

# Technical data

<b>General technical data valid for all pumps</b>		
ATEX approval if the ATEX marking is shown on the rating plate Inner part (pumped gases)		II 3/- G Ex h IIC T3 Gc X Internal Atm. only Tech.File: VAC-EX02
Maximum permissible inlet pressure (absolute)	psi (bar)	16 (1.1)
Maximum permissible outlet pressure (absolute)	psi (bar)	16 (1.1)
Maximum pressure difference between inlet and outlet	psi (bar)	16 (1.1)
Maximum permissible pressure (absolute) at gas ballast valve	psi (bar)	17.5 (1.2)
Permissible ambient temperature storage / operation	°F (°C)	14 to 140 / 50 to 104 (-10 to +60 / +10 to +40)
Permissible relative atmospheric moisture during operation (no condensation)	%	30 to 85
Maximum permissible installation altitude above mean sea level	ft (m)	6500 (2000)
Rated motor power	hp (kW)	0.71 (0.530)
No-load speed 50/60 Hz	rpm	30 - 2400
Maximum permissible range of supply voltage ( ±10% ) Attention: Observe specifications of rating plate!		100-120 V~ 50/60 Hz, 200-230 V~ 50/60 Hz
Device fuse		100-120V: slow blow fuse 8A 200-230V: slow blow fuse 4A
Motor protection		thermal cutout, manual reset
Overvoltage category		II
Degree of protection IEC 60529		IP 20
Degree of protection UL 50E		type 1
Pollution degree		2

## Gas inlet temperatures

Operating condition	Inlet pressure	Permitted range of gas temperatures at inlet
Continuous operation	> 75 Torr (100 mbar) (high gas load)	➔ 50 °F to 104 °F (+10 °C to +40 °C)
Continuous operation	< 75 Torr (100 mbar) (low gas load)	➔ 32 °F to 140 °F* (0 °C to +60 °C*)
Short-time (< 5 minutes)	< 75 Torr (100 mbar) (low gas load)	➔ 14 °F to 176 °F* (-10 °C to +80 °C*)

\* if pumping potentially explosive atmospheres: 50 °F to 104 °F (+10 °C to +40 °C)

Type		ME 4C VARIO select	MZ 2C VARIO select	MD 4C VARIO select
Maximum pumping speed 50/60 Hz (ISO 21360)	cfm (m <sup>3</sup> /h)	2.9 (4.9)	1.66 (2.8)	2.7 (4.6)
Ultimate vacuum (absolute) without gas ballast*	Torr (mbar)	52.5 (70)	5.3 (7)	1.1 (1.5)
Ultimate vacuum (absolute) with gas ballast*	Torr (mbar)	- -	9 (12)	2.3 (3)
Maximum rated current at: 100-120 V~ 50/60 Hz 200-230 V~ 50/60 Hz	A A	3.2 1.4	3.2 1.4	6.3 2.5
Inlet		hose nozzle for tubing I.D. 3/8" (hose nozzle DN 10 mm)		
Outlet		silencer or	-	
A-weighted emission sound pressure level** (uncertainty K <sub>pA</sub> : 3 dB(A))	dB(A)	45	43	
Dimensions L x W x H approx.	in (mm)	10.0 x 9.57 x 9.65 (254 x 243 x 245)	9.57 x 9.57 x 9.65 (243 x 243 x 245)	12.8 x 9.57 x 9.65 (325 x 243 x 245)
Weight approx.	lbs. (kg)	30.4 (13.8)	30.4 (13.8)	35.9 (16.3)

\* Ultimate vacuum at setting "Pump down" with optimized speed close to the ultimate vacuum

\*\* Measurement according to EN ISO 2151:2004 and EN ISO 3744:1995 at 1500 rpm and ultimate vacuum with exhaust tube at outlet.

