

### FEATURES

- > Oil-less
- > Low power consumption
- > Low sound level
- > Low vibration
- > Long lifetime
- > Compact design
- > Lightweight

### TYPICAL APPLICATIONS

- > Medical devices
- > Gas monitoring and detection
- > Clinical chemistry analyzers

### BASE MODEL

1420 BLDC P



Diaphragm

# Diaphragm Pump 1420VP BLDC Performance

<b>FLOW 12/24 VDC</b>	<b>9.2/9.4 l/min</b>
<b>FINAL VACUUM</b>	<b>76%</b>



## PNEUMATIC DATA\*

Max. flow 12/24VDC	9.2/9.4 l/min
Max. intermittent vacuum	76%
Max. continuous vacuum	76%
Max. restart vacuum	76%

\*@ Speed control 5 VDC (Pin3)

## OPERATING CONDITIONS\*

Media temperature	5 to 40 °C
Ambient temperature	5 to 40 °C
Storage temperature	-30 to 70 °C
Storage humidity	15 to 85% (no condensation)

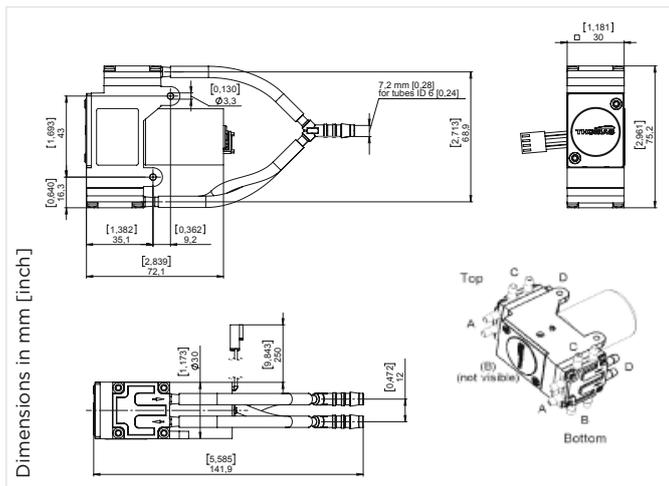
\*Standard configuration part number 14200700/14200701

## PHYSICAL DATA

Dimensions* l x w x h	72.1 x 30 x 75.2 mm
Weight	205 g
Mounting on side	Through hole Ø 3.3 mm

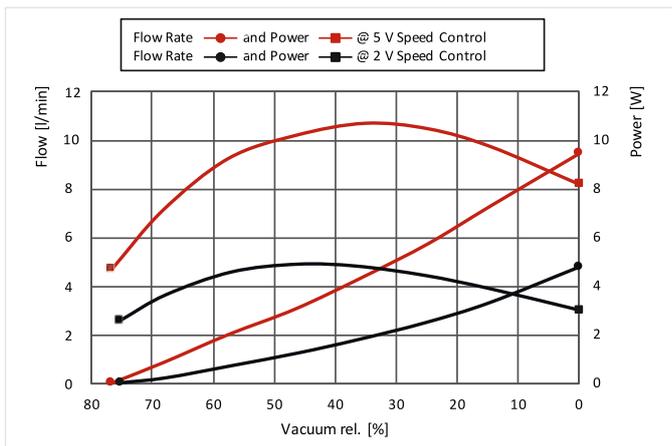
\*w/o Tubing

## DIMENSIONAL DRAWING



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## PERFORMANCE CURVE



## ELECTRICAL DATA

Motor type	Brushless DC (BLDC)
Nominal voltage	12/24 VDC
Max. power consumption	10.1/10.7 W
Insulation class	A
Protection class	IP 20
Drive electronics	Integrated
Connector housing	Molex KK 22-01-3047
Connector terminal	Molex KK 08-50-0031

## ELECTRICAL CONNECTION

Pin	Supply	Color	Signal
Pin 1	V Supply	Red	12 VDC (max. range 9 - 14 V) 24 VDC (max. range 20 - 26 V)
Pin 2	Ground	Black	Ground for all pins
Pin 3	Speed Control	Blue	Analog 1.0 - 5.0 VDC (5.5V max.) PWM 10 - 30 kHz / 23 - 90% Threshold 1.0 VDC (23% PWM)
Pin 4	Tacho out	Green	3 pulses per revolution
	- Pulse time	12 V DC	'High'/'Low'-Time 50% speed dep.
	- Pulse time	24 V DC	'High'/'Low'-Time 50% speed dep.
	- Output level		'Low'-Range 0 V - 0.5 V
	- Output level		'High'-Range 4.5 V - 5.5 V

