

# PSM Series

## Multi-CH (8CH/4CH) Pressure Sensor Indicator and Alarm Output

### ■ Features

- Displays multi-CH (8CH/4CH) pressure sensor indicator and alarm output
- Input range: 1-5VDC, DC4-20mA (depending on model)
- Auto pressure sensor model identification function (only for PSS Series, pressure sensor)
- Selectable PV display part color by output operation (red/green)
- Easy check output by output indicator of each channel
- Supports RS485 (Modbus RTU) communication
- Freezer pressure control mode
- Easy wiring with sensor connector (CNE Series)
- Power supply: 12-24VDC ±10%

NEW



⚠ Please read "Safety Considerations" in operation manual before using.



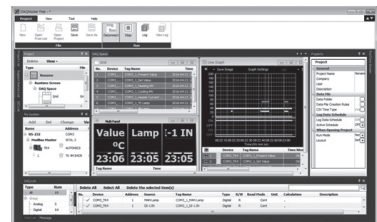
### ■ Comprehensive Device Management Program (DAQMaster)

- DAQMaster is comprehensive device management program for convenient management of parameters and multiple device data monitoring.
- Visit our website ([www.autonics.com](http://www.autonics.com)) to download user manual and comprehensive device management program.

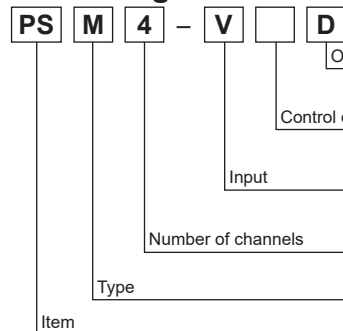
< Computer specification for using software >

< DAQMaster screen >

Item	Minimum requirements
System	IBM PC compatible computer with Intel Pentium III or above
Operations	Microsoft Windows 98/NT/XP/Vista/7/8/10
Memory	256MB+
Hard disk	1GB+ of available hard disk space
VGA	Resolution: 1024×768 or higher
Others	RS-232 serial port (9-pin), USB port



### ■ Ordering Information



D	Digital input
R	RS485 communication
No-mark	NPN open collector output
P	PNP open collector output
V	Voltage (1-5VDC) input
A	Current (DC4-20mA) input
4	4-channel
8	8-channel
M	Multi Channel
PS	Pressure Sensor

### ■ Rated Pressure Range and Max. Display Pressure Range

Pressure type	Negative pressure		Standard pressure		Compound pressure	
	Decimal point	Range	Decimal point	Range	Decimal point	Range
MPa	—	—	0.001	0.000 to 1.000 (-0.050 to 1.100)	—	—
kPa	0.1	0.0 to -101.3 (5.0 to -101.3)	0.1	0.0 to 100.0 (-5.0 to 110.0)	0.1	-101.3 to 100.0 (-101.3 to 110.0)
			1	0 to 1000 (-101.3 to 1100)		
kgf/cm <sup>2</sup>	0.001	0.000 to -1.033 (0.051 to -1.033)	0.001	0.000 to 1.020 (-0.051 to 1.122)	0.001	-1.034 to 1.020 (-1.034 to 1.122)
			0.01	0.00 to 10.20 (-0.51 to 11.22)		
bar	0.001	0.000 to -1.013 (0.050 to -1.013)	0.001	0.000 to 1.000 (-0.050 to 1.100)	0.001	-1.013 to 1.000 (-1.013 to 1.100)
			0.01	0.00 to 10.00 (-0.50 to 11.00)		
psi	0.01	0.00 to -14.70 (0.74 to -14.70)	0.01	0.00 to 14.50 (-0.72 to 15.96)	0.02	-14.70 to 14.50 (-14.70 to 15.96)
			0.1	0.0 to 145.0 (-7.2 to 159.6)		
mmHg	1	0 to -760 (38.0 to -760.0)	—	—	1	-760 to 750 (-760.0 to 824.0)
inHg	0.1	0.0 to -29.9 (1.50 to -29.90)	—	—	0.1	-29.9 to 29.5 (-29.88 to 32.58)
mmH <sub>2</sub> O	0.1	0.0 to -103.3 (5.1 to -103.3)	—	—	0.1	-103.4 to 102.0 (-103.4 to 112.2)

※ ( ) is max. pressure display range.

※ For using a unit mmH<sub>2</sub>O, multiply display value by 100.

# Multi-CH Pressure and Sensor Indicator

## ■ Pressure Conversion Chart

from \ to	Pa	kPa	MPa	kgf/cm <sup>2</sup>	mmHg	mmH <sub>2</sub> O	psi	bar	inHg
1Pa	1	0.001	0.000001	0.000010197	0.007501	0.101972	0.000145038	0.00001	0.0002953
1kPa	1000.000	1	0.001	0.010197	7.500617	101.971626	0.145038	0.01	0.2953
1MPa	1000000	1000	1	10.197162	7500.61683	101971.626	145.038243	10	295.299875
1kgf/cm <sup>2</sup>	98066.5	98.0665	0.098067	1	735.55924	10000.0005	14.223393	0.980665	28.959025
1mmHg	133.322368	0.133322	0.000133	0.001359	1	13.595099	0.019337	0.001333	0.039370
1mmH <sub>2</sub> O	9.80665	0.009807	—	0.000099	0.073556	1	0.00142	0.000098	0.002896
1psi	6894.733	6.89473	0.006895	0.070307	51.714752	703.016716	1	0.068947	2.036014
1bar	100000.0	100.0000	0.100000	1.019716	750.062	10197.1626	14.503824	1	29.529988
1inHg	3386.388	3.386388	0.003386	0.034532	25.40022	345.315507	0.491156	0.033864	1

E.g.) For calculating 760mmHg to kPa

: According to above chart, 1mmHg is 0.133322kPa, therefore 760mmHg will be 760×0.133322kPa=101.32472kPa.

## ■ Specifications

Model	PSM4-V□□	PSM4-A□□	PSM8-V□□	PSM8-A□□
Display pressure range	Depending on pressure type, pressure unit (refer to ■ Rated Pressure Range and Max. Display Pressure Range')			
Power supply	12-24VDC≒ (ripple P-P: max. 10%)			
Allowable voltage range	90 to 110% of rated voltage			
Power consumption	Max. 3W			
Current consumption*1	Max. 100mA (120mA for RS485 communication)			
Max. inputs	4		8	
Sensor input	1-5VDC≒	DC4-20mA	1-5VDC≒	DC4-20mA
Power supply for sensor*2	12-24VDC≒, 40mA for each channel (max. current of 1-4CH: max. 100mA, max. current of 5-8CH: max. 100mA)			
Control output	NPN or PNP open collector output			
	● Load voltage: max. 30VDC≒		● Load current: max. 100mA	
	● Residual voltage-NPN: max. 1VDC≒, PNP: max. 2VDC			
	Hysteresis	Min. display interval		
	Repeat error	±0.1% F.S. ±min. display interval		
Response time	2.5ms, 100ms, 500ms, 1000ms		5ms, 100ms, 500ms, 1000ms	
Protection circuits	Output short over current protection circuit, reverse polarity protection circuit			
Number of display digits	PV display part, SV display part: 4-digit, channel display part: 1-digit			
Display method	Display part	7-segment LED method		
	Output indicator	● PV display part: red or green*3 ● SV display part: green ● Channel display part: red		
Display accuracy	±0.1% ±2-digit (at 23 ±5°C)			
Control output and display temperature	0 to 50°C: ±0.2% F.S. ±2-digit (based on 25°C), -10 to 0°C: ±0.3% F.S. ±2-digit			
Digital input*4	Digital input (1 point)			
Communication*5	● Contact input-[L]: max. 0.2V			
	● Non-contact input: ON- residual voltage max. 1.0V, OFF- leakage current max. 0.1mA			
Connections	Input	Sensor connector (for CNE-P04-□, sold separately) terminal		
	Output	Hirose connector 20-pin (HIF3BA-20D-2.54R, flat cable 20-wire, sold separately) terminal		
Insulation resistance	Over 100MΩ (at 500VDC megger)			
Dielectric strength	1,000VAC 50/60Hz for 1 min (between power terminal and case), 500VAC 50/60Hz for 1 min (between power terminal and RS485 terminal)*5			
Vibration	1.5mm amplitude at frequency of 10 to 50Hz (for 1 min) in each X, Y, Z direction for 2 hours			
Environment	Ambient temp.	-10 to 50°C, storage: -20 to 60°C		
	Ambient humi.	30 to 85%RH, storage: 30 to 85%RH		
Protection structure	Front: IP65, the other part: IP30 (IEC standard)			
Accessory	Bracket			
Approval	CE			
Weight*6	Approx. 108g (approx. 65g)			

\*1: Except current consumption of sensor part. When all output LED are ON, it is max. 120mA.

