

# DP30

## User manual



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### ※ Pre Caution for Use

1. This product may cause an electric shock in handling. Please do not attempt to open it with power turned on.
  2. This product should be installed in a place fixed secured by a rack or panel.
  3. This product can be used under the following environmental condition  
CD Indoor @Pollution Degree 2 @At an altitude of 2000m or below @Installation Category II
  4. To turn on or turn off power supply for this product, please the circuit breaker or switch of a standard product of IEC 60947-1 or IEC 60947-3 product and install it within a close distance allowing convenient operation by user.
  5. Please be understood that if this product is dismantled or modified discretionary, after sales service will not be able to be provided.
  6. An output wire to be used for this product should be inflammable grade FV1 (V-1 grade or above), the thickness of the wire should be AWG No. 20 or above. (0.501111)
  7. In order to prevent it from an inductive noise, please maintain the high-voltage wire and power wire separated.
  8. Please avoid installing the product in a place where a strong magnetism, noise, severe vibration and impact exist.
  9. When extending the sensor wire, use a shield wire and do not extend it unnecessary long.
  10. The sensor wire and signal wire should be away from the power and load wires using conduits separately installed.
  11. Please avoid using the product near a device generating strong high frequency noise (high-frequency welding machine, high-frequency sewing machine, high-frequency radiotelegraph, high capacity SCR controller)
  12. PRODUCT'S DAMAGES OTHER THAN THOSE DESCRIBED IN THE GUARANTEE CONDITIONS PROVIDED BY THE MANUFACTURER SHALL NOT BE RESPONSIBLE BY US.
- ※ Please use this product after attaching double or more safety device without fail if you use this product for control of equipment which have a big effect on human life or on property (e.g. nuclear control, medical instrument, vehicle, railroad, aviation, combustion apparatus, amusement equipment, safety device, etc.)



## Cubic Type Digital Differential Transmitter DP30

- DP30 series는 30mm 큐빅타입의 디지털 차압 트랜스미터로, 플로우 방식의 차압센서를 적용하여 신뢰성 높은 초저 미세차압 측정이 가능합니다.
- 트랜스미터는 장시간 사용하더라도 zero-point에 대한 드리프트가 없어서 주기적인 영점 조절이 필요하지 않아 유지관리가 용이합니다.
- 오픈콜렉터 방식의 스위치 출력과 아나로그 출력, RS485 통신 출력을 제공하여 다양한 응용분야에 적용이 가능합니다.
- NPN, PNP 출력 및 4~20mA, 1~5V 아나로그 출력은 내부 파라미터 설정을 통해서 선택가능
- 고 시야각의 LCD 적용으로 시인성 향상 및 직관적 디스플레이 제공

### Features

- Ultra-low pressure ranges from 25 to 5000 Pa (0.1 to 20 inH2O)
- Outstanding long-term stability and precision zero-point offset
- Thermal micro-flow measurement principle
- Available media is air and other non-corrosive gases
- Don't required periodic zero-point adjustment
- 30mm square body designed for space saving
- 2-CH NPN or PNP switch output
- 4~20mA or 1~5V analog output
- RS485 modbus RTU output
- 12SEG, LCD display

### Applications

- HVAC system
- Filter monitoring
- Burner control
- Fuel cells
- Gas leak detection
- Fume hood
- Instrumentation
- Security systems

# 1. Specifications

## 1.1 Differential Pressure

Pressure range	±25 Pa, ±250 Pa, ±500 Pa, ±1250 Pa, ±2500 Pa, ±5000 Pa
Span accuracy	±1.5% of reading : ±25 Pa, ±250 Pa, ±500 Pa ±3.0% of reading : ±1250 Pa, ±2500 Pa, ±5000 Pa
Offset long term stability	±0.1 Pa/year : ±25 Pa, ±100 Pa, ±250 Pa, ±500 Pa ±0.5 Pa/year : ±1250 Pa, ±2500 Pa ±1.0 Pa/year : ±5000 Pa
Burst pressure	500kPa (75 psi)
Display, Set Pressure range	4-digit LCD, -5000 ~ 5000Pa
Min. Range Unit	0.1Pa
Internal pressure	Proof pressure (30psi), Burst Pressure(75psi)
Fluid used	Air, non-corrosive gas

