8 Appendix

8.1 Technical information

8.1.1 Technical data

Vacuum pump

Vacuum pump technical data

Ambient conditions		(US)
Ambient temperature, max.	10 – 40 °C	50 – 104 °F
Storage/transport temperature	-10 – 60 °C	14 – 140 °F
Max. altitude	2000 m above sea level	6562 ft above sea level
Relative humidity	30 – 85 %, non-condensing	
Pollution degree	2	
Impact energy	5 J	
Protection class (DIN 60529)	IP 20	
Protection class (UL 50E)		type 1

Operating conditions		(US)
Maximum admissible media temperature (gas), non-explosive atmosphere:		
Short term (< 5 minutes)	80 °C	176 °F
Continuous operation	40 °C	104 °F
Max. surface temperature in the area in contact with the medium	200 °C	392 °F

Connections	
Vacuum connection IN (inlet)	Small flange KF DN 25
Outlet connection OUT	Small flange KF DN 25
Coolant EK (optional)	2 x hose nozzle DN 6/8
Outlet EK (optional)	Hose nozzle DN 19
Cold device plug	+ power supply CEE, CH, CN, UK, IN, US
Connection accessories (optional)	VACUU·BUS
Controller connection (optional)	VACUU·BUS / Modbus RTU

Technical data

Electrical data		
Nominal voltage	100 – 230 V ±10 %	
Nominal frequency	50 / 60 Hz	
Overvoltage category	II	
Power, max.	700 W	
Interface	VACUU·BUS / Modbus RTU	
Power cord	2 m	
Max. permissible load on VACUU·BUS connections	11 W	
Device fuse 2x	250 V / 8 AT – 5x20	

Vacuum data		(US)
Max. pumping speed	9 m^3/h	5.3 cfm
Ultimate vacuum*, abs.	$5*10^{-3}$ mbar	$3.8*10^{-3}$ Torr
Max. inlet pressure, abs.	Atmospheric pressure (ATM)	
Max. outlet pressure, abs.	15 mbar above atmospheric pressure	11 Torr above atmospheric pressure

** Specification at 1013 mbar. Due to their functional principle, the ultimate vacuum of screw pumps of this design shows a dependency on the ambient pressure.*

Mechanical data		(US)
Dimensions (L x W x H)	507 mm x 269 mm x 413 mm	20 in x 10.6 in x 16.3 in
Weight*	21.5 kg	47.4 lb

** without cable*

Other information	
Emission sound pressure level* (uncertainty K_{pA}: 3 dB(A))	52 dB(A)
Volume of round bottom flask AK/EK (optional)	500 ml

** Measurement according to DIN EN ISO 2151:2009 and EN ISO 3744:1995 at ultimate vacuum with outlet line at outlet connection*

Frequency converter

Frequency converter technical data

Frequency converter		
Type	FC 700S 10	

Ambient conditions		(US)
Ambient temperature, max (end use)	10 – 40 °C	50 – 104 °F
Storage/transport temperature	-10 – 60 °C	14 – 140 °F
Installation height, maximum (end use)	2000 m above sea level	6562 ft above sea level
Relative humidity	30 – 85 %, non-condensing	
Pollution degree	2	
Protection class (DIN 60529)	IP 00	
EMC (DIN EN 61326) (end use)	CE Declaration	
Cooling (end use)	Actively cooled	

Electrical data	
Nominal voltage (IN)	100 – 230 V ±10 %
Nominal frequency (IN)	50 / 60 Hz
Power, max.	700 W
Output voltage (OUT)	max. 400 VDC phase–phase
Output frequency (OUT)	0 – 20 kHz

Mechanical data		(US)
Housing	Open aluminum housing (drawer unit in end use)	
Dimensions (L x W x H)	220 mm x 253 mm x 119 mm	8.7 in x 10 in x 4.7 in
Weight including housing	1.96 kg	4.3 lb

Interfaces	
I/O interfaces	RS-485
Internal power supply unit	24 VDC, 25 W (SELV)

Function	
Software	Programming / parameterization
Protective function	Overvoltage / undervoltage in the intermediate circuit; overcurrent; excessive temperature