NICHING

Vacuum Control Valves

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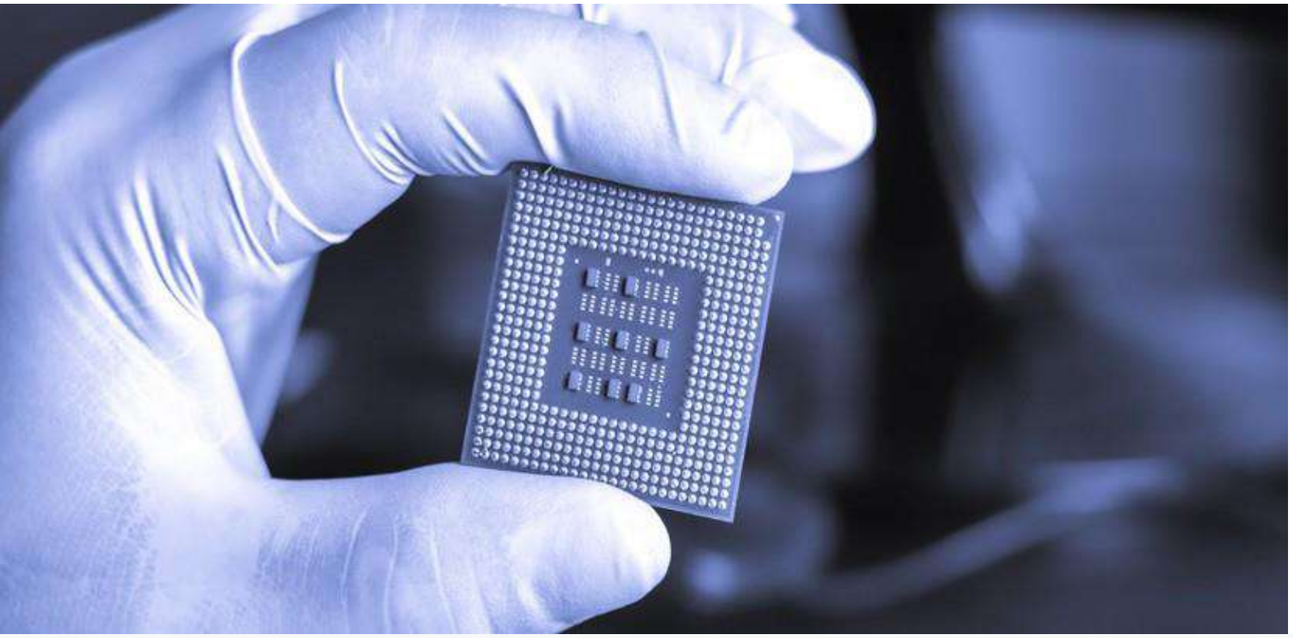
NOVASEN

Make it Best or Not !

CUSTOMER — CREATION — HUMANITY



Content

Product Selection Guide

A P X 350 F B – LO – B – 1

Quantity of Sensors	**1** : 1 Sensor	
	2 : 2 Sensor	
Power Option*	**B** : Basic	**S** : with SPS
	P : with PFO	**D** : with SPS and PFO
	E : Basic with VC master	**F** : with SPS and VC master
	G : with PFO and VC master	**H** : with SPS, PFO and VC master
Communication Interface	**R2** : RS-232	**R3** : RS-232(Analog output)
	R4 : RS-485	
	LO : Logic	**DN** : DeviceNet®
	PB : Profibus	**EN** : Ethernet
	CC : CC-Link	**EC** : EtherCAT
Body Finishing	**B** : Blank	**N** : Nickel-Coated
	H : Hard-anodized	
Method of Contract	**J** : JIS	
	F : ISO-F	
Flange Size	**100** : DN100	**160** : DN160
	200 : DN200	**250** : DN250
	320 : DN320	**350** : DN350
	400 : DN400	**500** : DN500
Heating Type	**X** : No Heating	
	H : Heating	
Valve Type	**P** : Pendulum	
Valve Model	**A** : APC	

* SPS = ±15V DC Sensor Power Supply
PFO = Power Failure Option (Valve closes or opens automatically at power failure)

Product List

DN100(4")

