SMART Gas Detector/Transmitter(4~20mA)

DA-800

with built-in LCD & explosion proof
- Suction Type -

GASDNA

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[Introduction]

DA-800 detects various combustible, toxic and VOC gases leaked from industrial areas and display its density for gas producers, gas users, gas reservoirs, gas by-producers, and so on.
It is an indicator and transmitter type gas detector which converts detection signal into a standard current signal and transmit output to external devices.

Transmitter of DA-800 displays sensor's current and voltage signal by gas density on LCD, still converts into 4-20mA standard current output signal and transmit to external side.
4-20mA standard current output signal can be transmitted to various controller such as Gas leakage alarm system (GMS1000, GMS2000) PLC, DDC, MMR to build a integrated or individual gas monitoring system.

[Features]

◆Built-in micro processor realizes various artificial intelligent functions which result in more convenient, more accurate, and more efficient gas detection environment.

◆ Built-in HD(high dissolution) A/D converter for accurate output signal.

◆LOW/HIGH 2 step relay contacts (AL1/AL2) enable to interlock with a various external devices like FAN.

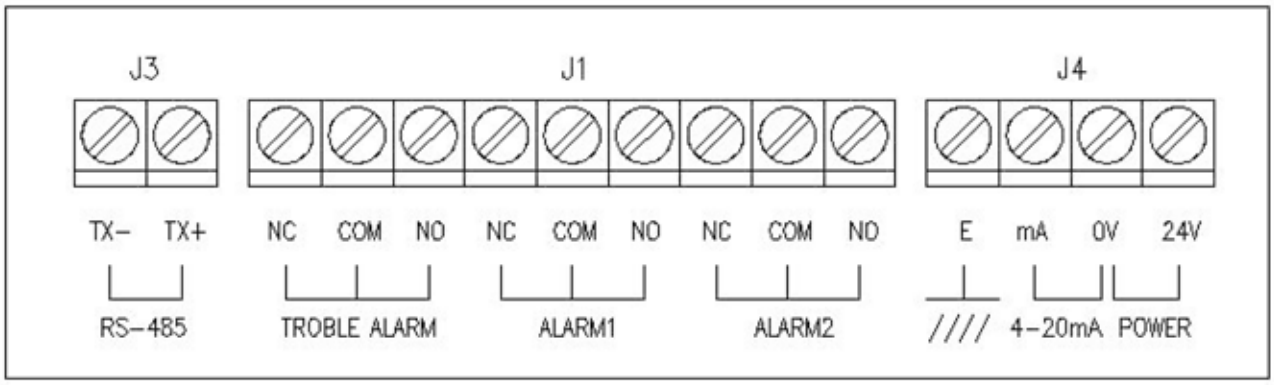
◆ 4-20mA output enables stable and long distance (maximum 2.5km) signal transmission.

◆ User programmable Menu offers to set user's own operating functions.

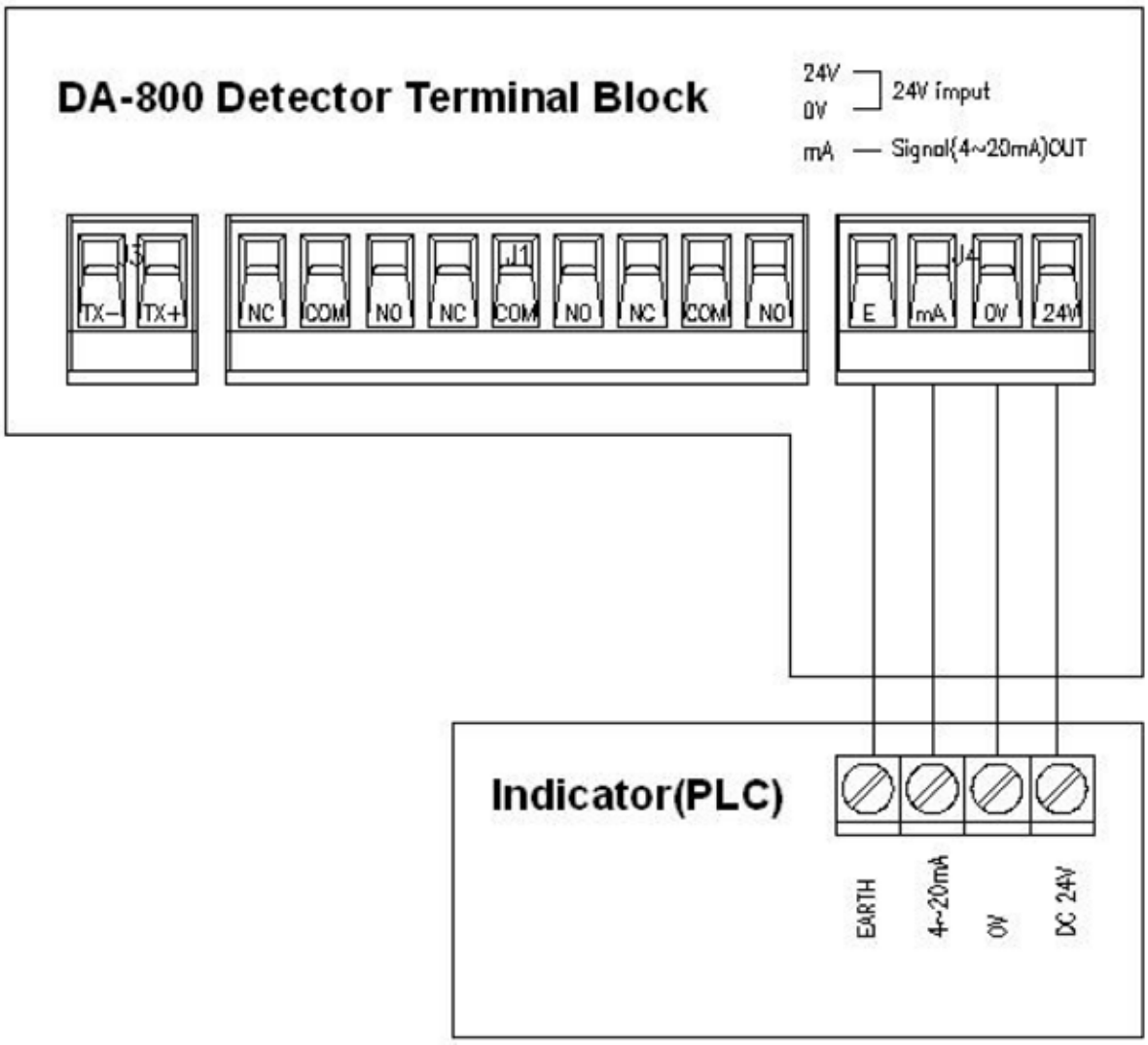
[Specification]

