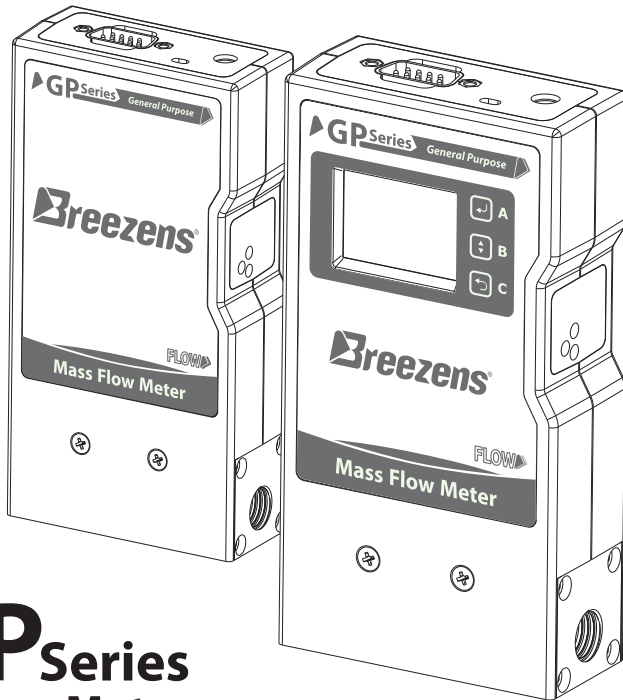


Breezens®

Accurate, Fast and Reliable



GP Series Mass Flow Meter

Visual Instruction & User Guide



March 2023









In The Name of
The Most Merciful

Index

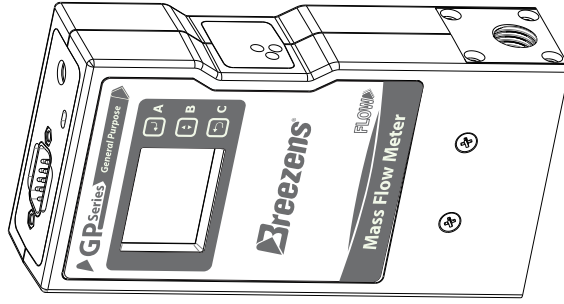
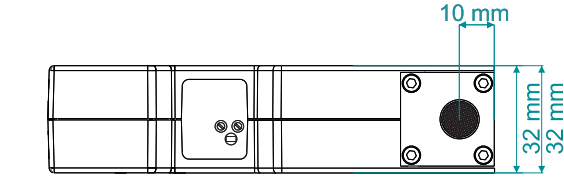
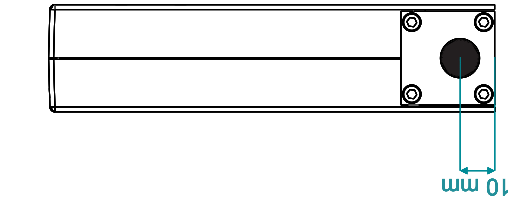
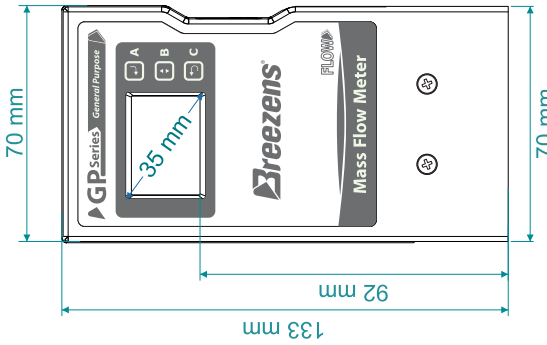
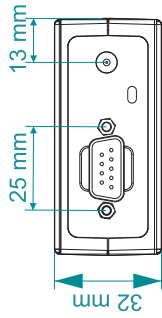
- 1 Dimensions
- 1 ATEX Requierments
- 2 Part Number Guide
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- 4 Introduction II
- 5 Display Panel
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- 7 Warm Up Process
- 7 Zero Check I
Via Display
- 7 Zero Check II
Via DB9 Port (Signal pin-5)
- 8 Zero Adjustment I
Via Display Panel (Auto)
- 9 Zero Adjustment II
Via Display Panel (Manual)
- 10 Zero Adjustment III
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- 11 Zero Adjustment IV
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(Zero Adj. Potentiometer)
- 12 Signal
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Vs Display
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- 17 Error Status
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- 18 Alarm Reset I
Via Display Panel
- 19 Error / Alarm Reset II
Via DB9 Port (Error Reset Pin-8)
- 19 LED Status
- 19 For Skilled Technical Expert
- 20 Factory Set

Symbols

-  Hold for 3 Sec.
-  Press n Times
-  Next Step
-  Few Steps Later
-  Internal Mode
-  External Mode
-  Attention
-  Skilled Technical Expert

Dimensions



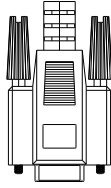
KG ~ 500 gr
(w/o package)

Breerzens GP-Series	
Code:	GP - 1L-8D-11-12-18-10-08-7E710
Range:	100 acscm
Valve:	NC
Max. Inlet Pressure:	10 bar
Min. I.P.P.:	3 bar
Gas :	N ₂
Cal. Gas:	Air
CAUTION !! WARRANTY/LIABILITY LABEL IS REMOVED	

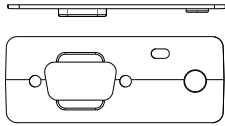


ATEX Requirements

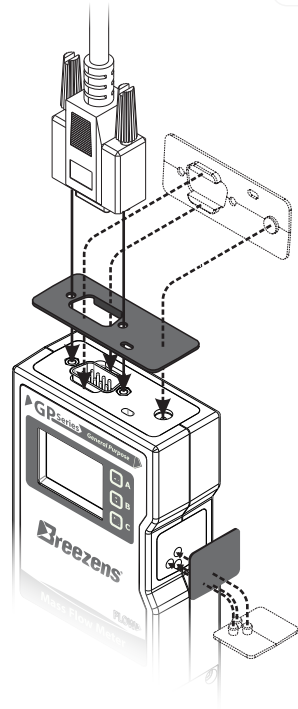
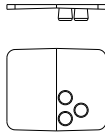
* Standard
1 x 9 - pin
Female Sub-D
(DB9)



