CTi-1X

CTi-17-700.GB / CTi-17-1000.GB integrated turbo compressor system

Highly compact, high-speed, electrically driven radial turbo compressor with gas bearing and integrated converter for the circulation and compression of various gases and refrigerants.

- High-speed gas bearings for oil free operation
- Aerodynamic and electromagnetic optimization for highest total efficiency, lowest ratio of volume and weight versus pressure and mass flow due to highest speeds
- Auxiliary voltage supply (8 – 32 VDC) for startup of the turbo compressor from battery, automatic switch to fuel cell voltage
- Operation of the turbo compressor from wide output voltage range of the fuel cell or battery (40 – 120 VDC)

Specifications turbo compressor system		
Model	**CTi-17-700.GB**	**CTi-17-1000.GB**
Maximum pressure ratio	1.65	1.65
Maximum mass flow	15 g/s	21 g/s
Maximum isentropic overall efficiency η_{tot} [1]	55 %	59 %
Maximum speed	280,000 rpm	280,000 rpm
Acceleration time[2]	< 1.5 s	< 1.5 s
Rated Power	700 W	1,000 W
Nominal high voltage input U_{HV}	40 – 120 VDC	
Maximum output power (high voltage operation)	1.2 kW	
Low voltage power input U_{LV} (Auxiliary supply)	8 – 32 VDC	
Maximum output power for startup (low voltage operation)	35 W	
Communication interface	CAN 2.0A, RS232-USB (Service Interface)	
Operating range (Ambient temperature)	-20 – 55 °C	
Mechanical mounting	4 x M4 x 6	
Dimensions (L x W x H)	182.6 x 90 x 93.7 mm (7.18 x 3.54 x 3.68 inch)	
Weight	2 kg	

Low voltage / High voltage input

3 x CAN interface	CanH, CanL, CanGND
2 x Serial interface (Service Interface)	TX, RX
2 x Low voltage input U_{LV}	1 x LV+, 1 x LV-
6 x High voltage input U_{HV}	3 x HV+, 3 x HV-
1 x PE	Protective earth input
Connector type	TE Connectivity / AMPSEAL 14 Pos.