Segment	DA-800
Gas sampling	Suction type
Density display	LCD Display - PPM, %LEL , % (set by user)
Input power	DC 20~30V
Structure	Explosion proof
Target gas	Toxic, Combustible , O2, VOC(PID) (select)
Detection principle	Catalytic, Electro-Chemical, VOC(PID) ,NDIR (select)
Suction flow rate	0 ~ 1000ml/ min
Suction distance	Within 100m
Measurement range	Please refer to the target gas list (page 16)
Accuracy	≤ ±2%/Full Scale
Response time	Within 20 seconds, 90% / full scale
Sensor calibration	AUTO-CALIBRATION with Magnetic Switch
User programming	Calibration density & Measurement range
Wiring	CVVS & CVVSB 1.25sq*3wire
Output signal	4-20㎃ DC/F.S // RS-485(MODBUS-RTU)
Alarm output	2 Step (HIGH/LOW) Alarm RELAY CONTACT
Operation Temperature	-10℃ ~ 50℃
Operation humidity	5 ~ 95%RH (Non-Condensing)
Wire conduit	1/2" or 3/4" PF,NPT
Housing material	Cast Aluminum Alloy
Mounting	Wall or Pipe Station

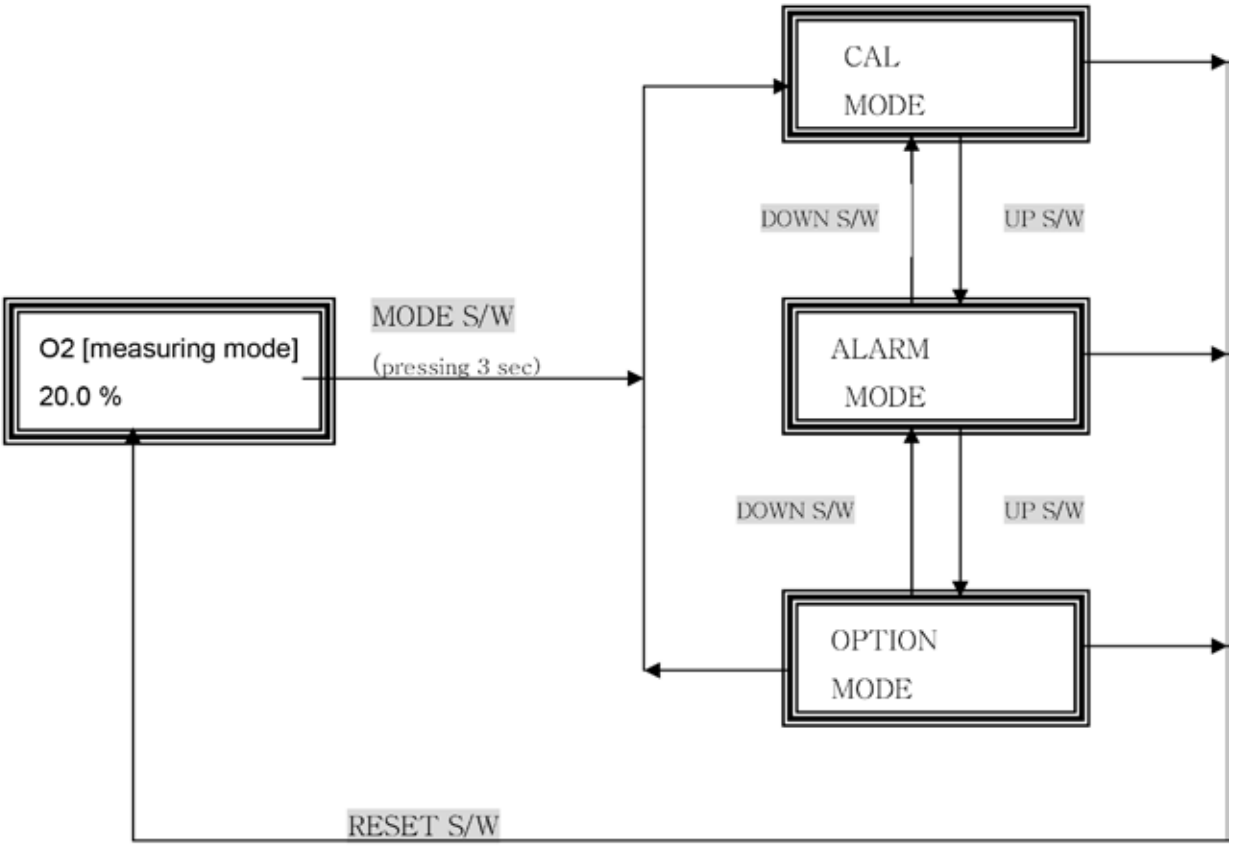
[Terminal]



