

LVDT

Linear Variable Differential Transformer



E-Series

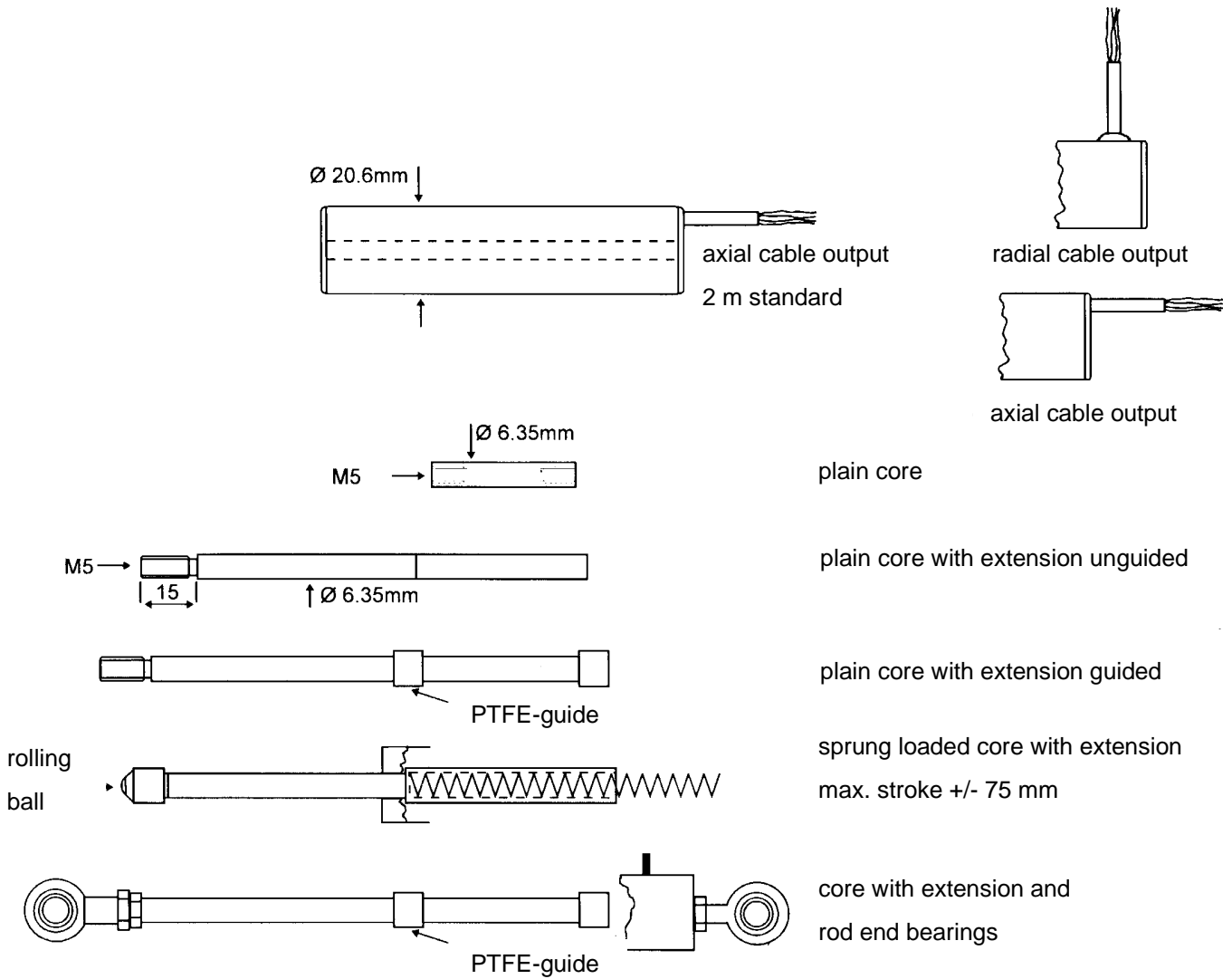
- **Range $\pm 0,5 \text{ mm} \dots \pm 550 \text{ mm}$**
- **Infinite Resolution**
- **Output: AC/DC ($\pm 2,5 \text{ V} / 0 \dots 10 \text{ V} / 4 \dots 20 \text{ mA}$)**
- **Excitation $5 V_{\text{rms}}$ at 3 kHz (AC)**
- **Linearity $< \pm 0,5\%$**
- **Repeatability up to $2,5 \mu\text{m}$**
- **Guided and unguided versions**
- **Stainless Steel Housing**
- **Various Mounting Options**
- **Temperature $-30 \dots +150^\circ\text{C}$ (optional)**
- **Protection Class IP54**