\*2: Do not short +V and 0V of sensor connector. It may cause break inner circuit.

\*3: It is able to select at PV display part color [L or R] in parameter 2 group.

\*4: It is only for the digital input option model (PSM□-□□D).

\*5: It is only for the RS485 communication option model (PSM□-□□R).

\*6: The weight includes packaging. The weight in parenthesis is for unit only.

※Environment resistance is rated at no freezing or condensation.

(A) Photoelectric Sensors

(B) Fiber Optic Sensors

(C) Door/Area Sensors

(D) Proximity Sensors

(E) Pressure Sensors

(F) Rotary Encoders

(G) Connectors/ Connector Cables/ Sensor Distribution Boxes/Sockets

(H) Temperature Controllers

(I) SSRs / Power Controllers

(J) Counters

(K) Timers

(L) Panel Meters

(M) Tacho / Speed / Pulse Meters

(N) Display Units

(O) Sensor Controllers

(P) Switching Mode Power Supplies

(Q) Stepper Motors & Drivers & Controllers

(R) Graphic/ Logic Panels

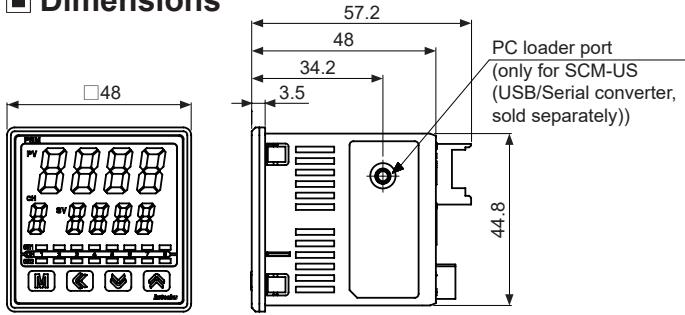
(S) Field Network Devices

(T) Software

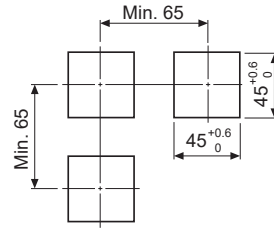
# PSM Series

(unit: mm)

## Dimensions

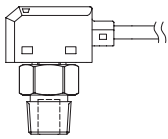


## Panel cut-out

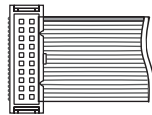


## Sold separately

- Pressure sensor (PSS Series: 8 types)

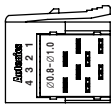


- Output connector cable (HIF3BA-20D-2.54R)

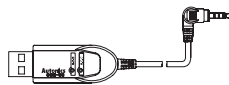


[Flat Cable 20-wire, 1.27mm (AWG28, 2.54mm for socket)]

- Sensor connector plug (CNE-P04-□)

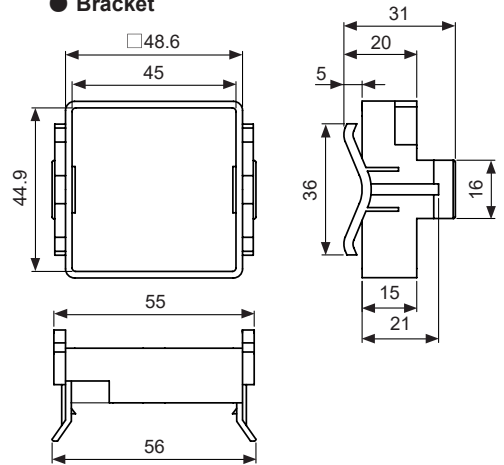


- Communication converter (SCM-US: USB/Serial converter)



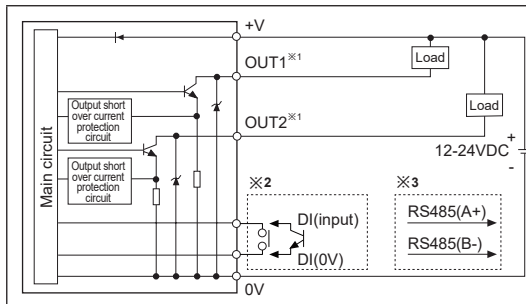
## Accessory

- Bracket

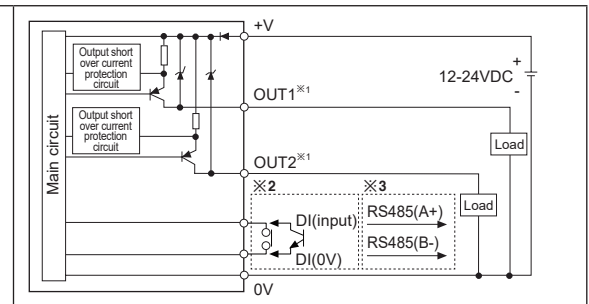


## Control Output Circuit

### NPN open collector output



### PNP open collector output



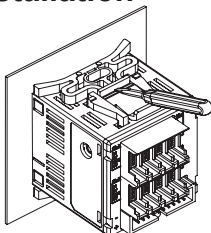
※1: PSM4: 4 of each OUT1/OUT2.  
PSM8: 8 of each OUT1/OUT2.

※2: It is only for the digital input option model (PSM□-□□D).

※3: It is only for the RS485 communication option model (PSM□-□□R).

※If short-circuit the control output terminal or supply current over the rated specification, normal control signal is not output due to the output short over current protection circuit.

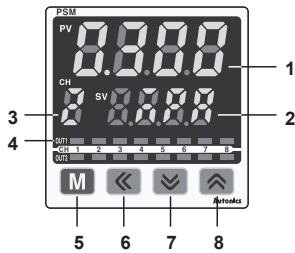
## Installation



※Insert this unit into a panel, fasten bracket by pushing with tools as shown.

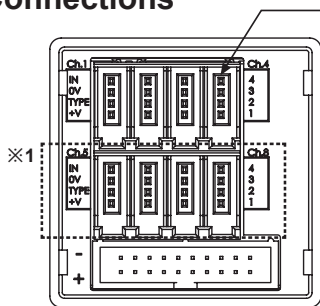
# Multi-CH Pressure and Sensor Indicator

## Unit Descriptions



1. **Present value (PV) display part (red or green)**  
 RUN mode: Displays the measured value of the current channel.  
 Setting mode: Displays the set parameter name.
  2. **Setting value (SV) display part (green)**  
 RUN mode: Displays the pressure unit of the current channel.  
 Setting mode: Displays SV of the parameter.
  3. **Channel display part (red)**  
 RUN mode: Displays the channel.  
 Setting mode: Displays the channel of the setting parameter.
  4. **Output indicator (OUT1 (red), OUT2 (green))**  
 Turns ON when the dedicated control output is ON.  
 PSM4: OUT1/OUT2 of 4 channels  
 PSM8: OUT1/OUT2 of 8 channels
5. **M Key**  
 Sets preset value, enters parameter 1/2 group, moves between parameters or returns to RUN mode.
  6. **Left Arrow Key**  
 RUN mode: Changes the currently displayed channel.  
 Setting mode: Changes the setting channel or moves between digits.
  7. **Right Arrow Key**  
 Setting mode: Changes SV from each parameter.
  8. **Up Key**  
 RUN mode: Enters peak value/auto shift correction value parameters.  
 Setting mode: Changes SV from each parameter.

## Connections



Sensor connector input  
 It is recommended to use Autoncis sensor connector CNE-P04-□ (sold separately).

PIN no.	Type	
	Voltage (1-5VDC) input	Current (DC4-20mA) input
4	INPUT	
3	0V	N-C
2	TYPE <sup>※2</sup>	
1	+V	

※1: Dot line parts are only for PSM8 Series.

※2: No.2 pin is for auto pressure sensor model identification.

Wire it only for using Autoncis pressure sensor, PSS Series (sold separately).  
 Refer to the PSS series catalog.

