

Smart Digital-Process Gas Detector

DA-752

Auto-Suction Type



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***Best Detectors,
Best Service***

Product Summary

DA-752 detects gas leaks in industrial sites such as factories and gas storages facilities producing or using toxic gases generated during manufacturing processes to prevent accidents in advance. It continuously sucks and detects leaked gas in the field using a micro pump, so it can smoothly perform gas detection functions in environments where gas detectors cannot be installed or are difficult to manage.

In addition, it converts digital signals back into 4-20mA standard current signals and outputs them to provide signals to various external devices such as PLCs, DDCs, and RECODERs. This makes it easier to build a more expanded and comprehensive gas monitoring environment.

Product features

- **Auto-Suction Type:**

Continuous measurement of leaked gas is possible on the site using a micro pump. And it can smoothly perform gas detection functions in environments where gas detectors cannot be installed or are difficult to manage.

- **Digital Process**

A digital process based on a microprocessor implements various artificial intelligence (AI) functions to perform more convenient, accurate, and efficient gas detection functions.

- **LCD Display with Back-Light**

The detection concentration is displayed in real time on the LCD display, allowing immediate & convenient concentration confirmation even in the dark environments with backlight functions.

- **Isolation Circuit**

The safety & stability of sensor output has been enhanced by configuring an isolation circuit directly within the circuit to effectively block electrical noise.

- **Various Signal-Output**

It provides smooth signal supply to external devices through various output methods such as DC 4-20mA, 2 Step-Relay Contact, RS-485, etc.

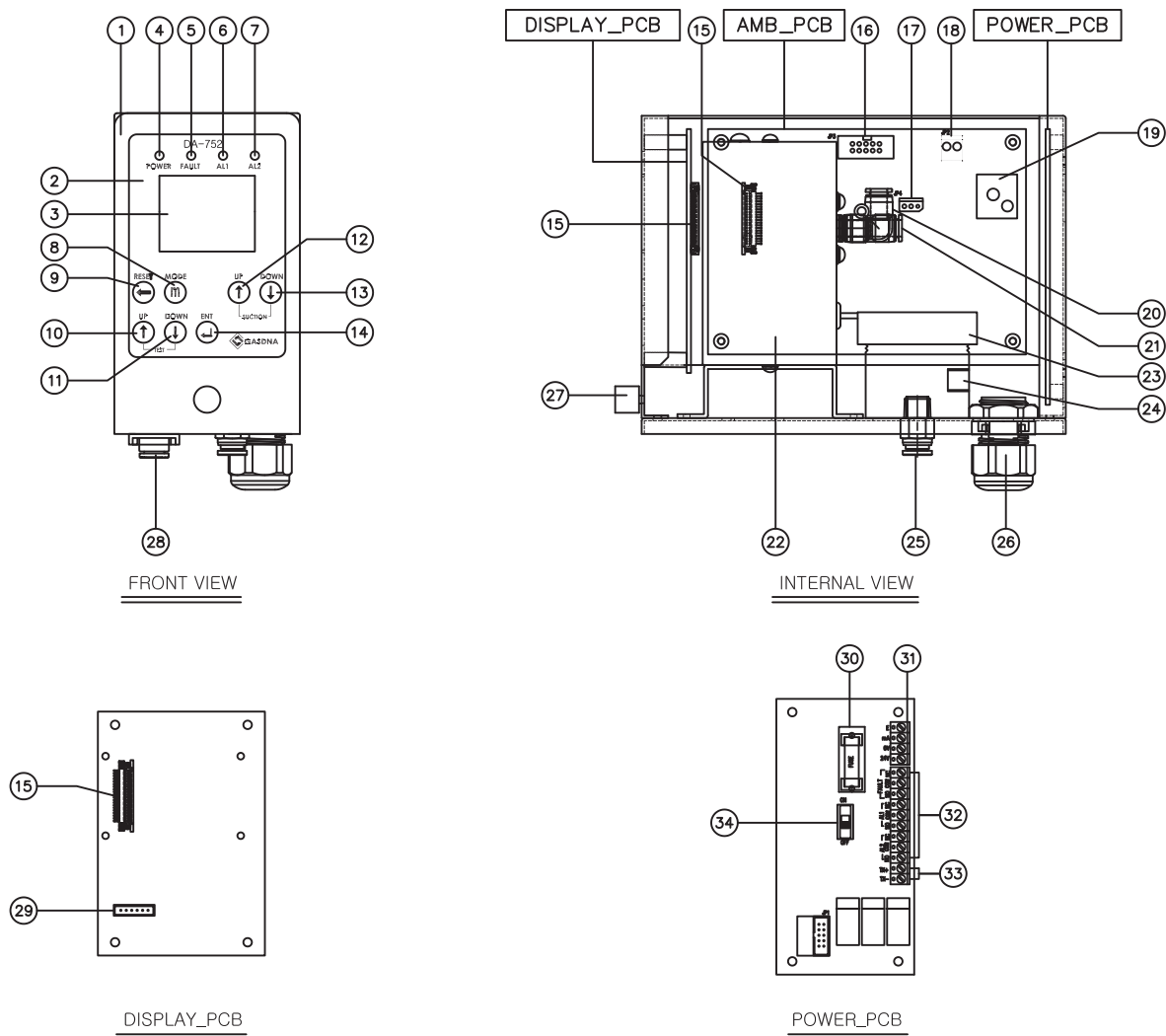
- **TFT Display**

The 1.7" color TFT display shows gas concentration in real time and is easy to read even in the dark.