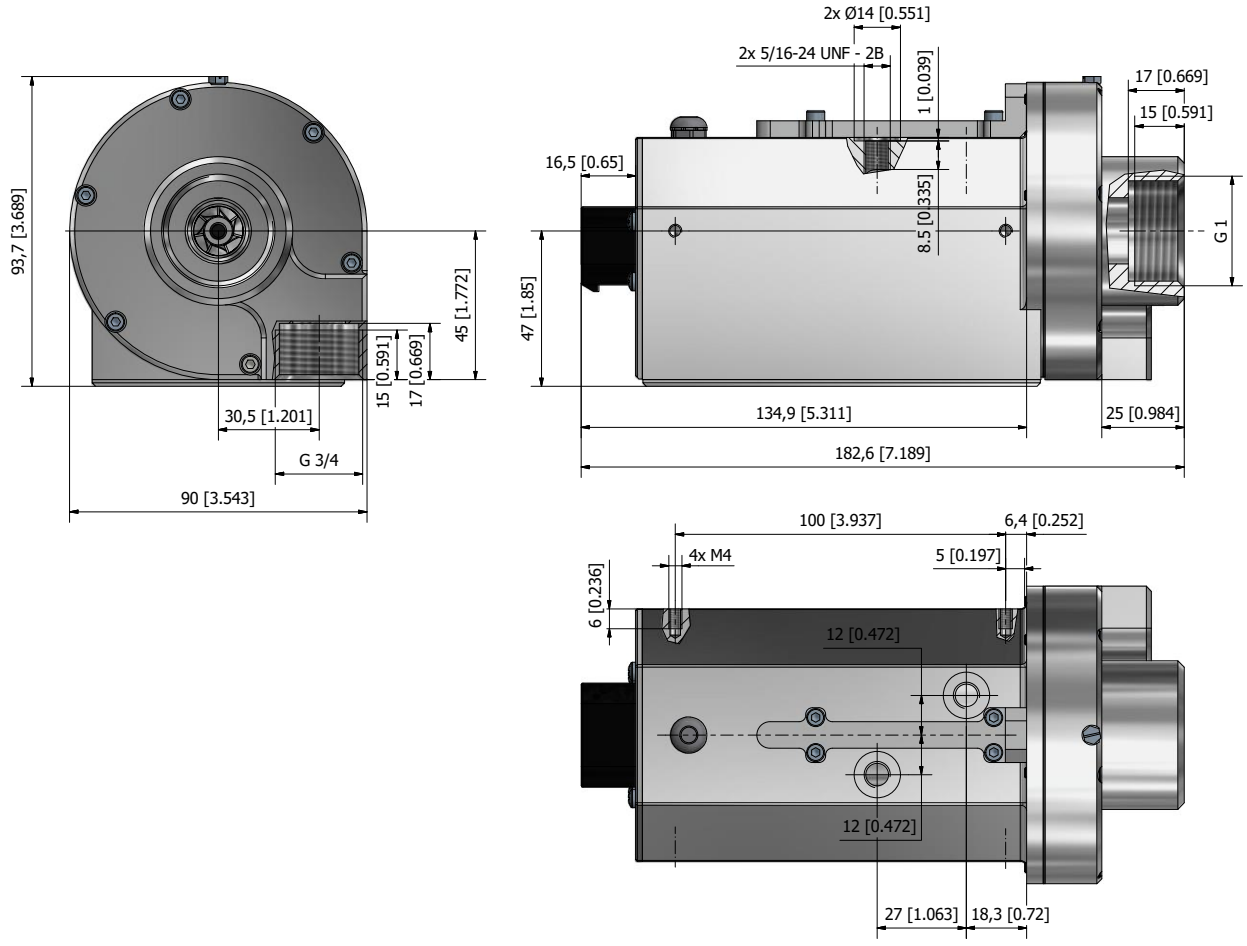
Cooling

Liquid	50% / 50% water glycol mixture
Coolant temperature	-20 – 55 °C
In-/Outlet connector thread	5/16-24 UNF

Converter grounding

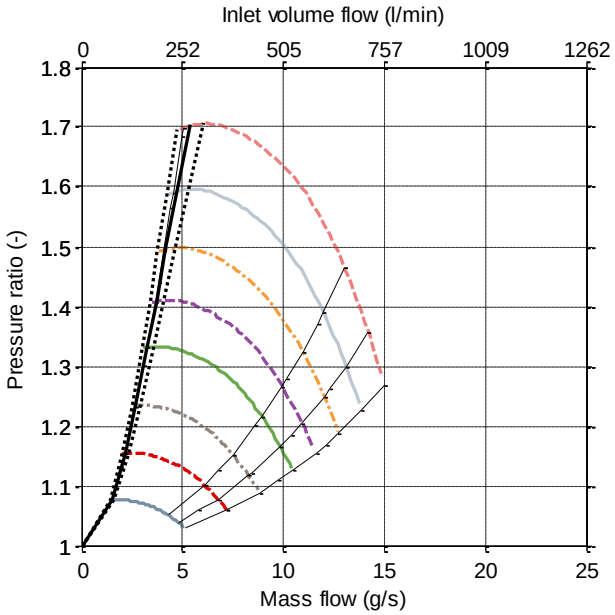
Grounding thread	M4 x 6 (identical to mechanical mounting)

Drawing in mm [inch]

