AKO®

Sensor and Equipment

Differential Pressure Transmitter DP Series

Instruction Manual

Please read the following safety considerations before use.

Safety considerations

Please observe all safety considerations for safe and proper product operation to avoid hazards.

Warning: Fail-safe device must be installed when using the unit with machinery that may cause serious injury or economic loss.(e.g. nuclear power control, medical equipment, ships, railways, aircraft, combustion, safety equipment, etc.)

Warning: Do not connect, repair or inspect the unit while connected to a power source.

Warning: Do not disassemble or modify the unit, please contact us if necessary.

Warning: check input power specification and check power terminal polarity before connecting the power source.

Caution: Do not use the unit outdoors.

Caution: Do not touch the temperature \ humidity by hands.

Caution: Do not use the water or oil-based detergent when clean the unit.
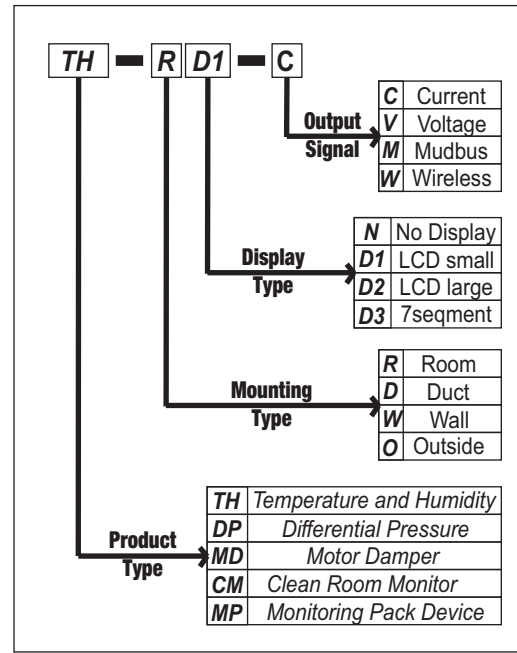

Caution: Do not use the unit where flammable or explosive gas, direct sunlight, radiant heat, vibration or impact may be present.

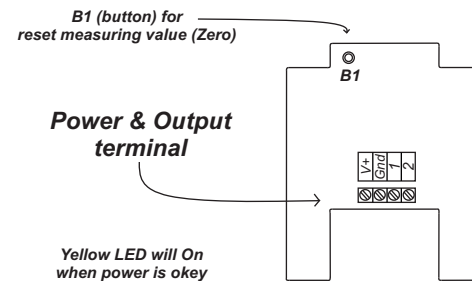**Caution:** keep dust and wire residue from flowing into the unit.

Caution During use:

1. Do not store at the high temperature /humidity environment.
2. For cleaning use dry towel and do not use acid ,chrome acid, solvent but alcohol.
3. Separate the unit cable from high voltage line. power line to avoid inductive noise.
4. installation environment: it shall be used indoor and pollution degree 2

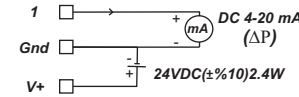Failure to follow these instruction may result in product damage.
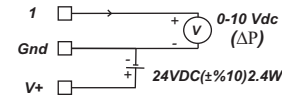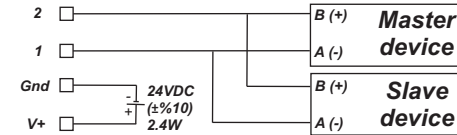
Ordering Information

C	Current
V	Voltage
M	Mudbus
W	Wireless

Output Signal

N	No Display
D1	LCD small
D2	LCD large
D3	7seqment

Display Type

R	Room
D	Duct
W	Wall
O	Outside

Mounting Type

TH	Temperature and Humidity
DP	Differential Pressure
MD	Motor Damper
CM	Clean Room Monitor
MP	Monitoring Pack Device

Product Type

Terminal Connection

B1 (button) for reset measuring value (Zero)

Power & Output terminal

Yellow LED will On when power is okey

DP- ☐ - ☐ - C

DC 4-20 mA (ΔP)

24VDC(±%10)2.4W

DP - ☐ - ☐ - V

0-10 Vdc (ΔP)

24VDC(±%10)2.4W

DP - ☐ - ☐ - M

B (+) / A (-) **Master device**

B (+) / A (-) **Slave device**

24VDC (±%10) 2.4W

Set Measuring rang

Measuring ran is Multi range and can set by 2 Dip switches.

DP- ☐ - ☐ - C
DP- ☐ - ☐ - V

Sw1
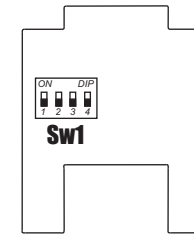
Dip switches for Set measuring rage

Sw1		Pressure Range		Time
S1	S2	S3 : Off	S3 : On	S4
Off	Off	0...100Pa	±100Pa	Off
Off	On	0...500Pa	±500Pa	1S
On	Off	0...1000Pa	±1000Pa	On
On	On	0...2000Pa	±2000Pa	5S

Specification

Model	DP- D☐ - ☐
Power supply	24 VDC ± 10% 2.4W
Measuring Range	±2000Pa (Multi Range)
Sensitivity	Pressure ± 0.5 P.a
Output signal	DP- D -☐- C ⟹ 4~20 mA DP- D -☐- V ⟹ 0 ~ 10 Vdc DP- D -☐- M ⟹ Modbus RTU DP- D -☐- W ⟹ WIFI (Wirless) DP- D -☐- R ⟹ Relay(Switching)
Resolution	16 Bit
Protection class	IP 65
Cable	Ø 0.5mm , 4-Wire