Product Specification

Specification	Detail
Detection Principle	Catalytic, Electro-Chemical, TCD & NDIR
Detection Type	Suction Type
Input Power	DC24V
Suction flow rate	0.5 LPM ~ 2.5 LPM
Accuracy	$\leq \pm 3\%$ /Full Scale
Output Signal	4-20mA DC/F.S
Detection Time(T90)	Within 5 Sec
Measuring Type	Suction Type
INPUT POWER	AC 220V
Suction flow rate	0.2 LPM ~ 3 LPM
Accuracy	$\leq \pm 0.1\%$ /Full Scale
Output Signal	4-20mA DC/F.S
Concentration display	1.7" TFT Display - PPM, %LEL, % as per user requirement
Alarm Signal	1st Alarm - AL1 LED (RED)
	2nd Alarm - AL2 LED (RED)
Alarm Value Setting	AL2/AL1 2-step Alarm - Setting as per user requirement
Alarm Delay time	0~99 sec, Setting as per user requirement
Alarm Off	Manual and Automatic
Operating temperature	-10°C ~ 50°C
Humidity Range	5~ 95% RH (Non-Condensing)
Installation Method	Wall Mounting Type
Gas Inhalation	Teflon 1/4"
Output Options	RS-485 (Optional)
Signal Wire	CVVS & CVVSB 1.25sp*3 Wire-Shield Type

Names and Main functions of Each Part



NO	Description	NO	Description
1	Cover Case	13	Motor DOWN S/W
2	Body Case	14	ENT Switch
3	TFT Display	15	20 PIN CONNECT
4	Power LED	16	JP3
5	Fault LED	17	JP4
6	AL1 LED	18	JP2
7	AL2 LED	19	Pressure sensor
8	MODE Switch	20	Pump out
9	RESET Switch	21	Pump in
10	UP Switch	22	Pump
11	DOWN Switch	23	Sensor Cap
12	Motor UP S/W	24	Air out line

NO	Description	NO	Description
25	Sample Gas Inlet		
26	Cable Grand		
27	Cover Fixed Screw		
28	Sample Gas Vent		
29	JP1		
30	Fuse		
31	Power/mA TB		
32	Alarm TB		
33	RS485 TB		
34	Power Switch		

1. Cover Case

- ▷ Protects the Sensor, Pump, and PCB board mounted inside from external impact and environmental changes.

2. Body Case

- ▷ Mounts the Sensor, Pump, Display board, Analog AMP board, and Power board and protects them from external impact and environmental changes.

3. TFT(Graphic 128(RGB)x160 dot matrix)

- ▷ Displays the gas concentration value measured by the sensor and the set parameters.

4. Power LED(Green)

- ▷ The LED lights up when the power is normal.

5. Fault LED(Yellow)

- ▷ If there is a circuit defect, parameter setting error, or the FLOW METER inlet is blocked, the Fault LED lights up and the FAULT signal is output as an external relay contact signal.

6. AL1 LED(RED)

- ▷ If the measured gas concentration is higher than the ALARM1 set value, the LED flashes at 0.5 second intervals and a relay contact signal is output to the outside.

7. AL2 LED(RED)

- ▷ If the measured gas concentration is higher than the ALARM2 setting value, the LED flashes at 0.25 second intervals, and an external relay contact signal is output.

8. MODE Switch

- ▷ Function to enter the setting mode from the measurement state.
- ▷ Pressing the MODE switch for 3 seconds or more enters the setting mode.

9. RESET Switch

- ▷ External relay release function (applicable when the reset type is manual in the setting menu).
- ▷ When switching from the setting mode to the measurement mode, use the RESET Switch to return.

10. UP Switch

- ▷ Function to increase the parameter value in the setting mode.

11. DOWN Switch

- ▷ Function to decrease the parameter value in the setting mode.
 - ◁11.1> UP+DOWN(TEST function)
 - ▷ If you press and hold the UP Switch and DOWN Switch simultaneously for 3 seconds, you can check the operation status of the measurement value & Alarm relay.

12. Motor UP Switch

- ▷ This function increases the flow rate of sample gas.

13. Motor DOWN Switch

▷ Lowers the flow rate of the sample gas.

14. ENT Switch

▷ Used when saving parameter values in the setup mode.

15. 20 PIN Connector

▷ 20PIN Connector connecting the Display PCB and AMP PCB.

16. JP3 Connector

▷ 3PIN Connector connecting the signal line output from the Gas Sensor.

17. JP4 Connector

▷ 2PIN Connector connecting the electrical signal line output from the Pump Motor.

18. JP2 Connector

▷ 20PIN Connector connecting the POWER PCB and the Analog PCB.

19. Pressure sensor

Check if the gas flow is blocked in the direction of the sample gas inlet port.

20. Pump Out

▷ Pump flow rate outlet direction.

21. Pump In

▷ Pump flow rate inlet direction.

22. Pump

▷ Motor that generates the flow rate.

23. Sensor Cap

▷ A place to detect actual gas leaks.

24. Sensor Out

▷ Sensor Cap flow rate outlet direction.

25. Sample Gas Inlet

Sample gas inlet port(1/4")

26. Cable Grand

▷ Power and signal cable

27. Cover Fixed Screw

▷ Screw that fixes the Cover case and Body.

28. Sample Gas Out

- ▷ Sample gas vent port(1/4")

29. JP1 Connector

- ▷ CPU firmware download connector

30. FUSE

- ▷ Element for board protection in case of overcurrent.

31. Power/4-20mA Terminal(24V,0V,mA,E)

- ▷ Terminal for connecting power supply and 4-20mA output.

32. Alarm Terminal

- ▷ Fault, Alarm1, Alarm2 contact output terminal.