## MODEL KEY

1420 - V - P - DD - 12V - BLDC P - 3700 - 22 - EEE - PARA

Pos	Options	Description
1	1420	Product Line
2	V / D / VD	Vacuum / Pressure / Vacuum-Pressure
3	P / R / O	Tubing: Parallel / series / no tubing
4	A / B / C / D	Port position: standard D over motor
5	12V / 24V	Nominal voltage
6	BLDC P	Motor: BLDC Performance
7	3700	Nominal motor speed (motor dependent)
8	12 / 15 / 19 / 22	Eccentric: e.g. 22 → 2.2 mm
9	EEE / FFF	Diaphragm, valve, seal material: EPDM / FKM
10	PARA / PPS	Pump head material: IXEF / Ryton

## ORDER INFORMATION

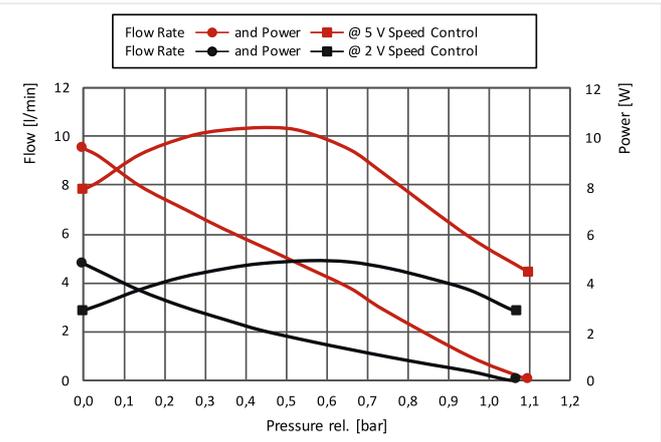
Part Number	Model Key
14200700	1420-V-P-DD-12V-BLDC P-3700-22-EEE-PARA
14200701	1420-V-P-DD-24V-BLDC P-3800-22-EEE-PARA
Other configurations	Upon request
To order call	ASIA +86 510 6878 2258
To order call	EMEA +49 8141 22800
To order call	USA +1 920 457 4891
Or go online @	www.thomaspumps.com

# Diaphragm Pump 1420DP BLDC Performance

<b>FLOW 12/24 VDC</b>	<b>9.1/9.5 l/min</b>
<b>FINAL PRESSURE</b>	<b>1.1 bar</b>



## PERFORMANCE CURVE



## PNEUMATIC DATA\*

Max. flow 12/24VDC	9.1/9.5 l/min
Max. intermittent pressure	1.1 bar
Max. continuous pressure	1.1 bar
Max. restart pressure	1.1 bar

\*@ Speed control 5 VDC (Pin3)

## OPERATING CONDITIONS\*

Media temperature	5 to 40 °C
Ambient temperature	5 to 40 °C
Storage temperature	-30 to 70 °C
Storage humidity	15 to 85% (no condensation)

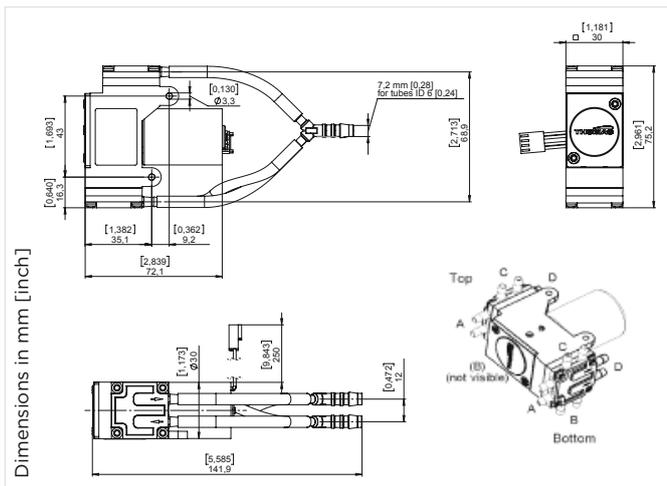
\*Standard configuration part number 14200702/14200703

## PHYSICAL DATA

Dimensions* l x w x h	72.1 x 30 x 75.2 mm
Weight	205 g
Mounting on side	Through hole Ø 3.3 mm

\*w/o Tubing

## DIMENSIONAL DRAWING



## ELECTRICAL DATA

Motor type	Brushless DC (BLDC)
Nominal voltage	12/24 VDC
Max. power consumption	9.7/10.4 W
Insulation class	A
Protection class	IP 20
Drive electronics	Integrated
Connector housing	Molex KK 22-01-3047
Connector terminal	Molex KK 08-50-0031