* Electrical Port
Shield

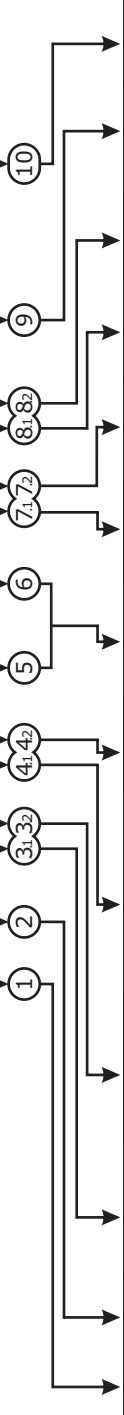


* Setting panel
Shield



Part Number Guide

GP-X - XX - XX - XX - XX - XX - XX - XX - XXXXXX



Class	Device	Max. Inlet Pressure	ΔP Range	Wet Parts	Sealant	In/Outlet Ports	Elec. Port 1	Elec. Port 2	Analog port	Digital Port	Flow Range	ID
-------	--------	---------------------	----------	-----------	---------	-----------------	--------------	--------------	-------------	--------------	------------	----

GP	M	MFM	1	L	<0.05 to 10 bar	1	SS 304/SS 420/Al	1	NBR	11	BSP 1/8"	1	DB9	0	Non	1	0-5 V	0	Non	05	10sccm	XXXXXX
			2	A	0.05 to 10 bar	2	SS 304/SS 420/Al/Br	2	VITON	12	BSP 1/4"	8	Display	4	4-20 mA	1	RX&TX	06	2	20sccm		
			3	B	0.5 to 10 bar	3	SS 304/SS 420*/Al*	3	EPDM	13	BSP 3/8"									07	50sccm	
			4	C	1 to 10 bar	4	SS 316 / SS 420	4	PVMQ	00	By Order									08	100sccm	
			5	D	2 to 10 bar	5	SS 316 / SS 420*	5	Kalrez											09	200sccm	
			6	E	3 to 10 bar		*: Coated Part													0A	500sccm	
			7	100 bar	0	By Order														0B	1slm	
			0	By Order																0C	2slm	
																				0D	5slm	
																				0E	10slm	
																				0F	20slm	
																				10	50slm	
																				00	By Order	

Brezens®
GP Series

Code: GP - M-3D - 11 - 12 - 18 - 10 - 08- 7E7101

Range: 100 sccm

Valve: NC

Max Inlet Pressure: 10 bar

Max ΔP: 10 bar

Min ΔP: 3 bar

Gas: N₂

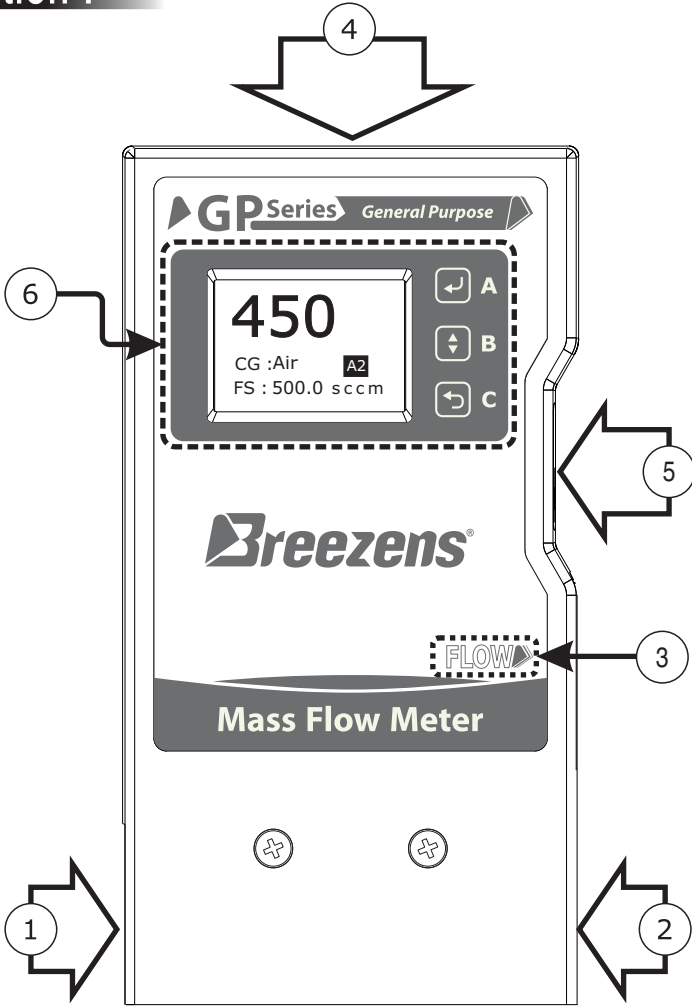
Cal. Gas: Air

CAUTION !

WARRANTY VOID IF LABEL IS REMOVED

<p>① Class _____</p> <p>② Device _____</p> <p>③① Maximum Allowable Inlet Pressure _____</p> <p>③② Operating Pressure _____</p> <p>④① Wet Part _____</p> <p>④② Sealant _____</p>	<p>⑤ Mechanical Gas Inlet Port _____</p> <p>⑥ Mechanical Gas Outlet Port _____</p> <p>⑦① Electronic Port 1 _____</p> <p>⑦② Electronic Port 2 _____</p> <p>⑧① Analog port _____</p> <p>⑧② Digital Port _____</p>
---	---

Introduction I



① Input Fitting
(BSP 1/4" Female)

② Output Fitting
(BSP 1/4" Female)

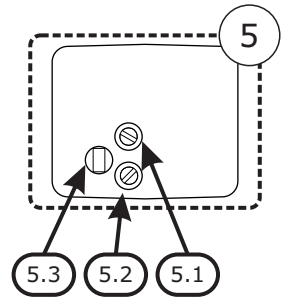
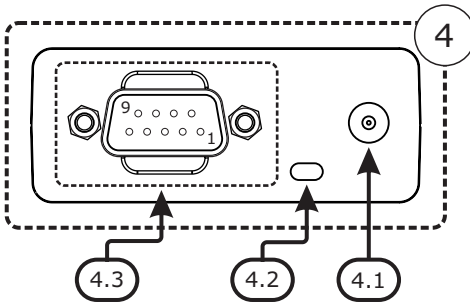
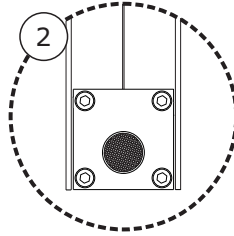
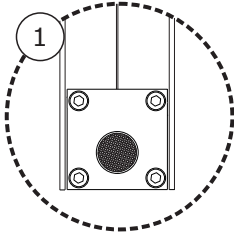
③ Attitude Indicator

