Voltage Drop
  (=Power Supply voltage – min operating voltage)
- IMAX: Maximum current value of SI-H100
- WIRER/m: The resistance of the wire
  (ohms/meter value available in wire manufacturer's specification data sheet)

Note:

Ex.1) An example of a set length using a 24V power supply and 16AWG:

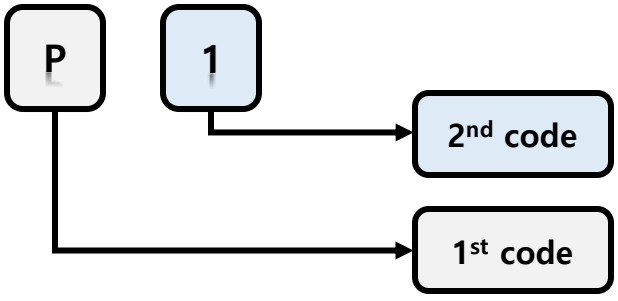
- Minimum operating voltage of SI-H100 = 18 Vdc
- VMAXDROP = 24 – 18 = 6V
- IMAX = 0.4A (400mA)

12.2 The length of the cable by classification

AWG	mm²	Copper resistance (ohms/m)	Meters
12	3.31	0.00521	1439
14	2.08	0.00828	905
16	1.31	0.01318	569
18	0.82	0.02095	357
20	0.518	0.0333	225

13. Error Code

13.1 Error Display Code



SenKo Co., Ltd

No	1st Code	2nd Code	Reason	Solution
1	B	0	Unstable Firmware Version	Update Firmware
2	B	1	Unstable Firmware Tag Data	Update Firmware
3	B	2	Unstable Firmware CRC Data	Firmware Update
4	B	3	EEPROM Read/Write Failure	Replace MAIN Board
5	B	4	RTC Access Failure	Replace MAIN Board
6	B	5	Reserved	
7	Y	0	Pyrolyzer Current is Low	1) Check the connection status of Pyrolyzer and main body 2) Check the wire (heat) inside the Pyrolyzer
8	Y	1	Pyrolyzer Current is High	1) Defective main board 2) Internal failure
9	S	0	Smart Sensor Communication Failure	Crosscheck or replace Smart Sensor connector
10	S	1	Receiving abnormal data from Smart Sensor	Crosscheck or replace Smart Sensor connector
11	S	2	Expiration of Smart Sensor life span	Replace Smart Sensor
12	S	3	Smart Sensor concentration is abnormal (reading low)	Crosscheck or replace Smart Sensor assembly
13	S	4	Smart Sensor concentration is abnormal (reading high)	Crosscheck or replace Smart Sensor assembly
14	S	5	Sensor internal Error (applies to only PID Sensor)	Crosscheck or replace Sensor
15	S	6	Smart Sensor Zero CAL Failure	Crosscheck or replace Sensor
16	P	0	Pump is not connected or malfunctioning	Crosscheck Pump connection state
17	P	1	Low pressure of Pump	Crosscheck Pump connection and piping tube
18	P	2	High pressure of Pump	Crosscheck Pump connection and piping tube
19	R	0	Unstable operation of RS485	Crosscheck connection of RS485
20	E	0	Ethernet chipset Error	Replace MAIN Board
21	E	1	Ethernet initialization Error	Replace MAIN Board
22	E	2	Ethernet timeout	Replace MAIN Board

Limited Warranty

SENKO warrants this product to be free of defects in workmanship and materials-under normal use and service for two years from the date of purchase from the manufacturer or from the product's authorized reseller.

The manufacturer is not liable (under this warranty) if its testing and examination disclose that the alleged defect in the product does not exist or was caused by the purchaser's (or any third party's) misuse, neglect, or improper installation, testing, or calibrations. Any unauthorized attempt to repair or modify the product, or any other cause of damage beyond the range of the intended use, including damage by fire, lightening, water damage or other hazard, voids liability of the manufacturer.

This warranty is possible only for the users who purchase the products from the official sales offices or delegates designated by Senko, and warranty maintenance should be performed by the designated aftersales service center of Senko where the skilled technicians are. In the event that a product should fail to perform up to manufacturer specifications during the applicable warranty period, please contact the product's authorized reseller or SENKO service center at 82-31-492-0445 to repair/return information.

SENKO
SenKo Co., Ltd

445, Doksanseong-ro, Osan-si, Gyeonggi-do, 18111, South Korea

Tel : 82-31-492-0445
Fax : 82-31-492-0446
Email : sales@senko.co.kr
Web : www.senko-detection.com