Technical Data

Resolution	nearly infinite, depending on following circuit (ripple) and measurement range.
Range	$\pm 0,50 / \pm 2,50 / \pm 5,00 / \pm 10,00 / \pm 12,50 / \pm 15,00 / \pm 25,00 / \pm 50,00 / \pm 75,00 / \pm 100,00 / \pm 125,00 / \pm 150,00 / \pm 175,00 / \pm 200,00 / \pm 250,00 / \pm 300,00 / \pm 400,00 / \pm 500,00 / \pm 550,00$ mm Note: every LVDT works unidirectional, using zershift.
Linearity	$\leq \pm 0,5\%$ range, others on request.
Output AC (external Electronics)	Excitation $5 V_{rms}$ at 3 kHz Temperature: $-30...+85^{\circ}\text{C}$ (Standard) optional $-30...+150^{\circ}\text{C}$ Frequency Response: 3 dB at 180 Hz
External Electronics	Using the external electronic device 8100 it is possible to adapt LVDT`s with smaller housing and an extended temperature range up to 150°C . For critical applications in harsh environments we recommend LVDT`s with external electronics. Please see technical details in the data sheets 8100 and 6000 (19" rack, modular system) Output: 0...5 VDC, 0...10 VDC, 4...20 mA
Internal Electronics	Built in electronics. Following outputs are available (others on request). $\pm 2,5$ VDC Supply: 10...30 VDC (to be specified) Current consumption: 35 mA (at 12 VDC) Ripple: max. 30 mV Output Bandwidth: 300 Hz Zero Temperature Coefficient: 0,01% FS/ $^{\circ}\text{C}$ Span Temperature Coefficient: 0,03% FS/ $^{\circ}\text{C}$ Working Range: $-50...+85^{\circ}\text{C}$. 0...10 VDC Supply: 15...30 VDC (to be specified) Current consumption: 35 mA (at 12 VDC) Ripple: max. 30 mV Output Bandwidth: 300 Hz Zero Temperature Coefficient: 0,01% FS/ $^{\circ}\text{C}$ Span Temperature Coefficient: 0,03% FS/ $^{\circ}\text{C}$ Working Range: $-50...+85^{\circ}\text{C}$. 4...20 mA Supply: 14...24 VDC Ripple: max. 0,1% at 20 mA Null: 12 mA at zero set within 0,5% Working Range: $-20...+95^{\circ}\text{C}$.
Type	Plain core with extension front end guided, core with extension and rod end bearings, Sprung loaded core with extension front end guided max. stroke ± 75 mm Extension rod wiper
Housing	Stainless steel
Connection	2000 mm cable output (others on request)
Protection	IP54
Shock	1000g (10 ms)
Vibration	20 g (2 kHz)



Type

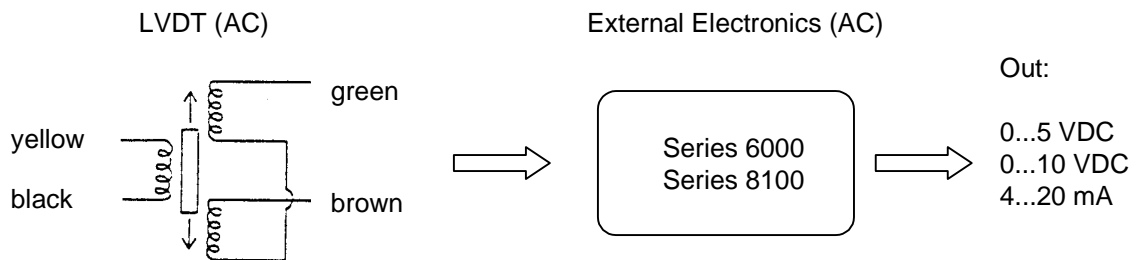


Connection Diagram

Internal Electronics (DC-unipolar and 4...20 mA)