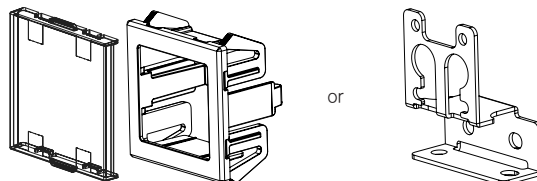
## 1.2 In-output

Power	24Vdc ±10%
Allowable voltage fluctuation range	90~110% of power
Current Consumption	below 50mA (When using current output below 70mA)
Control Output	Output type : NPN or PNP Open collector output - Select from parameters Load voltage : Below 30Vdc, Load current : Below 100mA, Residual voltage : Below 2Vdc Protection circuit : Output short circuit overcurrent protection circuit, Reverse voltage protection
Analog output (Voltage)	Output Voltage : 1~5Vdc ±2.5% F.S. Linearity : below ±1% F.S. Resolution : 1/2,000 Output impedance : about 200Ω Response time : 50ms
Analog output (electric current)	Output current : 4~20mA ±2.5% F.S. Linearity : below ±1% F.S. Resolution : 1/2,000 Output impedance : about 100kΩ Response time : 50ms
Communication Output	RS485 modbus RTU
Operating temperature	-20~60°C (non condensed)
Operating humidity	30~80%RH
Storage temperature	-20~70°C
Internal voltage	1,000VAC 50/60Hz 1min.
Insulation Resistance	Over 50MΩ (500VDC)
Housing	ABS
Weight	

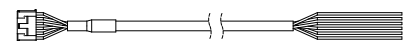
## 2. Components



DP30



Panel Bracket or L Bracket



Cable(2m)

### 3. Ordering Guide

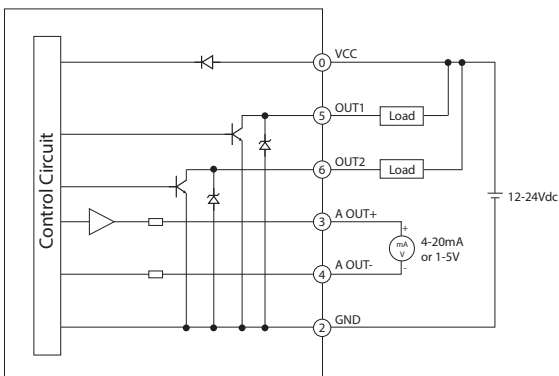
DP30 -	①	-	②	③	Description
① Output type	D2A1	-			TR output 2-CH + Analog output 1-CH
	D2R4	-			TR output 2CH + RS485 Communication output
	A1R4	-			Analog output 1-CH + RS485 Communication output
② Measurement Pressure Range		-	0025		±25 Pa
		-	0250		±250 Pa
		-	0500		±500 Pa
		-	1250		±1250 Pa
		-	2500		±2500 Pa
		-	5000		±5000 Pa
③ Mount Kit				A	Panel Bracket
				B	L bracket
					None Bracket

### 4. Installation

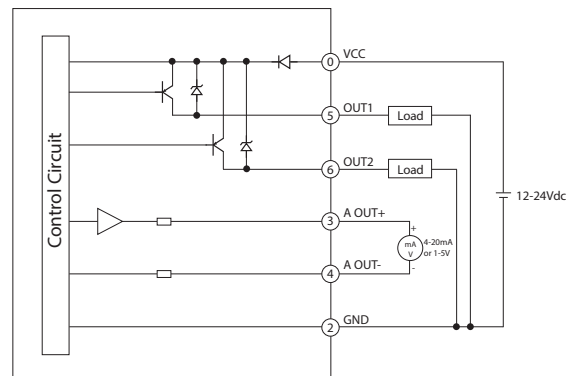
#### 4.1 Wiring

PIN	DP30-D2A1	DP30-D2R4	DP30-A1R4
1	VCC	VCC	VCC
2	GND	GND	GND
3	A OUT+	TRX+(A)	A OUT+
4	A OUT-	TRX-(B)	A OUT-
5	CH1 NPN/PNP output	CH1 NPN/PNP output	TRX+(A)
6	CH2 NPN/PNP output	CH2 NPN/PNP output	TRX-(B)

