Technical Information

PDE9- Series (dP)

Air Differential Pressure Sensor with
BACnet MSTP / Modbus RTU communication and analog output

thermokon asia pacific

The PDE9- Series (dP) is designed to measure differential pressure in Duct Systems

or rooms, especially where high precision measurements are needed

Can be used in non aggressive, non flammable environments

Measuring Range -1500…1500Pa

Operates with low power supply

Output is via BACnet MSTP or Modbus RTU communication / 0…10V or 4…20mA

Use

Compatible to Building Automation Systems using BACnet MSTP / Modbus RTU communications or stand- alone

Differential pressure measurement in precise HVAC control systems

Monitoring differential pressure of fans in air systems

Suitable for laboratory and clean room applications with high precession controls

Features

Sensor with BACnet MSTP / Modbus RTU communication

Sensor with 0…10V or 4…20mA (field selectable)

dP- Sensor with excellent repeatability, practically no drift or offset

dP Sensor is factory calibrated and temperature compensated

Adjustable response-time-filter values

Professional and practical product design, withstands rough environmental conditions

Easy to use, install and maintain

Product Range

Order Codes	Power Supply	*Communication	Analog Output*	Measuring Range (Analogue)	Measuring Range (BUS)	Accuracy (static)		Over Pressure Rating	Bust Pressure Rating	IP Rating
PDE9.AA	AC/DC 24V (±10%)	*BACnet MSTP or *Modbus RTU	0…10V or 4…20mA	-50…+50Pa ; 0…250Pa ; 0…500Pa	-1500…1500Pa	Measuring Range >500Pa = typically ±3 Pa / Maximum ±3Pa	Measuring Range <500Pa = typically ±5 Pa / Maximum ±8Pa	1 bar - 100.000 Pa	3 bar - 300.000 Pa	IP65
PDE9.AG				0…+750Pa ; 0…1250Pa ; 0…1500Pa						

*default, **field selectable via DIP switch

Sensor Specification	Sensor Specification	Measured	Air Differential Pressure
		Sensor Characteristics	Active
		Sensor Output	BACnet MSTP or Modbus RTU communication, RS485
			0..10V or 4…20mA
		Accuracy	>500Pa = typically ±3 Pa / Maximum ±3Pa
			<500Pa = typically ±5 Pa / Maximum ±8Pa
		Zero Point Accurracy	0.2 Pa
		Zero Point Repetability	0.1 Pa
		Over Pressure	1 bar, 100.000 Pa
		Burst Pressure	2 bar, 100.000 Pa
		Offset stability	<0.03 Pa / year
		Calibrated Temperature Range	-40…85ºC
		Response Time Filter	0…60sec.
		Measuring Range (Bus- System)	-1500…1500 Pa
		Measuring Range (Analoge Outputs - PDE9.AF)	-50…50Pa ; 0…100Pa ; 0…250Pa ; 0…500Pa
		Measuring Range (Analoge Outputs - PDE9.BF)	0…750Pa ; 0…1000Pa ; 0…1250Pa ; 0…1500Pa
		Media Compatitbility	Air, N2, O2, non condensing
Technical Information	Electrical Information	Power Supply	AC/DC 24V (±10%)
		Frequency	50 / 60 Hz @ AC 24V
		Output Load (Analoge Output)	Min. load 10kΩ
		Power Consumption	Typical 1.1W at 24V= , 1.7VA at 24V~
	Mechanical Information	Terminal Clamp	Screw terminal, max. 1.5mm²
		Connection Nozzle Dimension	Ø6.3 x 1.15mm, L=10mm
		Cable Entry	M20, Ø6...Ø8mm cables
		Sensing Element Position	Internal
	Color and Material	Housing Cover	PA6, White
		Housing Bottom	PA6, White
		Lock Screws	Snap Connector
		Cable Gland	ABS, RAL 7042 (Traffic Grey A)
		Gland Rubber Seal	ENSOFT50, RAL 9016 (Traffic White)
		User element	DIP Switches
		Connection Nozzle	PA6, White
	Environmental Condition	Operation Temperature	-10ºC...+50ºC
		Operation Humidity	<85% r.h., no condensation
		Transport Temperature	-35ºC...+70ºC
		Transport Humidity	< 90% r.h.
		Storage Temperature	-20ºC...+70ºC
		Storage Humidity	< 85% r.h., no condensation
	Norms and Directives	IP- Rating	IP65 according to IEC60529
		Safety Class	III to EN 60 730
		Product Standard 1	Automatic Electric. Controls for household and similar use
		Product Standard 2	2009/EN 60 730-1
		RoHS Compatibility	Rohs 3 EU2015/863
		CE Conformities	2004/108/EG Electromagnetic Compatibility EMV
		Emitted Interference	2000/EN60730-1 Emitted Interference
		Interference Resistance	2000/EN60730-1 Interference Resistance
		Transport to Climatic Condition	IEC 60721-3-2
		Transport Mechanical Condition	IEC 60721-3-2 to class 2M2
		Storage Climatic Condition	IEC 60721-3-1
		Storage Mechanical Condition	IEC 60721-3-1 to class 2M2
Miscellaneous	Accessories	Mounting Kit, Included in delivery	2 plastic duct connectors; 2m Silicone tube
	Shipping & Handling	Minimum Order	1 box with 1 piece
		Packaging Material	Rigid Cardboards
	Order Notes	Order Code	PDE9.xx