④ Electrical Port

⑤ Setting panel

⑥ Display & Control panel

Introduction II

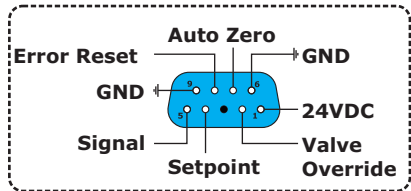


4

4.1 DC Power Jack (005)
(5.5x2.1mm)


4.2 3 Colors LED

4.3 1 x 9 - pin Male Sub-D (DB9)



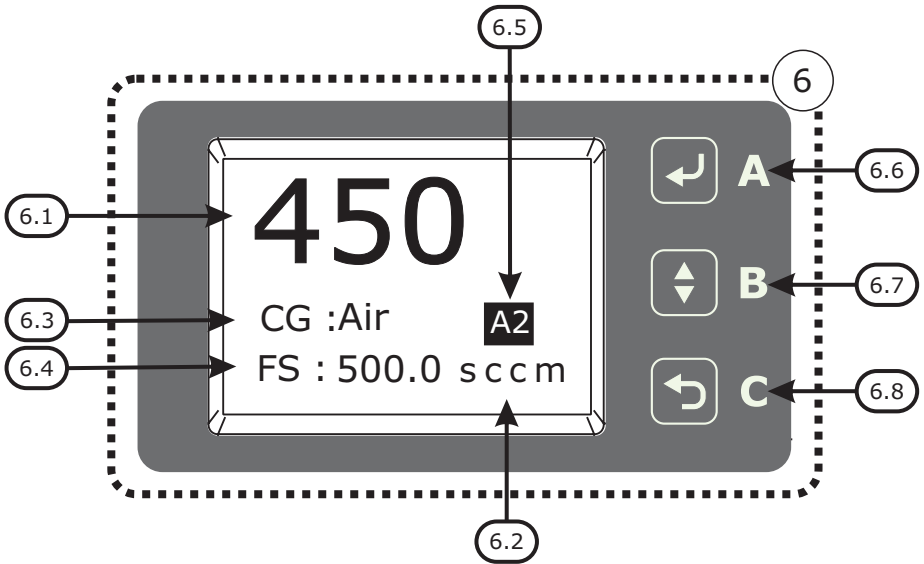
5

5.1 Zero Adjustment Potentiometer

5.2 Span Adjustment Potentiometer 

5.3 Auto Span Adjustment 

Display Panel



6

6.1 Flow Value

6.5 Error / Alarm

6.2 Flow Unit

sccm: Standard cm^3 per minute
slm: standard liter per minute

6.6 Key (A)
Select /Confirm

6.3 Current Gas

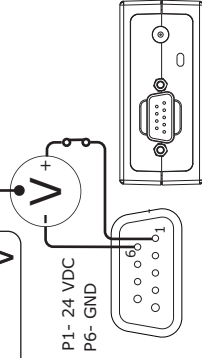
6.7 Key (B)
Scroll

6.4 Fullscale

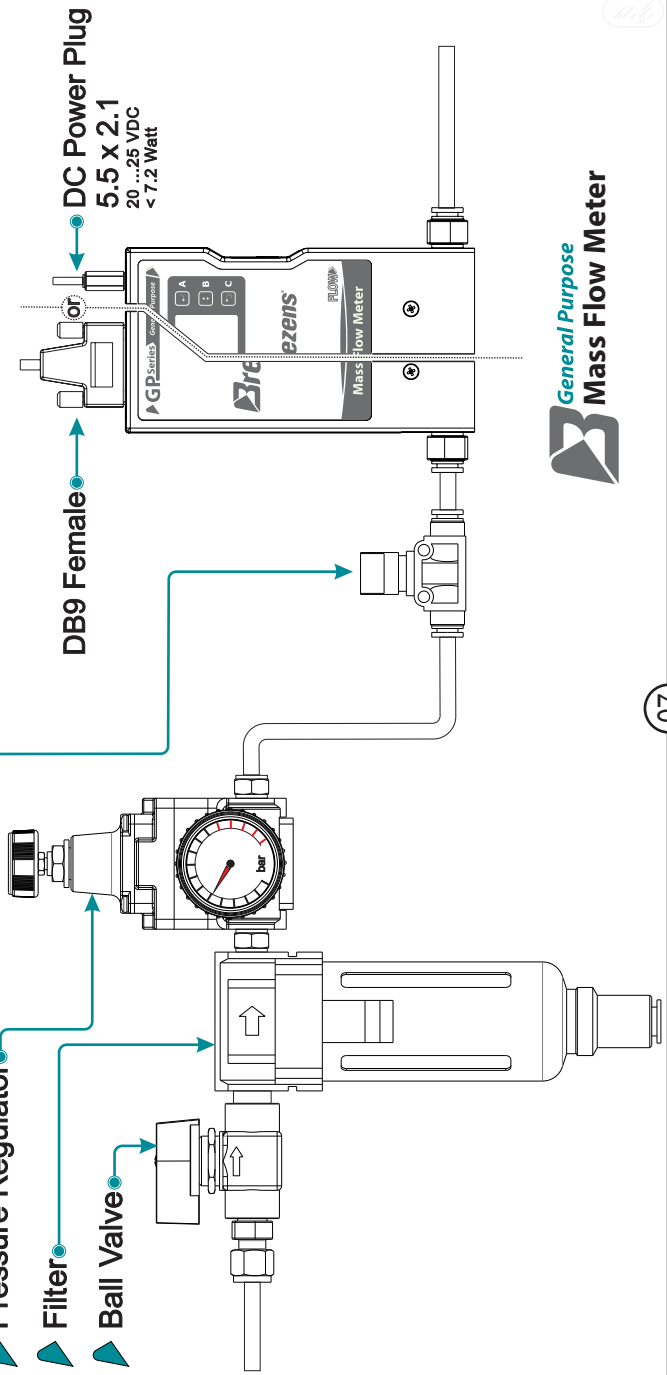
6.8 Key (C)
Cancel

Arrangement

+24 V
20 ...25 VDC
< 7.2 Watt



- ▶ 3 Way Hand Valve
- ▶ Pressure Regulator
- ▶ Filter
- ▶ Ball Valve

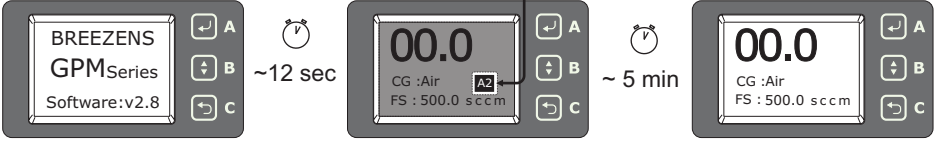


DB9 Female

