

Vacuum ironless series



UMV6 in 150mm magnet yoke shown

Suited for pressures down to 10⁻⁸ mbar, due to:

- ▶ Custom stainless steel coil unit housing
- ▶ Special high vacuum cables
- ▶ Low outgassing yoke design
- ▶ Cleanroom manufacturing process

Outgassing

Information and specifications concerning outgassing of the UXXV, UMV and ULV series are available on request. Since these values depend on materials and environmental conditions, please contact us directly so we can advise you about your specific vacuum application. The knowledge and experience we have gained from designing and implementing custom vacuum motors for large OEMs enable us to provide a fitting solution for any application.

Parameter	Remarks	Symbol	Unit	UMV6	UMV12	ULV9	UXXV18
Winding type				S	N	S	N
Motor type, max voltage ph-ph	3-phase synchronous		$V_{acrms} (V_{dc})$	230 (325)			
Peak force @ 20°C/s increase	magnet @ 25°C	F_p	N	200	400	720	4020
Continuous force passive cooled*	@ T_{max}	F_c	N	6	12	25	81
Continuous force active cooled**	@ T_{max}	F_c	N	31	62	120	427
Maximum speed***	@ 300 V	v_{max}	m/s	16	10	16	5
Motor force constant	coils @ 20°C	K	N/A _{rms}	19.9	36.3	19.9	68
Motor constant	coils @ 25°C	S	N ² /W	48	95	290	1742
Peak current	magnet @ 25°C	I_p	A _{rms}	10.0	11.0	20.0	10.6
Max. cont. current passive cooled*	coils @ T_{max}	I_c	A _{rms}	0.30	0.32	0.58	0.37
Max. cont. current active cooled**	coils @ T_{max}	I_c	A _{rms}	1.56	1.71	3.10	1.74
Back EMF phase-phase		B_{emf}	$V_{dc} / m/s$	16	30	16	55.5
Resistance per phase	coils @ 25°C ex. cable	R_{ph}	Ω	2.8	4.6	1.4	5.3
Induction per phase	$l < 0.6$ lp	L_{ph}	mH	0.9	1.5	0.4	4.2
Electrical time constant	coils @ 25°C	τ_e	ms	0.35	0.35	0.8	1.4
Maximum continuous power loss	all coils	P_c	W	25	49	59	118
Maximum coil temperature		T_{max}	°C	80			60
Thermal resistance	coils to mount. sfc.	R_{th}	°C/W	2.4	1.2	1.0	0.32
Thermal time constant*	up to 63% max coil temp.	τ_{th}	s	96		180	290
Temperature cut-off / sensor				PTC 1kΩ / NTC			2 x PTC 1kΩ / NTC
Coil unit weight	ex. cables	W	kg	0.17	0.33	0.72	3.3
Coil unit length	ex. cables	L	mm	140	260	272	701
Motor attraction force		F_a	N	0			
Magnet pitch NN		τ	mm	30		42	57
Cable mass		m	kg/m	0.06			0.18
Cable type (power)		d	mm (AWG)	3x 1.6mm (20), length 1 m			5.5 (18), length 3 m
Cable type (sensor)		d	mm (AWG)	4x 0.8mm (26), length 1 m			5.5 (18), length 3 m

* Depends on environmental conditions in the application. Continuous force noted has been determined with a typical thermal resistance value for passive cooling, and a vacuum chamber wall of 40°C.

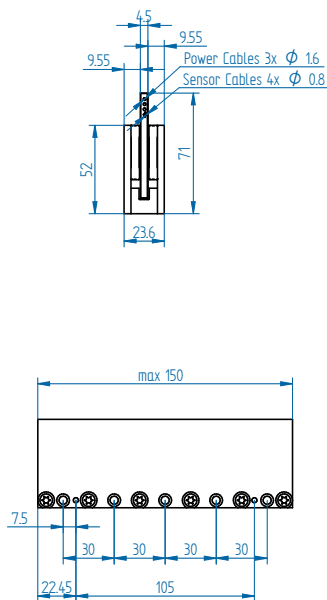
** Depends on environmental conditions in the application. Continuous force noted has been determined with a thermal resistance of 0.02 K/W and a mounting surface of 20°C when the motor is driven at max. continuous current.