Modbus Parameters

Address Number	Register Description	
0…3	Serial Number	actual version
4	Software Version	actual version
6	Modbus Address	Default 254, selectable 1…254
8	Hardware Version	actual version
11	Baud Rate autodetection	0= OFF ; 1= On
15	Baud Rate, (if autodetection is OFF)	0= 9600 ; 1= 19.200 ; 2= 38.400 ; 3= 57.600 ; 4= 115.200
34	Actual Pressure Value	actual value
35	Response Time Filter	0…60 seconds
41	Measuring Range	0= -1500…1500Pa

BACnet Parameters

Supported BACnet Objects Types

analog-value

device

Supported BACnet Services

who-is

i-am

object-identifier, object-name, object-type, present-value, units, object-list, vendor-id, vendor-name, system-status, confirmed-service, unconfirmed-services

MSTP Objects

analog-value

	BACnet Address	Default 127, selectable 0…127
AV0	Baud rate autodetection	default 0, 0= OFF ; 1= ON
AV1	Baud Rate, (if autodetection is OFF)	0= 9600 ; 1= 19.200 ; 2= 38.400 ; 3= 57.600 ; 4= 115.200
AV2	n.a.	n.a.
AV3	Protocol	0= Modbus ; 1= BACnet
AV4	Actual Pressure Value	actual value
AV6	Response Time Filter	0…60 seconds
AV7	Measuring Range	0= -1500…1500Pa

Device

device-identifier

device-name

The function "Baud Rate autodetection" can only be used during the product is been setup. When the product is working with the BAS, the "Baud Rate autodetection" has to be set to 0= OFF and the actual Baud Rate has to be set.

Advices

Installation Notes

Caution

Observe the following general regulation for engineering and implementation:

All relevant national and heavy power regulation

Other country specific regulations

Country-specific regulations

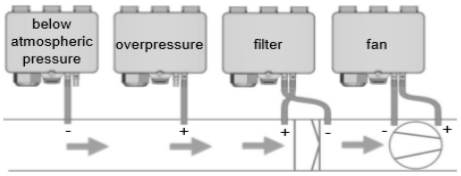
Local electrical supply authority regulation

Schematics, cable listings, dispositions, specification and arrangements from the customer or engineering office in charge

Third party specifications, e.g. general contractors or constructors

Mounting Advices

Caution



Disposal Notes

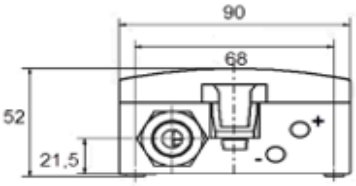
The device is considered an electronic device for disposal in terms of the EUROPEAN DIRECTIVE 2012/19/EU.

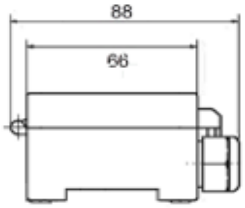
The device may not be disposed as domestic garbage.

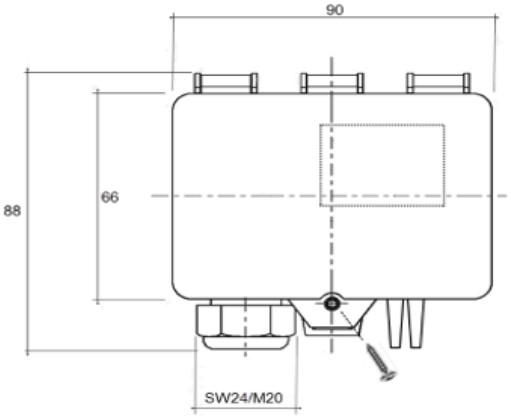
The device must be disposed through channels provided for this purpose.

It is mandatory to comply with local currently applying laws and regulations.

Dimensional Drawing



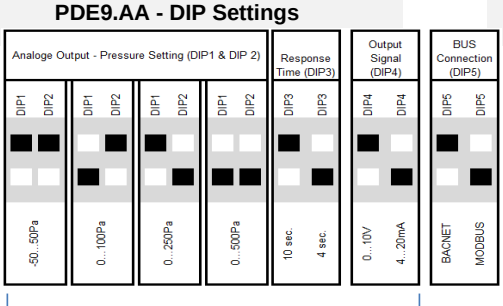




Connections & Settings

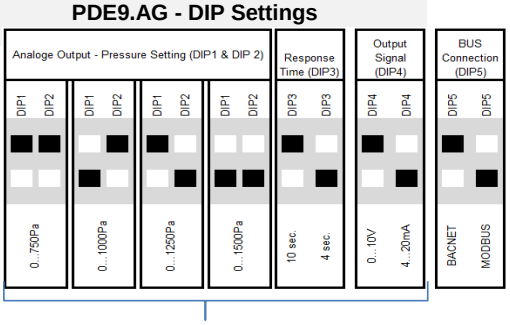
Connection Terminals				
T1	T2	T3	T3	T4
UB+ (24V AC/DC)	GND	Analogue Out	RS485 - C-	RS485 - C+

PDE9.AA - DIP Settings



Effecting only analogue Output

PDE9.AG - DIP Settings



Effecting only analogue Output