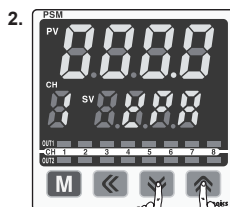
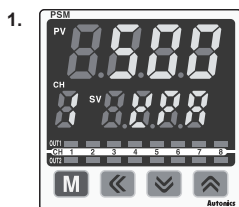
## Hirose connector (HIF3FB-20PA-2.54DSA) 20-pin

PIN no.	2	4	6	8	10	12	14	16	18	20
Type	0V	Ch4_OUT2	Ch4_OUT1	Ch3_OUT2	Ch3_OUT1	Ch2_OUT2	Ch2_OUT1	Ch1_OUT2	Ch1_OUT1	DI(0V)/RS485(B-)
PIN no.	1	3	5	7	9	11	13	15	17	19
Type	12-24VDC	Ch8_OUT2	Ch8_OUT1	Ch7_OUT2	Ch7_OUT1	Ch6_OUT2	Ch6_OUT1	Ch5_OUT2	Ch5_OUT1	DI(input)/RS485(A+)

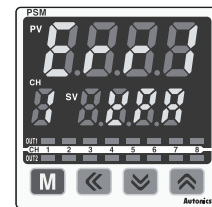
No. 19, 20 pins are sub I/O pins and support digital input function (DI) or RS485 communication by option.

## Zero-Point Adjustment

※Before using this unit, you must execute zero-point adjustment.



for over 4 sec



If there is external pressure and executing zero-point adjustment, [Err 1] flashes during pressing the keys. Remove the external pressure and re-execute zero-point adjustment at atmospheric pressure.

With opening pressure ports of pressure sensors, this function is to set zero-point for the current pressure display value forcibly.

Press the + keys for over 4 sec at the same time, the value of PV display part flashes twice as 0000 and zero-adjustment is complete. You can set the applied channel range for this function at zero-point adjustment channel range [Err 5] in parameter 2 group.

※Zero-point adjustment allowable range: max. ±5% of rated pressure.

●[Err 5CH]: Executes zero-point adjustment only for current channel.

●[Err 5AL]: Executes zero-point adjustment for all channels.

(A) Photoelectric Sensors

(B) Fiber Optic Sensors

(C) Door/Area Sensors

(D) Proximity Sensors

(E) Pressure Sensors

(F) Rotary Encoders

(G) Connectors/ Connector Cables/ Sensor Distribution Boxes/Sockets

(H) Temperature Controllers

(I) SSRs / Power Controllers

(J) Counters

(K) Timers

(L) Panel Meters

(M) Tacho / Speed / Pulse Meters

(N) Display Units

(O) Sensor Controllers

(P) Switching Mode Power Supplies

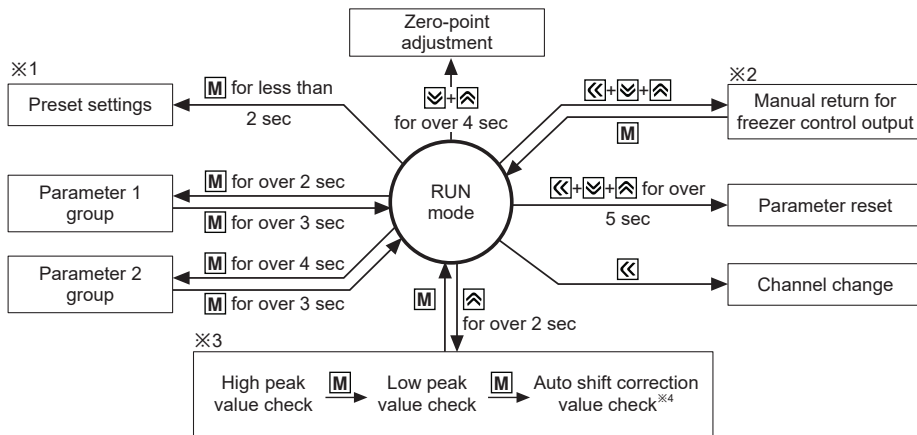
(Q) Stepper Motors & Drivers & Controllers

(R) Graphic/ Logic Panels

(S) Field Network Devices

(T) Software

## Settings



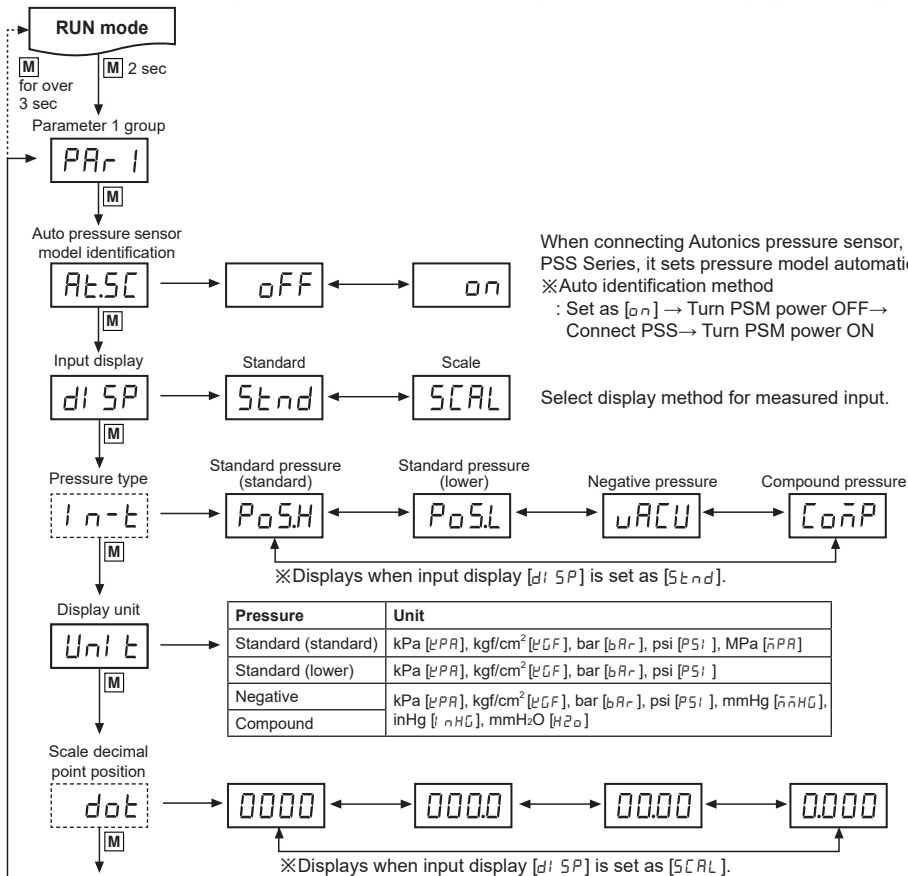
- ※1: When using forced output control mode, auto shift/hold input functions are not available. There is no preset setting function.
- ※2: It executes this function when more than one channel's output operation mode [OUT. n] is freezer pressure control [Fr. E] and its control output 2 reset is manual [rAn].
- ※3: Press the [M] keys for over 1 sec to reset high/low peak value or auto shift correction value.
- ※4: You can check it only when digital input function [d-i n] set as Auto shift function [SHF].