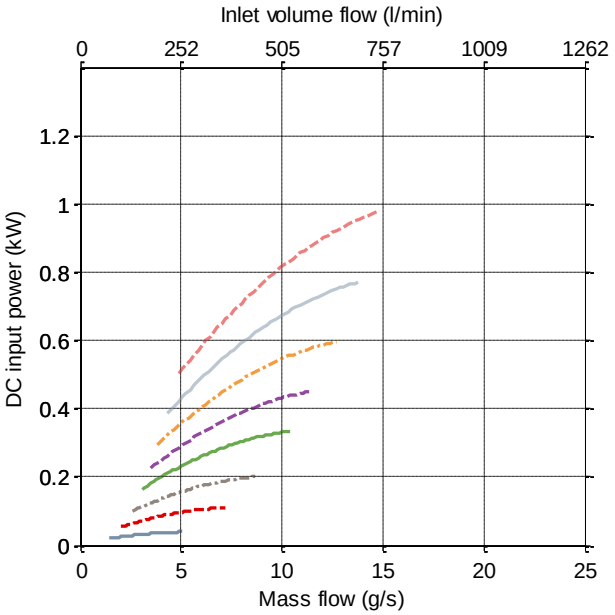


Compressor map: overpressure operation - CTi-17-700.GB

Pressure ratio versus mass flow

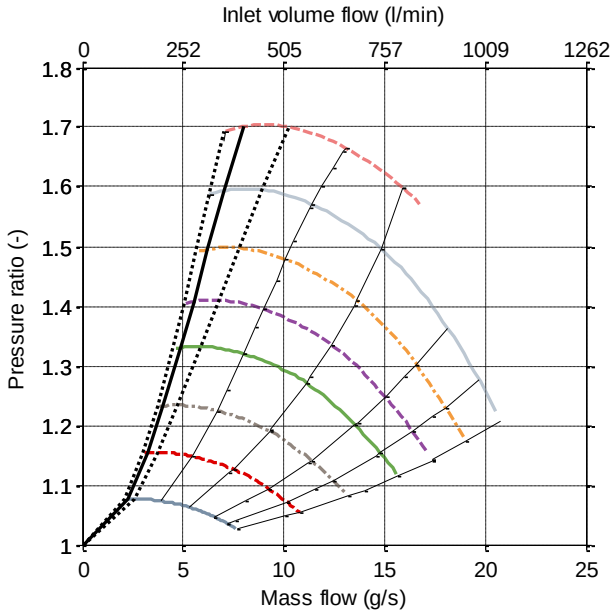


Converter input power versus mass flow

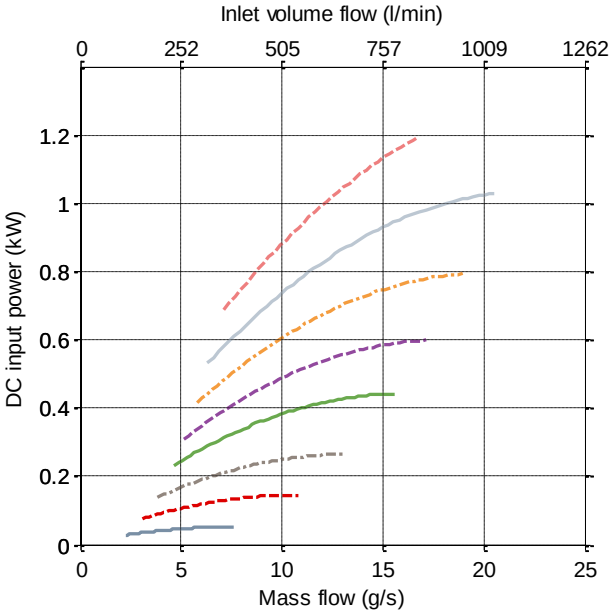


Compressor map: overpressure operation - CTi-17-1000.GB

Pressure ratio versus mass flow



Converter input power versus mass flow



The specifications and compressor maps in this document refer to air (ISO 8778) at the inlet of the compressor: temperature: $T = 293.15\ K = 20°C$, absolute pressure: $p_{in} = 1\ bar\ abs$.

Depending on custom specific operation conditions such as different inlet pressure and temperature, humidity, cooling conditions, the operation in environmental conditions with vibrations and/or depending on the combination of the compressor and the corresponding Celeroton converter, the compressor maps shown in this document may be different or may have additional limitations.
For technical details and further information, please refer to the user manual.

Order codes: CTi-17-700.GBxx / CTi-17-1000.GBxx

Bearing options GBxx	
GB01	Air bearing at ISO 8778 inlet conditions
GB99	Custom specific gas bearing (inlet conditions and / or gas etc.)

Accessories	
Supply cable CTi-17	Low and high voltage supply cable with CAN 1 m (open ends)
Service cable CTi-17	Low and high voltage supply cable with CAN and RS422-USB converter 1 m (open ends)

[1] $\eta_{tot} = \eta_{is} * \eta_m * \eta_c$: isentropic overall efficiency,
η_{is} : isentropic compressor efficiency,
η_m : motor efficiency,
η_c : converter efficiency
[2] 20 to 80% of maximum speed

Celeroton AG | Industriestrasse 22 | 8604 Volketswil | Switzerland
T: +41 44 250 52 20 | F: +41 44 250 52 29 | info@celeroton.com