DC Power Plug
5.5 x 2.1
20 ...25 VDC
< 7.2 Watt

General Purpose
Mass Flow Meter

WarmUp Process

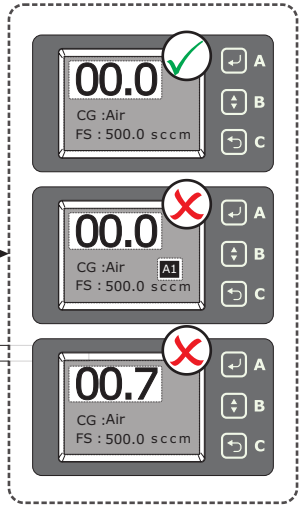
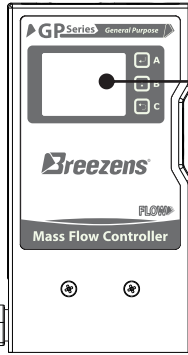
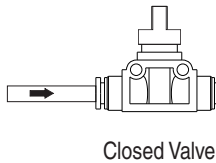


! 5 (min) for Acc ± 2.0 (FS)

! 45 (min) for Acc ± 1.5 (FS)

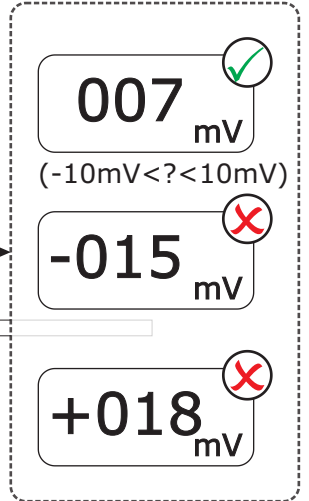
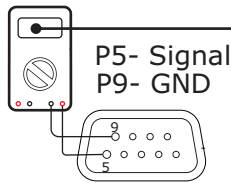
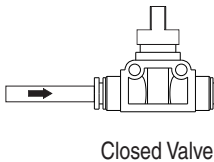
Zero Check I

Via Display



Zero Check II

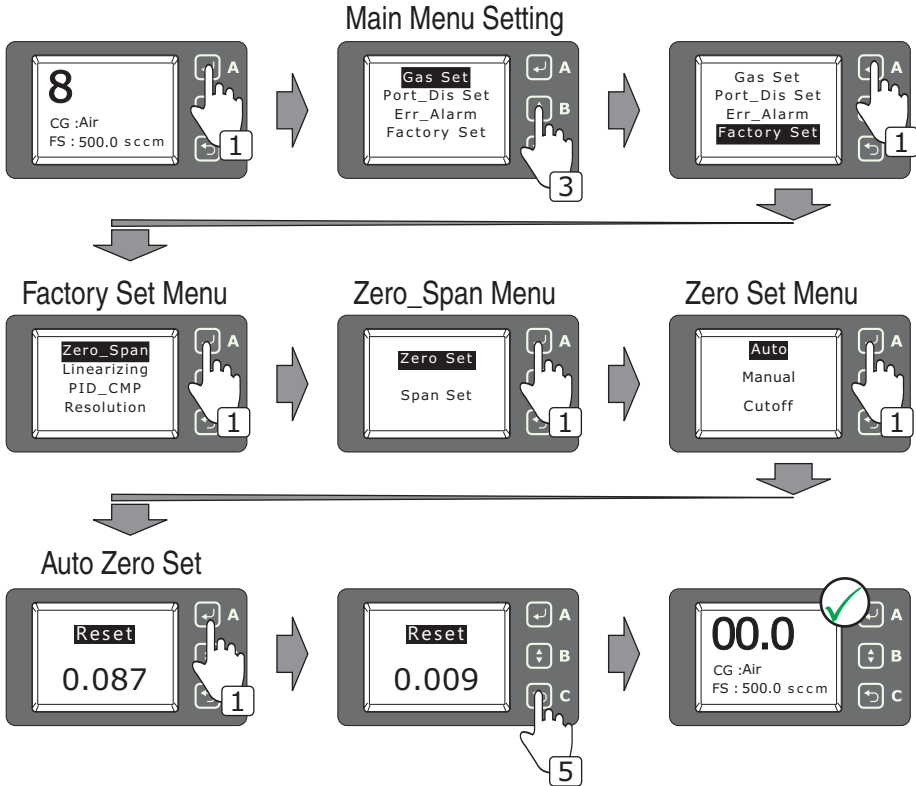
Via DB9 Port (Signal Pin-5)



Zero Adjustment I



Via Display Panel (Auto)



For Fine tune,

Temporarily reduce the Cutoff [P 11] value to 0.1% and after adjusting the Zero, return it to previous value



Note

Auto Zero Set is not very accurate, it is better to use the Manual Zero Set for more accurate adjustment

Zero Adjustment II

Via Display Panel (Manual)