## Parameter Setting

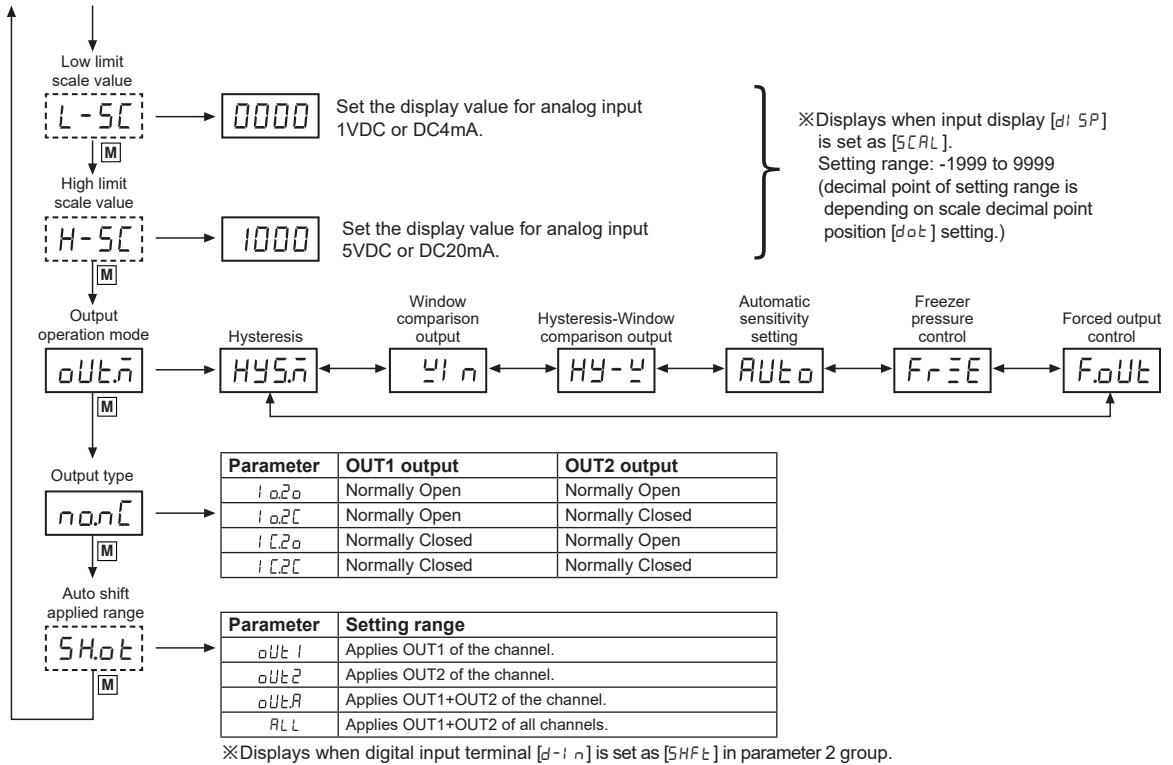
- ※After entering parameter 1/2 group, if there is no additional key input for 30 sec, it maintains previous setting value and it returns to RUN mode.
- ※Press the [M] key to set the setting value.
- ※After entering parameter 1/2 group, press the [M] key for over 3 sec to at any parameters return to RUN mode.
- ※Dot line parameters may not be displayed by other parameter settings.

### Parameter 1 group

※Parameters in parameter 1 group are settable for each channel. (refer to Channel Changing and Setting)

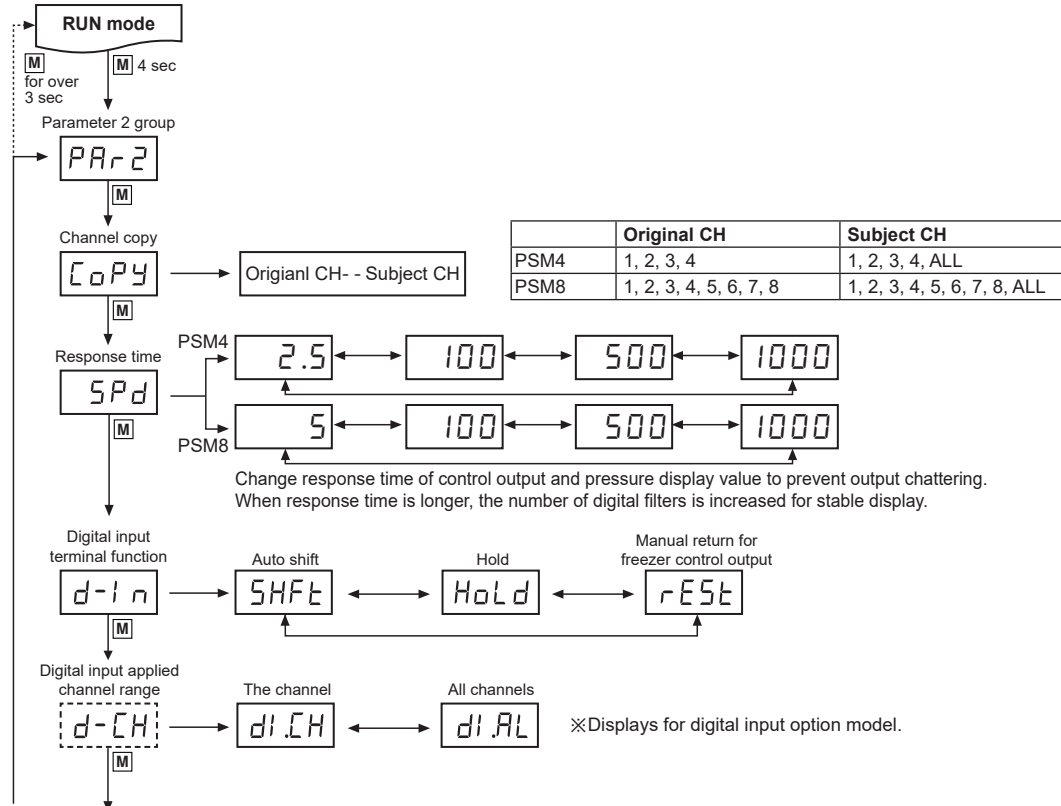


# Multi-CH Pressure and Sensor Indicator



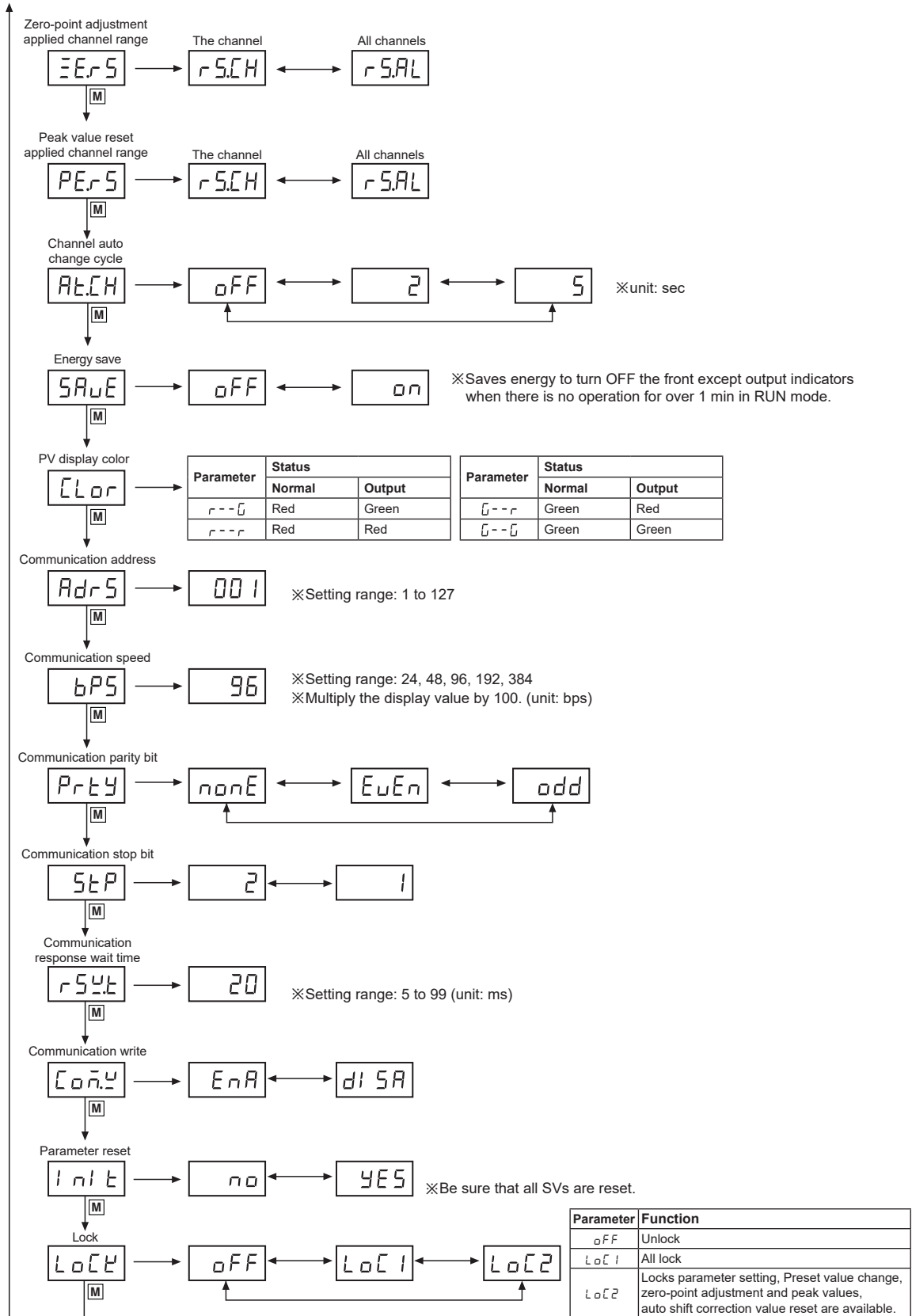
## Parameter 2 group

※Parameters in parameter 2 group are applied to all channels.