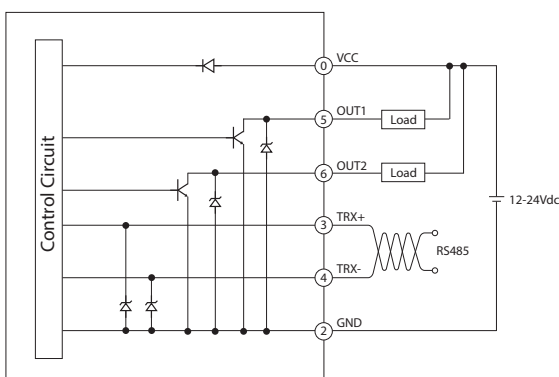
DP30-D2A1-XX(NPN Output)



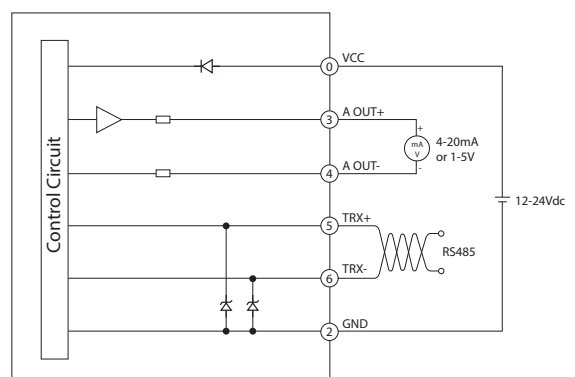
DP30-D2A1-XX(PNP Output)



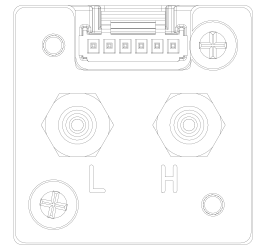
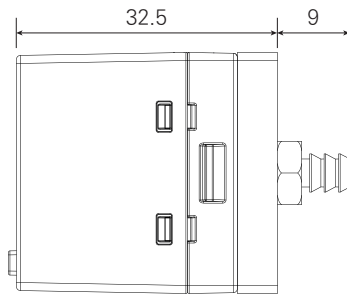
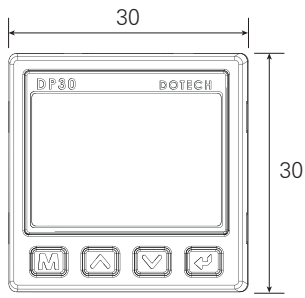
DP30-D2R4-XX(NPN Output)



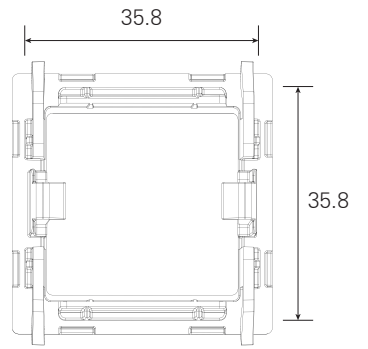
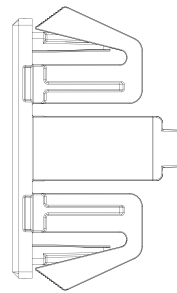
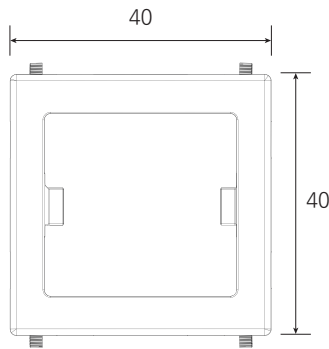
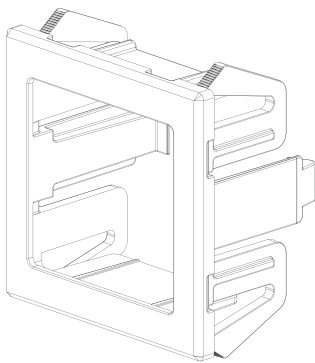
DP30-A1R4-XX(NPN Output)



