Display and alarm output for pressure/analog MV from up to 8 CH

NEW
(available soon)

▣ Features

- Displays pressure and MV of analog sensor from up to 8 CH
- Input range: 0-5VDC, 1-5VDC, DC4-20mA
- 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 Modbus RTU / RS485 communication
- Freezer pressure control mode
- Easy wiring with sensor connector (CNE Series)
- Power supply : 12-24VDC ±10%

Please read "Caution for your safety" in operation manual before using.

CE (pending)

▣ Integrated device management program(DAQMaster)

You can set and monitor parameters by DAQMaster. Visit our website (www.autonics.com) to download DAQMaster program, user manual.

▣ Ordering information

PS M 4 – V □ D

Option	D	Digital input
	R	RS485 communication
Control output	No-mark	NPN open collector output
	P	PNP open collector output
Input	V	Voltage
	A	Current
Number of channels	4	4CH
	8	8CH
Type	M	Multi Channel
Item	PS	Pressure Sensor

▣ Rated pressure range and Max. display pressure

Unit	Standard pressure(standard) [PoS.H]			Standard pressure(lower) [PoS.L]		
	Rated pressure	Displayed pressure	Min. display interval	Rated pressure	Displayed pressure	Min. display interval
MPa [MPA]	**0 to 1.000**	**-0.050 to 1.100**	**0.001**	—	—	—
kPa [kPA]	**0 to 1.000**	**-50 to 1100**	**1**	**0 to 100.0**	**-5.0 to 110.0**	**0.1**
kg/cm² [kGF]	**0 to 10.20**	**-0.51 to 11.22**	**0.01**	**0 to 1.020**	**-0.051 to 1.122**	**0.001**
Bar [bAr]	**0 to 10.00**	**-0.50 to 11.00**	**0.01**	**0 to 1.000**	**-0.050 to 1.100**	**0.001**
psi [PSI]	**0 to 145.0**	**-7.2 to 159.6**	**0.1**	**0 to 14.50**	**-0.72 to 15.96**	**0.01**

Unit	Negative pressure [uACU]			Compound pressure [CoMP]		
	Rated pressure	Displayed pressure	Min. display interval	Rated pressure	Displayed pressure	Min. display interval
MPa [MPA]	—	—	—	—	—	—
kPa [kPA]	**0 to -101.3**	**5.0 to -101.3**	**0.1**	**-101.3 to 100.0**	**-101.3 to 110.0**	**0.1**
kg/cm² [kGF]	**0 to -1.034**	**0.051 to -1.034**	**0.001**	**-1.034 to 1.020**	**-1.034 to 1.122**	**0.001**
Bar [bAr]	**0 to -1.013**	**0.050 to -1.013**	**0.001**	**-1.013 to 1.000**	**-1.013 to 1.100**	**0.001**
psi [PSI]	**0 to -14.70**	**0.74 to -14.70**	**0.01**	**-14.70 to 14.50**	**-14.70 to 15.96**	**0.02**
mmHg [MMHG]	**0 to -760**	**38 to -760**	**1**	**-760 to 750**	**-760 to 824**	**1**
inHg [InHG]	**0 to -29.9**	**1.5 to -29.9**	**0.1**	**-29.9 to 29.5**	**-29.9 to 32.6**	**0.1**
mmH_2O [H2O] ※1	**0 to -103.4**	**5.1 to -103.4**	**0.1**	**-103.4 to 102.0**	**-103.4 to 112.2**	**0.1**

※1: It displays the value by dividing 100. (To read this, multiply the display value by 100.)
※Display pressure range is -5% to 110% of the rated pressure.

▣ Pressure conversion chart

from \ to	Pa	kPa	MPa	kgf/cm²	mmHg	mmH_2O	psi	bar	inHg
1Pa	1	0.001	0.000001000	0.000010197	0.007501	0.101972	0.000145038	0.000010000	0.0002953
1kPa	1000.000	1	0.001000	0.010197	7.500616	101.9716	0.145038	0.010000	0.2953
1MPa	1000000	1000	1	10.197162	7500.61683	101971.553	145.038243	10	295.299875
1kgf/cm²	98066.54	98.066543	0.09806	1	735.5595	10000.20	14.22334	0.980665	28.95878
1mmHg	133.322368	0.133322	0.000133	0.001359	1	13.5954	0.019336	0.001333	0.039370
1mmH_2O	9.80665	0.00980	–	0.000099	0.0735578	1	0.00142	0.000098	0.002895
1psi	6894.757	6.89757	0.00689	0.070307	51.71630	703.07	1	0.068947	2.036003
1bar	100000.0	100.0000	0.100000	1.019689	750.062	10196.89	14.50339	1	29.52998
1inHg	3386.417	3.388418	0.003386	0.034532	25.40022	345.31849	0.491158	0.033863	1

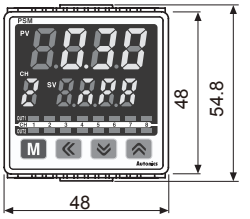
※Ex) For calculating 760mmHg as kPa:
According to above chart, 1mmHg is 0.133322kPa, therefore 760mmHg is 760×0.133322kPa=101.32472kPa.