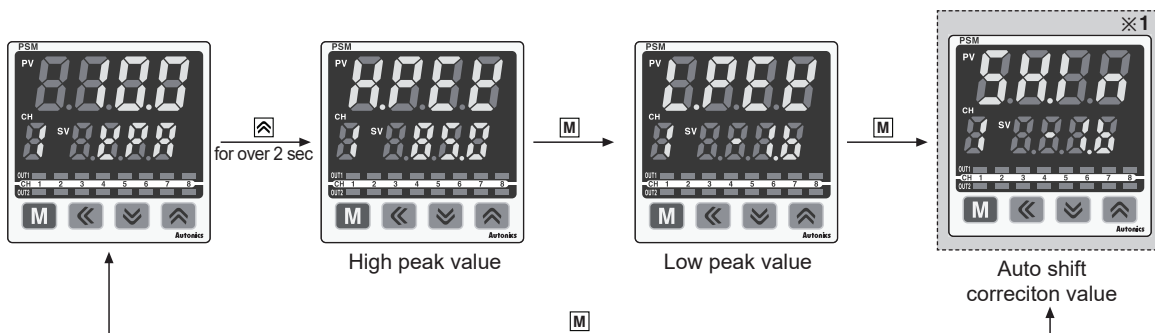
- (A) Photoelectric Sensors
- (B) Fiber Optic Sensors
- (C) Door/Area Sensors
- (D) Proximity Sensors
- (E) Pressure Sensors
- (F) Rotary Encoders
- (G) Connectors/ Connector Cables/ Sensor Distribution Boxes/Sockets
- (H) Temperature Controllers
- (I) SSRs / Power Controllers
- (J) Counters
- (K) Timers
- (L) Panel Meters
- (M) Tacho / Speed / Pulse Meters
- (N) Display Units
- (O) Sensor Controllers
- (P) Switching Mode Power Supplies
- (Q) Stepper Motors & Drivers & Controllers
- (R) Graphic/ Logic Panels
- (S) Field Network Devices
- (T) Software

# PSM Series



# Multi-CH Pressure and Sensor Indicator

## High/Low Peak Value, Auto Shift Value Check



- ※1: It displays only when digital input terminal function [d-1 n] is [5HF E] in parameter 2 group.
- ※Press the key for over 1 sec, "----" of the SV display part flashes twice and saved value is reset.
- ※This function is to diagnose malfunction of the system caused by parasitic pressure through memorizing the High/Low peak value occurred from the system.
- ※When digital input terminal function [d-1 n] is [5HF E] in parameter 2 group, you can check and correct auto shift correction value at [5H I n].
- ※Press the key for over 2 sec to check high/low peak value, auto shift correction value of current channel in RUN mode. Press the key to change the channel.

## Auto Pressure Sensor Model Identification [A.E.S.C]

When connecting Autonics pressure sensor, PSS Series, this unit recognizes pressure model [I n - E] in parameter 1 group and pressure range automatically.

※Auto identification method

: Set auto pressure sensor model identification [A.E.S.C] as [O n] → Turn PSM power OFF → Connect PSS → PSM power ON

※This function is only for Autonics pressure sensor, PSS Series.

※Turn OFF the PSM power and connect PSS. Otherwise, it may cause malfunction.

## Channel Changing and Setting

※Manual channel changing: Set channel auto change cycle [A.E.C.H] as [O F F] in parameter 2 group.

※Auto channel changing: Set channel auto change cycle [A.E.C.H] as [2] or [5] in parameter 2 group.

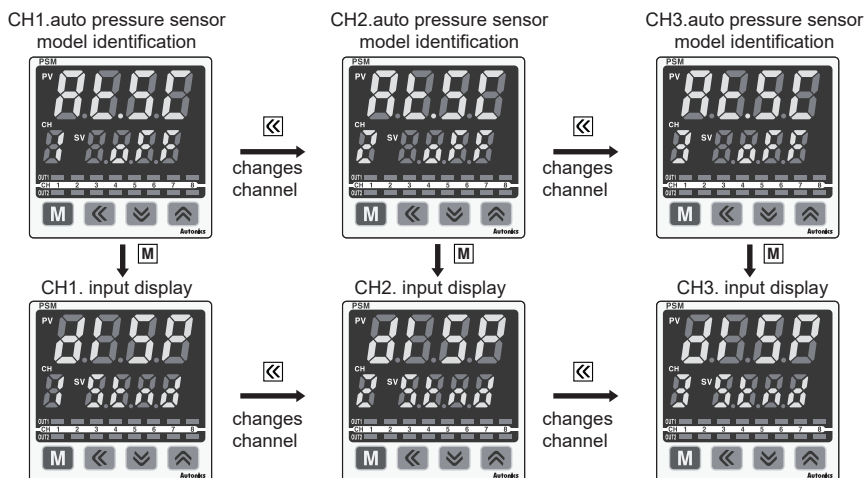
### Channel change

- Manual channel changing: Press the key in RUN mode. The SV display part changes channel and the PV display part displays the value of this channel.
  - Auto channel changing: It displays one of the connected channels and the next channel for the set time (2 or 5 sec) automatically.
- ※In auto channel changing, when pressing the key to change channel, it displays the value of this channel for 30 sec and it displays the next channel automatically.

### Channel setting

Parameter 1 group is available to set for each channel. Press the key once, channel is changed for the parameter.

E.g.) To set auto pressure sensor model identification [A.E.S.C], and input display [d: 5P] at CH1, 2, 3 in parameter 1 group.



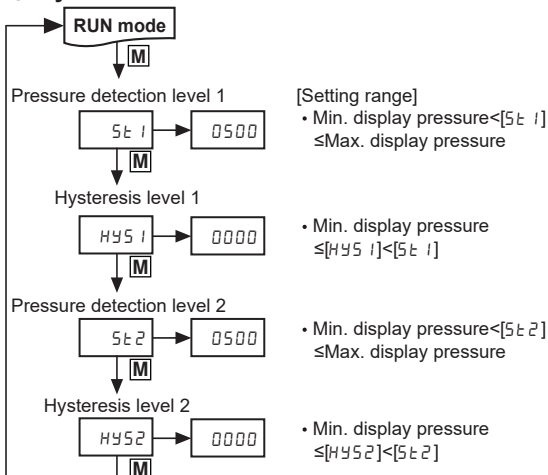
(A)	Photoelectric Sensors
(B)	Fiber Optic Sensors
(C)	Door/Area Sensors
(D)	Proximity Sensors
(E)	Pressure Sensors
(F)	Rotary Encoders
(G)	Connectors/ Connector Cables/ Sensor Distribution Boxes/Sockets
(H)	Temperature Controllers
(I)	SSRs / Power Controllers
(J)	Counters
(K)	Timers
(L)	Panel Meters
(M)	Tacho / Speed / Pulse Meters
(N)	Display Units
(O)	Sensor Controllers
(P)	Switching Mode Power Supplies
(Q)	Stepper Motors & Drivers & Controllers
(R)	Graphic/ Logic Panels
(S)	Field Network Devices
(T)	Software



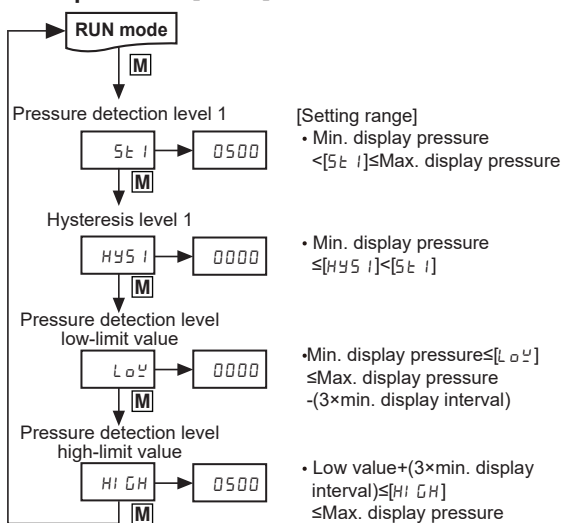
## ■ Preset Setting

※The example is based on standard pressure, kPa.

