Data sheet

Multi component Transducer

Series LVS

(10 – 250 kN)

(100 – 5000 N·m)

Benefits/Application

- Accuracy class 0.1
- For static and dynamic loads
- Very high-cycle fatigue resistant up to 80 % of nominal load
- Compact construction
- Little weight
- Largely flexible combination of forces and moments

Options/Accessories

- Optional solid or plug-in connection
- As 3-component transducer (Fx, Fy, Fz) or 6 component transducer (Fxyz, Mxyz) available

Technical data

Type				**10**	**25**	**50**	**100**	**250**
Accuracy class			%			**0,1**		
Basic forces [4]	dynamic	F_{dyn_x}		**2**	**5**	**10**	**20**	**50**
(100% fatigue endurance all components simultaneously)	∿	F_{dyn_y}	**kN**	**2**	**5**	**10**	**20**	**50**
		F_{dyn_z}		**10**	**25**	**50**	**100**	**250**
Basic torques [4]		M_{dyn_x}		**100**	**250**	**500**	**1500**	**5000**
(100% fatigue endurance all components simultaneously)	dynamic ∿	M_{dyn_y}	**N·m**	**100**	**250**	**500**	**1500**	**5000**
		M_{dyn_z}		**100**	**250**	**500**	**1500**	**5000**
Sensitivity at basic force / moment		C_{Fnom_i}	**mV/V**			**1,0**		
Equivalence forces [4]	static ——	F_{max_x}		**4**	**10**	**20**	**40**	**100**
(single, static)		F_{max_y}	**kN**	**4**	**10**	**20**	**40**	**100**
		F_{max_z}		**20**	**50**	**100**	**200**	**500**
Equivalence torques [4]	static ——	M_{max_x}		**200**	**500**	**1000**	**3000**	**10000**
(single, static)		M_{max_y}	**N·m**	**200**	**500**	**1000**	**3000**	**10000**
		M_{max_z}		**200**	**500**	**1000**	**3000**	**10000**
Linearity error		d_{lin}	%			**0,1**		
Hysteresis		h	%			**0,05**		
Repeatability (f.s.)			%			**0,01**		
Creep			%			**0,05**		
Crosstalk [3]			%			**typical < 1**		
Temperature effect on characteristic value per 10 K		TK_C	**%/10 K**			**0,2**		
Temperature effect on zero signal per 10 K		TK_0	**%/10 K**			**0,08**		

Metrological data

Input resistance	R_e	**Ω**	**400 – 800**
Output resistance	R_a	**Ω**	**350 – 700**
Insulation resistance	R_{is}	**Ω**	**> 10^9**
Operating range of excitation voltage	$B_{U,G}$	**V**	**5 – 12**
IP-Protection (DIN EN 60529)			**50**

Electrical data

Technical data

Mechanical data

Type			10	25	50	100	250
Spring stiffness crosswise	c_{xy}	kN/mm	80	150	230	480	800
Spring stiffness axial	c_z	kN/mm	640	1230	1880	2690	4030
Bending stiffness	$c_{b,xy}$	kN·m/rad	290	590	920	3280	6940
Torsional rigidity	$c_{t,z}$	kN·m/rad	190	380	600	2430	7720
Mass	m	kg	0,6	0,6	0,6	2,1	4,9
Proportionate moving mass	m_{mess}	kg	0,3	0,3	0,3	1,1	2,6
Fundamental resonant frequency	f_G	kHz	2,8	3,9	5	3,6	3
Rated temperature range	$B_{T,\,nom}$	°C	10 – 60				
Operating temperature range	$B_{T,\,G}$	°C	5 – 80				

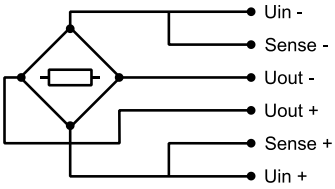
1) Valid for pluggable connection

2) Valid for permanent cable connection

3) "Crosstalk" is the percentage of a signal that a channel outputs when another component is loaded at 100% of its rated load

4) Other permissible load cases see calculation formula for load combinations

Cable connection



	Permanent connection[3] end not connected	Connection pluggable[1)2)]
	Grey cable Ø 6,5 mm[4]	7-pin LEMO Series 0 Female: - Male: 

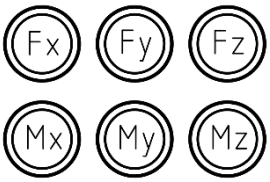
Connection		Color	Pin
Supply voltage (+)	U_{in+}	blue	3
Supply voltage (-)	U_{in-}	black	2
Measurement signal (+)	U_{out+}	white	1
Measurement signal (-)	U_{out-}	red	4
Sense (+)	Sense+	green	5
Sense (-)	Sense-	grey	6
Shielding		yellow	Housing

1) View to o weldingside

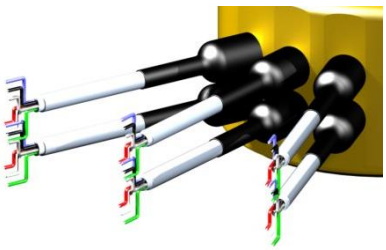
2) Female LEM O S.A. Typ: EGG.1B.307.CLL; M ale: FGG.1B.307.CLA.D72