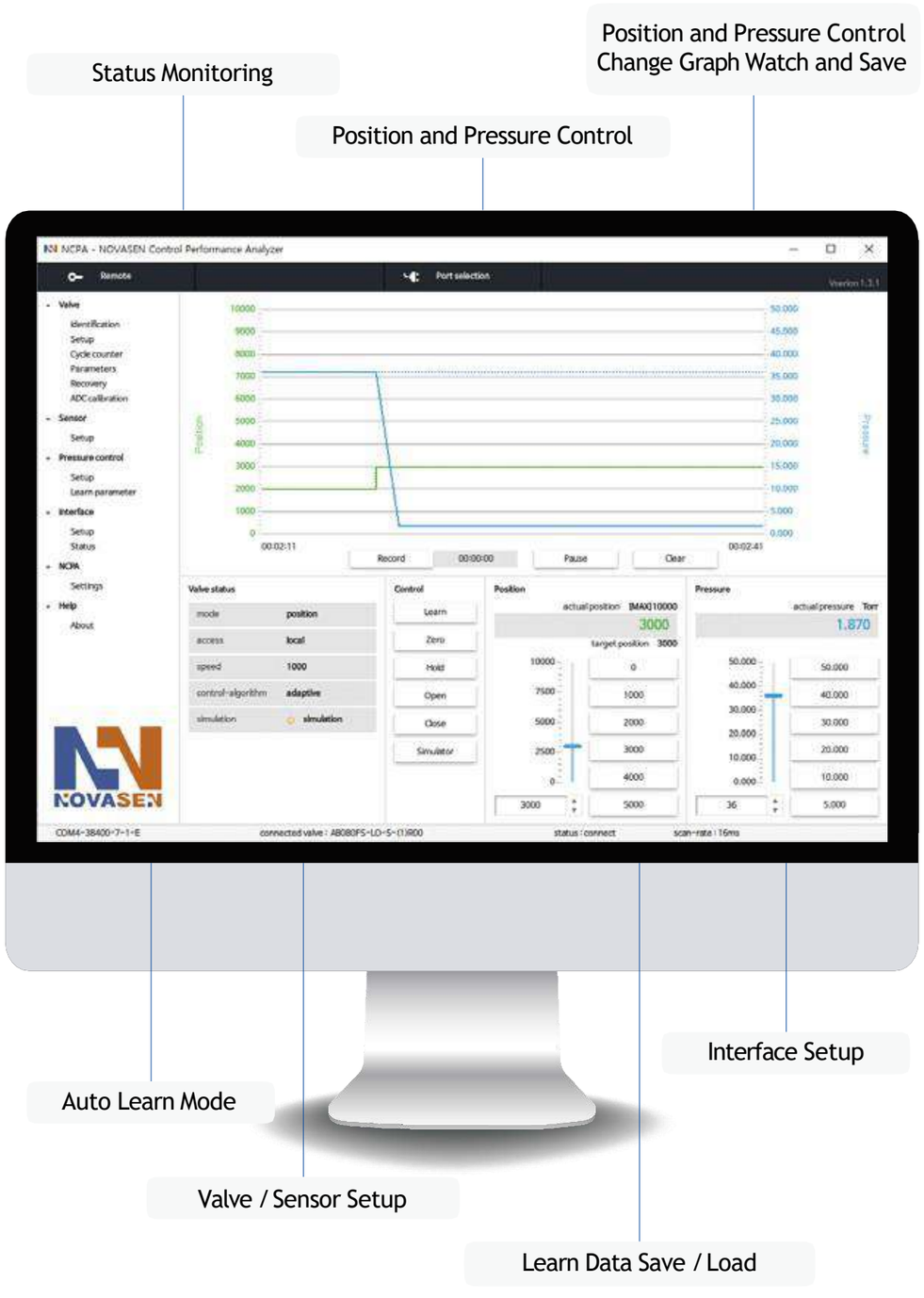
DN160(6")

DN250(10")

DN320(12")

DN350(14")

Setup & Management S/W



Pendulum

Product Specifications

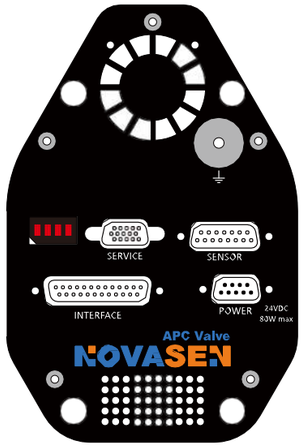
Pressure range at 20°C[1]	Blank aluminum		1 × 10E-8 mbar to 1.2 bar (abs) 1 × 10E-6 mbar to 1.2 bar (abs)
	Hard anodized aluminum		
Leak rate to outside at 20°C[1]	Valve body :	Blank aluminum	1 × 10E-9 mbar l/s
		Hard anodized aluminum	1 × 10E-5 mbar l/s
	Valve Seat :	Blank aluminum	1 × 10E-9 mbar l/s
		Hard anodized aluminum	1 × 10E-4 mbar l/s
Cycles until first service[1]	Pressure control		1 million
	Closing / Opening		200,000 (unheated and under clean conditions)
Admissible operating temperature[2]	Valve body		≤120°C
	Controller		max. 50°C (≤ 35°C recommended)
Mounting position	DN100 ~ 250		Any[3]
	DN320 ~ 500		horizontal only[3]
Material	Valve body, plate		6061-T6
	Sealing ring		6061-T6
	Other parts		SUS 316L
Seal (Bonnet, plate, body, feedthrough)			FKM(Viton®)
Feedthrough	Actuator		rotary feedthrough
	Sealing ring		shaft feedthrough