*** Actual values depend on bus voltage.

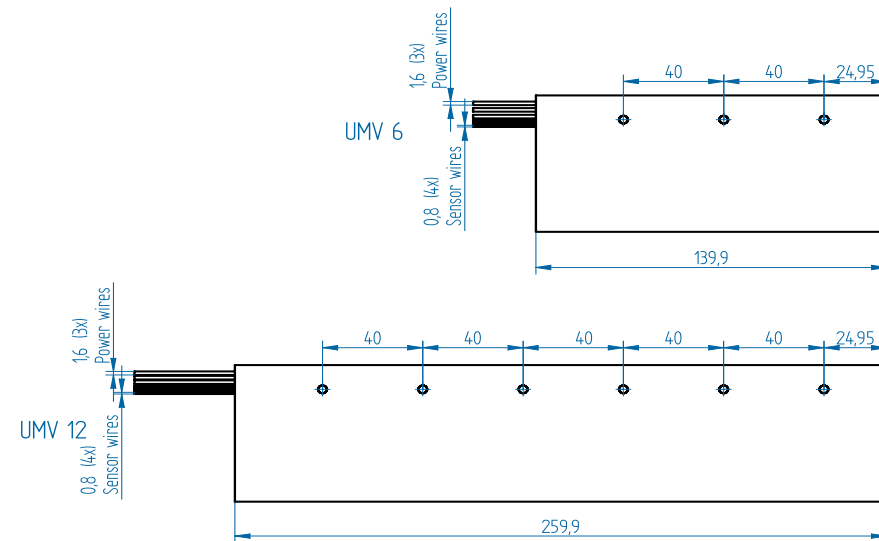
All specifications ±10%

UMV6 and UMV12

Magnet yoke



Coil unit



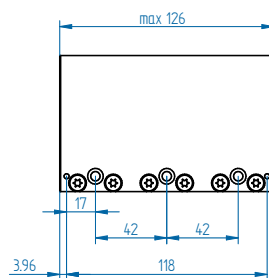
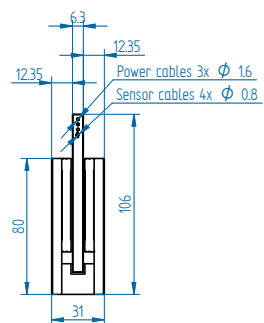
UMV Magnet yoke dimensions

Le (mm)	150
M4 bolts	5
Mass (kg/m)	6.7

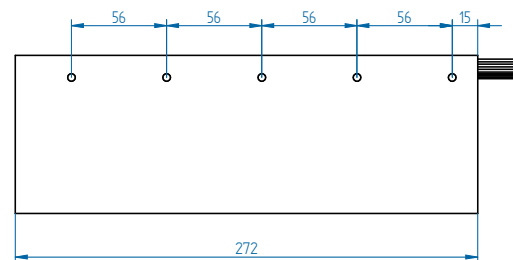
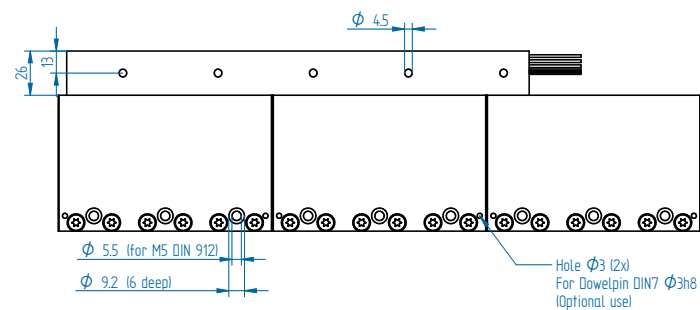
Magnet yokes can be butted together.