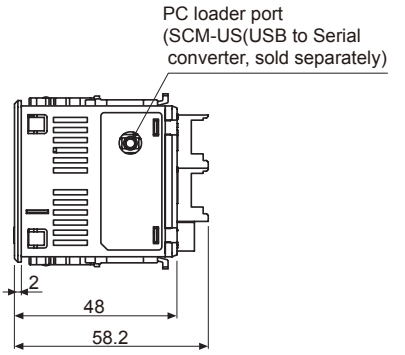
▣ Specifications

Model		PSM4-V□□□	PSM4-A□□□	PSM8-V□□□	PSM8-A□□□
Display range		Depending on pressure type, pressure unit (Refer to '▣ Rated 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		Max. 40mA			
Display digit		4digit			
Display method	Display part 1(PV)	7 Segment LED(red or green※1)			
	Display part 2	7 Segment LED(green)			
	CH display part	7 Segment LED(red)			
	Output display part	8EA		16EA	
Max. input points		4EA		8EA	
Sensor input		1-5VDC	4-20mA	1-5VDC	4-20mA
Power supply for sensor※2		12-24VDC 40mA for each channel			
Control output		NPN or PNP open collector output •Load voltage : Max. 30VDC •Load current: 100mA •Residual voltage-NPN : Max. 1V, PNP : Max. 2V			
Display accuracy		± 0.1% ± 2digit (at 23 ± 5℃)			
Hysteresis		Min. display interval (Refer to '▣Rated pressure range')			
Repeat error		±0.1% F.S. ±min. display range			
Response time		2.5 100, 500, 1000ms		5, 100, 500, 1000ms	
Resolution		1/2000			
Control output and display Temp. characteristics		0 to 50℃: ±0.2% F.S. ±2digit, -10 to 0℃: ±0.3% F.S. ±2digit			
Protection circuits		Output short overcurrent protection, reverse power polarity protection circuit			
Digital input※3		Digital input(1-point) •Contact input: LOW LEVEL input max. 0.2V •Non-contact input: ON- Residual voltage max. 1.0V, OFF- leakage current max. 0.1mA			
Communi-cation	Serial	Serial communication with SCM-US(USB to Serial converter, sold separately)			
	RS485※4	RS485 communication (Modbus RTU method)			
Connection	Sensor	Sensor connector terminal (CNE-P04-YG, sold separately)※5			
	Output	Hirose connector 20-pin(HIF3BA-20D-2.54R, flat cable 20-wire, sold separately) terminal block			
Dielectric strength		3000VAC 50/60Hz for 1 min.(between power terminal and case), 1000VAC 50/60Hz for 1 min.(between power terminal and RS485 terminal)※4			
Vibration		0.5mm amplitude at frequency of 10 to 50Hz(for 1 min.) in each of X, Y, Z directions for 2 hours			
Insulation resistance		Max. 100MΩ			
Environment	Ambient temperature	-10 to 50℃, storage: -20 to 60℃			
	Ambient humidity	30 to 85%RH, storage: 30 to 85%RH			
Protection		IP65(front), the others IP30			
Accessory		Bracket 2EA			
Approval		CE (pending)			
Weight※6		Approx. 108g (approx. 65g)			

※1: It is able to select at display part 1 color [CLor] in parameter 2 group.
※2: Do not short +V and 0V of sensor connector. It may cause break inner circuit.
※3: It is only for digital input option model (PSM□-□□D).
※4: It is only for RS485 communication option model(PSM□-□□R).
※5: For more information about sensor connector plug, refer to '(G) Connector/Socket'.
※6: The weight is with packaging and the weight in parentheses is only unit weight.
※Environment resistance is rated at no freezing or condensation.

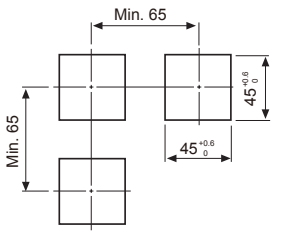
▣ Dimensions





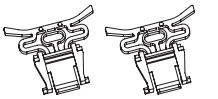
● Panel cut-out

(unit: mm)



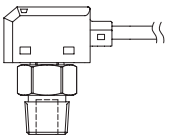
● Accessory

• Bracket

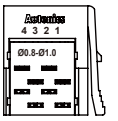


● Sold separately

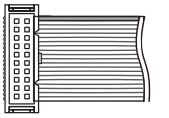
• **Pressure sensor, PSS Series** (8 type)



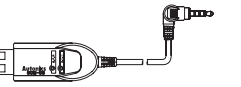
• **Sensor connector plug** (CNE-P04-YG)



• **Output connector cable** (Flat Cable 20-wire, 1.27mm [AWG28, 2.54mm for socket])

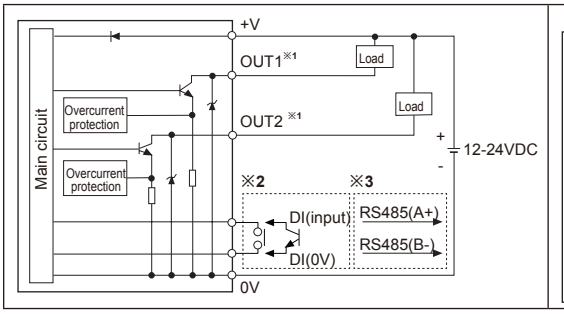


• **Communication converter, SCM-US** (USB to Serial converter)

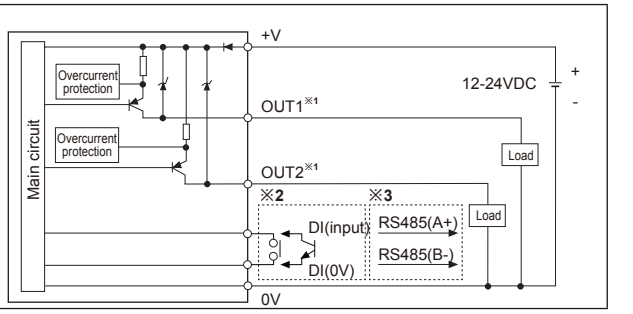


▣ Control output circuit

●NPN open collector output

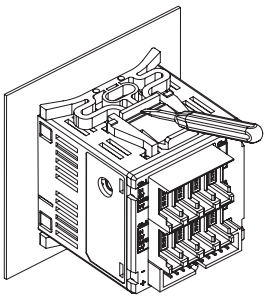


●PNP open collector output



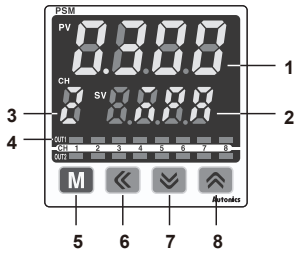
※1: OUT1 and OUT2 consist as the number of channels.
※2: It is only for the digital input option model(PSM□-□□D).
※3: It is only for the RS485 communication option model(PSM□-□□R).

▣ Installation



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

▣ Part descriptions



1. Display part 1(PV)
In RUN mode, it displays the measured value of the current channel.
In setting mode, it displays the set parameter name.

2. Display part 2
In RUN mode, it displays the unit for the measured value of the current channel.
In setting mode, it displays SV of the set parameter.

3. Channel display part
In RUN mode, it displays the channel of the value from the display part 1.
In setting mode, it displays the channel of the set parameter.

4. Control output indicators
PSM4 Series has 4 channels' control output indicators and PSM8 Series has 8 channels' control output indicators. When the output is ON, the relevant channel's indicator (OUT1 or OUT2) turns ON.

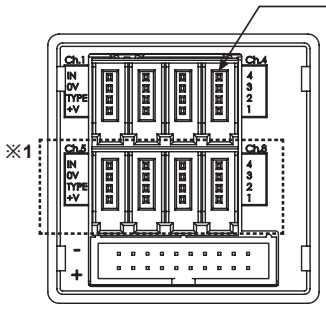
5. M key: Used to enter setting mode, save SV, move parameters or set preset.

6. ≪ key
In RUN mode, it is used to change the currently displayed channel.
In setting mode, it is used to change the set channel or move the digit for numerical SV.

7. ≫ key: In setting mode, it is used to change SV from each parameter.

8. ≪ key
In RUN mode, press this key for over 2 sec. to enter peak value/auto shift correction value parameters.
In setting mode, it is used to change SV from each parameter.

▣ Connections



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

PIN NO.	Type	
	Voltage input	Current input
4	INPUT	
3	0V	N·C
2	TYPE※2	
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 Autonics pressure sensor, PSS Series (sold separately).
Refer to the E-26 page.