[WIRING]



[User programming]



<1> CAL MODE

- Adjust zero calibration & span calibration for sensor calibration

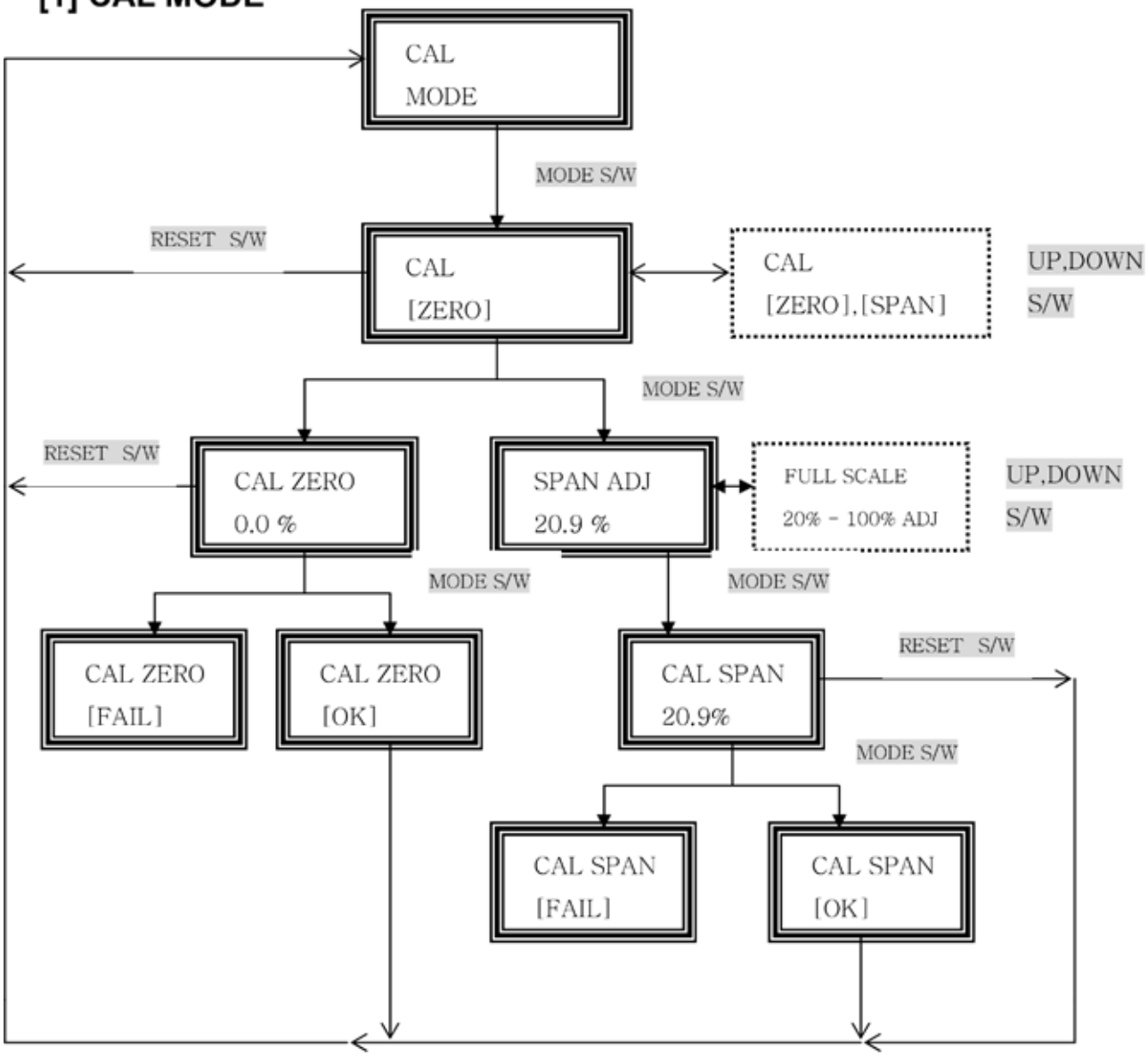
<2> ALARM MODE

- Adjust setting value of alarm type, alarm 1, & alarm 2.

<3> OPTION MODE

- Adjust the other parameters

[1] CAL MODE



(1.1) Zero calibration

① At 'CAL [ZERO]', please press MODE key to start zero calibration. And then, "CAL ZERO <0.0%>" appears on the LCD.

② Please infuse the clean air or 100% nitrogen gas at 500ml/min flow rate until the displayed value is stabilized.

③ Please press MODE key to complete the zero calibration. And then, "CAL ZERO [OK]" appears on the screen. If the zero calibration is not successful, "CAL ZERO [FAIL]" will be appeared on the LCD during 2 seconds.

(1.2) Span calibration

① At 'CAL [SPAN]', please press MODE key to start span calibration. And then, "SPAN ADJ <20.9%>" appears on the LCD.

② Please press UP, DOWN key to input the standard gas value.

③ Please press MODE key to confirm it. And then, "CAL SPAN [20.9%]" appears on the LCD.