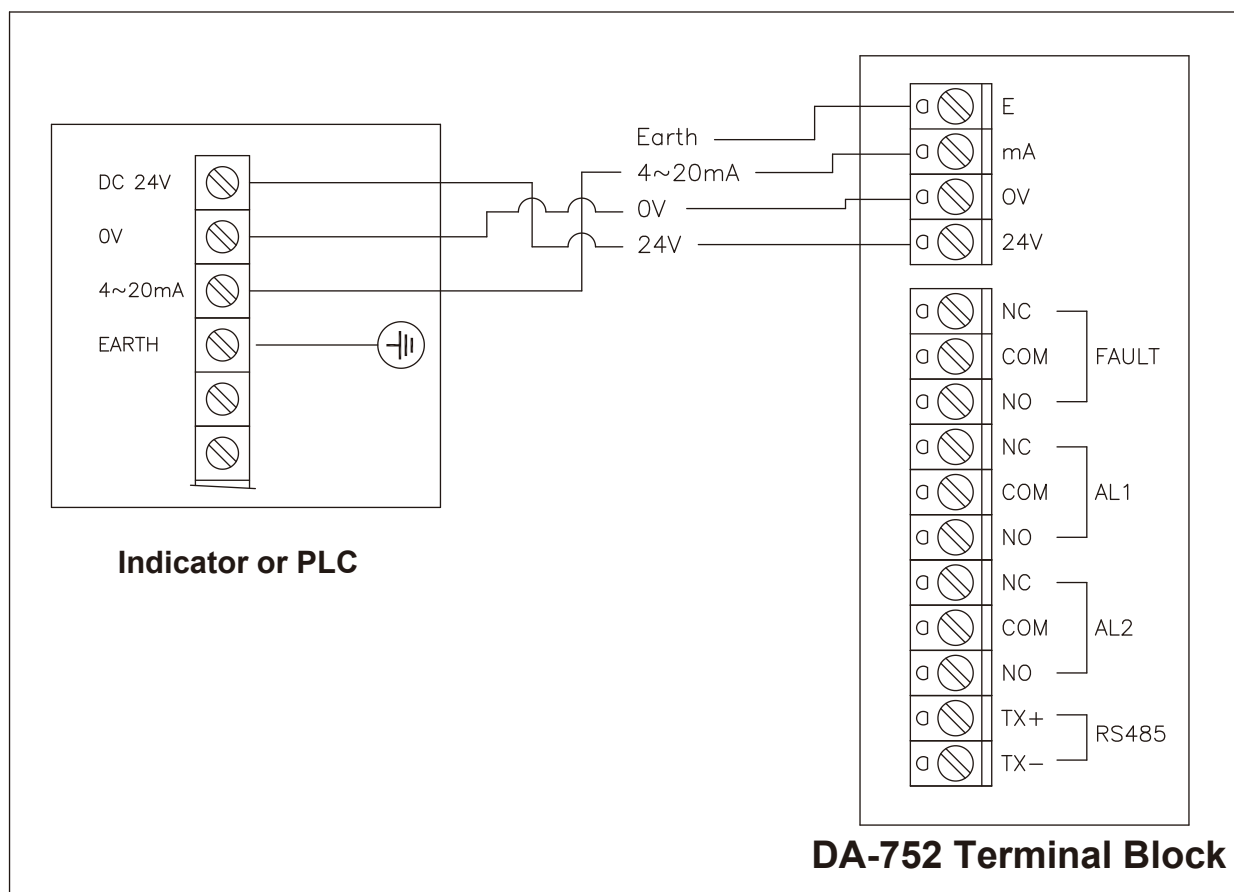
33. RS485 Terminal

- ▷ Terminal for data communication

34. Power Switch

- ▷ Power ON/OFF Switch.