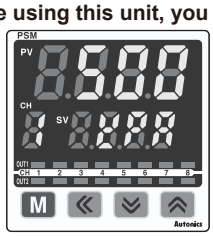
Hirose connector (HIF3FB-20PA-2.54DSA) 20-pin

PIN NO.	1	2	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	8	11	13	15	17	19
Type	12-24 VDC	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.										

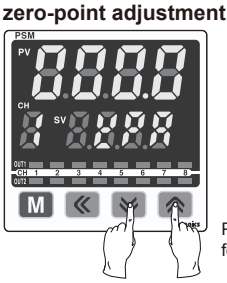
▣ Zero-point adjustment

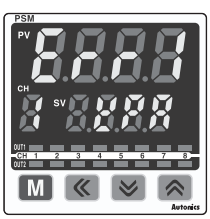
※Before using this unit, you must execute zero-point adjustment.

1.



2.





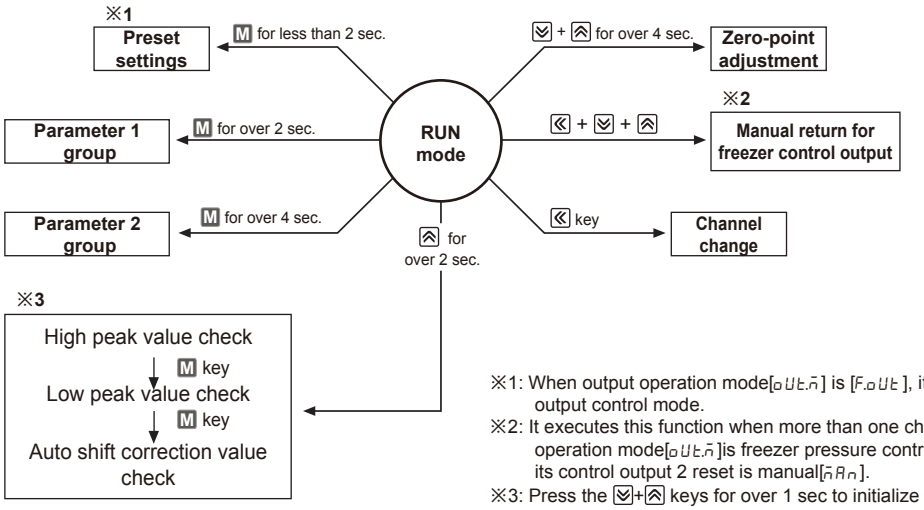
1. With opening pressure ports of pressure sensors (supplying atmospheric pressure), this function is to set zero-point for the current pressure display value forcibly.
2. Press the ≫ + ≪ keys for 4 sec. at the same time, the value of display part 1 flashes twice as 000.0 and zero-adjustment is complete.

※You can set the applied channel range for this function at zero-point adjustment channel range [ZE.rS] in parameter 2 group.

- [r5.CH] : Executes zero-point adjustment only for current channel.
- [r5.AL] : Executes zero-point adjustment for all channels.

If there is external pressure and executing zero-point adjustment, Err1 flashes during pressing the keys.
Remove the external pressure and re-execute zero-point adjustment at atmospheric pressure.

▣ Settings

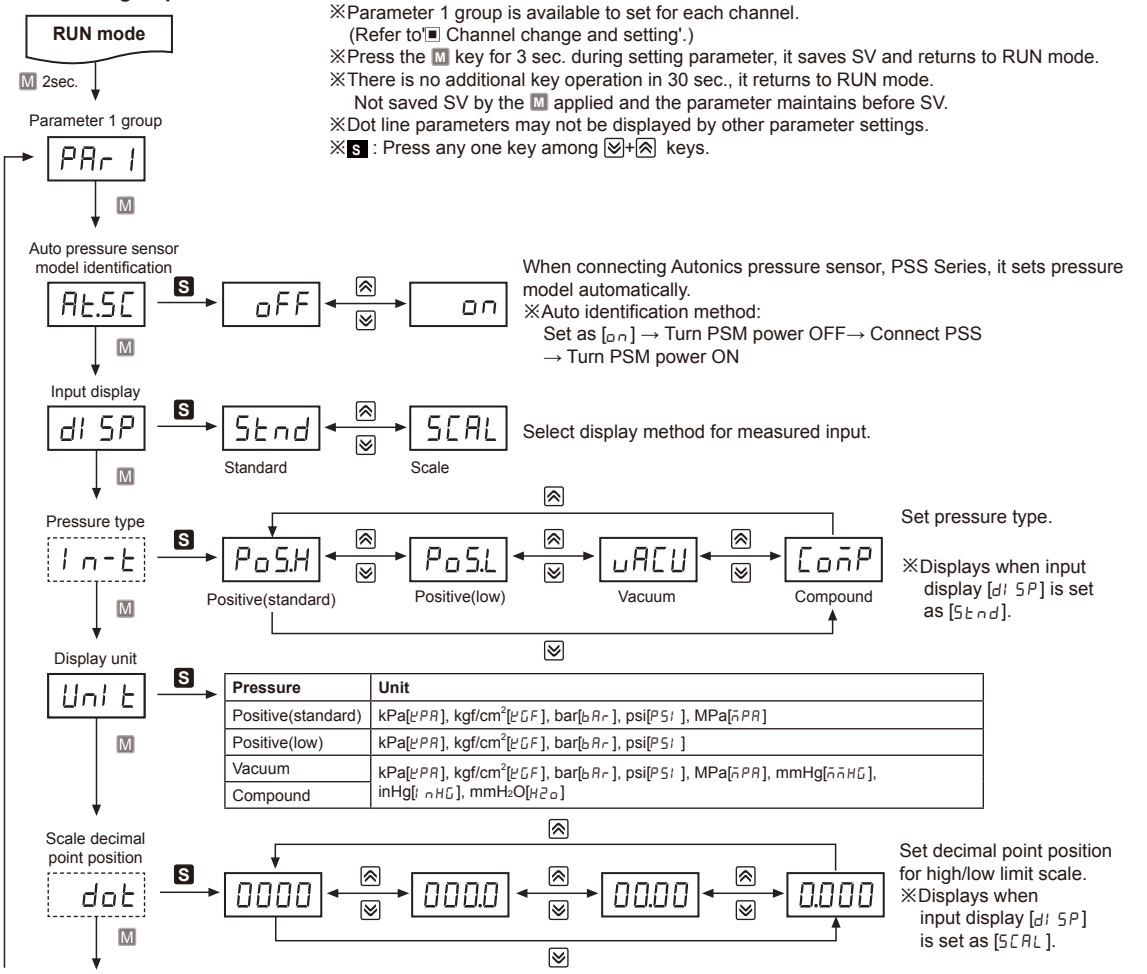


※1: When output operation mode[oUt.n] is [F.oUt], it enters forced output control mode.
※2: It executes this function when more than one channel's output operation mode[oUt.n]is freezer pressure control[FrEE] and its control output 2 reset is manual[nAn].
※3: Press the +keys for over 1 sec to initialize high/low peak value or auto shift correction value.