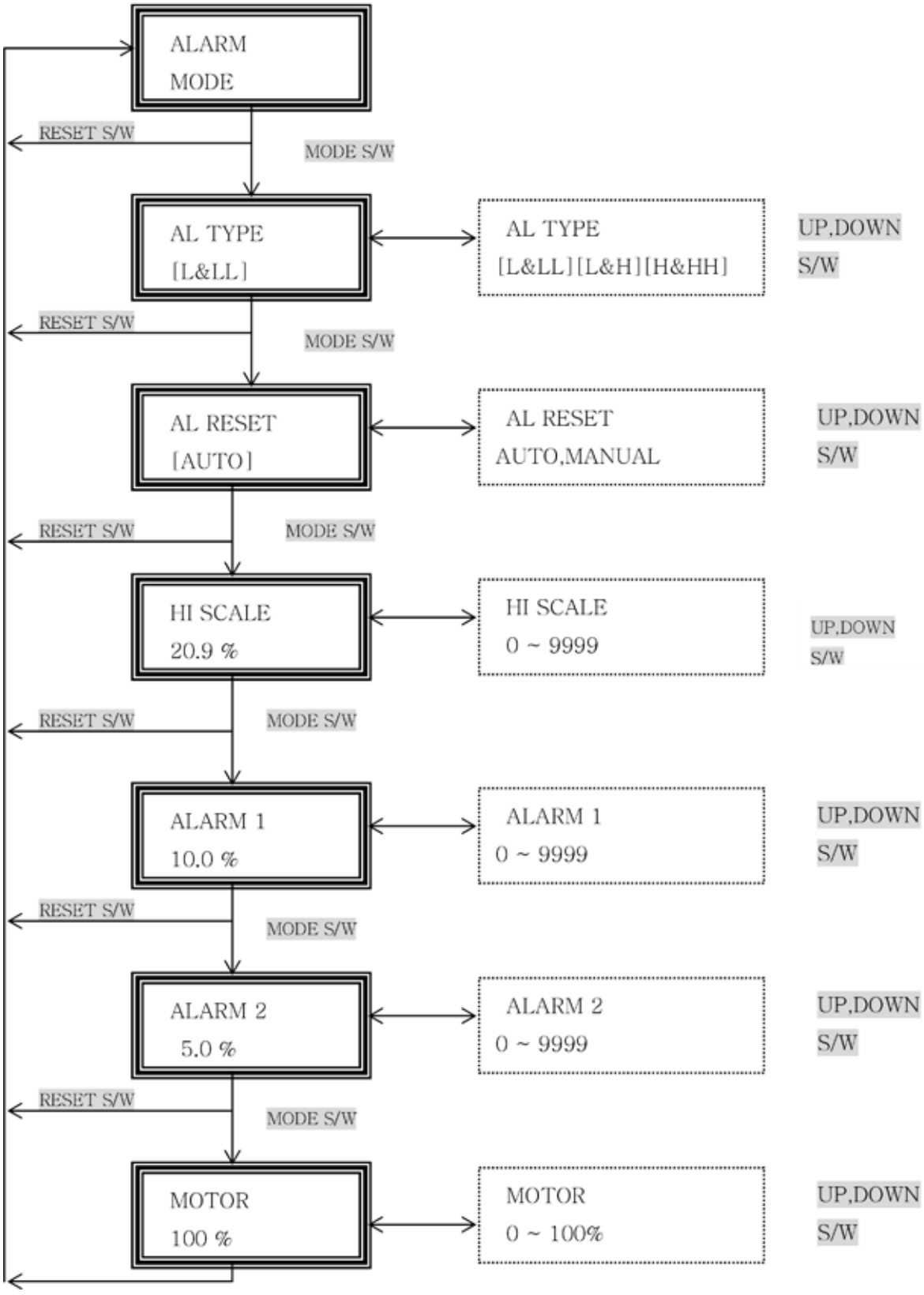
④ Please infuse the standard gas at 500ml / min flow rate during 1 minute.

⑤ Please infuse the standard gas during one(1) minute. And then, please wait until the displayed value gets stabilized.

⑥ When the displayed vale has been stabilized, please press MODE key. And then, "CAL SPAN [OK]" appears on the LCD. If the calibration is not successful, "CAL SPAN [FAIL]" will be appeared on the

LCD during 2 seconds.

[2] ALARM MODE



(2.1) AL TYPE (Select alarm type)

- It has Four(4) alarm types: L&L, L&H, H&L, and H&H
- You can use two alarm relay – relay 1 & relay 2.

(ex) If you set 'AL TYPE' to H&L:

➔ Relay 1- set high: when the measured value is higher than set value, alarm on.

➔ Relay 2 -set low: when the measured value is lower than set value, alarm on.

(2.2) AL RESET

- The method how to control ALARM Relay .
- Select 'AUTO' ←→ 'MANUAL'

<1> AUTO: The relay contact & Alarm LED releases according to set value automatically regardless of reset switch

<2> MANUAL: Only when you press reset switch, the relay contact & LED releases.

(2.3) HI SCALE

- Set 4 ~ 20mA output signal for full scale.

(ex) If you set SCALE to 100,

4mA output signal displays '0' and 20mA output signal displays '100'.

(2.4) ALARM 1

- According to 'AL TYPE', alarm #1 on.

(2.5) ALARM 2

- According to 'AL TYPE', alarm #2 on.