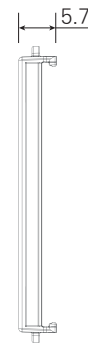
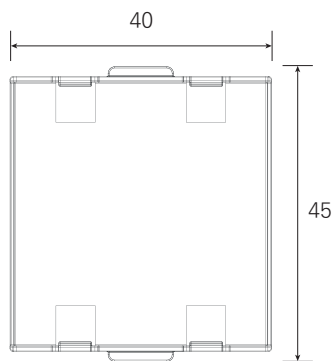
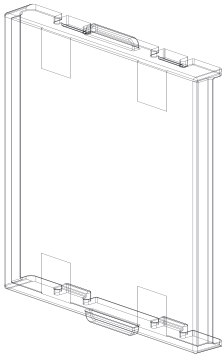
## 4.2 Dimensions



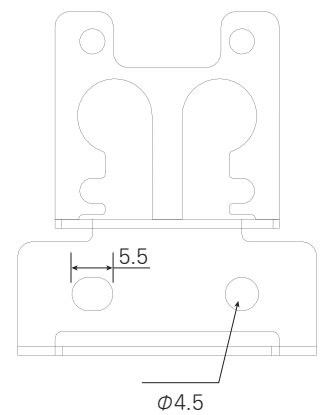
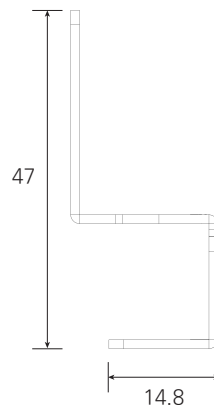
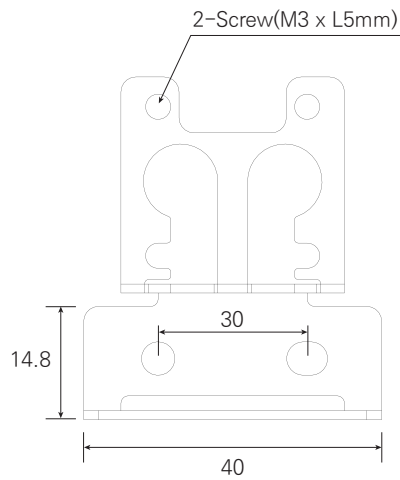
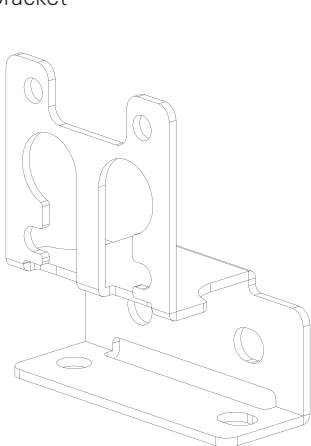
### Panel Bracket