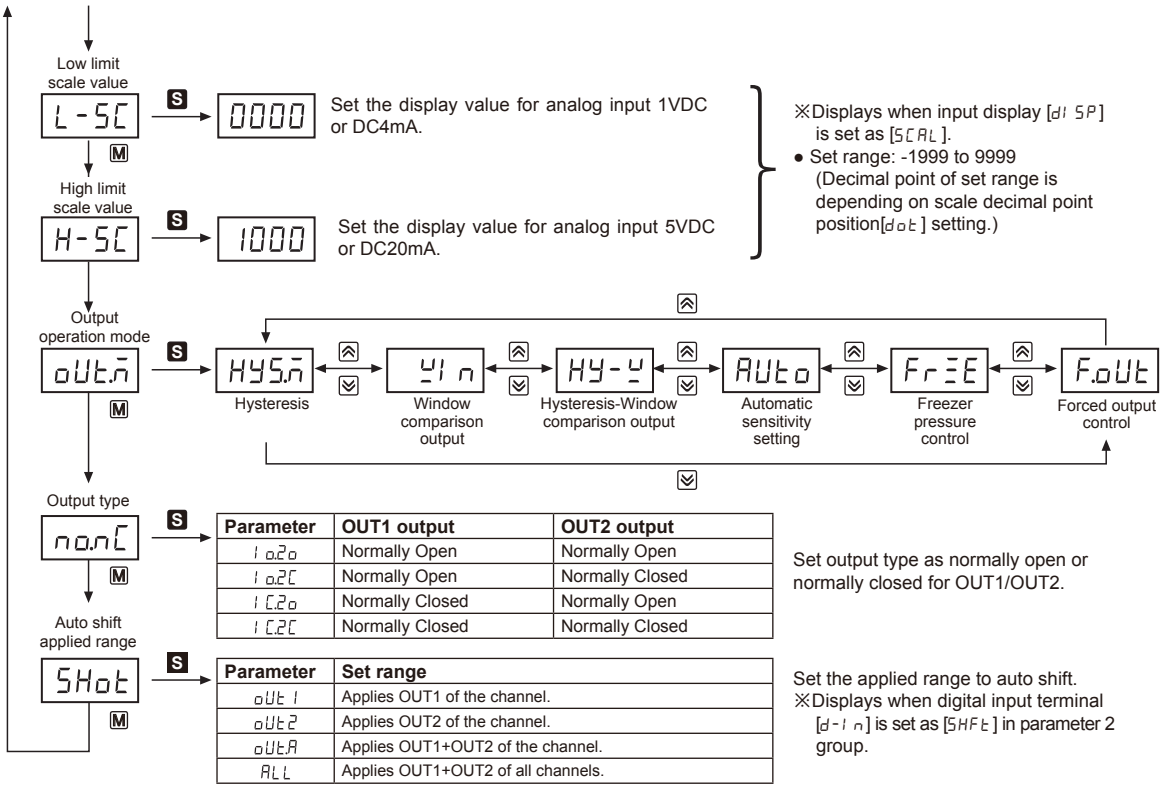
▣ Parameter setting

●Parameter 1 group

※Parameter 1 group is available to set for each channel.
(Refer to'▣ Channel change and setting'.)
※Press the M key for 3 sec. during setting parameter, it saves SV and returns to RUN mode.
※There is no additional key operation in 30 sec., it returns to RUN mode.
Not saved SV by the M applied and the parameter maintains before SV.
※Dot line parameters may not be displayed by other parameter settings.
※S : Press any one key among +keys.