(2.6) MOTOR (Suction pump flow rate control)

- Set the flow rate from 0 to 100ml / min.
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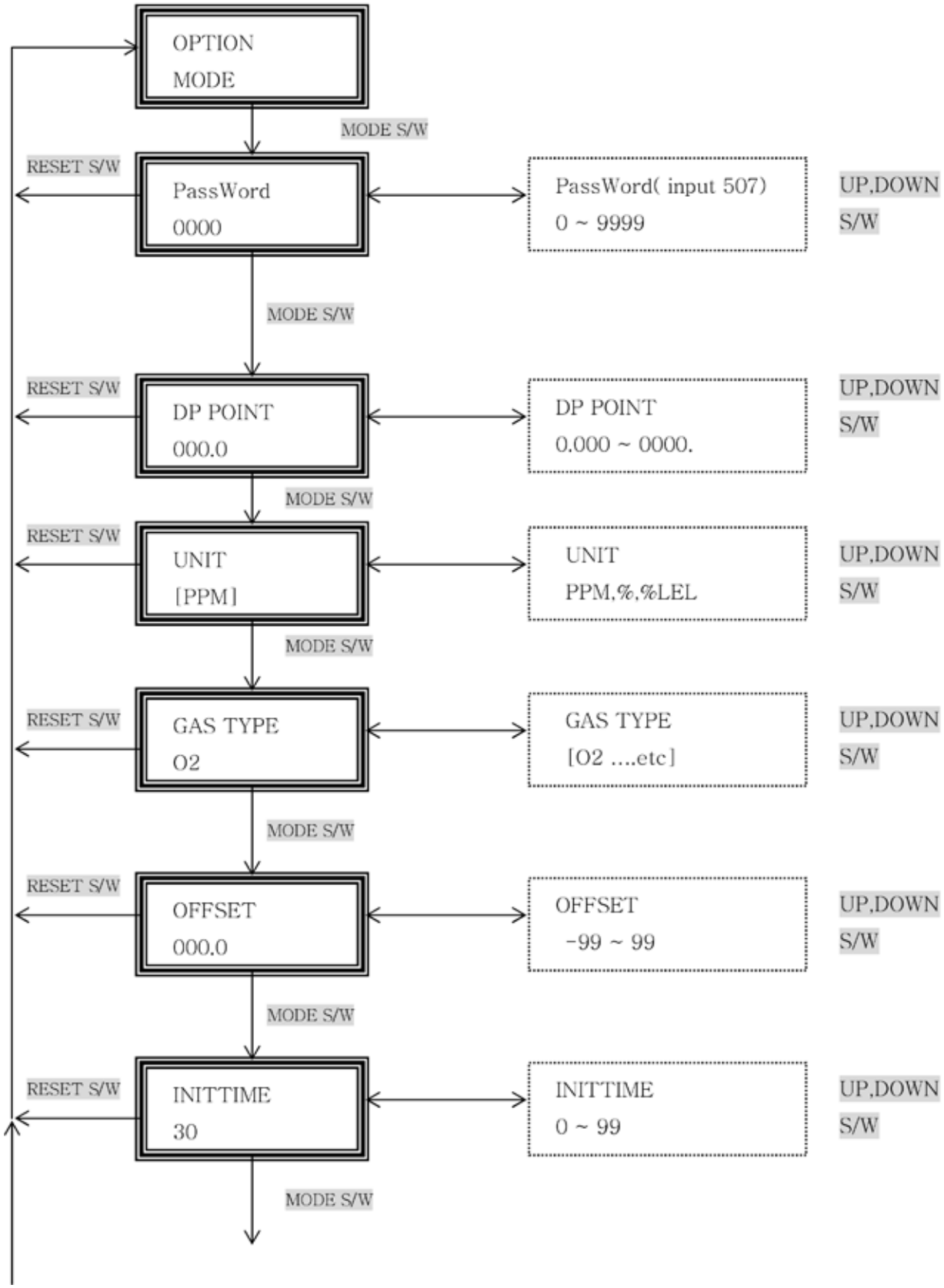
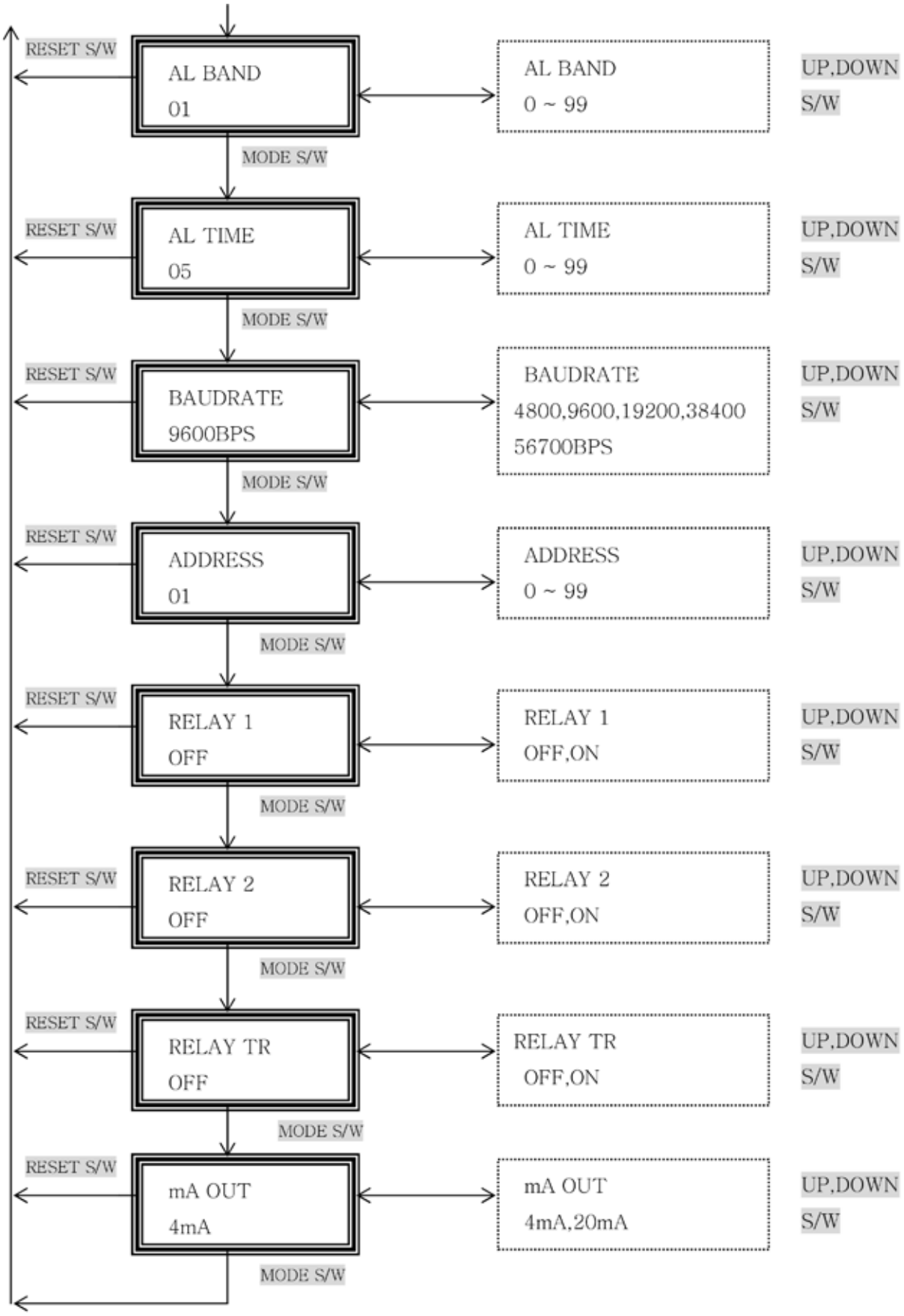
[3] OPTION MODE