Terminal Description



MENU Setting

<Measurement Mode Screen>

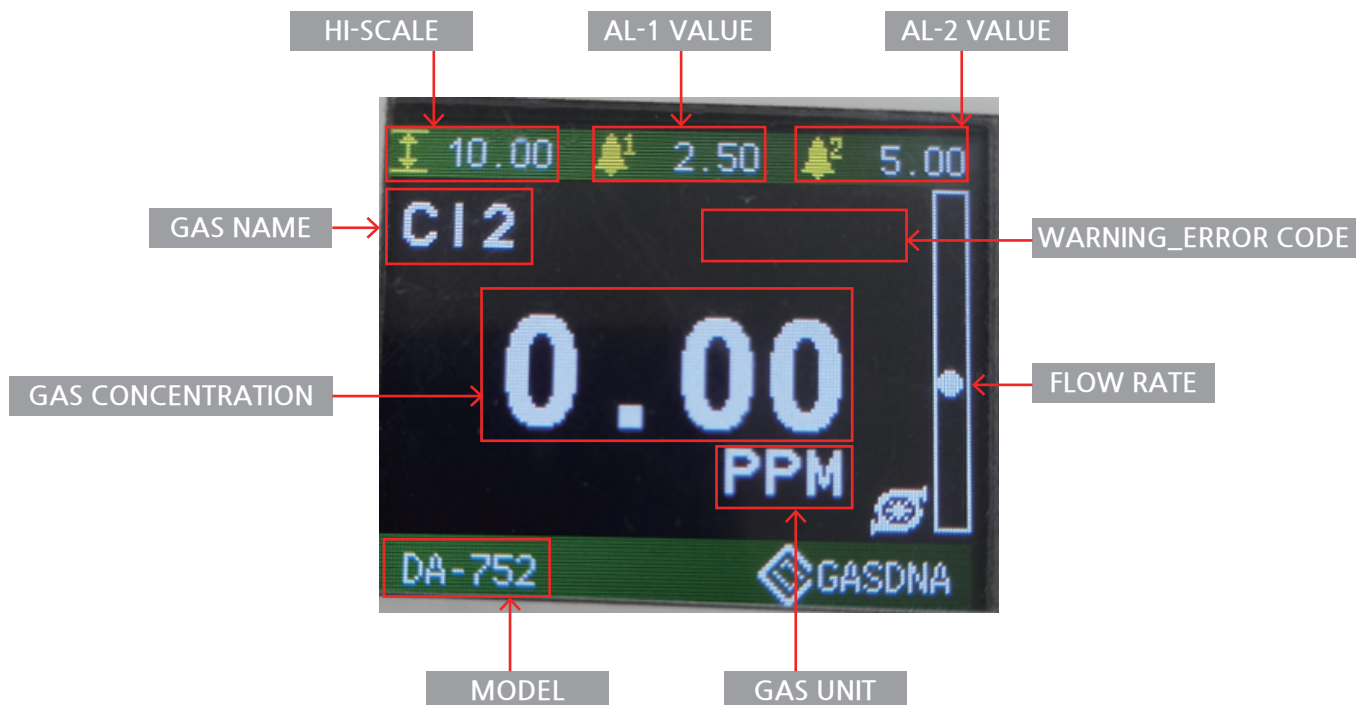
1. Warming-up Screen after Power Supply

- Sensor warming-up time is required so that the sensor output can reach a stable value before normal measurement.
- Model name, firmware version, and warm-up time are displayed.



2. Measurement Mode Screen

- After warming up, the concentration value is displayed in the measurement mode.

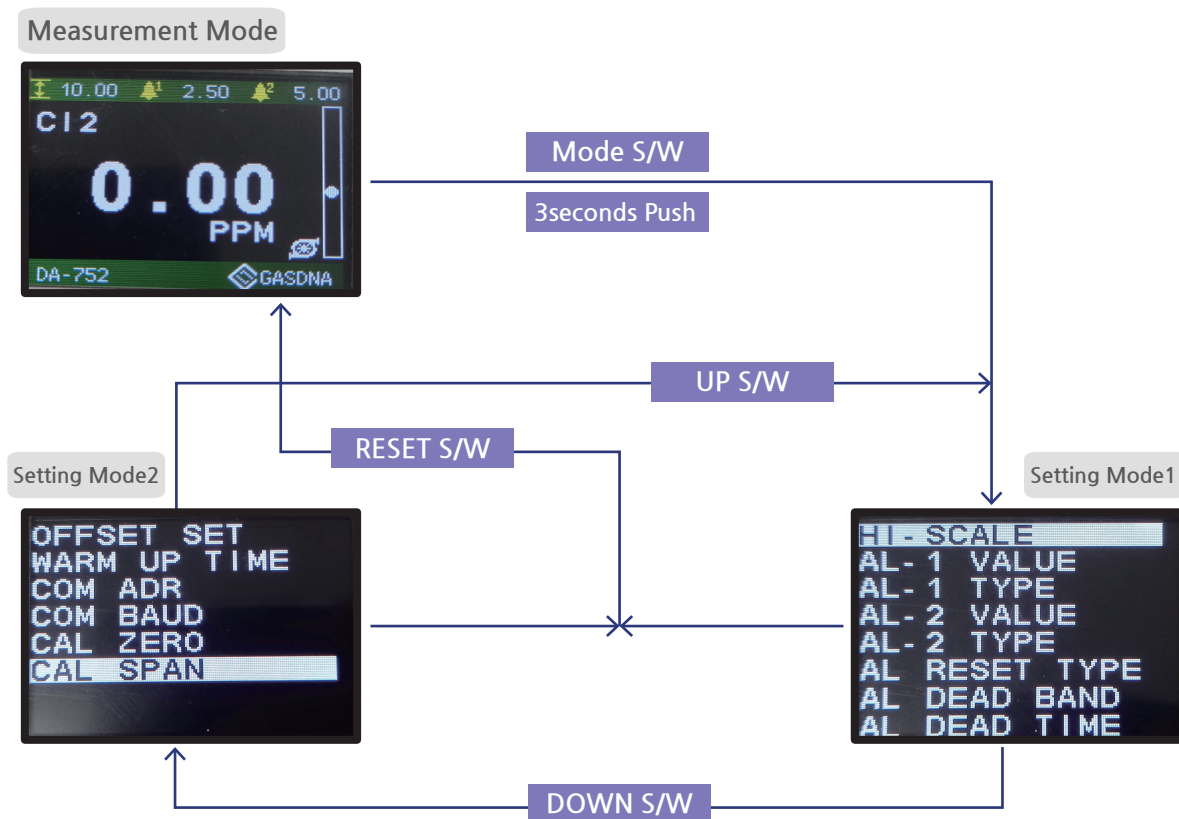


WARNING_ERROR CODE

WARNING ERROR CODE	Content
W-01	Occurs when the gas measurement value exceeds 110% of the measurement range
W-02	Occurs when there is no gas flow in the direction of the gas inlet
E-01	CPU memory failure occurs, FAULT relay operates
E-02	A/D converter failure occurs, FAULT relay operates

<Measurement Mode>

<Setting Mode>



■ In measurement mode, press the **MODE** key for more than 3 seconds to enter the setting mode  (Screen 2)

■ Move to the next menu each time you press the **DOWN** key

→HI-SCALE → AL-1 VALUE → AL-1 TYPE → AL-2 VALUE → AL-2 TYPE → AL RESET TYPE
→ AL DEAD BAND → AL DEAD TIME → OFFSET SET → WARM UP TIME → COM ADR
→ COM BAUD → CAL ZERO → CAL SPAN →

■ Move to the next menu each time you press the **UP** key

HI-SCALE ← AL-1 VALUE ← AL-2 TYPE ← AL-2 VALUE ← AL-2 TYPE ← AL RESET TYPE
← AL DEAD BAND ← AL DEAD TIME ← OFFSET SET ← WARM UP TIME ← COM ADR
← COM BAUD ← CAL ZERO ← CAL SPAN ←

■ Press the **ENT** key to move to the setting value.