<b>Controller</b>	<b>VACUU•SELECT with VACUU•SELECT Sensor</b>
Pressure transducer	VACUU•SELECT Sensor; external gauge head, capacitive, ceramic diaphragm (alumina), absolute pressure, gas type independent
Display	color display with touchscreen
Pressure units / scale (selectable)	Torr, mbar or hPa
Measuring range (absolute)	810 - 0.1 Torr (1080 - 0.1 mbar)
Maximum control range (absolute)*	810 - 0.1 Torr (1080 - 0.1 mbar)
Maximum permissible pressure at pressure transducer (absolute)	1125 Torr (1.5 bar)
Temperature coefficient	< 0.11 Torr/K (0.15 mbar/K)
Measurement uncertainty (absolute) after careful adjustment and at constant temperature	± 1 Torr/mbar/hPa, ± 1 digit
Maximum permissible temperature of gaseous media**	continuous operation: 104°F (40°C), for short periods (less than 5 minutes) up to 176°F (80°C)
Ambient temperature range (operation)	50 °F to 104 °F (10 °C to +40 °C)
Ambient temperature range (storage)	14 °F to 140 °F (-10 °C to +60 °C)
Permissible relative atmospheric mois- ture during operation (no condensation)	30% to 85%
Maximum permitted current of connect- ed valves (connected components)	4 A
Degree of protection IEC 60529 (controller)	IP 40
Degree of protection IEC 60529 (front side controller)	IP 42
Degree of protection IEC 60529 (sensor)	IP 42
Measurement connection of pressure transducer	small flange DN 16 or hose nozzle DN 6/10 or hose connection PTFE hose DN 8/10
Venting valve connection (at sensor)	connection for silicone rubber hose DN 3/6
Cable length of sensor	approx. 5'6" (2m)

\* The actual vacuum control range in your application might be reduced due to ultimate vacuum of the pump, volume of gas present, etc.

\*\* if operating with potentially explosive atmospheres: 50 °F to 104 °F (+10 °C to +40 °C)

<b>Controller</b>	<b>VACUU•SELECT with VACUU•SELECT Sensor</b>
Plug-in connector	VACUU • BUS
Supply voltage (via VACUU • BUS)	24 VDC
Device fuse on circuit board	Nano fuse 4 A/t
Max. power of controller	5 W
Power sensor	0.2 W
Max. switching current (24V / VACUU • BUS)	4 A
Communication	VACUU • BUS
Interfaces	VACUU • BUS Ethernet (LAN): Patch cable min. cat. 5e RJ45 USB port: 2x USB-A 2.0, max. 0.5 A per port
Dimensions controller L x W x H (without stand)	6.0" x 5.0" x 1.6" (152 mm x 127 mm x 41 mm)
Dimensions sensor with small flange with hose nozzle with hose connection	3.0" x 2.1" x 3.2" (77 mm x 53 mm x 81 mm) 3.9" x 2.1" x 3.2" (100 mm x 53 mm x 81 mm) 2.6" x 2.1" x 3.2" (67 mm x 53 mm x 81 mm)
Weight controller	1.3 lbs. (590 g)
Weight sensor with small flange with hose nozzle with hose connection	0.34 lbs. (155 g) 0.32 lbs. (147 g) 0.32 lbs. (145 g)

**We reserve the right for technical modification without prior notice!**

## Wetted parts

Components	Wetted materials
<b>Pump</b>	
Head cover	ETFE carbon fiber reinforced
Diaphragm clamping disc	ETFE carbon fiber reinforced
Diaphragm	PTFE
Valves	FFKM (ME 4C VARIO select: PTFE)
O-rings	FPM
Valve head	ECTFE carbon fiber reinforced
Gas ballast tube, inlet, outlet	PTFE carbon reinforced
Tubing	PTFE
Silencer // hose to silencer	PBT/PVF // PVC
<b>Sensor</b>	
Sensor	Aluminum oxide ceramic, gold-coated (if applicable)
Seal at sensor	Chemically resistant fluoroelastomer
Measurement chamber	PPS
Small flange (measurement connection)	PP
O-ring in small flange (sensor)	FPM
Hose nozzle (measurement connection)	PP
Venting valve seal	FFKM

## Abbreviations

- ETFE:** Ethylene/Tetrafluoroethylene
- ECTFE:** Ethylene/Chlorotrifluoroethylene
- FFKM:** Perfluoro elastomer
- FPM:** Fluoroelastomer
- PBT:** Polybutylene terephthalate
- PP:** Polypropylene
- PPS:** Polyphenylene sulfide
- PTFE:** Polytetrafluoroethylene
- PVC:** Polyvinyl chloride
- PVF:** Polyvinyl fluoride

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