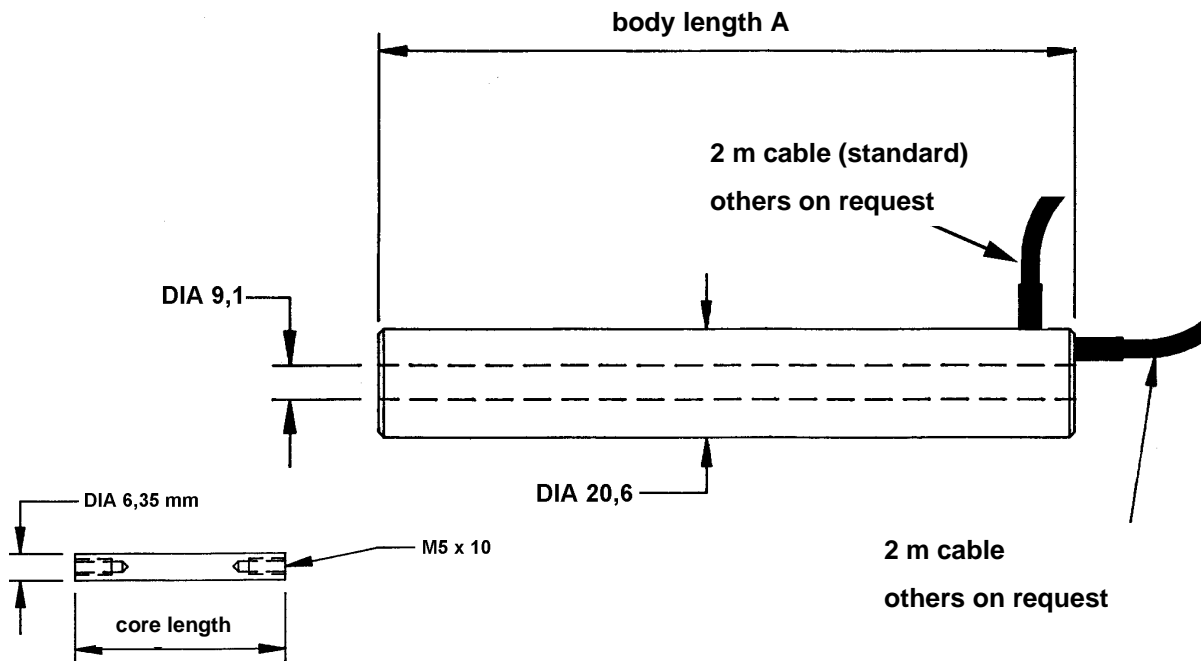
	(3-wire)	(4-wire, IP68 (W))
red	supply	supply
blue	0 Volt COM	0 Volt COM
green	signal	signal COM
yellow		signal

LVDT with external electronics:



Dimensions

E - Series: plain core



+/- 550	1400	1350	1360	190	430	10	550	1530
+/- 500	1400	1350	1360	314	390	10	550	1530
+/- 400	1150	1100	1110	250	460	20	450	1010
+/- 300	900	850	860	185	400	5	690	770
+/- 250	800	750	760	170	350	10	290	560
+/- 200	678	628	638	185	300	10	250	430
+/- 175	613	563	573	180	310	2	230	360
+/- 150	562	512	522	165	330	5	210	290
+/- 125	485	435	445	152	300	2	180	320
+/- 100	427	377	387	140	190	5	150	150
+/- 75	370	320	330	138	350	20	260	460
+/- 50	296	246	256	115	320	2	200	270
+/- 25	210	160	170	76	240	5	130	210
+/- 15	170	120	130	50	230	20	90	190
+/- 12,5	142	92	102	35	300	15	120	190
+/- 10	123	77	83	35	280	10	70	170
+/- 5	123	73	83	29	80	5	100	110
+/- 2,5	82	32	42	15	90	5	180	460
+/- 0,5	75	25	35	15	50	20	40	1800
range (mm)	body length A axial & radial (mm)	body length A	body length A	core length (mm)	sensitivity at 3 kHz (mV/V)	null (mV)	primary resistance (Ω)	secondary resistance (Ω)
		axial (mm)	radial (mm)					
	internal electronics	external electronics						

internal electronics - technical data

±2,5 VDC
 supply: 10...30 VDC
 current consumption: 35 mA (at 12 VDC)
 ripple: max. 30 mV
 output bandwidth: 300 Hz
 zero temperature coefficient: 0,01% /°C
 span temperature coefficient: 0,03% /°C
 temperature range: -50...+85°C