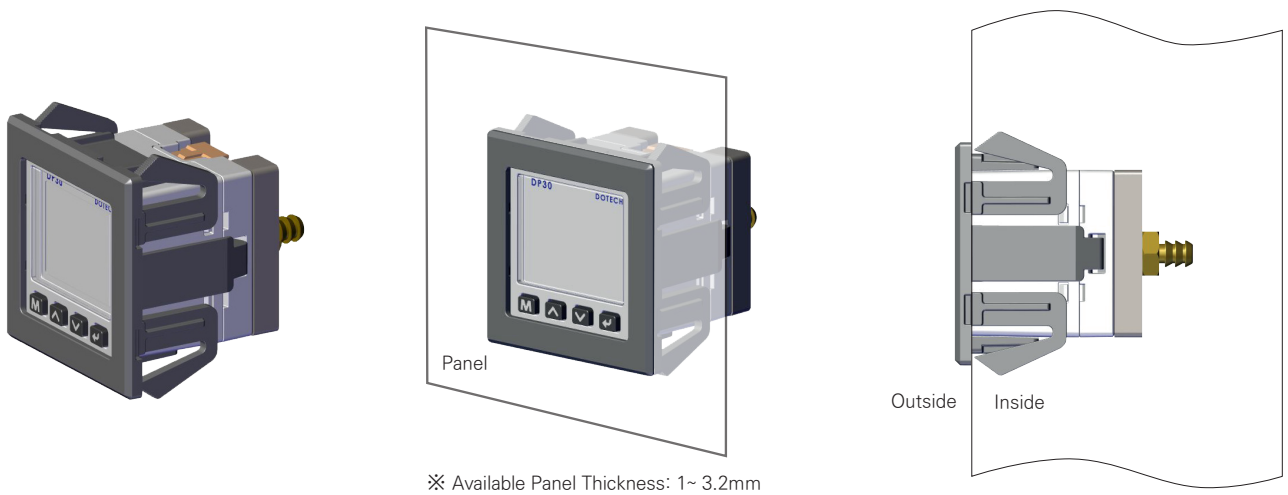
### Protection Cover



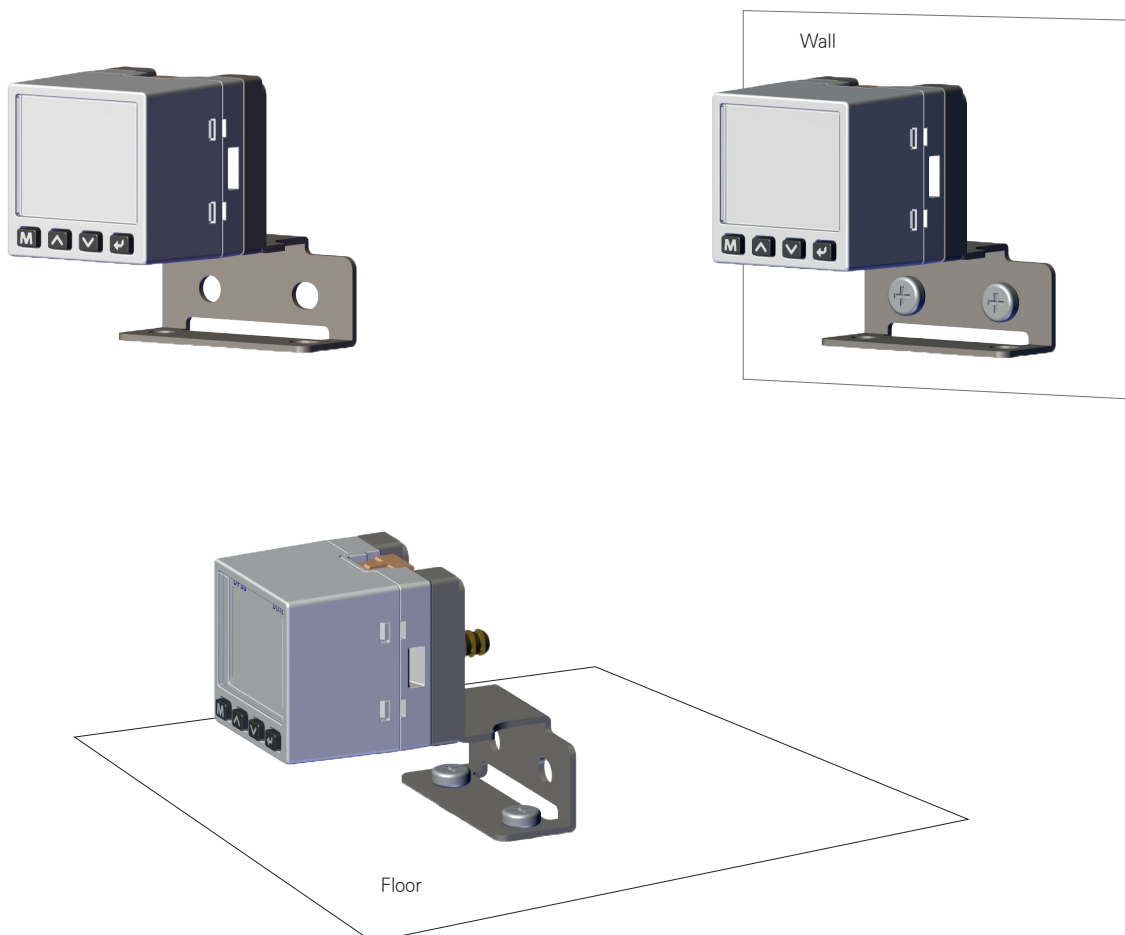
### L Bracket



## 4.2 Installation with Panel Bracket



## 4.2 Installation with L Bracket

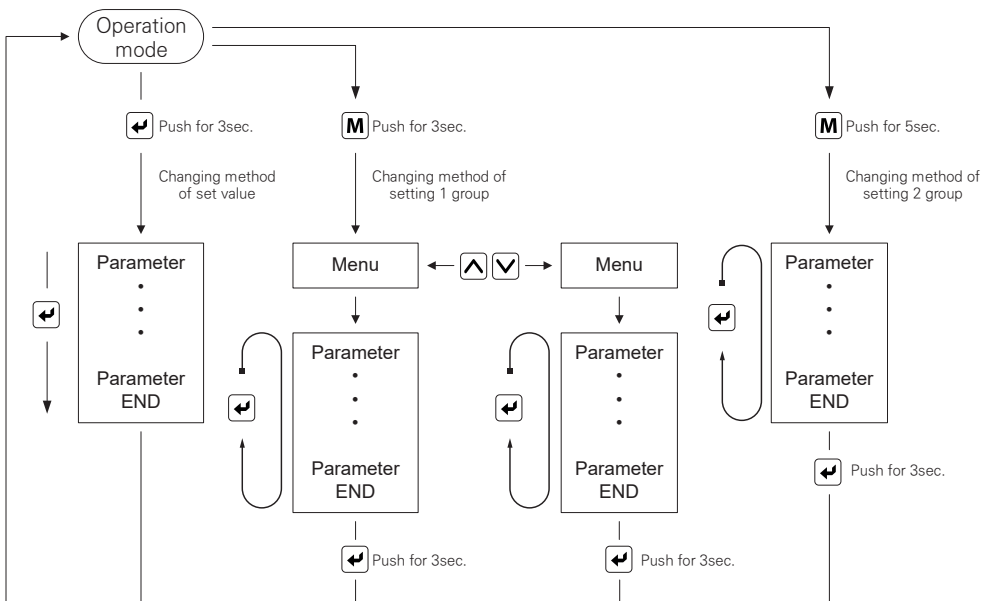


## 5. Configuration



	Name	Description
Button	M	M Program Setup
	^	UP Move between menus and increase setup value
	v	DOWN Move between menus and decrease setup value
	↵	Enter Use to select and save, set value

## 6. Parameter Change



- Press the ↵ button for 3sec. to change desired setting.  
 ● M button for 3sec. to change setting 1 group.  
 ● M button for 5sec. to change setting 2 group.
- In the Settings parameter, button ↵ performs the following functions of moving the menu and saving the set value.
- Change set value by using ^ or v arrow buttons.
- Current differential pressure will be displayed if pressing ↵ button for 3sec. after setup is finished.