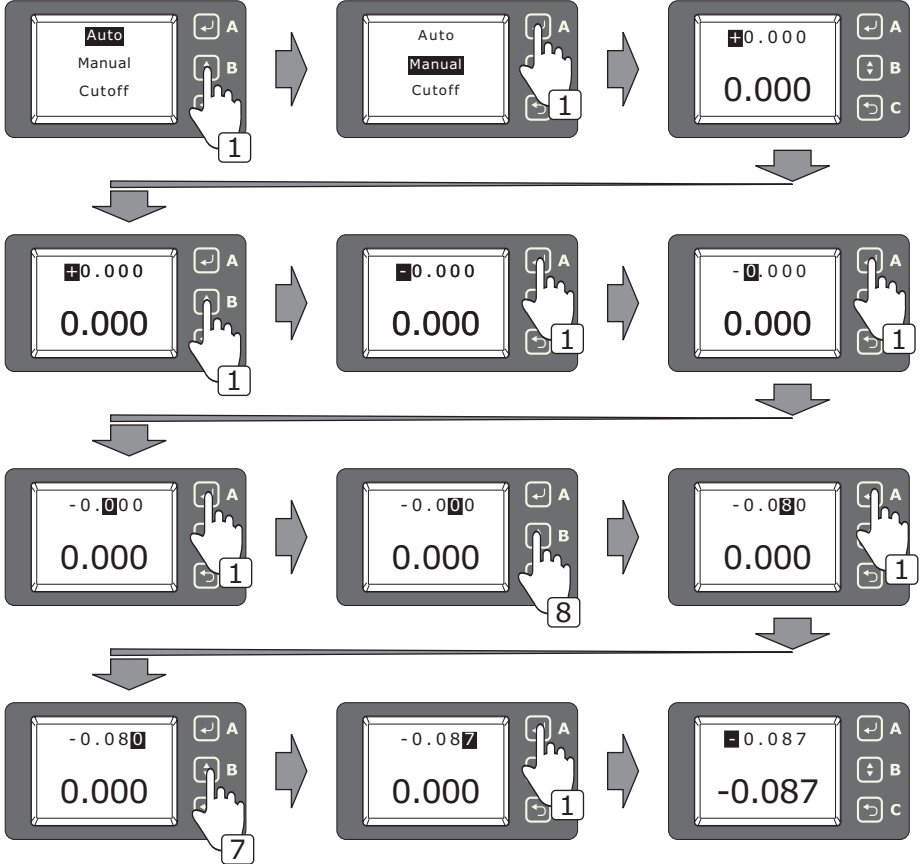


P5- Signal
P9- GND

-87 mV

Example:
(-87 mV) Or (-0.087 V) Zero Offset

Zero Set Menu



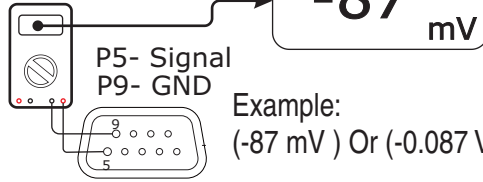
P5- Signal
P9- GND

007 mV

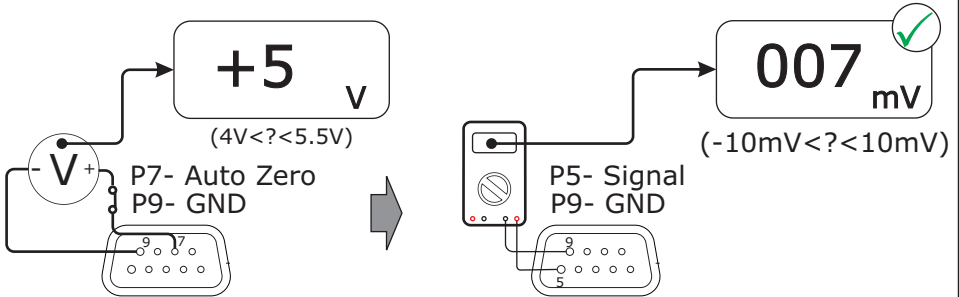
(-10mV < ? < 10mV)

Zero Adjustment III

Via DB9 Port (Auto Zero Pin-7)

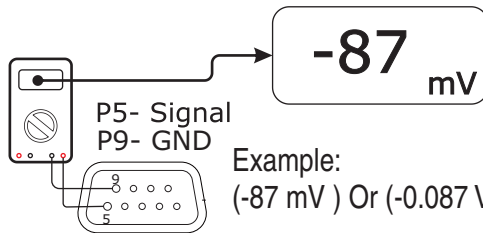


Example:
(-87 mV) Or (-0.087 V) Zero Offset

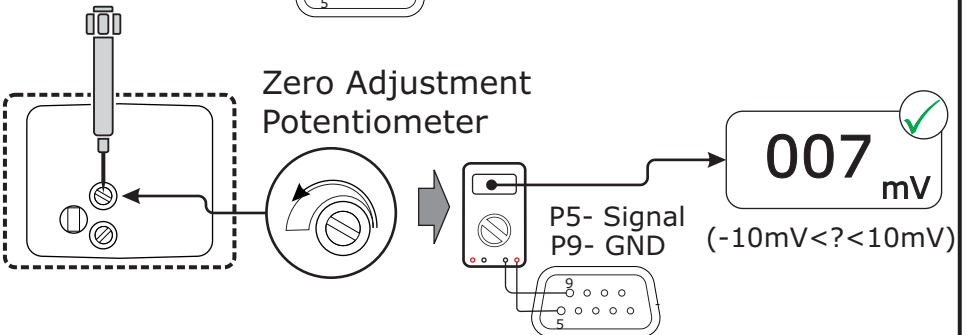


Zero Adjustment IV

Via Potentiometer (Zero Adj. Potentiometer)



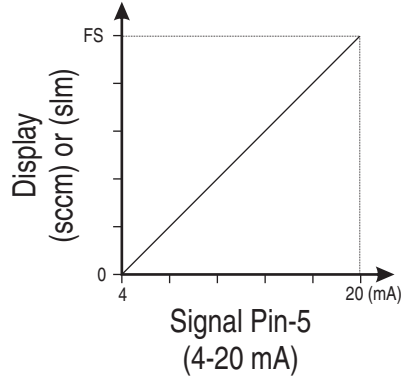
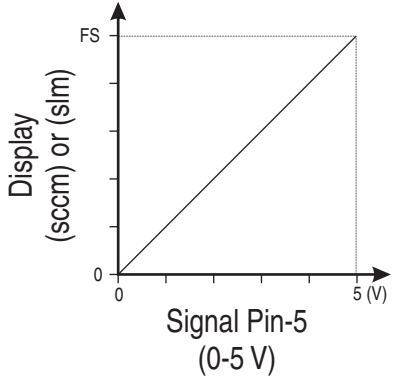
Example:
(-87 mV) Or (-0.087 V) Zero Offset





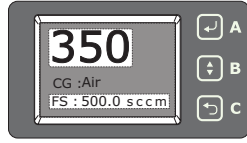
Signal


The DB9 Port (Signal Pin-5) VS Display



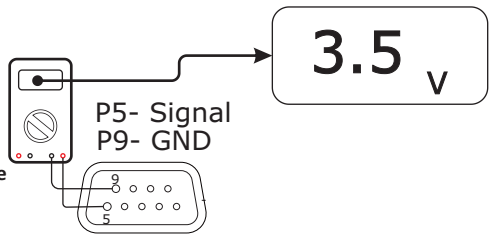
* Display [sccm]


Example:
Flow is 350 sccm
of 500 sccm FS



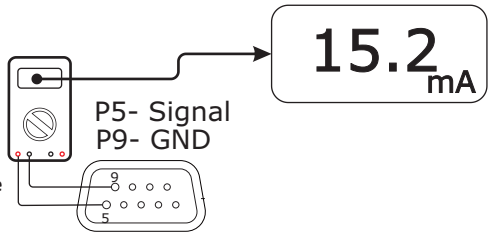
 **Minimum value in accordance with Turn Down Ratio**
2% (FS)
1% (FS)(By Order)


* Voltage Signal [0-5 V]