1) Unheated on delivery.
2) Maximum values : depending on operating conditions and sealing materials.
3) Valve seat on chamber side recommended.

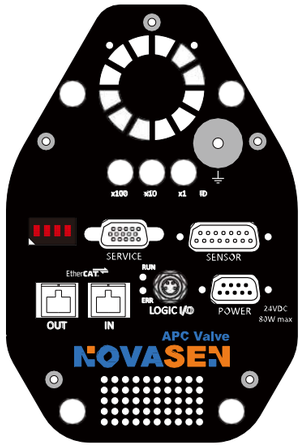
Power input [1]		+24 VDC (±10%) @ 0.5V pk-pk max.[connector: POWER]
Power Consumption		60 W max. (operation of valve with max. load) without PFO [4]
Sensor power supply [2]		+24 VDC (±10%) / 36 W max. [connector : POWER] ±15 VDC (±5%) / 1A max. [connector : SENSOR]
Input		
Output		
Sensor input		0-10 VDC 100 kΩ 0.23 mV 10 ms
Signal input		
Input resistance		
ADC resolution		
Sampling time		
Digital inputs [3]		±24 VDC max.
Digital outputs [3]		70 VDC or 70 V peak max. 0.5 ADC or 0.5 A peak max. 10 W max.
Input voltage		
Input current		
Breaking capacity		
Ambient temperature		+50 °Cmax. (<35 °Crecommended)
Pressure control accuracy		0.1% of sensor full scale
Position resolution / position control capability		13,000 steps (full stroke)
Time throttling only	closing	1.1 ~ 1.5 s (full stroke)
	opening	1.1 ~ 1.5 s (full stroke)

1) Internal overcurrent protection by a PTC device.
2) Refer to chapter «Sensor supply concepts» for details.
3) Refer to chapter «Schematics» for details.
4) PFO = Power Failure Option. Refer to «3.4 Behaviour in case of power failure» for details.