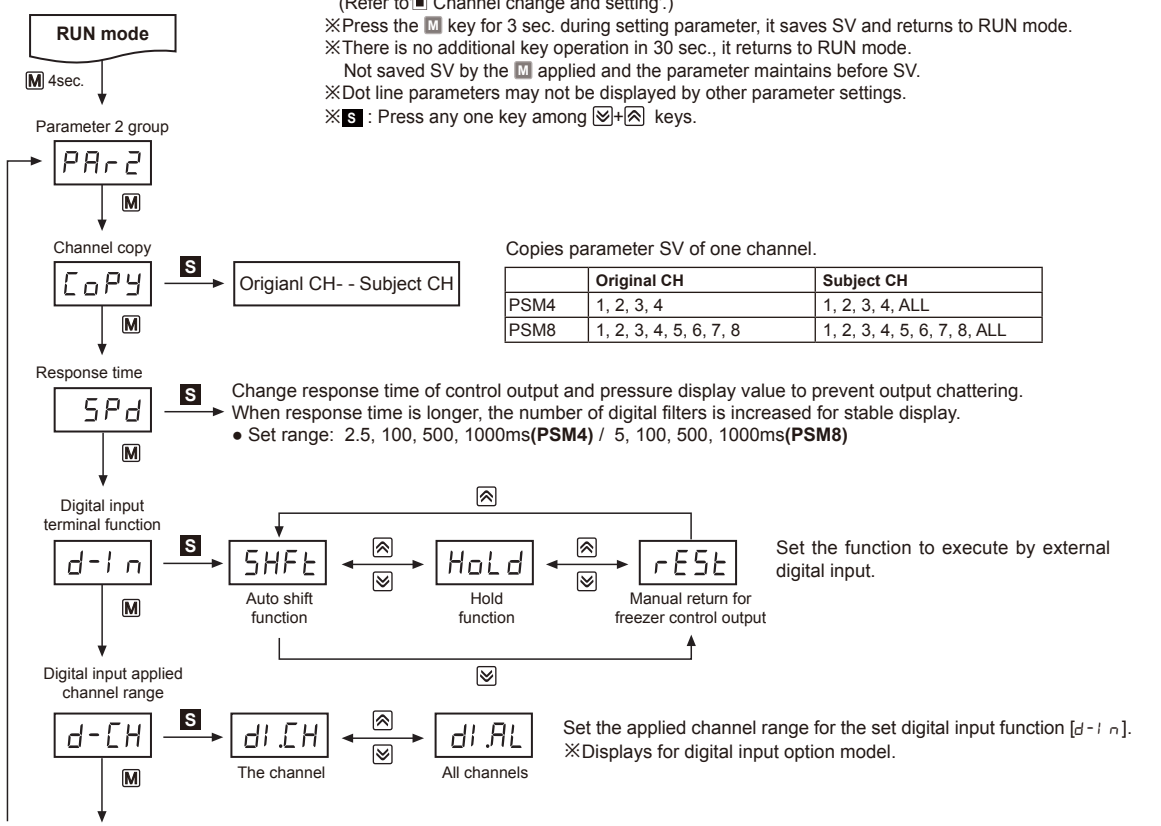


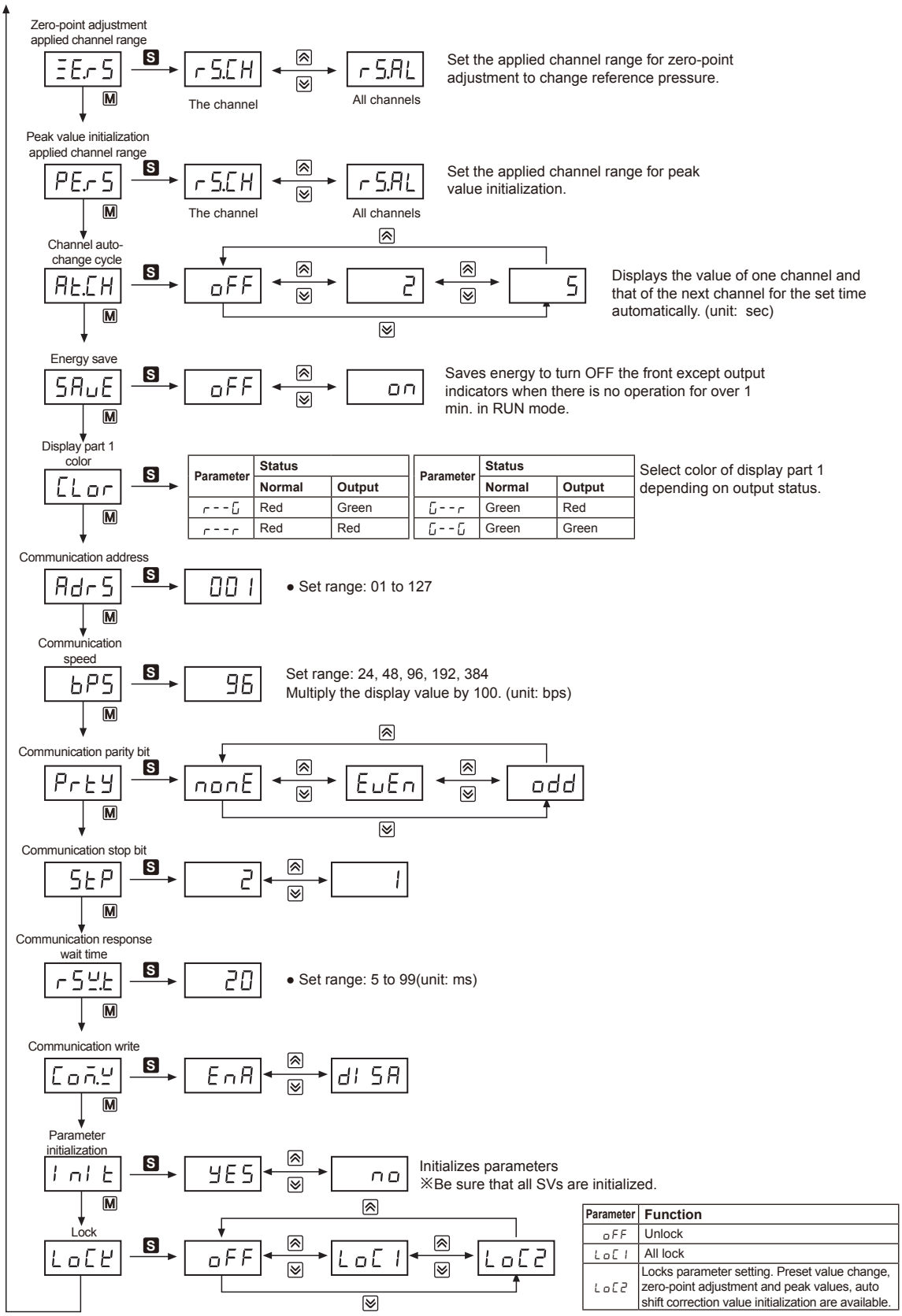
Pressure	Unit
Positive(standard)	kPa[kPA], kgf/cm²[kGF], bar[bAr], psi[PSI], MPa[MPA]
Positive(low)	kPa[kPA], kgf/cm²[kGF], bar[bAr], psi[PSI]
Vacuum Compound	kPa[kPA], kgf/cm²[kGF], bar[bAr], psi[PSI], MPa[MPA], mmHg[mmHG], inHg[inHG], mmH₂O[H2O]



●Parameter 2 group

※Parameter 2 group is available to set for each channel.
(Refer to'■ Channel change and setting'.)
※Press the M key for 3 sec. during setting parameter, it saves SV and returns to RUN mode.
※There is no additional key operation in 30 sec., it returns to RUN mode.
Not saved SV by the M applied and the parameter maintains before SV.
※Dot line parameters may not be displayed by other parameter settings.
※S : Press any one key among ▽+△ keys.



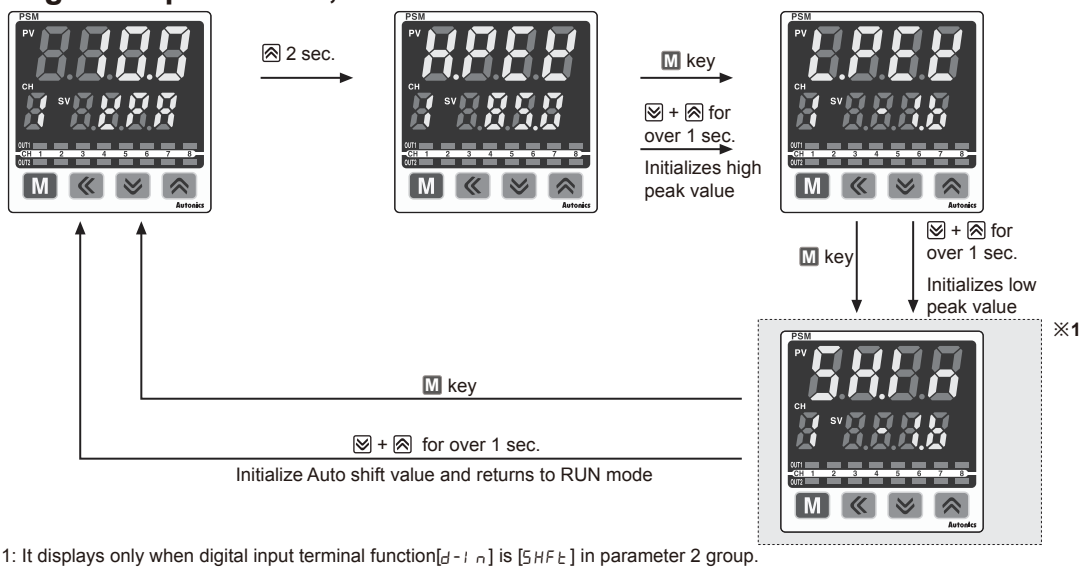


Parameter	Status	
	Normal	Output
r--G	Red	Green
r--r	Red	Red

Parameter	Status	
	Normal	Output
G--r	Green	Red
G--G	Green	Green

Parameter	Function
oFF	Unlock
LoC1	All lock
LoC2	Locks parameter setting. Preset value change, zero-point adjustment and peak values, auto shift correction value initialization are available.