## ELECTRICAL CONNECTION

Pin	Supply	Color	Control
Pin 1	V Supply	Red	12 VDC (max. range 9 - 14 V) 24 VDC (max. range 20 - 26 V)
Pin 2	Ground	Black	Ground for all pins
Pin 3	Speed Control	Blue	Analog 1.0 - 5.0 VDC (5.5V max.) PWM 10 - 30 kHz / 23 - 90% Threshold 1.0 VDC (23% PWM)
Pin 4	Tacho out	Green	3 pulses per revolution
	- Pulse time	12 V DC	'High'/'Low'-Time 50% speed dep.
	- Pulse time	24 V DC	'High'/'Low'-Time 50% speed dep.
	- Output level		'Low'-Range 0 V - 0.5 V
	- Output level		'High'-Range 4.5 V - 5.5 V

## MODEL KEY

1420 - D - P - DD - 12V - BLDC P - 3800 - 22 - EEE - PARA

Pos	Options	Description
1	1420	Product Line
2	V / D / VD	Vacuum / Pressure / Vacuum-Pressure
3	P / R / O	Tubing: Parallel / series / no tubing
4	A / B / C / D	Port position: standard D over motor
5	12V / 24V	Nominal voltage
6	BLDC P	Motor: BLDC Performance
7	3800	Nominal motor speed (motor dependent)
8	12 / 15 / 19 / 22	Eccentric: e.g. 22 → 2.2 mm
9	EEE / FFF	Diaphragm, valve, seal material: EPDM / FKM
10	PARA / PPS	Pump head material: IXEF / Ryton

## ORDER INFORMATION

Part Number	Model Key
14200702	1420-D-P-DD-12V-BLDC P-3800-22-EEE-PARA
14200703	1420-D-P-DD-24V-BLDC P-4000-22-EEE-PARA
Other configurations	Upon request
To order call	ASIA +86 510 6878 2258
To order call	EMEA +49 8141 22800
To order call	USA +1 920 457 4891
Or go online @	www.thomaspumps.com

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# Diaphragm Pump 1420VDP BLDC Performance

<b>FLOW 12/24 VDC</b>	<b>6.8/7.0 l/min</b>
<b>FINAL VACUUM</b>	<b>75%</b>
<b>FINAL PRESSURE</b>	<b>2. bar</b>



## PNEUMATIC DATA\*

Max. flow 12/24VDC	6.8/7.0 l/min
Max. intermittent vacuum	75%
Max. continuous vacuum	75%
Max. restart vacuum	75%
Max. intermittent pressure	2.1 bar
Max. continuous pressure	0.7 bar
Max. restart pressure	2.1 bar

\*@ Speed control 5 VDC (Pin3)

## OPERATING CONDITIONS\*

Media temperature	5 to 40 °C
Ambient temperature	5 to 40 °C
Storage temperature	-30 to 70 °C
Storage humidity	15 to 85% (no condensation)

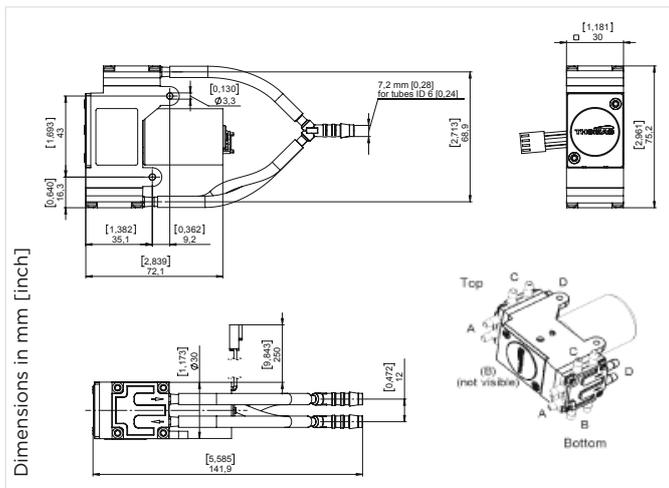
\*Standard configuration part number 14200704/14200705

## PHYSICAL DATA

Dimensions* l x w x h	72.1 x 30 x 75.2 mm
Weight	205 g
Mounting on side	Through hole Ø 3.3 mm