(***) 'OPTION MODE' is scarcely used. Please press password '507' to enter the 'OPTION MODE

(3.1) DP POINT (Set decimal point of density values)

- Change decimal point according to the measurement range.

(3.2) UNIT(Select density unit)

- 3 options: %LEL, PPM, %.

(3.2) GAS TYPE(Display measuring gas)

- 02, HCL, and so on.

(3.3) OFFSET(Compensation of measured value)

- Compensate the measured value.

(ex) OFFSET: If it sets '+5',

➔ When the measured value is '–5', it have to display -5. But it displays '0' after compensation of '+5'.

(3.4) INITTIME(Initialization time)

- After certain time from power on, sensor can provide stable output.

(3.5) AL-BAND(ALARM DEAD BAND)

Relay output usually repeats on/off around the alarm set value and it makes trouble. 'D-BAND' function gives hysteresis value on the alarm set value to remove this kind of trouble.

(ex1) If 'ALARM 1' sets 20, 'ALARM TYPE' sets 'H&H' & 'D-BAND' sets '3'

➔ When value displays higher than 20, alarm on ←➔ lower than 17, alarm off.

(ex2) If 'ALARM 1' sets 20, 'ALARM TYPE' sets 'H&L' & 'AL-BAND' sets '3'

➔ When value displays lower than '20', alarm on ←➔ higher than '23', alarm off.

(3.6) AL TIME (ALARM DELAY TIME)

This function is to prevent the normal operation of sensor against any momentary malfunctions affected by outside impact or noise.

(ex) When alarm value sets '50' & 'AL TIME' sets '5'.

➔ Only when the measured value keeps higher than alarm set value during longer than '5' seconds, alarm on.

(3.7) BAUDRATE

- Set RS-485 baud rate.

(3.8) ADDRESS

- Set RS-485 address.

(3.9) RELAY 1 [OFF]

- Self test mode to diagnose 'ALARM-1' relay output.

(3.10) RELAY 2 [OFF]