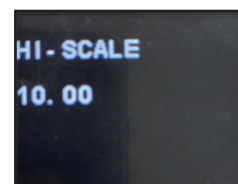
■ Pressing the **RESET** key switches from setting mode to measurement mode.

Menu Detail Explanation

NO	Menu	Description
1	HI-SCALE	20mA setting menu for Full Scale
2	AL-1 VALUE	AL-1 Alarm Value Setting Menu
3	AL-1 TYPE	AL-1 ALARM type (H, L)
4	AL-2 VALUE	AL-2 Alarm Value Setting Menu
5	AL-2 TYPE	AL-2 ALARM type (H, L)
6	AL RESET TYPE	Alarm Off Method
7	AL DEAD BAND	ALARM DEAD BAND Menu
8	AL DEAD TIME	ALARM DEAD TIME Menu
9	OFFSET SET	Error correction for measurement value
10	WARM UP TIME	Initialization time when power is applied
11	COM ADR	RS-485 country code setting (Optional)
12	COM BAUD	RS-485 Baud Rate Setting
13	CAL ZERO	ZERO calibration Setting
14	CAL SPAN	SPAN calibration Setting

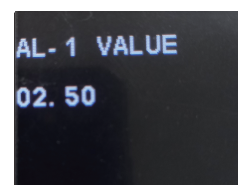
(1) HI-SCALE (measurement range)

▷ Set 20mA compared to FULL SCALE.
(ex) SCALE: When set to 10.00
When 4mA analog input: 0.00 Display
When 20mA analog input: 10.00 Display



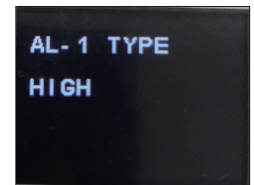
(2) AL-1 VALUE (Alarm value - 1)

▷ Alarm output according to AL-1 TYPE setting.
(ex1) AL-1 TYPE: HIGH, Alarm value - 1: When set to 2.50
→ AL-1 operates when the display value is 2.50 or higher.
(ex2) AL-1 TYPE: LOW, Alarm value - 1: When set to 2.50
→ AL-1 operates when the display value is 2.50 or lower.



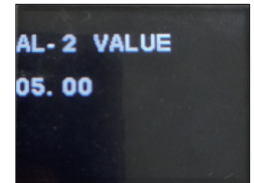
(3) AL -1 TYPE(Alarm-1 type)

- ▷ For flammable or toxic ----- HIGH (AL-1 operates when the value is above the set value)
- ▷ For oxygen ----- LOW (AL-1 operates when the value is below the set value)



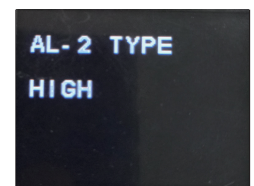
(4) AL-2 VALUE(Alarm value-2)

- ▷ Alarm output according to AL-2 TYPE setting.
- (ex1) AL-2 TYPE: HIGH, Alarm value-2: 5.00 setting
→ AL-2 operates when the display value is 5.00 or higher.
- (ex2) AL-2 TYPE: LOW, Alarm value-2: 5.00 setting
→ AL-2 operates when the display value is 5.00 or lower.



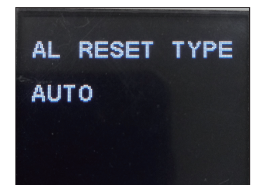
(5) AL-2 TYPE (Alarm-2 type)

- ▷ For flammable or toxic ----- HIGH (AL-2 operates when the value is above the set value)
- ▷ For oxygen ----- LOW (AL-2 operates when the value is below the set value)



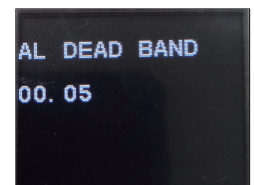
(6) AL RESET TYPE (Alarm reset type)

- ▷ Select AUTO (automatic) ↔ MANUAL (manual).
- <1> AUTO (automatic):
Relay and LED change according to the setting value regardless of the reset switch.
- <2> MANUAL (manual):
Relay and LED change only when the reset switch is pressed.



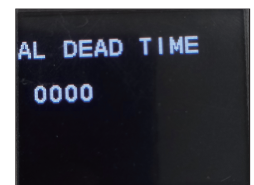
(7) AL DEAD BAND

- ▷ This function provides a hysteresis value to eliminate the phenomenon in which the relay output continues to turn ON/OFF near the alarm setting value.
- (ex1) In case of AL-1 VALUE: 5.00, AL-1 TYPE: HIGH, AL DEAD BAND:0.05
→ If the display value is 5.00 or higher, AL-1 ON ↔ If it is 4.95 or lower, AL-1 OFF.
- (ex2) In case of AL-1 VALUE: 5.00, AL-1 TYPE: LOW, AL DEAD BAND:0.05
→ If the display value is 5.00 or lower, AL-1 ON ↔ If it is 5.05 or higher, AL-1 OFF.



(8) AL DEAD TIME

- ▷ This function is a menu to prevent momentary malfunctions due to external impacts or noises that are not normal operation of the detector.
- (ex) In case of AL-1 VALUE: 5.00, AL DEAD TIME: 2.
→ If the measured value is maintained for 2 seconds or more above the alarm setting value, it is recognized as an alarm value.



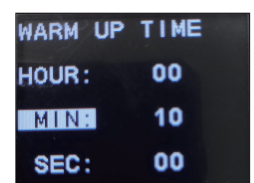
(9) OFFSET SET

- ▷ Corrects the error in the measurement value that occurs in the detection unit by addition and subtraction.
- (ex) OFFSET: When setting -0.50.
→ If the output error from the detection unit is +0.50, the actual display indicates 0.50, but OFFSET is corrected by -0.50 to make the display 0.00.