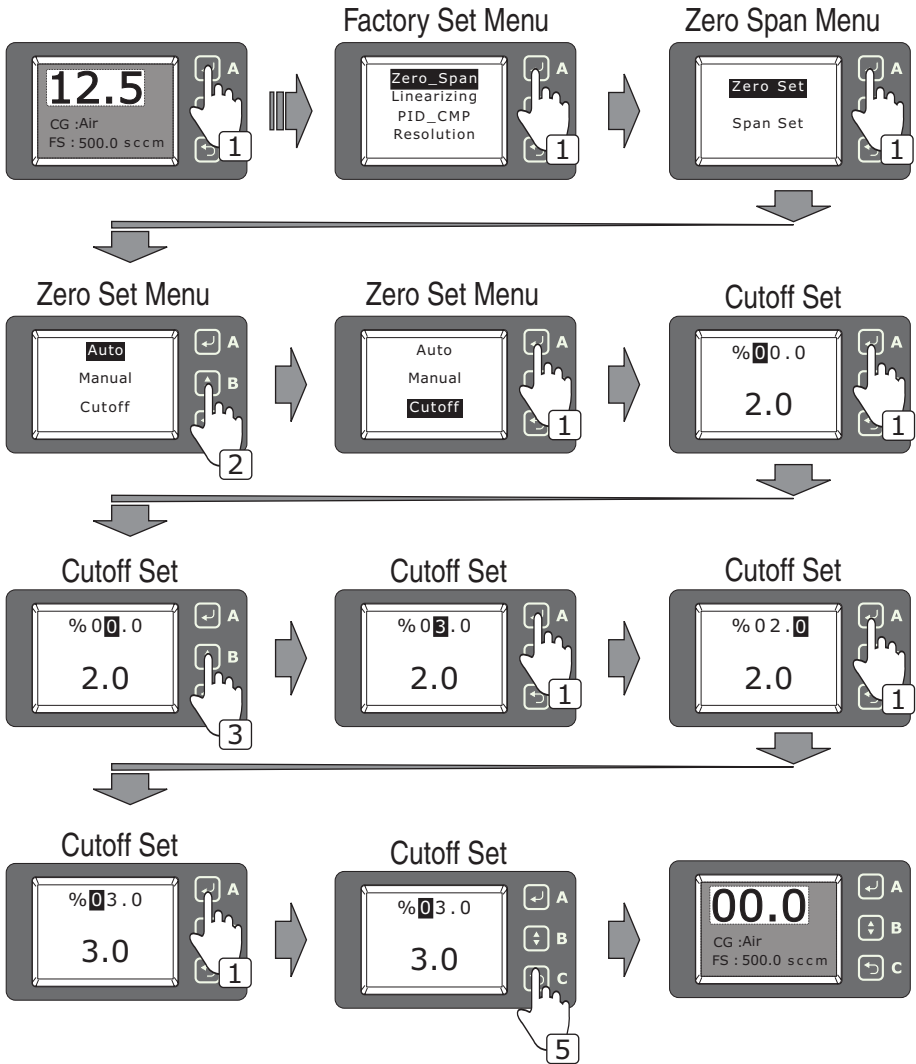
 **Minimum value in accordance with Turn Down Ratio**
100 (mV)
50 (mV)(By Order)

* Current Signal [4-20 mA]



 **Minimum value in accordance with Turn Down Ratio**
0.32(mA)
0.16 (mA)(By Order)

Cutoff Adjustment



* For 500 sccm Fullscale
Change The Cutoff
from 2.0 to 3.0 % of FS

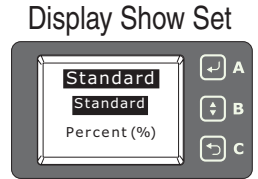
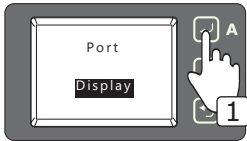
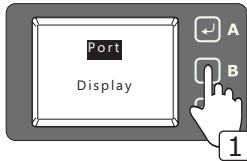
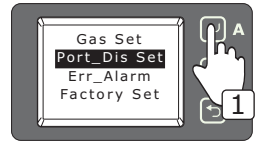
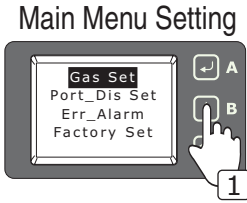
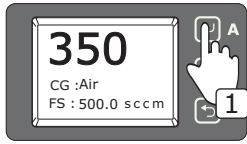
* For 500 sccm Fullscale
the minimum display Changes
from 10 sccm to 15 sccm



The Allowed Cut Off $\geq 2\%$ (FS)

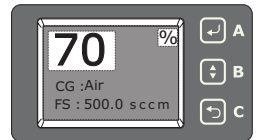
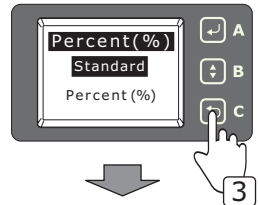
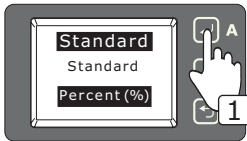
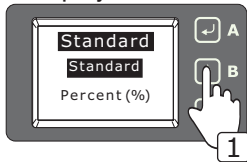
Flow Display Option

Example:
Flow is 350 sccm
of 500 sccm FS



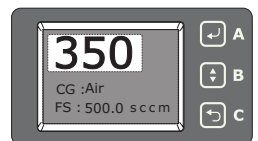
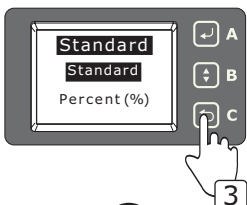
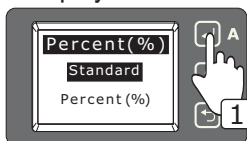
* Flow Percentage