▣ High/Low peak value, Auto shift value check



※1: It displays only when digital input terminal function[d-in] is [SHFt] in parameter 2 group.

▣ Auto pressure sensor model identification[At.SC]

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

※Auto identification method: Set auto pressure sensor model identification [At.SC] as [on] →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 change and setting

For manual channel change, set channel auto change cycle [At.CH] as [oFF] in parameter 2 group.

For auto channel change, set channel auto change cycle [At.CH] as [2] or [5] in parameter 2 group.

◎ Channel change

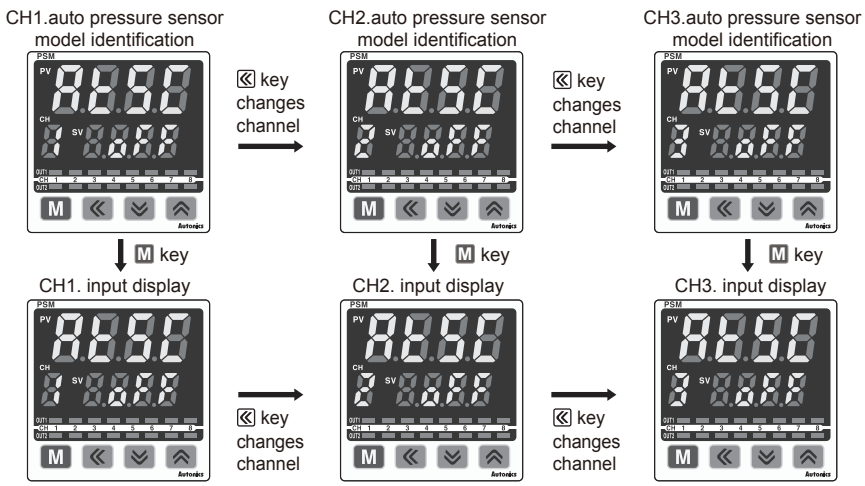
- Manual channel change: Press the ≪ key in RUN mode. The display part 2 changes channel and the display part 1 displays the value of this channel.
- Auto channel change: It displays only connected channels. It displays one of the connected channels and the next channel for the set time (2 or 5 sec.) automatically.

※In auto channel change, 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 key once, channel is changed for the parameter.

Ex)To set auto pressure sensor model identification [At.SC], and input display [diSP] at CH1, 2, 3 in parameter 1 group.

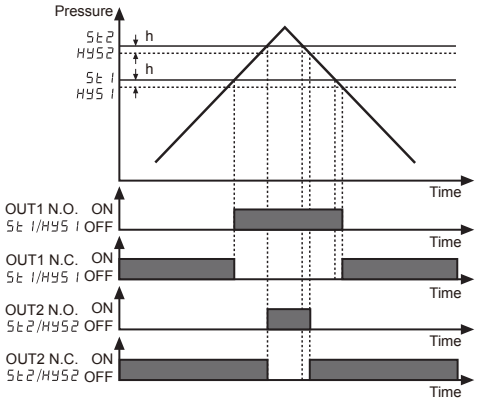


▣ Output operation mode

1. Hysteresis mode [HYS.n]

It is able to set certain value for pressure detection level [St 1, St2] and hysteresis [HYS 1, HYS2].

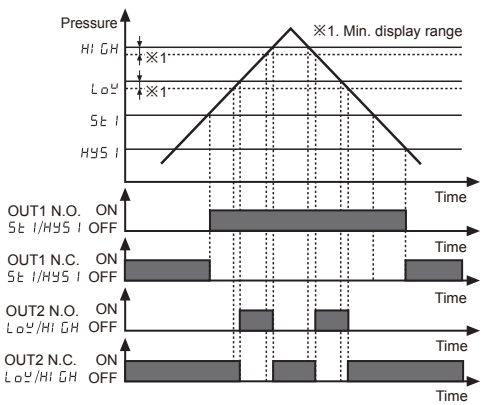
Parameter	Set range
St 1	Min. display pressure < St 1 ≤ Max. display pressure
HYS 1	Min. display pressure < HYS 1 ≤St 1
St2	Min. display pressure < St2 ≤ Max. display pressure
HYS2	Min. display pressure < HYS2 ≤ St2



3. Hysteresis-Window comparison output mode [HY-Y]

① It is available to set hysteresis mode and window comparison output mode when both hysteresis mode [St 1, HYS 1] and window comparison output mode [LoY, HI GH]are necessary.
② Detection hysteresis is fixed to min. display range.

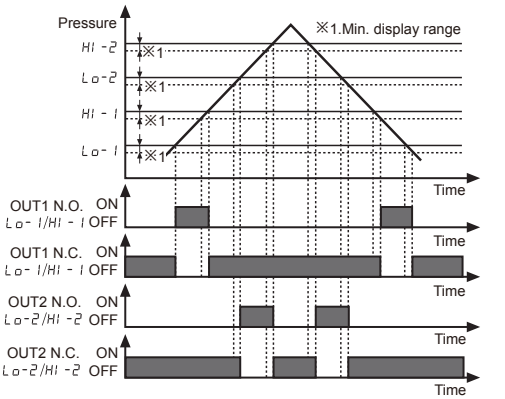
Parameter	Set range
St 1	Min. display pressure < St 1 ≤ Max. display pressure
HYS 1	Min. display pressure < HYS 1 ≤ St 1
LoY	Min. display pressure ≤ LoY ≤Max. display pressure -(3×Min. display interval)
HI GH	Low value +(3 × Min. display interval) ≤ HI GH ≤ Max. display pressure



2. Window comparison output mode [Y1 n]

① It is able to set the range for high[HI - 1, HI -2], low[Lo- 1, Lo-2] limit of pressure detection level when it is required to detect pressure at a certain range.
② Detection hysteresis is fixed to min. display range.