(10) WARM UP TIME

- ▷ Set the initialization time when power is supplied.



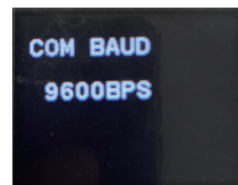
(11) COM ADR (Communication area code setting)

▷ RS-485 area code setting.



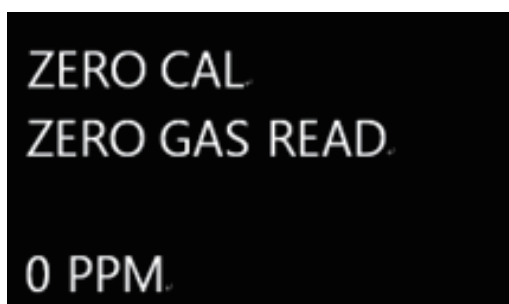
(12) COM BAUD (Communication baud rate setting)

▷ RS-485 baud rate setting.



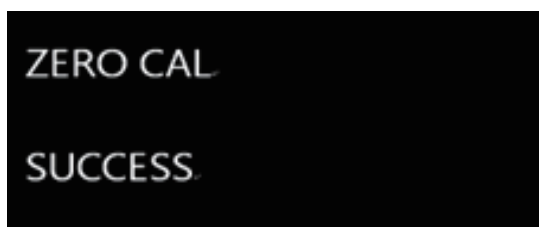
(13) CAL ZERO (ZERO Calibration)

〈1〉 After moving to the CAL ZERO menu, press the [ENT] button to move to the ZERO GAS screen.

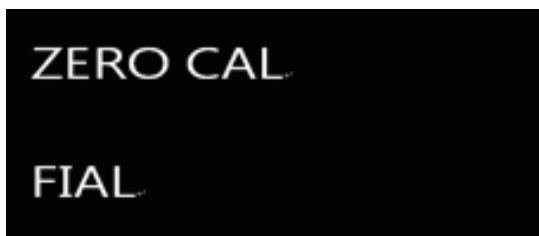


- Inject standard gas such as clean air or nitrogen gas for 1 minute.
- When the measurement value is stable, press the [ENT] button.

〈2-1〉 If zero calibration is successful, the SUCCESS text is displayed for about 2 seconds.



〈2-2〉 If zero calibration fails, the FIAL text are displayed for approximately 2 seconds.

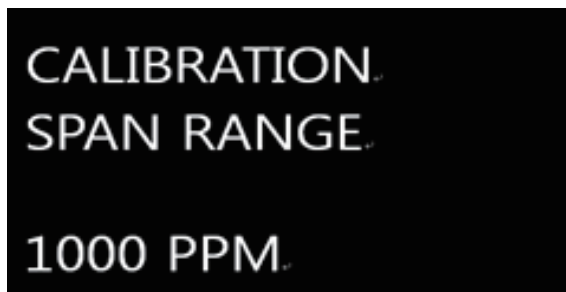


(Note 1): while performing Zero calibration, please use clean air or 99.9% nitrogen standard gas.
(For O2 gas, 99.9% nitrogen or higher must be used.)

(Note 2): To cancel zero calibration, press the [RESET] button.

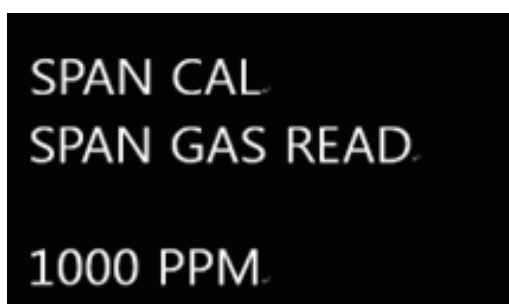
(14) CAL SPAN (SPAN calibration)

〈1〉 After moving to the CAL SPAN menu, press the [ENT] button to move to the standard gas concentration value adjustment menu.



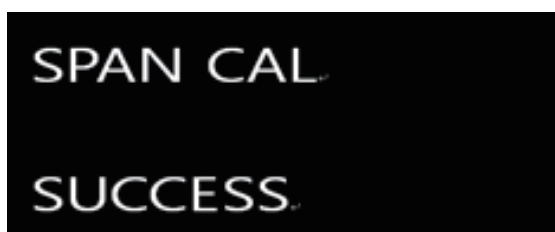
- Use the [DOWN] and [UP] buttons to adjust the standard gas concentration value.
- Press the [ENT] button to move to the SPAN standard gas insert screen.

〈2〉 SPAN standard gas insert.

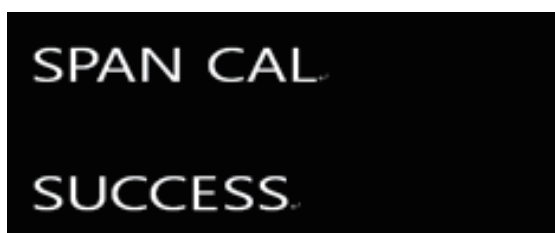


- Inject SPAN standard gas for more than 1 minute.
- When the gas measurement value is stable, press the [ENT] button.

〈3-1〉 If SPAN correction is successful, the SUCCESS text is displayed for approximately 2 seconds.