Certificate of Calibration

UUC. READING	REF.VALUE		ERROR		EXP.UN
	RISING	FALLING	RISING	FALLING	
-100.0	-96.8	-----	-3.2	-----	
-50.0	-49.0	-48.3	-1.0	-1.7	
0.0	-0.3	0.8	0.3	-0.8	
15.0	14.5	27.3	0.5	-12.3	
30.0	29.3	34.1	0.7	-4.1	
45.0	44.1	56.3	0.9	-11.3	± 11.3 Pa
60.0	58.7	69.4	1.3	-9.4	
100.0	98.5	108.7	1.5	-8.7	
300.0	312.2	319.5	-12.2	-19.5	
450.0	465.2	472.3	-15.2	-22.3	
900.0	928.6	931.2	-28.6	-31.2	
1600.0	1670.4	1674.1	-70.4	-74.1	± 10.5%F.S
2000.0	2086.8	-----	-86.8	-----	

Modbus communication

Interface

Comm. protocol	*Modbus RTU*
Comm. type	*Rs485*
Max.connection	*255unit(address:01up255)* *for use max 31 devices, must use Repeater*
Comm. method	*Two-wire half duplex*
Comm. distance	*Max. 500m* *for max 150m, must use Repeater*
Comm. speed	*9.6 and 19.2kbps(selectable)*
Start bit	*1-bit (fixed)*
Data bit	*8-bit (fixed)*
Parity bit	*None (fixed)*
Stop bit	*1-bit (fixed)*

Modbus network connection
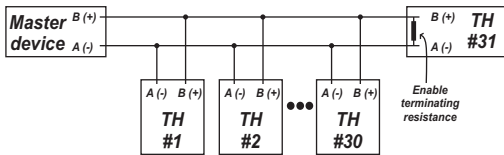
Modbus Mapping Table

Address	Item	Remark
40002 (0001)	*Temperature value*	*Temperature value x 0.01*
40003 (0002)	*Humidity value*	*Humidity value x 0.01*

Modbus communication setting

$$TH - \square - \square - M$$

- 2 Dip switches for Set Communication Speed → sw2
- Enable or Disable Terminating resistance → j1
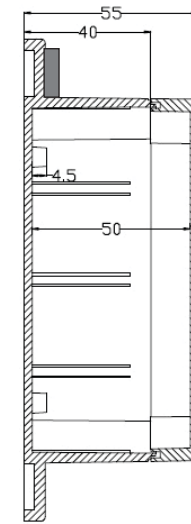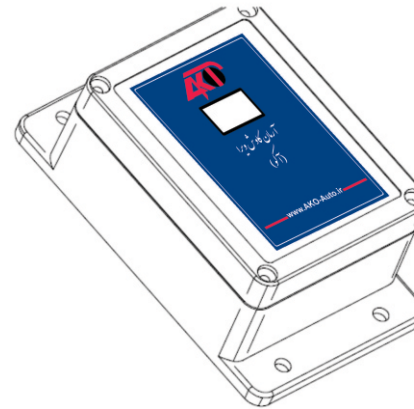- 8 Dip switches for Set communication address → sw1
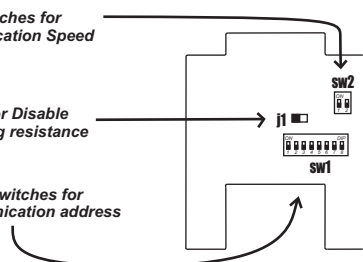
Modbus communication address

			Sw1					Address
S8	S7	S6	S5	S4	S3	S2	S1	
0	0	0	0	0	0	0	1	1
0	0	0	0	0	0	1	0	2
0	0	0	0	0	0	1	1	3
0	0	0	0	0	1	0	0	4
0	0	0	0	0	1	0	1	5
0	0	0	0	0	1	1	0	6
0	0	0	0	0	1	1	1	7
0	0	0	0	1	0	0	0	8
0	0	0	0	1	0	0	1	9
0	0	0	0	1	0	1	0	10
0	0	0	0	1	0	1	1	11
0	0	0	0	1	1	0	0	12
0	0	0	0	1	1	0	1	13
0	0	0	0	1	1	1	0	14
0	0	0	0	1	1	1	1	15
0	0	0	1	0	0	0	0	16
0	0	0	1	0	0	0	1	17
0	0	0	1	0	0	1	0	18
0	0	0	1	0	0	1	1	19
0	0	0	1	0	1	0	0	20
0	0	0	1	0	1	0	1	21
0	0	0	1	0	1	1	0	22
0	0	0	1	0	1	1	1	23
0	0	0	1	1	0	0	0	24
0	0	0	1	1	0	0	1	25
.	.	.	.	.	.	.	.	.
.	.	.	.	.	.	.	.	.
.	.	.	.	.	.	.	.	.
1	1	1	1	1	1	0	1	253
1	1	1	1	1	1	1	0	254
1	1	1	1	1	1	1	1	255

Modbus communication speed

Sw2		Baud rate
S7	S6	
0	0	9.6 kbps
0	1	19.2 kbps
1	0	-
1	1	-

Dimensions

Accessories :

AKO *Corporation*