### ⊙ Hysteresis mode [HY5.0]



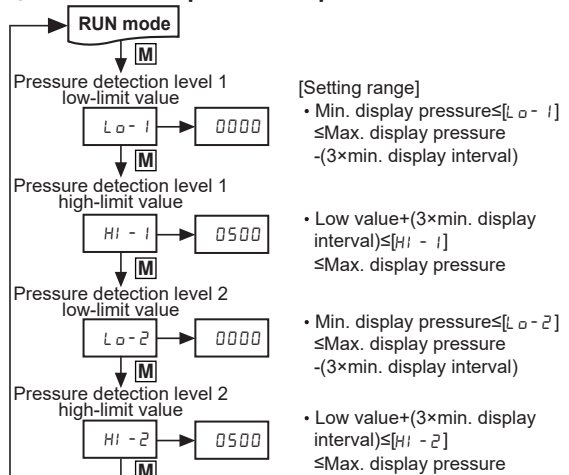
### ⊙ Hysteresis-Window comparison output mode [HY-W]



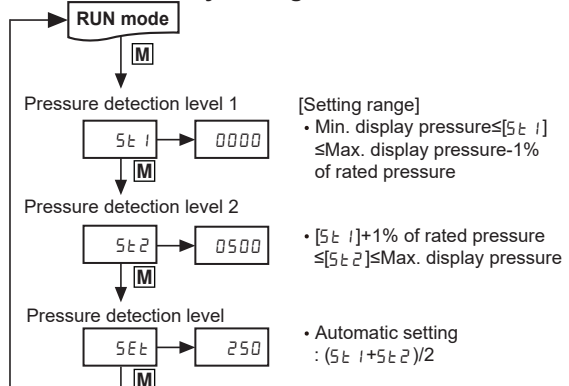
### ⊙ Forced output control mode [F.O.U.E.]

When using forced output control mode, hold/auto shift input functions are not available.

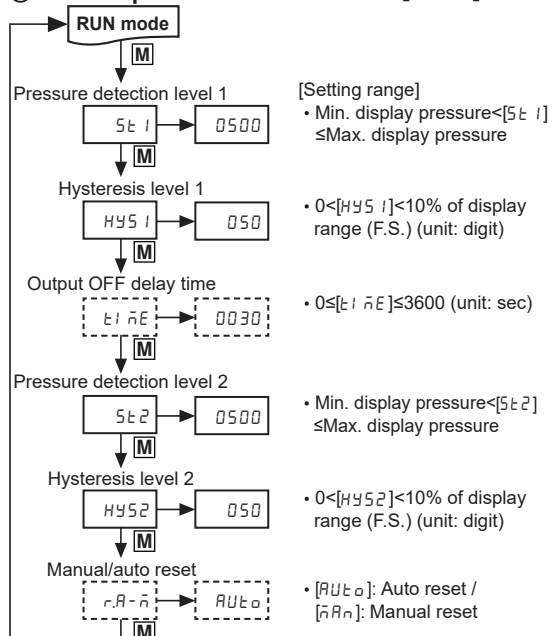
### ⊙ Window comparison output mode [W.I.N.]



### ⊙ Auto sensitivity setting mode [A.U.E.]



### ⊙ Freezer pressure control mode [F.F.E.]



# Multi-CH Pressure and Sensor Indicator

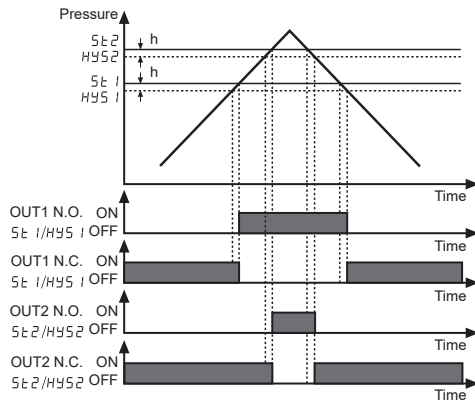
## Output Operation Mode

※PSM Series has 6 output operation modes.

Use the proper operation mode in accordance with the desired application of detection.

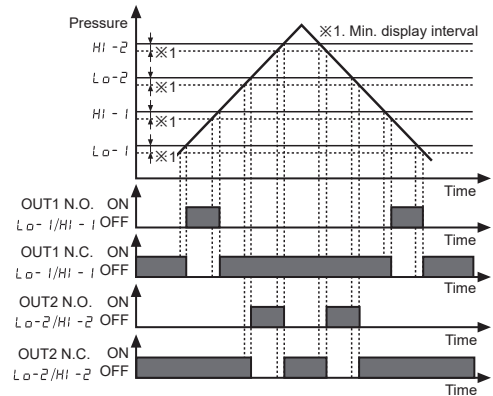
### ⊙ Hysteresis mode [HYS $\bar{n}$ ]

- Set the hysteresis of pressure detection.
- Set the pressure detection level [SE1, SE2] and hysteresis [HYS1, HYS2].



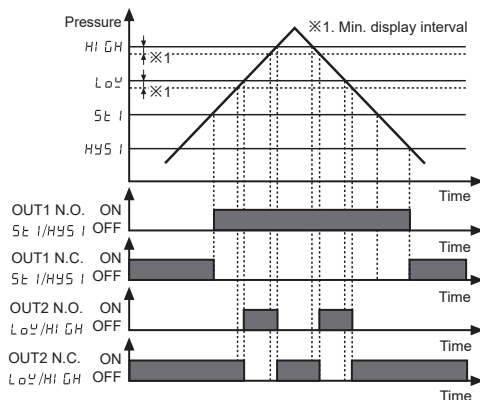
### ⊙ Window comparison output mode [L $\bar{n}$ ]

- It detects pressure at the desired range.
- Set high-limit value of pressure detection level [HI-1, HI-2], and low-limit value of pressure detection level [LO-1, LO-2].
- Hysteresis is fixed as min. display interval.



### ⊙ Hysteresis-Window comparison output mode [HY- $\bar{L}$ ]

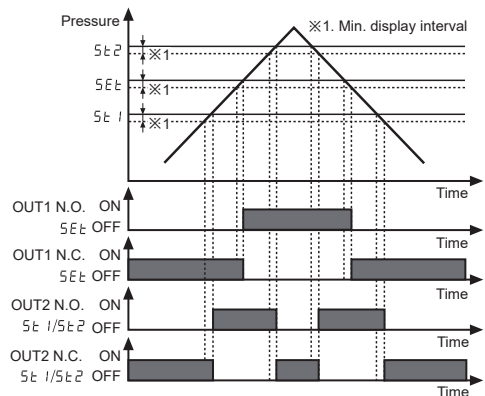
- It is available to set hysteresis mode [SE1, HYS1] and window comparison output mode [LO $\bar{L}$ , HI $\bar{L}$ ].
- Hysteresis is fixed as min. display interval.



### ⊙ Automatic sensitivity setting mode [AUTO]

- It sets the proper detection sensitivity automatically.
- It sets by the two pressure points [SE1, SE2].
- Hysteresis is fixed as min. display interval.
- The pressure detection level [SE $\bar{L}$ ] is shown in the below formula.

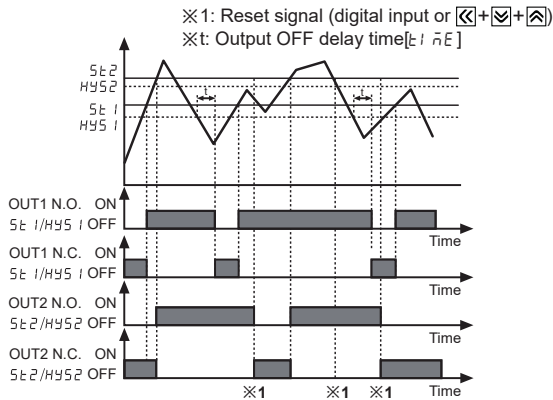
$$SE\bar{L} = \frac{(SE1 + SE2)}{2}$$



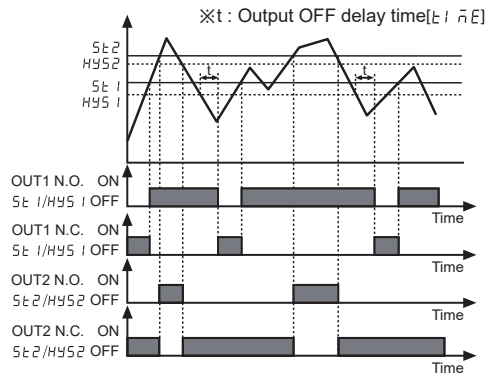
(A)	Photoelectric Sensors
(B)	Fiber Optic Sensors
(C)	Door/Area Sensors
(D)	Proximity Sensors
(E)	Pressure Sensors
(F)	Rotary Encoders
(G)	Connectors/ Connector Cables/ Sensor Distribution Boxes/Sockets
(H)	Temperature Controllers
(I)	SSRs / Power Controllers
(J)	Counters
(K)	Timers
(L)	Panel Meters
(M)	Tacho / Speed / Pulse Meters
(N)	Display Units
(O)	Sensor Controllers
(P)	Switching Mode Power Supplies
(Q)	Stepper Motors & Drivers & Controllers
(R)	Graphic/ Logic Panels
(S)	Field Network Devices
(T)	Software