3) Gray cable with cable fitting PG7

4) twisted pairs, 3 x 2 x 0,25 mm², temperature range: -35 °C to 90 °C

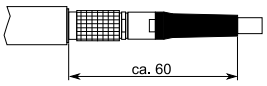


Pin assignment

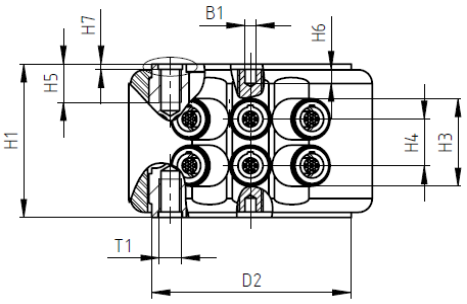


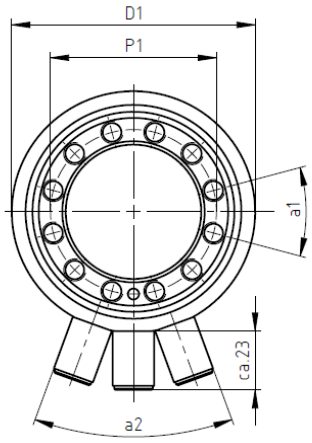
Permanent connection
end not connected

Plugable conection



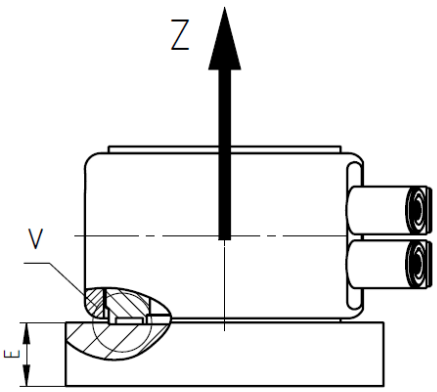
Mating dimensions

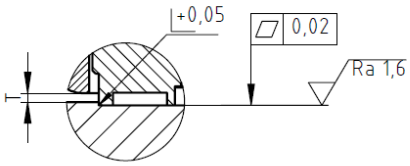




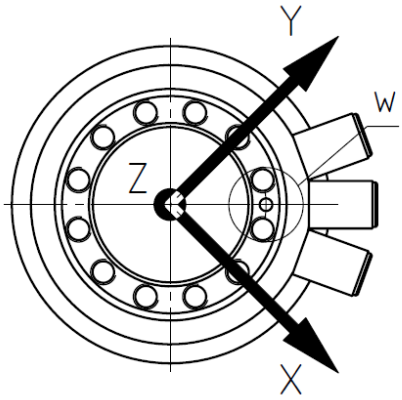
Type			10 - 50	100	250
Bore	$ØB_1$	mm		Ø4 H7	
Diameter	$ØD_1$	mm	Ø88	Ø124	Ø169
Diameter	$ØD_2$	mm	Ø73	Ø110	Ø154
Pitch circle diameter	$ØP_1$	mm	Ø60	Ø90	Ø130
Thread	T_1		M8	M12	M16
Height	H_1	mm	56	70	92
Height	H_2	mm	27.5	33	46
Height	H_3	mm		32	
Height	H_4	mm		17	
Height	H_5	mm	14	18	22
Height	H_6	mm		5	
Height	H_7	mm		2	
Angle	a_1			30°	
Angle	a_2			40°	

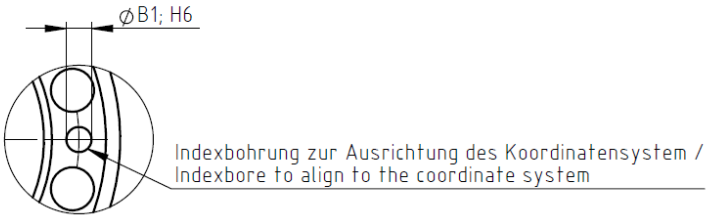
Coordinate system and alignment





v (1 : 1)





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Load combinations

To evaluate an occurring load combination, the following formula can be used to calculate the load point number.

Note for

- **Static combined load:**
  When calculating the maximum permissible score "P", each component must not exceed the respective equivalent load (F_{max}; M_{max}).

- **Dynamically combined load (alternating):**
  When calculating the maximum permissible score "P", a component must not exceed 1.6-F_{dyn} or 1.6-M_{dyn} of the respective load.

$$P=\left(\frac{\sqrt{Fx^2+Fy^2}}{Fmax\_x;y}+\frac{|Fz|}{Fmax\_z}+\frac{\sqrt{Mx^2+My^2}}{Mmax\_x;y}+\frac{|Mz|}{Mmax\_z}\right)*100$$

Load values

Type		10	25	50	100	250
permitted dynamic	Points	241	241	241	241	241
permitted static	Points	386	386	241	368	290

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