Display Show Set

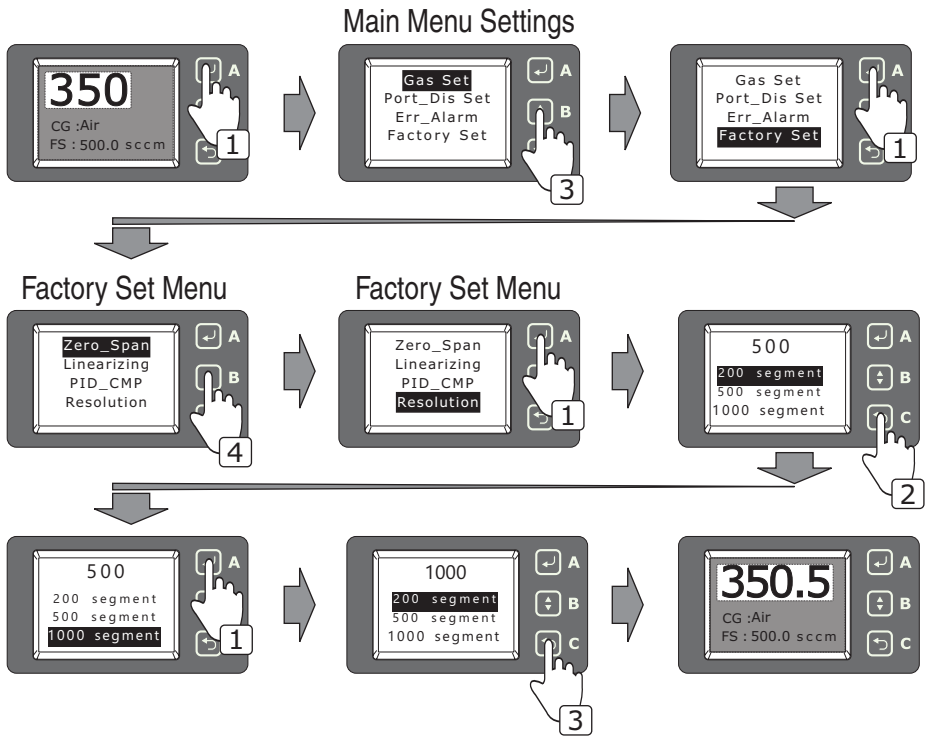


* Standard Flow

Display Show Set



Resolution Adjustment



* For 500 sccm fullscale
change the resolution
from 500 to 1000



* For 500 sccm fullscale
the measurement resolution
changes from 1 sccm to 0.5 sccm

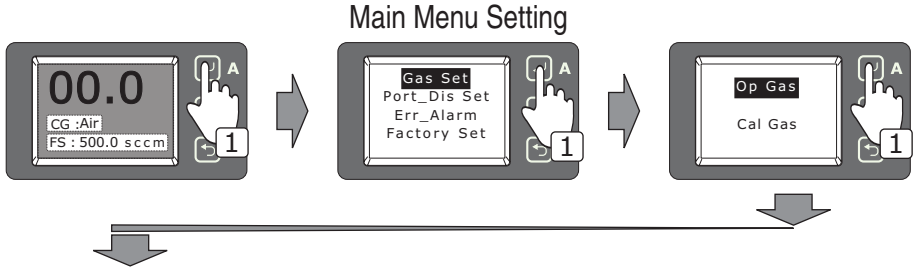


The Allowed Resolution ≤ 500
Resolution > 500 By Order

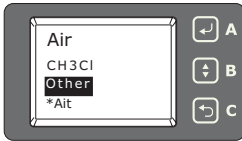
Adjust The Operation(Current) Gas I



Via The List



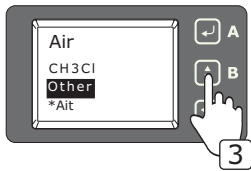
Gas Selection List



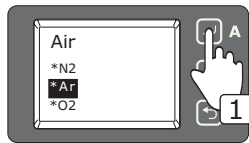
Example:

Operating (Current) Gas Changed to Argon (Ar)

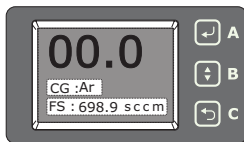
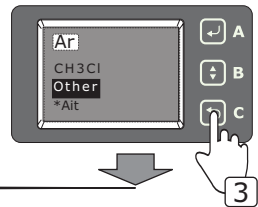
Gas Selection List



Gas Selection List



Gas Selection List



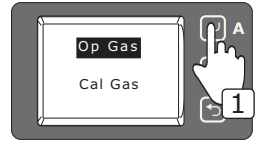
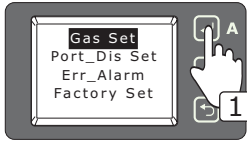
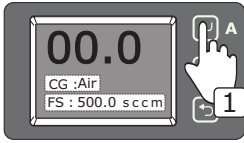
Allowed Operating Gases have an Asterisk (*)
Other Operating Gases By Order

Adjust The Operation (Current) Gas II



Other gases Adjustment

Main Menu Setting



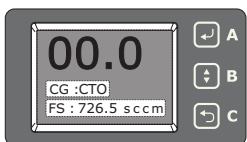
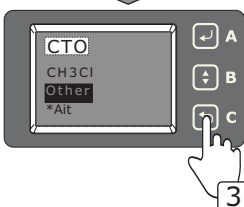
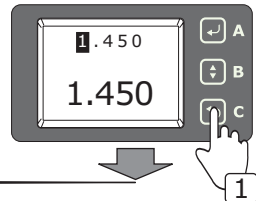
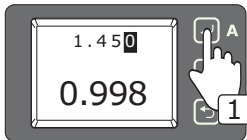
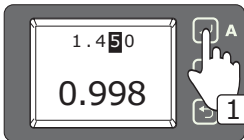
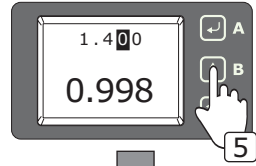
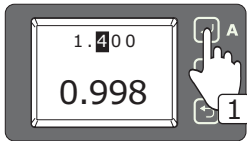
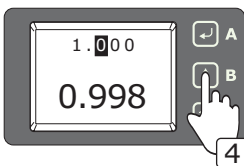
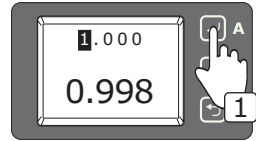
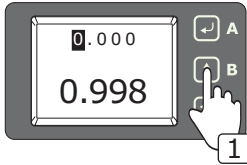
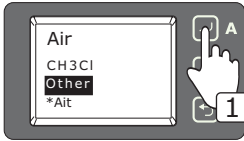
Gas Selection List



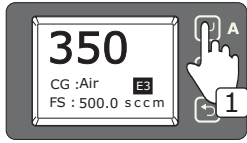
Example:

Operating (Current) Gas changed to an undefined Gas
Gas Correction Factor : 1.45

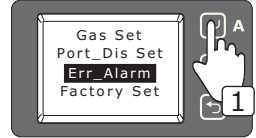
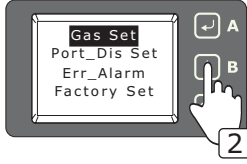
Gas Selection List



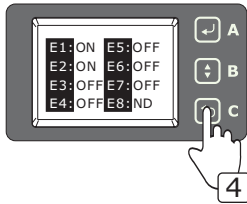
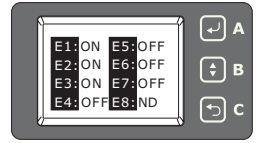
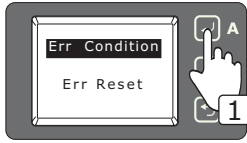
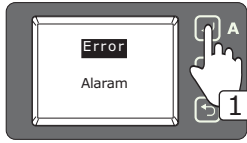
Error Status