ULV

Magnet yoke



Coil unit



ULV Magnet yoke dimensions

Le (mm) 126

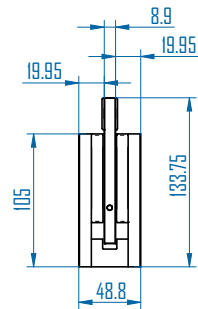
M5 bolts 3

Mass (kg/m) 12.3

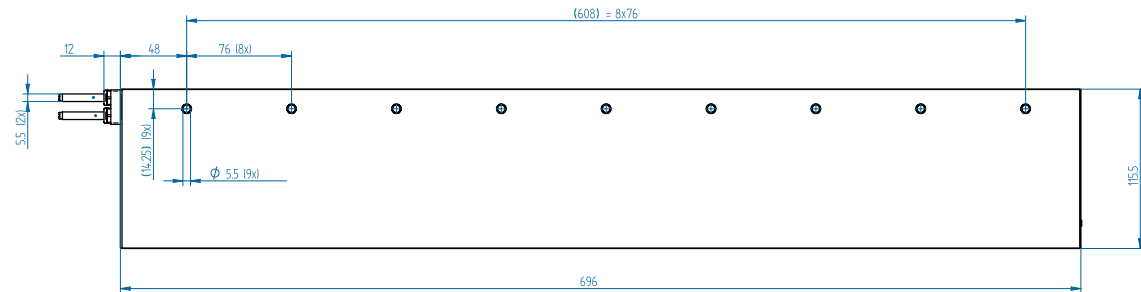
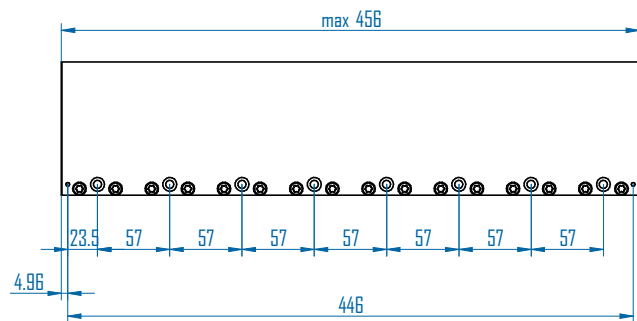
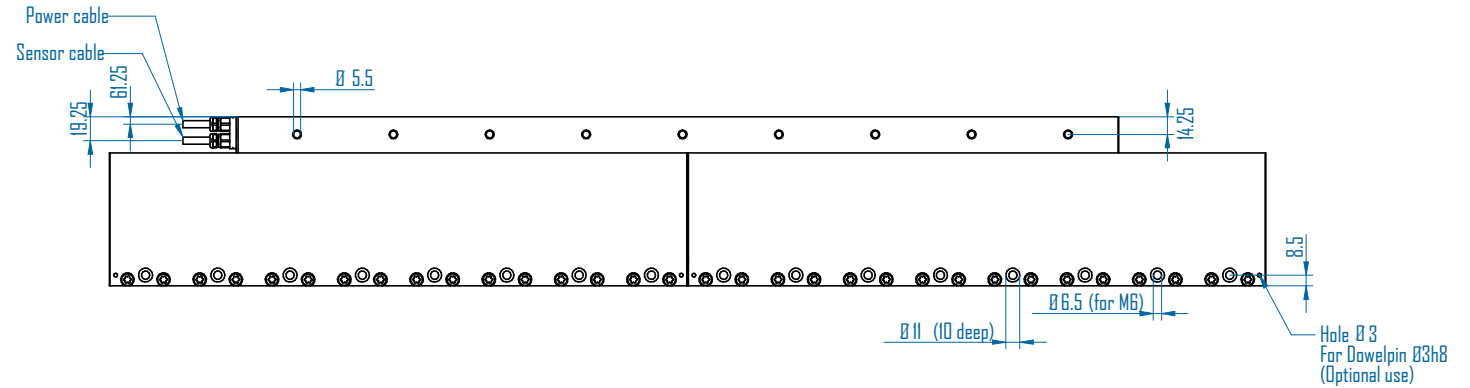
Magnet yokes can be butted together.

UXXV

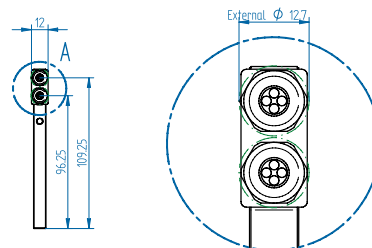
Magnet yoke



Coil unit



Detail A



UXXV Magnet yoke dimensions

Le (mm)	456
M6 bolts	8
Mass (kg/m)	26

Magnet yokes can be butted together.