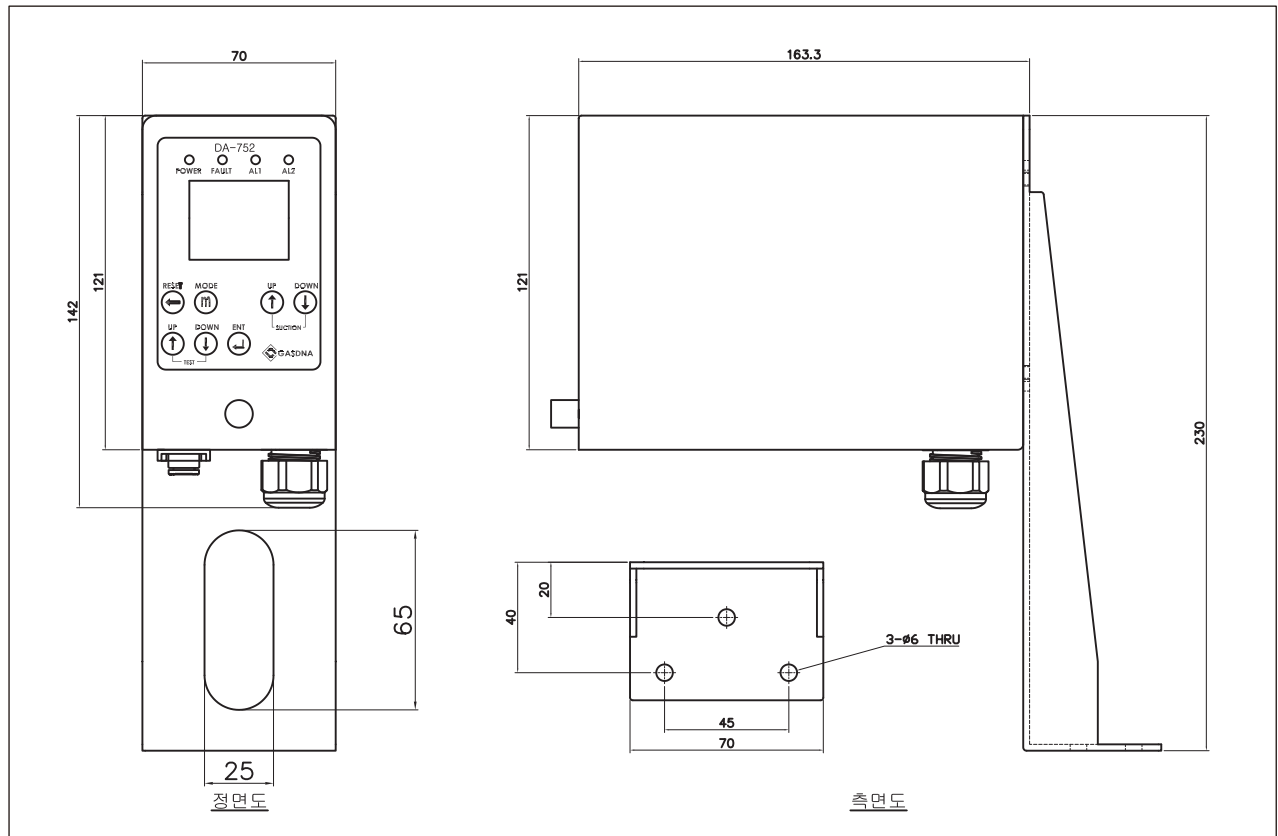


〈3-2〉 If SPAN correction fails, the FINAL character is displayed for approximately 2 seconds.



(Caution): If there is no change in the measurement value when injecting gas, the sensor's lifespan has ended and the sensor should be replaced.