Main Menu Setting

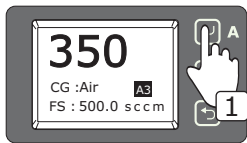


Error Alarm Menu

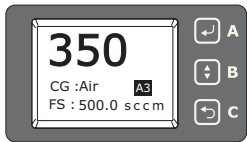
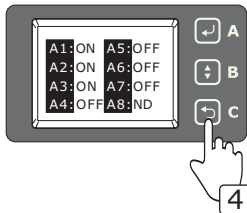
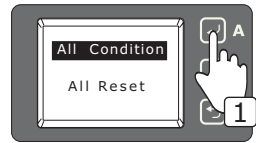
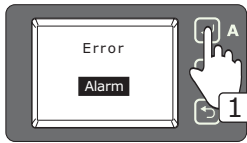


- * OFF: Ex Not Activated Error Code
- * ON: Ex Activated Error Code
- * ND: Ex Not Defined Error Code

Alarm Status



Error Alarm Menu

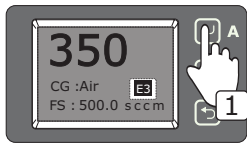


- * OFF: Ax Not Activated Alarm Code
- * ON: Ax Activated Alarm Code
- * ND: Ax Not Defined Alarm Code

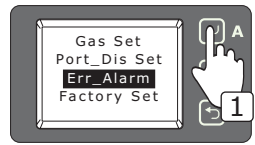
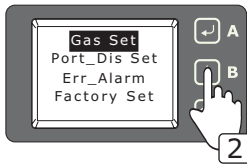


Error Reset I

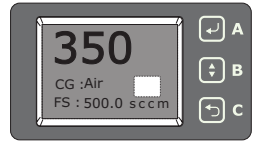
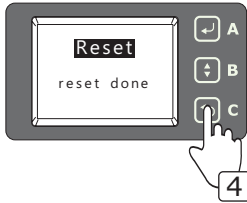
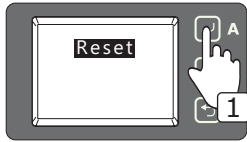
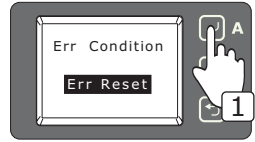
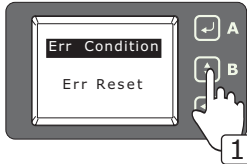
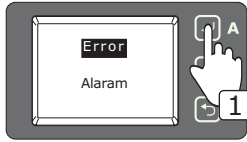
Via Display Panel



Main Menu Setting

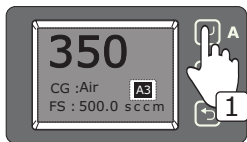


Error Alarm Menu

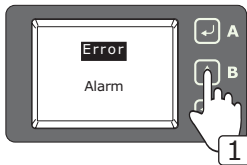


Alarm Reset I

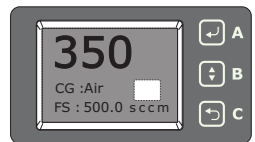
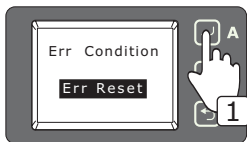
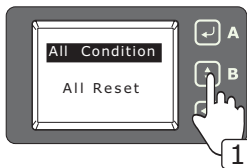
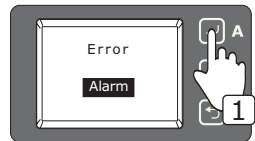
Via Display Panel



Error Alarm Menu



Error Alarm Menu



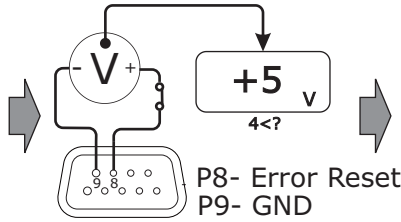
Error / Alarm Reset II



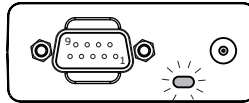
Via DB9 Port (Error Reset Pin-8)



or



LED Status



Green: ON/Normal

Yellow : Alarm

Red : Error

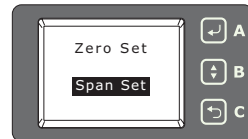
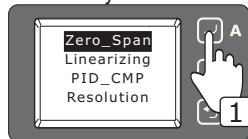


For Skilled Technical Expert

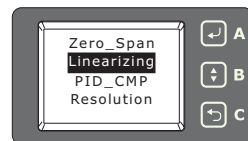
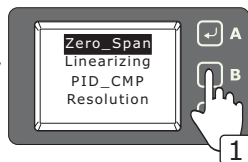


Only the authorized technical expert of the company is allowed to set SPAN

Factory Set Menu



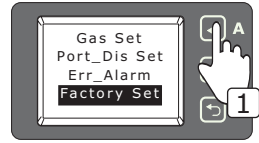
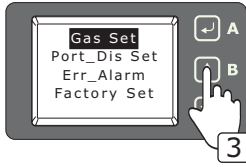
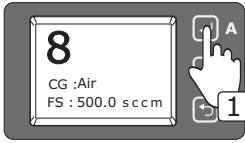
Only the authorized technical expert of the company is allowed to set LINEARIZING



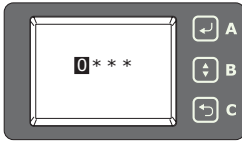
Factory Set



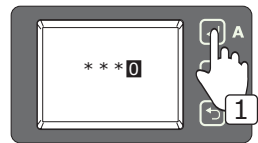
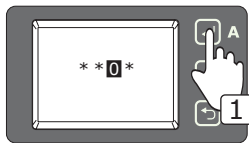
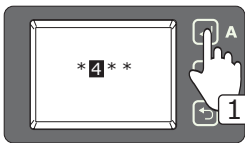
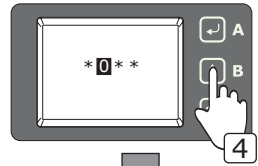
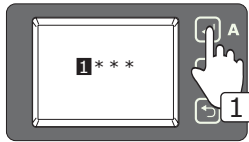
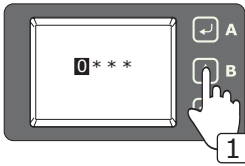
Main Menu Settings



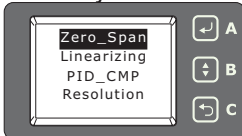
Password



Password Example: 1400



Factory Set Menu



Note:

Note:

A series of 20 horizontal dashed lines for writing notes.