## ⊙ Freezer pressure control mode [F r E 3]

- This mode is proper for freezer system's pressure.
  - OUT1 is utilized as main output control. Set the output OFF delay time to prevent frequent ON/OFF.
  - OUT2 is utilized as alarm for error pressure.
- Set pressure detection level 1 [S t 1] and hysteresis 1 [H Y 5 1], output OFF delay time [t 1 n E] for OUT1.
  - During the output OFF delay time [t 1 n E], it delays output after hysteresis 1 [H Y 5 1], it turns OFF the output.
- Set pressure detection level 2 [S t 2], and hysteresis 2 [H Y 5 2], manual/auto reset [r R - n] for OUT2.
  - Manual reset [n R n]: Output maintains ON before applying the reset signal (digital input or  $\square + \checkmark + \triangle$ ) after hysteresis 2 [H Y 5 2].
  - Auto reset [R U t o]: Output turns OFF after hysteresis 2 [H Y 5 2].
- OUT1 and OUT2 operate individually.



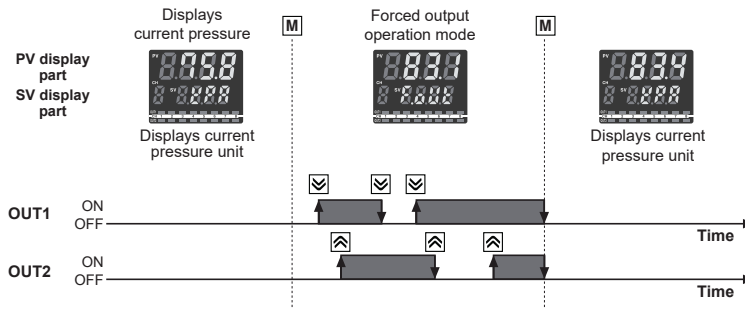
< Manual reset [n R n] >



< Auto reset [R U t o] >

## ⊙ Forced output control mode [F o U t]

- Regardless of setting value, it maintains comparison output OFF and displays present pressure.
- RUN mode: Press the  $\square$  key and it is forced output control mode [F o U t].
- During forced output control mode, press the  $\checkmark$  or  $\triangle$  key to turn ON/OFF OUT1, 2 manually.
- When pressing the  $\square$  key, output of current channel maintains that status and it moves to next channel.
  - ※When using forced output control mode, auto shift/hold input functions are not available.



# Multi-CH Pressure and Sensor Indicator

## ■ Functions

### ○ Channel copy

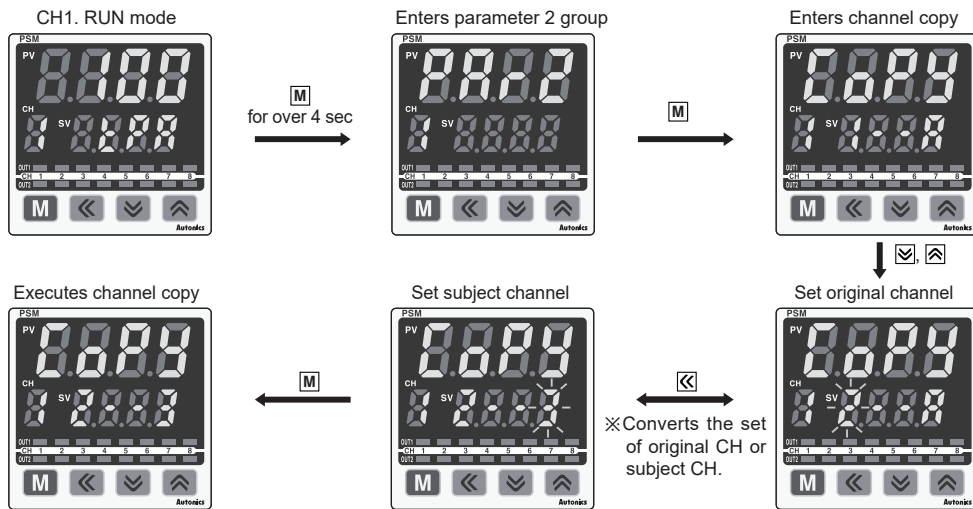
Parameter SV and preset values of the particular channel are able to copy to the desired channel or all channels. Set [original CH - subject CH] in PV display part at channel copy [COPy] in parameter 2 group.

When executing channel copy, it copies preset values and parameter 1 group's SVs (except [SHi n]). Copied items are as below.

- ①Preset value
- ②Auto pressure sensor model identification [Rt.SC]
- ③Input display [d! 5P]
- ④Pressure type [i n-t]
- ⑤Display unit [U n! t]
- ⑥Scale decimal point position [d o t]
- ⑦Low limit scale value [L - 5C]
- ⑧High limit scale value [H - 5C]
- ⑨Output operation mode [o U t n]
- ⑩Output type [n o n C]

※Auto shift correction value [SHi n] and zero-point adjustment [E r o] of the subject channel are reset.

E.g.)Copies parameter SV and preset values of CH2 to CH3. (original CH: 2, subject CH: 3)



### ○ Pressure type [i n-t]

This unit is able to set measured pressure type by each channel.

This parameter is displayed only when input display [d! 5P] is set as standard mode [5t n d].

- Setting range: Standard pressure (standard) [P o 5H], Standard pressure (lower) [P o 5L], Negative pressure [U R U], Compound pressure [C o n P]
- When using auto pressure sensor model identification [Rt.SC], pressure type of each channel is set automatically.
- When changing pressure type, display unit [U n! t], scale decimal point position [d o t], high/low scale value [H - 5C / L - 5C], preset input value, and auto shift correction value [SHi n] are reset.

### ○ Input display [d! 5P]

Select display method for measured input.

- Standard mode [5t n d]: Displays input within the rated pressure display range by pressure type/unit.
- Scale mode [5C R L]: Displays input within the setting range (-1999 to 9999) of high/low limit scale value [L - 5C / H - 5C]. The resolution of PSM is 2000 and if setting range is over 2000, display value is automatically proportioned.

E.g.) When setting range -1999 to 2000 is over two times of the resolution of PSM, the display value is automatically proportioned.

※When changing input display, preset values are reset.

### ○ Display scale function [H - 5C / L - 5C]

It displays low limit value (1VDC or DC4mA)/high limit value (5VDC or DC20mA) of transmitted analog input from pressure sensors as the set high/low limit value (setting range: -1999 to 9999).

High/Low limit scale value [L - 5C / H - 5C] parameters are displayed only when input display [d! 5P] is set as scale mode [5C R L].

- Factory default of low limit scale value: 0000 / Factory default of high limit scale value: 1000

※High limit scale value should be set over low limit scale value  $\pm(3 \times \text{min. display unit})$ .

(E.g.:When low limit scale is 50, set high limit scale value  $\leq 47$  or high limit scale  $\geq 53$ )

(A)	Photoelectric Sensors
(B)	Fiber Optic Sensors
(C)	Door/Area Sensors
(D)	Proximity Sensors
(E)	Pressure Sensors
(F)	Rotary Encoders
(G)	Connectors/ Connector Cables/ Sensor Distribution Boxes/Sockets
(H)	Temperature Controllers
(I)	SSRs / Power Controllers
(J)	Counters
(K)	Timers
(L)	Panel Meters
(M)	Tacho / Speed / Pulse Meters
(N)	Display Units
(O)	Sensor Controllers
(P)	Switching Mode Power Supplies
(Q)	Stepper Motors & Drivers & Controllers
(R)	Graphic/ Logic Panels
(S)	Field Network Devices
(T)	Software

## ○ Parameter reset [ $i n i t$ ]

Hold the  $\text{[OK]}+\text{[ENT]}+\text{[ESC]}$  key for over 5 sec in RUN mode, to enter re-set parameter menu [ $i n i t$ ]. Select [ $H E 5$ ] and all parameters are reset as factory default.