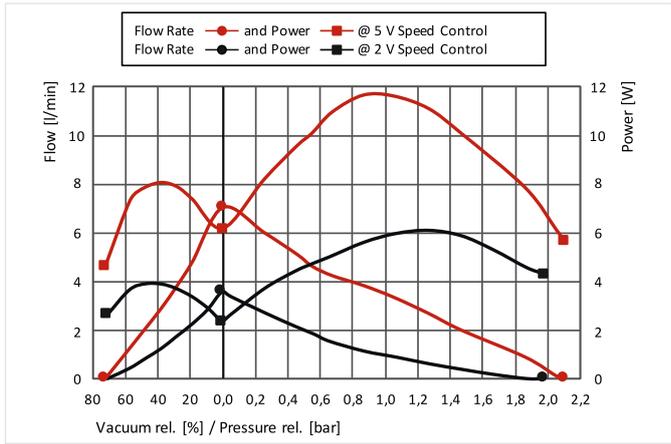
\*w/o Tubing

## DIMENSIONAL DRAWING



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## PERFORMANCE CURVE



## ELECTRICAL DATA

Motor type	Brushless DC (BLDC)
Nominal voltage	12/24 VDC
Max. power consumption	10.8/11.6 W
Insulation class	A
Protection class	IP 20
Drive electronics	Integrated
Connector housing	Molex KK 22-01-3047
Connector terminal	Molex KK 08-50-0031

## ELECTRICAL CONNECTION

Pin	Supply	Color	Signal
Pin 1	V Supply	Red	12 VDC (max. range 9 - 14 V) 24 VDC (max. range 20 - 26 V)
Pin 2	Ground	Black	Ground for all pins
Pin 3	Speed Control	Blue	Analog 1.0 - 5.0 VDC (5.5V max.) PWM 10 - 30 kHz / 23 - 90% Threshold 1.0 VDC (23% PWM)
Pin 4	Tacho out	Green	3 pulses per revolution - Pulse time 12 V DC 'High'/'Low'-Time 50% speed dep. - Pulse time 24 V DC 'High'/'Low'-Time 50% speed dep. - Output level 'Low'-Range 0 V - 0.5 V - Output level 'High'-Range 4.5 V - 5.5 V

## MODEL KEY

1420 - VD - P - DD - 12V - BLDC P - 4000 - 15 - EEE - PARA

Pos	Options	Description
1	1420	Product Line
2	V / D / VD	Vacuum / Pressure / Vacuum-Pressure
3	P / R / O	Tubing: Parallel / series / no tubing
4	A / B / C / D	Port position: standard D over motor
5	12V / 24V	Nominal voltage
6	BLDC P	Motor: BLDC Performance
7	4000	Nominal motor speed (motor dependent)
8	12 / 15 / 19 / 22	Eccentric: e.g. 15 → 1.5 mm
9	EEE / FFF	Diaphragm, valve, seal material: EPDM / FKM
10	PARA / PPS	Pump head material: IXEF / Ryton