Parameter	Set range
Lo- 1	Min. display pressure ≤ Lo- 1 ≤ Max. display pressure-(3×Min. display interval)
HI - 1	Low value +(3 × Min. display interval) ≤ HI - 1 ≤ Max. display pressure
Lo-2	Min. display pressure ≤ Lo-2 ≤Max. display pressure-(3×Min. display interval)
HI -2	Low value +(3 × Min. display interval) ≤ HI -2 ≤ Max. display pressure

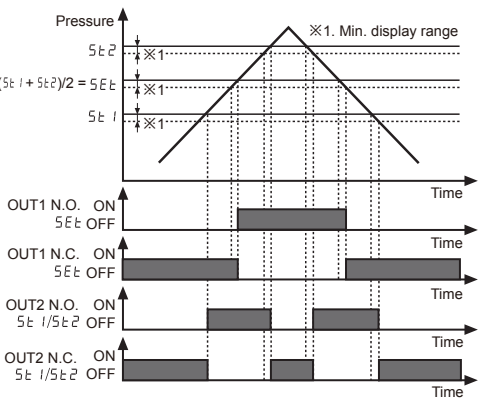


4. Automatic sensitivity setting mode [AUto]

① This mode is to set pressure detection level to the proper position automatically. It is set by applied pressure from two positions [St 1,St2].
② Detection hysteresis is fixed to min. display range.
③ The pressure detection level [SEt] is shown in the following calculation.

$$SEt = \frac{(St\ 1 + St2)}{2}$$

Parameter	Set range
St 1	Min. display pressure ≤ St 1 ≤ Max. display pressure - 1% of rated pressure
St2	St 1+1% of rated pressure ≤ St2 ≤ Max. display pressure
SEt	Automatic setting: (St 1 + St2)/2



5. Freezer pressure control mode [FrEE]

① This mode is proper for freezer system's pressure. Control output 1 is utilized as main output control.
Set the output OFF delay time to prevent frequent ON/OFF.
Control output 2 is utilized as alarm for error pressure.
② Set pressure detection level1 [St 1] and hysteresis 1 [HYS 1], output OFF delay time [t1 nE] for control output 1. During the output OFF delay time [t1 nE], it delays output after hysteresis 1 [HYS 1], it turns OFF the output.
③ Set pressure detection level 2 [St2], hysteresis 2 [HYS2], manual/auto reset [r.A-n] for control output 2.

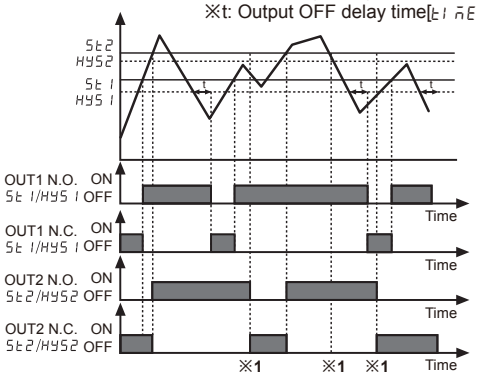
Parameter	Set range
St 1	Min. display pressure < St 1 ≤ Max. display pressure
HYS 1	0 < HYS 1 < 10% of display range (F.S.) (unit: digit)
t1 nE	0 ≤ t1 nE ≤ 3600 (unit: sec.)
St2	Min. display pressure < St2 ≤ Max. display pressure
HYS2	0 < HYS2 < 10% of display range (F.S.) (unit: digit)
r.A-n	AUto (auto reset) / nAn (manual reset)

- Manual reset [nAn]: Output maintains ON before applying the reset signal (digital input or ≪+≫+≪) after hysteresis 2 [HYS2].
- Auto reset [AUto]: Output turns OFF after hysteresis 2 [HYS2].

④ Control output1 and control output 2 operate individually.

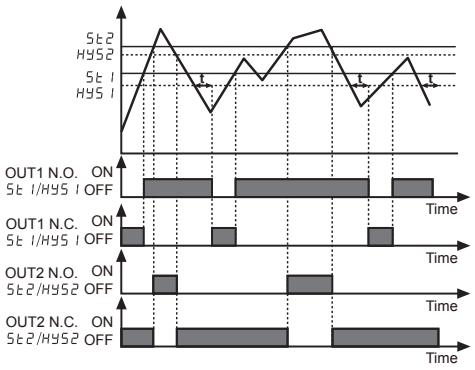
< Manual reset [nAn] >

※1: Reset signal(digital input or ≪+≫+≪)
※t: Output OFF delay time[t1 nE]



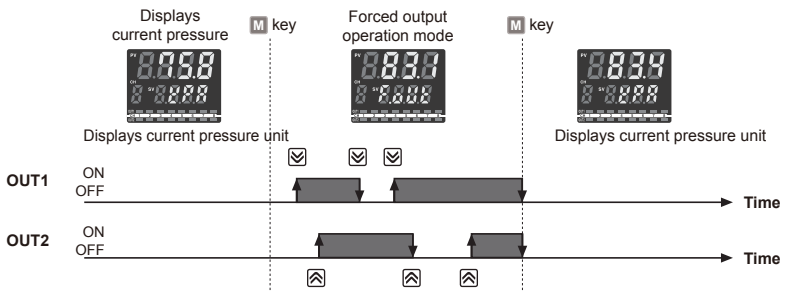
< Auto reset [AUto] >

※t : Output OFF delay time[t1 nE]



6. Forced output control mode[F.oUt]

① This mode is to display pressure with forcibly holding output 1, 2 OFF or ON regardless of SV.
② In RUN mode, press the M key for less than 2 sec. and it is forced output control mode.
③ Whenever pressing the ≫ key, output 1 is changed as ON or OFF in turn.
Whenever pressing the ≪ key, output 2 is changed as ON or OFF in turn.
④ When pressing the ≪ key, output of current channel maintains that status and it moves to next channel.



■ Preset value setting

Set preset value of output mode for each channel. Press the M key for less than 2 sec., it enters preset parameters varied by each output mode.
Press the ≫+≪ keys to set preset value within available set range in display part 2.
When control output mode [oUt.n] is [F.oUt], it does not set preset and enters forced output control mode.
※Factory defaults of preset values are different by each output mode [oUt.n] and input display [dI SP] setting.

▣ Functions

◎ Pressure type [In-t]

This unit is able to set measured pressure type by each channel. This parameter is displayed only when input display [diSP] is set as standard mode [Stnd].

- Set range: Positive pressure (standard) [Pos.H], Positive pressure (lower) [PosL], Vacuum pressure [vACU], Compound pressure [CoMP]
- When using auto pressure sensor model identification [At.SC], pressure type of each channel is set automatically.
- When changing pressure type, display unit [Unit], scale decimal point position [dot], high/low scale value [H-SC/L-SC], preset input value, and auto shift correction value [SHIn] are initialized.

◎ Input display [diSP]

Select display method for measured input.

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

Ex) When set 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 initialized.

◎ Display scale function [H-SC/L-SC]

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 (set range: -1999 to 9999).

High/Low limit scale value [L-SC/H-SC] parameters are displayed only when input display [diSP] is set as scale mode [SCAL].

- 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 ±(3xmin. display unit).

(Ex) When low limit scale is 50, set high limit scale value ≤ 47 or high limit scale≥ 53

◎ Channel copy

Parameter SV and preset values of the particular channel are able to copy to the desired channel or all channels.