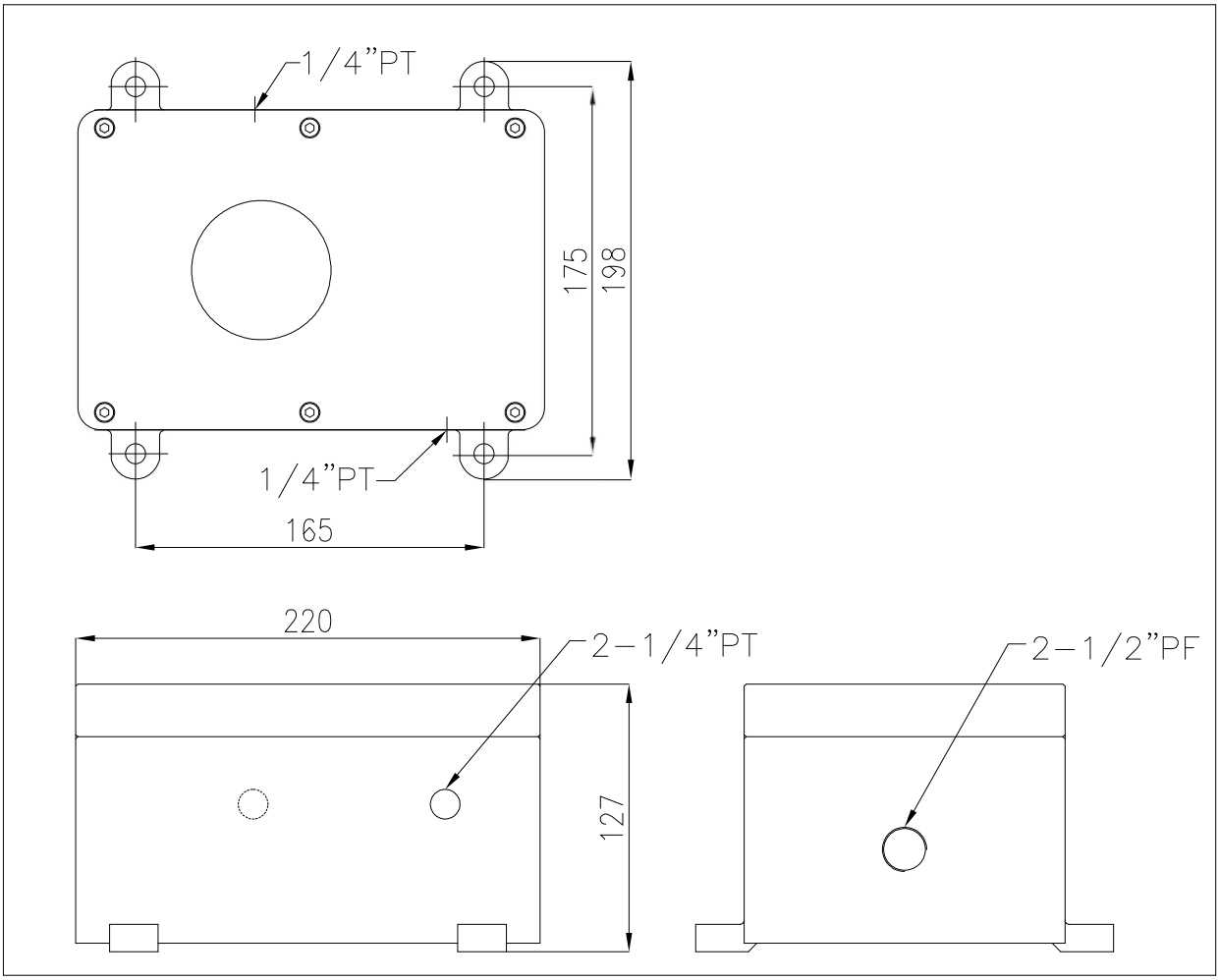
- Self test mode to diagnose 'ALARM-2' relay output.

(3.11) RELAY TR [OFF]

- Self test mode to diagnose 'ALARM TROBLE' relay output.

(3.12) mA OUT

- Self test mode to diagnose analogue signal output.


1/4"PT
175
198
1/4"PT
165
220
2-1/4"PT
127
2-1/2"PF


GAS IN
GAS OUT(1/4"PT)
1/2"PF

DA-800 Toxic gas list

Target Gas	Formula	Measuring Range	Code Number
Acetaldehyde	CH_3CHO	0~500 ppm	DA-800-CH_3CHO
Ammonia	NH_3	0~100 ppm	DA-800-NH_3
Arsine	AsH_3	0~1.00 ppm	DA-800-AsH_3
Arsenic Trichloride	$AsCl_3$	0~1.00 ppm	DA-800-$AsCl_3$
Arsenic Trifluoride	AsF_3	0~10.0 ppm	DA-800-AsF_3
Arsenic Pentafluoride	AsF_5	0~10.0 ppm	DA-800-AsF_5
Boron Trichloride	BCl_3	0~15.0 ppm	DA-800-BCl_3
Boron Tribromine	BBr_3	0~15.0 ppm	DA-800-BBr_3
Boron Trifluoride	BF_3	0~10.0 ppm	DA-800-BF_3
Butanethiol	C_4H_9SH	0~10.0 ppm	DA-800-C_4H_9SH
Carbonyl Fluoride	COF_2	0~10.0 ppm	DA-800-COF_2
Carbon Dioxide	CO_2	0~5000 ppm	DA-800-LCO_2
Carbon Dioxide	CO_2	0~5.00 %	DA-800-MCO_2
Carbon Dioxide	CO_2	0~100 %	DA-800-HCO_2
Carbon Monoxide	CO	0~500 ppm	DA-800-CO
Carbon Tetrachloride	CCl_4	0~30.0 ppm	DA-800-CCl_4
Chlorine	Cl_2	0~10.0 ppm	DA-800-Cl_2
Chlorine Dioxide	CLO_2	0~2.00 ppm	DA-800-CLO_2
Chlorine Trifluoride	CLF_3	0~2.00 ppm	DA-800-CLF_3
Diborane	B_2H_6	0~1.00 ppm	DA-800-B_2H_6
Dichlorosilane	SiH_4Cl_2	0~10.0 ppm	DA-800-SiH_4Cl_2
Disulfur Decafluoride	S_2F_{10}	0~10.0 ppm	DA-800-S_2F_{10}
Disulfur Dichloride	S_2Cl_2	0~10.0 ppm	DA-800-S_2Cl_2
Flourine	F_2	0~10.0 ppm	DA-800-F_2
Formic Acid	HCOOH	0~500 ppm	DA-800-HCOOH
Germane	GeH_4	0~1.00 ppm	DA-800-GeH_4
Germanium Chloride	$GeCl_4$	0~10.0 ppm	DA-800-$GeCl_4$
Hydrazine	N_2H_4	0~10.0 ppm	DA-800-N_2H_4
Hydrogen	H_2	0~2000 ppm	DA-800-H_2
Hydrogen Bromide	HBr	0~10.0 ppm	DA-800-HBr