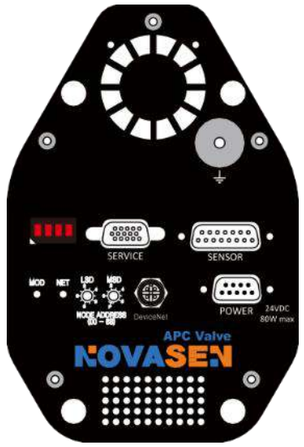
Electrical connections



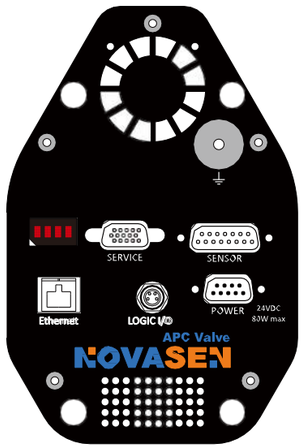
Logic, RS232, RS422, RS485



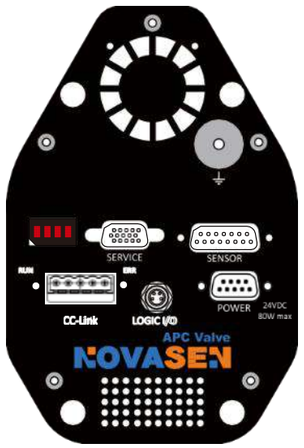
EtherCAT



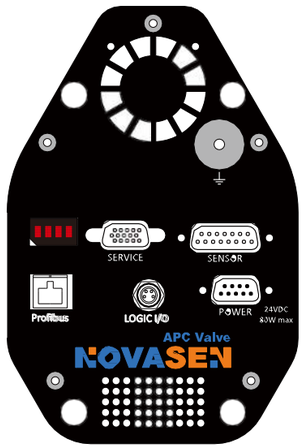
DeviceNet



Ethernet



CC-Link



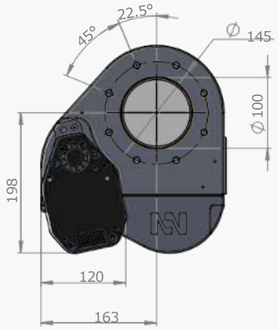
Profibus

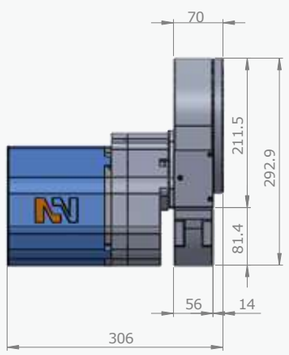
ELECTRICAL CONNECTIONS

	CONNECTION	TYPE
POWER	Power input	DB-9 male
SENSOR	Sensor input Sensor power supply	DB-15 female
INTERFACE	RS232, Logic, RS422, RS485	DB-25 female
	DeviceNet®	Micro-style male
	Ethernet	RJ-45
BUS Mudules	Profibus	DB-9 female
	CC-Link	5-pole terminal screw
	EtherCAT	RJ-45 x 2

PENDULUM

DN100(4")



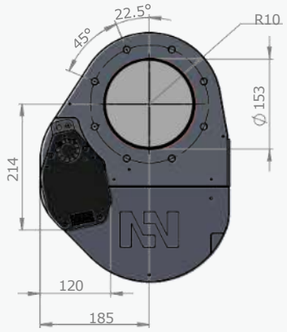


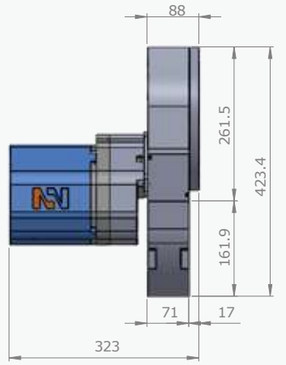
Product Specification

DN (nominal I.D.)		Conductance in open position (molecular flow)	Minimum controllable conductance (molecular flow)	Max. differential pressure on the plate	Max. differential pressure during operation	Compressed air min. - max. overpressure		Operating time for throttling	Typical closing / opening time open -> closed	Typical closing / opening time closed -> open	Weight (approx.)	
mm	inch	ls-1	ls-1	mbar	mbar	bar	psi	s	s	s	kg	lbs
100	4	1,700	3	1,200	30	4-7	58-102	0.7	3	4	12	27

PENDULUM

DN160(6")





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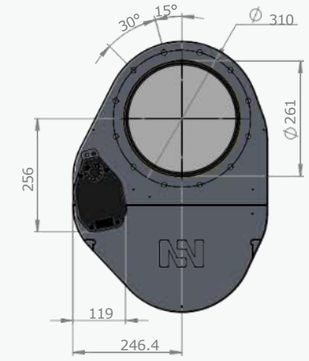
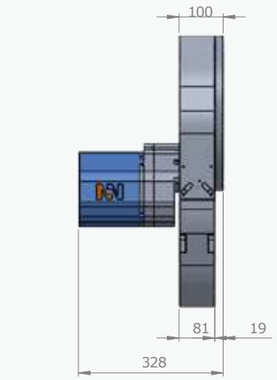
DN (nominal I.D.)		Conductance in open position (molecular flow)	Minimum controllable conductance (molecular flow)	Max. differential pressure on the plate	Max. differential pressure during operation	Compressed air min. - max. overpressure		Operating time for throttling	Typical closing / opening time open -> closed	Typical closing / opening time closed -> open	Weight (approx.)	
mm	inch	ls-1	ls-1	mbar	mbar	bar	psi	s	s	s	kg	lbs
160	6	5,000	5	1,200	10	4-7	58-102	0.8	3	4	18	40

PENDULUM

DN250(10")