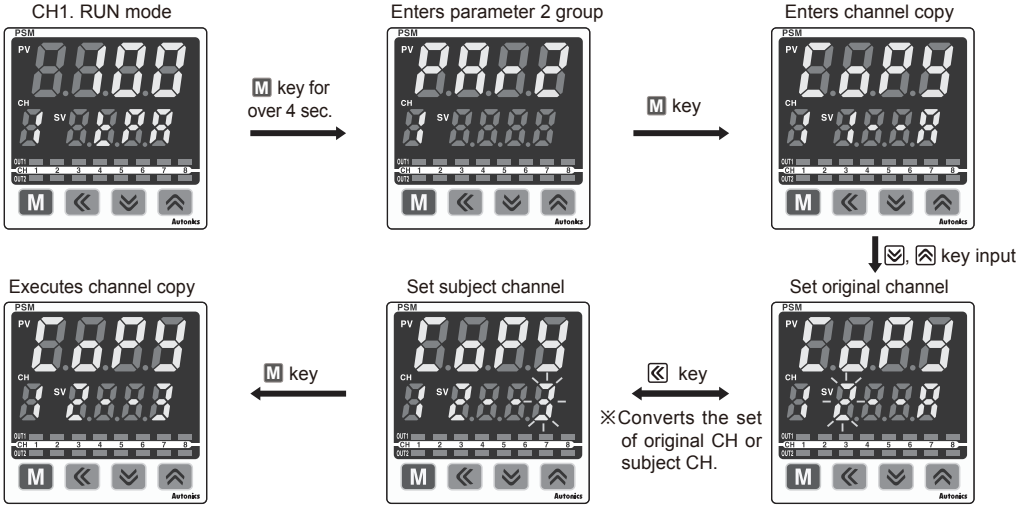
Set [original CH- - subject CH] in display part 2 at channel copy [CoPY] in parameter 2 group. When executing channel copy, it copies preset values and parameter 1 group's SVs (except [SHot]).

Copied items are as below.

① Preset values ② Auto pressure sensor model identification [At.SC] ③ Input display [diSP]
④ Pressure type [In-t] ⑤ Display unit [Unit] ⑥ Scale decimal point position [dot]
⑦ Low limit scale value [L-SC] ⑧ High limit scale value [H-SC] ⑨ Output operation mode [oUt.M]
⑩ Output type [nonC]

※Auto shift correction value [SHIn] and zero-point adjustment [ZEro] of the subject channel are initialized.

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



◎ Digital input terminal

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

1. Auto shift [SHFt]:
When initial 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 ▲ key for over 2 sec. in RUN mode to check/correct auto-shift correction value [SHI n].
- When not using auto shift, reference pressure is atmospheric pressure(0.0kPa).

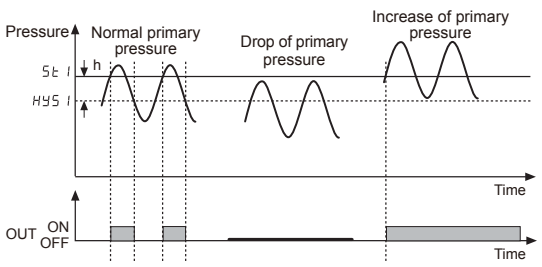
※When the channel is forced output control mode or the value is "HHHH" or "LLLL", auto shift does not operate.
※When auto shift digital input is supplied over 5 sec., initial pressures of OUT1, OUT2 for all channels are changed regardless of the applied channel range.
※When auto shift is set, preset set range is bigger than the rated pressure range as changed initial pressure.

<Preset range after auto-shift correction>

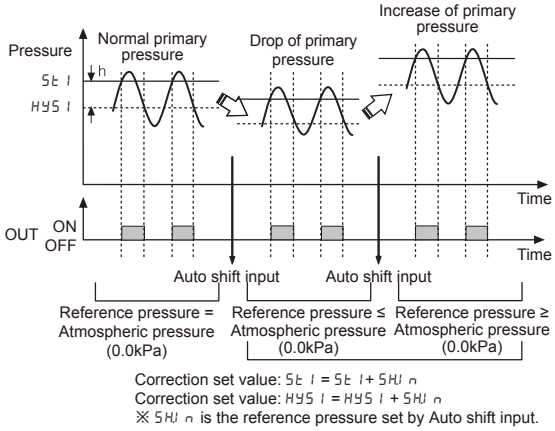
Pressure	Set pressure range(after correction)	Set pressure range(preset set range)
Positive (standard)	-5.2kPa to 110.0kPa	-110.0kPa to 110.0kPa
Positive (lower)	-50.0kPa to 1,100kPa	-1,100kPa to 1,100kPa
Vacuum	-101.3kPa to 5.0kPa	-101.3kPa to 101.3kPa
Compound	-101.3kPa to 110.0kPa	-100.0kPa to 110.0kPa

▸Example of Auto shift

< When Auto shift is not used >



< When Auto Shift is used >



Correction set value: St 1 = St 1 + SHI n
Correction set value: HYS 1 = HYS 1 + SHI n
※ SHI n is the reference pressure set by Auto shift input.

2. Hold function [HoLd]:
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.

3. Manual return for freezer control output function [rESt]:
For freezer pressure control, when control output 2 is set as manual reset [MAn], it resets maintained control output 2 manually by supplying digital input of manual return for freezer control output.
Press the ◀+▼+▲ keys in RUN mode, it enters [rESt] parameter to set the applied channel for manual return for control output before executing manual return for freezer control output.
Press the M key and it returns control output 2 manually.

- [HoLd]: Maintains the current output status.
- [ALL]: 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-CH].

- [dI .CH]: Applies digital input for the channel
- [dI .AL]: Applies digital input for all channels

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

▣ USB to Serial communication

Connect Autonics communication converter, SCM-US (USB to Serial converter, sold separately) to the PC load port of PSM to set or monitor parameters from PC by communications.

▣ Communications

From external upper system (PC, PLC etc), it is available to set or monitor parameters and to transmit the data by communications.

◎ Interface

Application standard	Compliance with EIA RS485
Max. connections	31 units (address: 01 to 127)
Comm. type	2-wire half duplex
Comm. method	Asynchronous
Comm. distance	Within max. 800m
Comm. speed	2400, 4800, 9600, 19200, 38400bps
Comm. response time	5 to 99ms
Start bit	1bit(fixed)
Data bit	8bit(fixed)
Parity bit	None, Even, Odd
Stop bit	1, 2bit
Protocol	Modbus RTU(1 Character=fixed as 11Bit)

※It may cause malfunction when changing parameters by front keys of PSM during connecting communications.
※In same communication line, duplicated communication address is not allowed. Used twisted pair cable as communication cable for RS485 communications.

▣ Error and troubleshooting

Error	Causes	Troubleshooting
Err 1	When external pressure is input while adjusting zero-point.	Remove external pressure and re-try it.
Err2	When overload is applied to control output.	Remove overload.
LLLL	When applied pressure is lower than display range.	Apply pressure within the rated display range.
HHHH	When applied pressure is higher than display range.	
-HH- -LL- -HL-	Auto shift correction value error	Set the correct SV within the set pressure 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 in the place occurring lots of noise.
- Installation environment

• If shall be used indoor.
• Altitude max. 2,000m
• Pollution degree 2
• Installation category II