Hydrogen Chloride	HCl	0~10.0 ppm	DA-800-HCl
Hydrogen Cyanide	HCN	0~50.0 ppm	DA-800-HCN
Hydrogen Fluoride	HF	0~10.0 ppm	DA-800-HF
Hydrogen Sulfide	H_2S	0~100 ppm	DA-800-H_2S
Iodine[2]	I_2	0~10.0 ppm	DA-800-I_2
Isopropanol[2]	$(CH_3)_2$ CHOH	0~500 ppm	DA-800-$(CH_3)_2$ CHOH
Methanol[2]	CH_3OH	0~500 ppm	DA-800-CH_3OH
Nitric Oxide	NO	0~100 ppm	DA-800-NO
Nitrogen Dioxide	No_2	0~20.0 ppm	DA-800-No_2
Nitrogen Trifuoride	NF_3	0~30.0 ppm	DA-800-NF_3
Oxygen	O_2	0~30 % vol	DA-800-O_2
Ozone	O_3	0~1.00 ppm	DA-800-O_3
Phosgene	$COCl_2$	0~5.00 ppm	DA-800-$COCl_2$
Phosphine	PH_3	0~1.00 ppm	DA-800-PH_3
Phosphorus Trichloride	PCl_3	0~15.0 ppm	DA-800-PCl_3
Phosphorous	PCl_5	0~15.0 ppm	DA-800-PCl_5
Phosphoryl Chloride	$POCl_3$	0~10.0 ppm	DA-800-$POCl_3$
Silane	SiH_4	0~20.0 ppm	DA-800-SiH_4
Silicon Tetrachloride	$SiCl_4$	0~10.0 ppm	DA-800-$SiCl_4$
Stibin[2]	SbH_3	0~1.00 ppm	DA-800-SbH_3
Sulfur Dioxide	SO_2	0~20.0 ppm	DA-800-SO_2
Sulfuryl Fluoride[2]	SO_2F_2	0~10.0 ppm	DA-800-SO_2F_2
Sulfur Tetrafluoride	SF_4	0~9.00 ppm	DA-800-SF_4
Trichlorosilane	$SiHCl_3$	0~15.0 ppm	DA-800-$SiHCl_3$
Thiophene	C_4H_4S	0~50.0 ppm	DA-800-C_4H_4S
Tin Tetrabromide	$SnBr_4$	0~10.0 ppm	DA-800-$SnBr_4$
Tin Tetrachloride	$SnCl_4$	0~30.0 ppm	DA-800-$SnCl_4$
Tin Tetrafluoride	SnF_4	0~10.0 ppm	DA-800-SnF_4
Titanium Tetrachloride	$TiCl_4$	0~10.0 ppm	DA-800-$TiCl_4$
Trichlorosilane	$SiHCl_3$	0~10.0 ppm	DA-800-$SiHCl_3$
Trichlortriazine	$C_3Cl_3N_3$	0~10.0 ppm	DA-800-$C_3Cl_3N_3$
Trifluorotriazine	$C_3F_3N_3$	0~10.0 ppm	DA-800-$C_3F_3N_3$

DA-800 Combustible gas list

Target gas	Formula	Explosion limit (%VOL)
Acetaldehyde	CH_3CHO	4
Acetic acid	CH_3COOH	4
Acetone	CH_3COCH_3	2.5
Acetylene	C_2H_2	2.5
Bezene	C_6H_6	1.5
Butane	C_4H_{10}	1.86
Chloro benzene	C_6H_5Cl	1.3
Cyclohexane	C_6H_{12}	1.3
Di-Methylethar	CH_3OCH_3	2
Ethane	C_2H_6	3.22
Ethanol	CH_3CH_2OH	3.6
Ethylene	C_2H_4	2.75
Ethylene glycol (EG)	$HOCH_2CH_2OH$	3.2
Ethylene oxide (EO)	C_2H_4O	3.0
Formic acid	CH_2O_2	16.9
Gasoline		1.4
Heptane	$CH_3(CH_2)_5CH_3$	1.05
Hydrogen	H_2	4
Iso-butane	$i\text{-}C_4H_{10}$	1.8
Iso-propyl alcohol	$(CH_3)_2CHOH$	2
Methane	CH_4	5
Methyl alcohol	CH_4O	7.3
Methyl bromide	CH_3Br	1
Naphthalene	$C_{10}H_8$	0.9
Octane	$CH_3(CH_2)_6CH_3$	1
Pentane	$CH_3CH_2CH_2CH_2CH_3$	1.5
Phenol	C_6H_5OH	1.3
Propane	C_3H_8	2.1
Propylene	C_3H_6	2
Propylene oxide (PO)	C_3H_6O	2.3
Thinners		1
Toluene	C_7H_8	1.2
Vinyl acetate (VAM)	$CH_2=CHOCOCH_3$	2.6
Vinyl chloride	$CH_2=CHCl$	3.6

Xylene	$C_8H_{10}=C_6H_4[CH_3]_2$	1.1

*For other gases(unlisted gases), Please contact us.