Dimensions



Toxic Gas List

Target Gas	Chemical Formula	Measurement range	Code Number
Acethylene	C ₂ H ₂	0~10.0 PPM	DA-752-C ₂ H ₂
Ammonia	NH ₃	0 - 100 ppm	DA-752-NH ₃
Argon	Ar	0~100% VOL	DA-752-AR
Arsine	AsH ₃	0 - 3.0 ppm	DA-752-AsH ₃
Boron Trichloride	BCl ₃	0 - 10.0 ppm	DA-752-HCL
Boron Trifluoride	BF ₃	0-10.0 PPM	DA-752-HF
Bromine	Br ₂	0-2.0 PPM	DA-752-BR ₂
Carbon Dioxide	CO ₂	0~5000 PPM	DA-752-CO ₂ -L-ND
Carbon Dioxide	CO ₂	0 - 5.00%VOL	DA-752-CO ₂ -M-ND
Carbon Dioxide	CO ₂	0~100% VOL	DA-752-CO ₂ -H-ND
Carbon Monoxide	CO	0-100 PPM	DA-752-CO-L
Carbon Monoxide	CO	0-500 PPM	DA-752-CO-M
Chlorine	Cl ₂	0~5.0 PPM	DA-752-Cl ₂
Chlorine Dioxide	ClO ₂	0~5.0 PPM	DA-752-ClO ₂
Chlorine Trifluoride	ClF ₃	0-5.0 PPM	DA-752-ClF ₃
Diborane	B ₂ H ₆	0-1.0 PPM	DA-752-B ₂ H ₆
Dichlorosilane	H ₂ SiCl ₂	0~10.0 PPM	DA-752-HCL
Difluoromethane	CH ₂ F ₂	0~1000 PPM	DA-752-CH ₂ F ₂ -ND
Disilane	Si ₂ H ₆	0~20.0 PPM	DA-752-SiH ₄
Ethylene	C ₂ H ₄	0~10.0 PPM	DA-752-C ₂ H ₄
Ethylene Oxide	ETO	0~10.0 PPM	DA-752-ETO
Fluorine	F ₂	0 -5.0 ppm	DA-752-HF
Formaldehyde	CH ₂ O	0~10.0 PPM	DA-752-CH ₂ O
Germane	GeH ₄	0~1.0 PPM	DA-752-GeH ₄
Hexafluorobutadiene	C ₄ F ₆	0~1,000 PPM	DA-752-C ₄ F ₆ -ND
Hydrazine	N ₂ H ₄	0~2.0 PPM	DA-752-N ₂ H ₄
Hydrogen (% LEL)	H ₂	0~100%LEL	DA-752-H ₂ -H
Hydrogen (ppm)	H ₂	0~1000 PPM	DA-752-H ₂ -L
Hydrocarbon(%LEL)	HC	0~100%LEL	DA-752-HC-CAT
Hydrocarbon(%LEL)	HC	0~100%LEL	DA-752-HC-ND
Hydrogen Bromide	HBr	0~10.0 PPM	DA-752-HBr
Hydrogen Chloride	HCL	0~10.0 PPM	DA-752-HCL
Hydrogen Cyanide	HCN	0~20.0 PPM	DA-752-HCN
Hydrogen Fluoride	HF	0~10.0 PPM	DA-752-HF
Hydrogen Selenide	H ₂ Se	0~5.0 PPM	DA-752-H ₂ Se
Hydrogen Sulfide	H ₂ S	0~10.0 PPM	DA-752-H ₂ S
Methanethiol	CH ₄ S	0~20.0 PPM	DA-752-CH ₃ SH
Methyl Fluoride	CH ₃ F	0~1000 PPM	DA-752-CH ₃ F
Nitrogen Dioxide	NO ₂	0~30.0 PPM	DA-752-NO ₂
Nitrogen Oxide	NO	0~100 PPM	DA-752-NO
Nitrogen Trifluoride	NF ₃	0.30.0 PPM	DA-752-NF ₃
Nitrous oxide	N ₂ O	0~1000 PPM	DA-752-N ₂ O
Octafluorocyclobutane	C ₄ F ₈	0~1000 PPM	DA-752-C ₄ F ₈ -ND
Octofluorocyclopentene	C ₅ F ₈	0~1000 PPM	DA-752-C ₅ F ₈ -ND
Oxygen	O ₂	0~25.0 %VOL	DA-752-O ₂ -CHEM
Oxygen	O ₂	0~25.0 %VOL	DA-752-O ₂ -OP
Ozone	O ₃	0~5.00 PPM	DA-752-O ₃
Phosphine	PH ₃	0~5.00 PPM	DA-752-PH ₃
Phosphorous Oxychloride	POCl ₃	0~1.00 PPM	DA-752-POCl ₃
Refrigerants	R290	0~100%LEL	DA-752-Propan-ND
Silane	SiH ₄	0~10.0 PPM	DA-752-SiH ₄
Sulfur Dioxide	SO ₂	0~20.0 PPM	DA-752-SO ₂
Sulfur Hexafluoride	SF ₆	0~1000 PPM	DA-752-SF ₆ -ND
Sulfur Tetrafluoride	SF ₄	0~1000 PPM	DA-752-SF ₄ -ND
Tetrahydrothiophene	THT	0~100 PPM	DA-752-THT
Trimethyl Borate	TMB	0~500 PPM	DA-752-TMB
Tetra Ethyl Ortho Silicate	TEOS	0~50.0 PPM	DA-752-TEOS
Tetrafluoromethane	CF ₄	0~2000 PPM	DA-752-CF ₄ -ND
Trifluoromethane	CHF ₃	0~2000 PPM	DA-752-CHF ₃ -ND
Tungsten Hexafluoride	WF ₆	0~10.0 PPM	DA-752-HF
Vinyl Chloride	C ₂ H ₃ CL	0~10.0 PPM	DA-752-C ₂ H ₃ CL
Volatile Organic Compounds	VOC	0~100 PPM	DA-752-VOC-L-PID
Volatile Organic Compounds	VOC	0~1000 PPM	DA-752-VOC-M-PID
Volatile Organic Compounds	VOC	0~5000 PPM	DA-752 -VOC-H-PID

Catalytic Gas List

Target Gas	Chemical Formula	Lower Explosive Limit (%VOL)
Acetaldehyde	CH ₃ CHO	4
Acetic acid	CH ₃ COOH	4
Acetone	CH ₃ COCH ₃	2.5
Acetylene	C ₂ H ₂	2.5
Bezene	C ₆ H ₆	1.5
Butane	C ₄ H ₁₀	1.86
Chloro benzene	C ₆ H ₅ Cl	1.3
Cyclohexane	C ₆ H ₁₂	1.3
Di-Methylethar	CH ₃ OCH ₃	2
Ethane	C ₂ H ₆	3.22
Ethanol	CH ₃ CH ₂ OH	3.6
Ethylene	C ₂ H ₄	2.75
Ethylene glycol (EG)	HOCH ₂ CH ₂ OH	3.2
Ethylene oxide (EO)	C ₂ H ₄ O	3.0
Formic acid	CH ₂ O ₂	16.9
Gasoline		1.4
Heptane	CH ₃ (CH ₂) ₅ CH ₃	1.05
Hydrogen	H ₂	4
Iso-butane	i-C ₄ H ₁₀	1.8
Iso-propyl alcohol	(CH ₃) ₂ CHOH	2
Methane	CH ₄	5
Methyl alcohol	CH ₄ O	7.3
Methyl bromide	CH ₃ Br	1
Naphthalene	C ₁₀ H ₈	0.9
Octane	CH ₃ (CH ₂) ₆ CH ₃	1
Pentane	CH ₃ CH ₂ CH ₂ CH ₂ CH ₃	1.5
Phenol	C ₆ H ₅ OH	1.3
Propane	C ₃ H ₈	2.1
Propylene	C ₃ H ₆	2
Propylene oxide (PO)	C ₃ H ₆ O	2.3
Thinners		1
Toluene	C ₇ H ₈	1.2
Vinyl acetate (VAM)	CH ₂ =CHOCOCH ₃	2.6
Vinyl chloride	CH ₂ =CHCl	3.6
Xylene	C ₈ H ₁₀ =C ₆ H ₄ [CH ₃] ₂	1.1

※Please Send us inquiry separately for other gases

 Revisions Table

VERSION	CHANGE	DATE
Rev 1.0		2023-09-01