## ○ Digital input terminal function

This unit executes the set function from digital input terminal [ $d - i n$ ] in parameter 2 group or communication. As the below, there are three functions to set digital input.

### ● Auto shift function [ $S H F t$ ]

: When reset pressure of the pressure sensor is changed, supply auto shift digital input to correct the current pressure as reference pressure by the changed level.

- Press the  $\text{[ENT]}$  key for over 2 sec in RUN mode to check/correct auto-shift correction value [ $S H i n$ ].
- When not using auto shift, reference pressure is atmospheric pressure (0.0kPa).

※When the channel is forced output control mode or the value is  $H H H H$  or  $L L L L$ , auto shift function does not operate.

※When auto shift digital input is supplied over 5 sec, reset pressures of OUT1, OUT2 for all channels are changed regardless of the applied setting range.

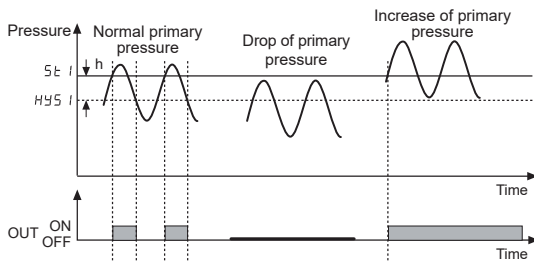
※When auto shift function is set, preset setting range is bigger than the rated pressure range as changed reset pressure.

<Preset range after auto shift correction>

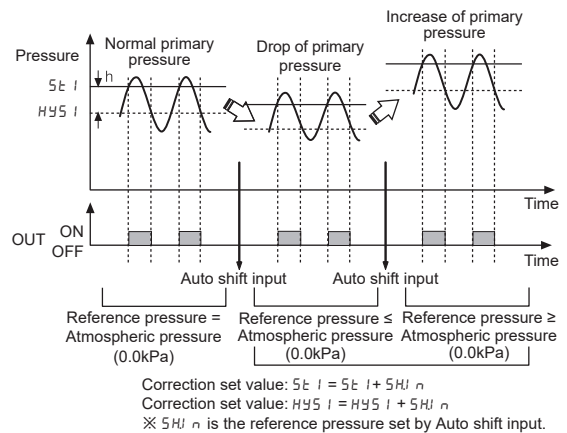
Pressure	Set pressure range (after correction)	Set pressure range (preset setting range)
Standard (standard)	-5.0 to 110.0kPa	-110.0 to 110.0kPa
Standard (lower)	-50.0 to 1,100kPa	-1,100 to 1,100kPa
Negative	-101.3 to 5.0kPa	-101.3 to 101.3kPa
Compound	-101.3 to 110.0kPa	-110.0 to 110.0kPa

### ▶ Example of Auto shift function

< When Auto shift is not used >



< When Auto Shift is used >



### ● Hold function [ $H o l d$ ]

: When hold digital input is supplied, it maintains the current display value and control output.

※When hold digital input is supplied over 5 sec, this function is applied for all channels regardless of the applied setting range.

### ● Manual return for freezer control output function [ $r E 5 t$ ]

: For freezer pressure control, when OUT2 is set as manual reset [ $r R n$ ], it resets maintained OUT2 manually by supplying digital input of manual return for freezer control output.

Press the  $\text{[OK]}+\text{[ENT]}+\text{[ESC]}$  keys in RUN mode, it enters [ $r E 5 t$ ] parameter to set the applied channel for manual return for control output before executing manual return for freezer control output.

Press the  $\text{[M]}$  key and it returns OUT2 manually.

- [ $H o l d$ ]: Maintains the current output status.
- [ $R L L$ ]: Returns all output status.
- Each channel: Displays only the CH which output is ON. Returns output of the select CH.

※For digital input option model (PSM□□□□D), it is available to set the applied channel range for digital input at digital input applied channel range [ $d - C H$ ].

- [ $d i C H$ ]: Applies digital input for the channel.
- [ $d i R L$ ]: Applies digital input for all channels.

※By communications, the only one digital input function set at ADDRESS 400053(0034) is available.

# Multi-CH Pressure and Sensor Indicator

## ■ Communication Output

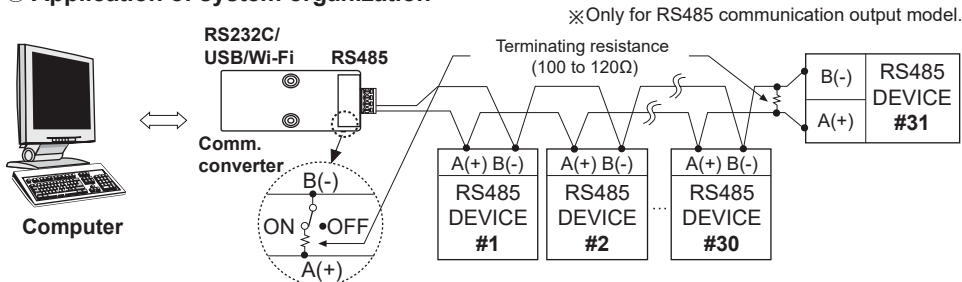
It is for parameter setting and monitoring via external devices (PC, PLC, etc.).

### ○ Interface

Comm. protocol	Modbus RTU	Comm. speed	2400, 4800, 9600 (factory default), 19200, 38400bps
Connection type	RS485	Comm. response wait time	5 to 99ms (factory default: 20ms)
Application standard	Compliance with EIA RS485	Start bit	1-bit (fixed)
Max. connection	31 units (address: 1 to 127)	Data bit	8-bit (fixed)
Synchronous method	Asynchronous	Parity bit	None (factory default), Even, Odd
Comm. method	Two-wire half duplex	Stop bit	1, 2-bit (factory default: 2-bit)
Comm. distance	Max. 800m		

※It is not allowed to set overlapping communication address at the same communication line.  
Use twisted pair wire for RS485 communication.

### ○ Application of system organization



※It is recommended to use Autonics communication converter;

SCM-WF48 (Wi-Fi to RS485-USB wireless communication converter, sold separately),

SCM-US48I (USB to RS485 converter, sold separately), SCM-38I (RS232C to RS485 converter, sold separately).

Please use twisted pair wire, which is suitable for RS485 communication, for SCM-WF48, SCM-US48I and SCM-38I.

## ■ Sold Separately

### ○ Communication converter

#### ● SCM-WF48

(Wi-Fi to RS485-USB wireless communication converter)



#### ● SCM-US48I

(USB to RS485 converter)



#### ● SCM-38I

(RS232C to RS485 converter)



## ■ Error and Troubleshooting

Display	Cause	Troubleshooting
Err 1	When adjusting zero-point while external pressure is input	Try again after removing external pressure.
Err 2	When over current is applied on control output.	Remove over current conditions by adjusting load resistance.
LLLL	When applied pressure exceeds the low-limit of display pressure range.	Apply pressure within the display pressure range.
HHHH	When applied pressure exceeds the high-limit of display pressure range.	
-HH- -LL- -HL-	Auto shift correction value error	Set the auto shift correction value within the setting range.

## ■ Proper Usage

- Use separated line from high voltage line or power line in order to avoid inductive noise.
- Install power switch or circuit breaker in order to supply or cut off the power.
- The switch or circuit breaker should be installed near by users for safety.
- Be sure to avoid using the following unit near by machinery making strong high frequency noise. (high frequency welder & sewing machine, high capacity SCR unit, etc.)
- When input is applied, if "HHHH" or "LLLL" is displayed, there is some problem with measured input, check the line after power off.
- Input line: Shield wire must be used when the measuring input line is getting longer or where the place is occurring lots of noise. Not used terminals should be open, and not to be connected.
- This product may be used in the following environments.

①Indoors

②Altitude max. 2,000m

③Pollution degree 2

④Installation category II

(A)	Photoelectric Sensors
(B)	Fiber Optic Sensors
(C)	Door/Area Sensors
(D)	Proximity Sensors
(E)	Pressure Sensors
(F)	Rotary Encoders
(G)	Connectors/ Connector Cables/ Sensor Distribution Boxes/ Sockets
(H)	Temperature Controllers
(I)	SSRs / Power Controllers
(J)	Counters
(K)	Timers
(L)	Panel Meters
(M)	Tacho / Speed / Pulse Meters
(N)	Display Units
(O)	Sensor Controllers
(P)	Switching Mode Power Supplies
(Q)	Stepper Motors & Drivers & Controllers
(R)	Graphic/ Logic Panels
(S)	Field Network Devices
(T)	Software