## 7. Parameter

Desired Setting Value Table

No.	Menu	Code	Unit	Min.	Max.	Default
40003	Set value	StP1	Pa	USLo	USHI	100.0
						100
40023	Set value	StP2	Pa	USLo	USHI	200.0
						200
40043	Set value	RStd	Pa	USLo	USHI	10.0

### Setting 1 group

No.	Menu	Code	Unit	Min.	Max.	Default
40001	Select control type	dtY1	-	oFF Cool HEAt RL1 RL2 RL3 RL4 RL5 RL6 SBR		Cool(1)
40002	Select output type	dot1	-	nPN PnP		nPN(0)
40003	Set value	StP1	Pa	USLo	USHI	100.0
						100
40004	Control deviation value	dIF1		-999.9	999.9	10.0
				-9999	9999	10
40005	Control deviation type	dFt1		P Pn		P(0)
40006	ON delay time	ndL1	-	0	9999	1
40007	Min. OFF time	nFt1	-	0	9999	5
40008	Min. ON time	OnT1	-	0	9999	5
40009	Output when sensor error	Sfo1		oFF on		oFF(0)
40010	Alarm deviation value	HYs1		-999.9	999.9	10.0
				-9999	9999	10
40011	Alarm option	RoP1		RLA RLb RLC RLd		RLA(0)
40021	Select control type	dtY2	-	oFF Cool HEAt RL1 RL2 RL3 RL4 RL5 RL6 SBR		Cool(1)
40022	Select output type	dot2	-	nPN PnP		nPN(0)
40023	Set value	StP2	Pa	USLo	USHI	200.0
						200
40024	Control deviation value	dIF2		-999.9	999.9	10.0
				-9999	9999	10
40025	Control deviation type	dFt2		P Pn		P(0)
40026	ON delay time	ndL2	-	0	9999	1
40027	Min. OFF time	nFt2	-	0	9999	5
40028	Min. ON time	OnT2	-	0	9999	5
40029	Output when sensor error	Sfo2		oFF on		oFF(0)
40030	Alarm deviation value	HYs2		-999.9	999.9	10.0
				-9999	9999	10
40031	Alarm option	RoP2		RLA RLb RLC RLd		RLA(0)
40041	Select control type	RtYP		oFF rEt PId		oFF(0)
40042	Select output type	RtYn		4-20 20-4 1-5 5-1		4-20(0)
40043	Set value	RStd	Pa	USLo	USHI	10.0
40044	Auto tuning	RtU		oFF on		oFF(0)
40045	Proportional band	Pd		1	9999	50
40046	Integral time	I		0	9999	120
40047	Derivative time	d		0	9999	0
40048	Min. analog value	rtL	Pa	-999.9	999.9	500.0
				-9999	9999	5000
40049	Max. analog value	rtH	Pa	-999.9	999.9	0.0
				-9999	9999	0
40050	Analog manual output	RnRU	%	0	1000	0
40051	Analog Lower Output	RoL	%	0	1000	0
40052	Analog Upper Output	RoH	%	0	1000	1000

## Setting 2 group

No.	Menu	Code	Unit	Min.	Max.	Default
40061	Pressure unit	<i>Unit</i>		<i>PA hPa</i>	<i>kPa hPa</i>	<i>PA(0)</i>
40062	User setting Max.	<i>USHI</i>		-999.9	999.9	500.0
				-9999	9999	5000
40063	User setting Min.	<i>USLo</i>		-999.9	999.9	0.0
				-9999	9999	0
40064	Pressure Calibration	<i>Err</i>		-9999	9999	
40065	Pressure calibration	<i>SPAn</i>		0	9999	
40066						
40067	Sensor input filter	<i>FiL</i>		0.1	5.0	
40068	Sensor display cycle	<i>PrId</i>		0.0	5.0	
40069	Communicaton Id	<i>Id</i>		1	127	
40070	Parity	<i>bAUd</i>		<i>48 96 192 384</i>		<i>96(1)</i>
40078	Parameter reset	<i>Init</i>		<i>off on</i>		<i>off(0)</i>
40079						