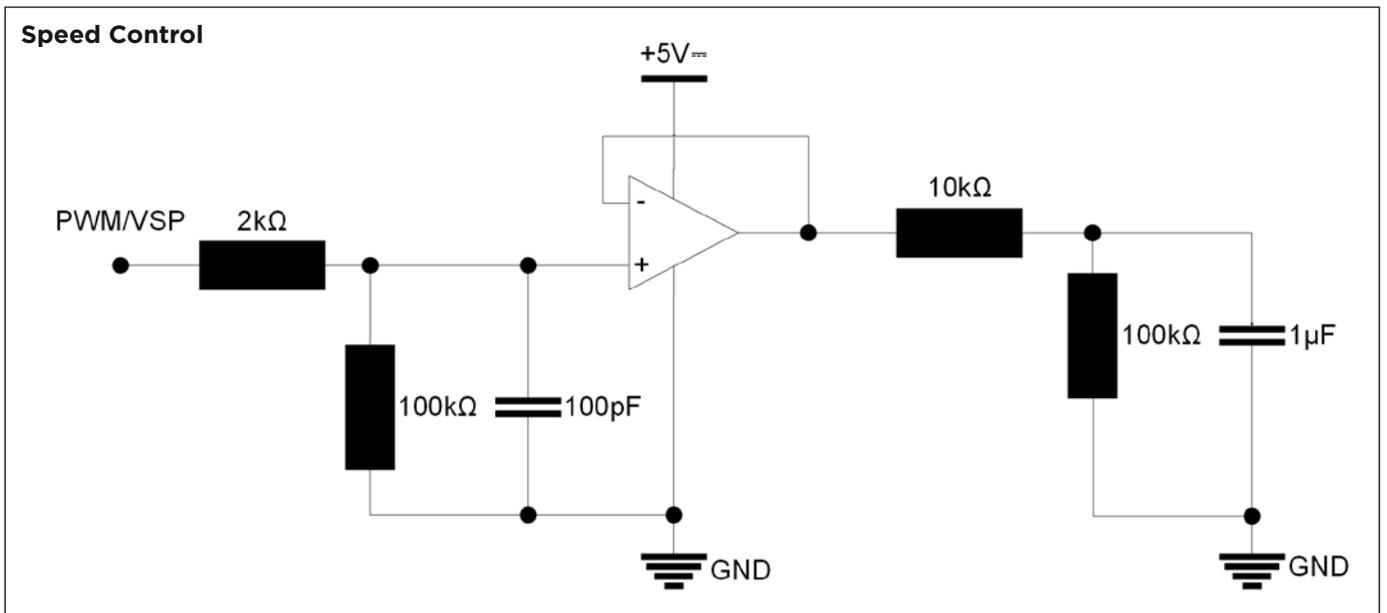
## ORDER INFORMATION

Part Number	Model Key
14200704	1420-VD-P-DD-12V-BLDC P-4000-15-EEE-PARA
14200705	1420-VD-P-DD-24V-BLDC P-4100-15-EEE-PARA
Other configurations	Upon request
To order call	ASIA +86 510 6878 2258
To order call	EMEA +49 8141 22800
To order call	USA +1 920 457 4891
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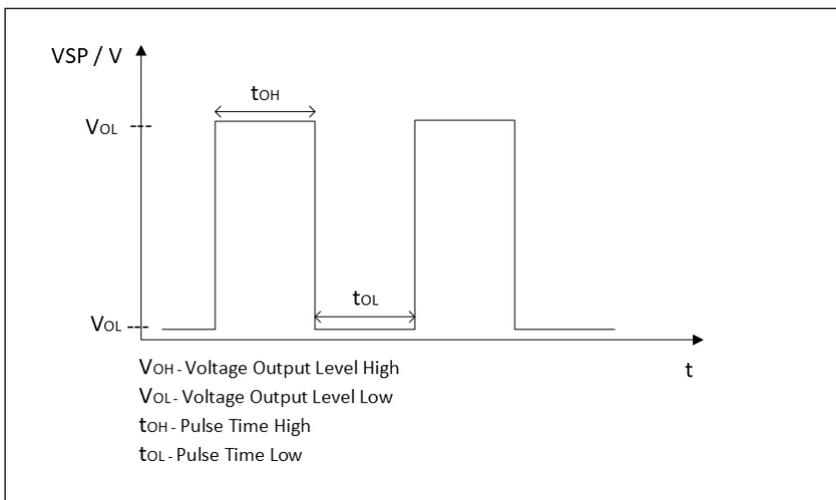
# Wiring diagram (BLDC High Performance)

	Function	Colour	Control
Pin 1	V Supply	Red	12 VDC (max. range 9 - 14 VDC) 24 VDC (max. range 20 - 26 VDC)
Pin 2	Ground	Black	Ground for all pins
Pin 3	Speed Control	Blue	Analog 1.0 - 5.0 VDC (5.5 VDC max.) PWM 10 - 30 kHz / 23 - 90 % Threshold 1.0 VDC (23% PWM)
Pin 4	Tacho out - Pulse time - Pulse time - Output level - Output level	Green	3 pulses per revolution 'High'/'Low'-Time 50% speed dependent 'High'/'Low'-Time 50% speed dependent 'Low'-Range 0 VDC - 0.5 VDC 'High'-Range 4.5 VDC - 5.5 VDC

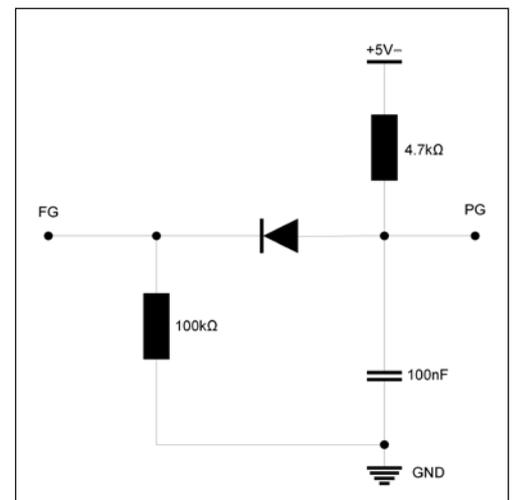
## Speed Input



## Speed Output Signal



## Speed Output (Tacho Out)



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