Product Specification

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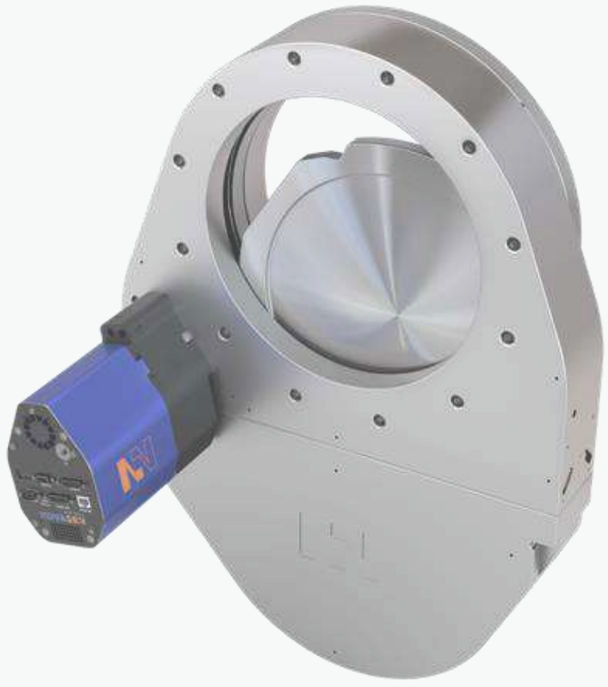
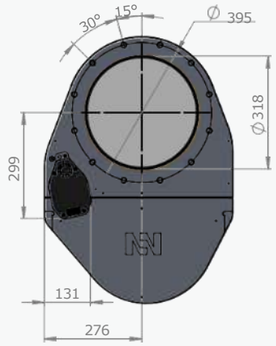
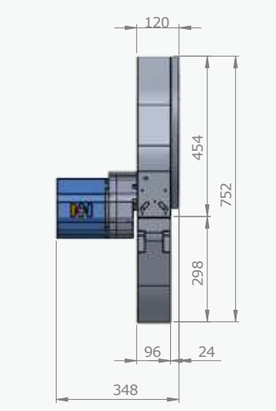
mm	inch	ls-1	ls-1	mbar	mbar	bar	psi	s	s	s	kg	lbs
250	10	22,000	15	1,200	5	4-7	58-102	0.9	3	4	29	64

PENDULUM

DN320(12")







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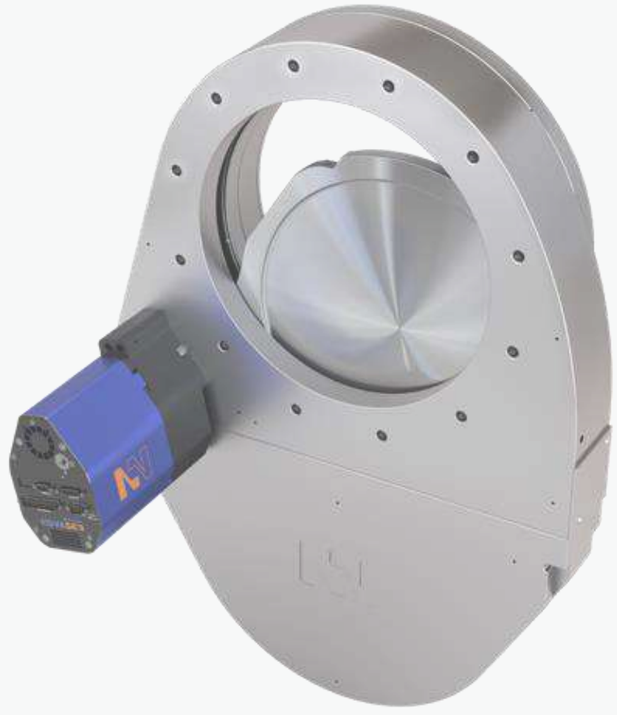
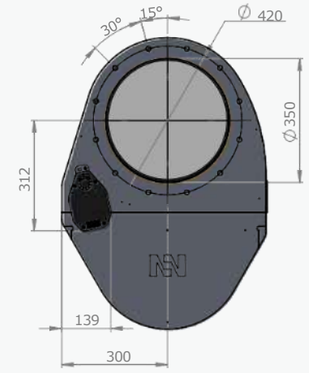
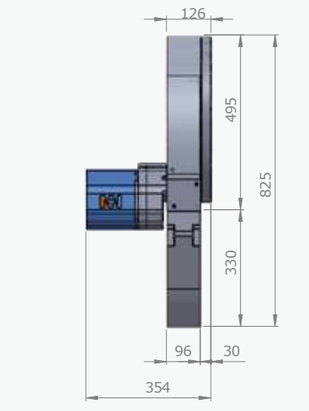
mm	inch	ls-1	ls-1	mbar	mbar	bar	psi	s	s	s	kg	lbs
320	12	30,000	22	1,200	5	4-7	58-102	1.1	5	6	48	106

PENDULUM

DN350(14")







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mm	inch	ls-1	ls-1	mbar	mbar	bar	psi	s	s	s	kg	lbs
350	14	43,000	25	1,200	5	4-7	58-102	1.3	5	6	59	130