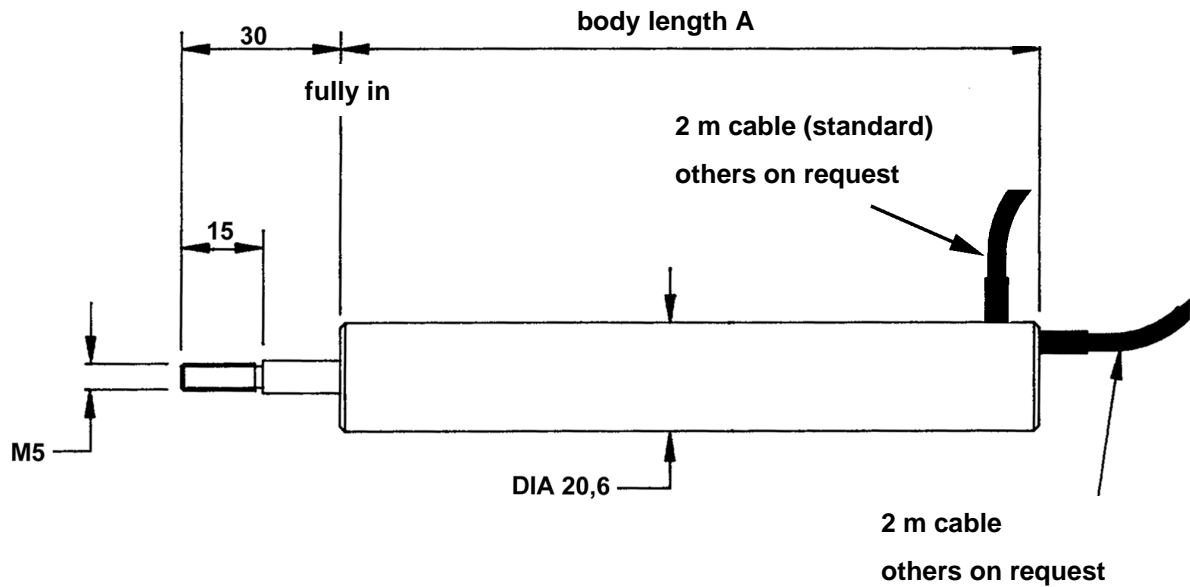
0...10 VDC
 supply: 15...30 VDC
 current consumption: 35 mA (at 15 VDC)
 ripple: max. 30 mV
 output bandwidth: 300 Hz
 zero temperature coefficient: 0,01% /°C
 span temperature coefficient: 0,03% /°C
 temperature range: -50...+85°C

4...20 mA
 supply: 14...24 VDC
 ripple: max. 0,1% at 20 mA
 null: 12 mA ± 0,5%
 temperature range: -20...+95°C

external electronics

Please see technical details in the data sheets 8100 and 6000 (19" rack, modular system). Outputs available:
 0...5 VDC, 0...10 VDC, 4...20mA





+/- 550	1400	1350	1360	430	10	550	1530
+/- 500	1400	1350	1360	390	10	550	1530
+/- 400	1150	1100	1110	460	20	450	1010
+/- 300	900	850	860	400	5	690	770
+/- 250	800	750	760	350	10	290	560
+/- 200	678	628	638	300	10	250	430
+/- 175	613	563	573	310	2	230	360
+/- 150	562	512	522	330	5	210	290
+/- 125	485	435	445	300	2	180	320
+/- 100	427	377	387	190	5	150	150
+/- 75	370	320	330	350	20	260	460
+/- 50	296	246	256	320	2	200	270
+/- 25	210	160	170	240	5	130	210
+/- 15	170	120	130	230	20	90	190
+/- 12,5	142	92	102	300	15	120	190
+/- 10	123	77	83	280	10	70	170
+/- 5	123	73	83	80	5	100	110
+/- 2,5	82	32	42	90	5	180	460
+/- 0,5	75	25	35	50	20	40	1800
range (mm)	body length A axial & radial (mm)	body length A axial (mm)	body length A radial (mm)	sensitivity at 3 kHz (mV/V)	null (mV)	primary resistance (Ω)	secondary resistance (Ω)
	internal electronics	external electronics					

internal electronics - technical data

±2,5 VDC
 supply: 10...30 VDC
 current consumption: 35 mA (at 12 VDC)
 ripple: max. 30 mV
 output bandwidth: 300 Hz
 zero temperature coefficient: 0,01% /°C
 span temperature coefficient: 0,03% /°C
 temperature range: -50...+85°C

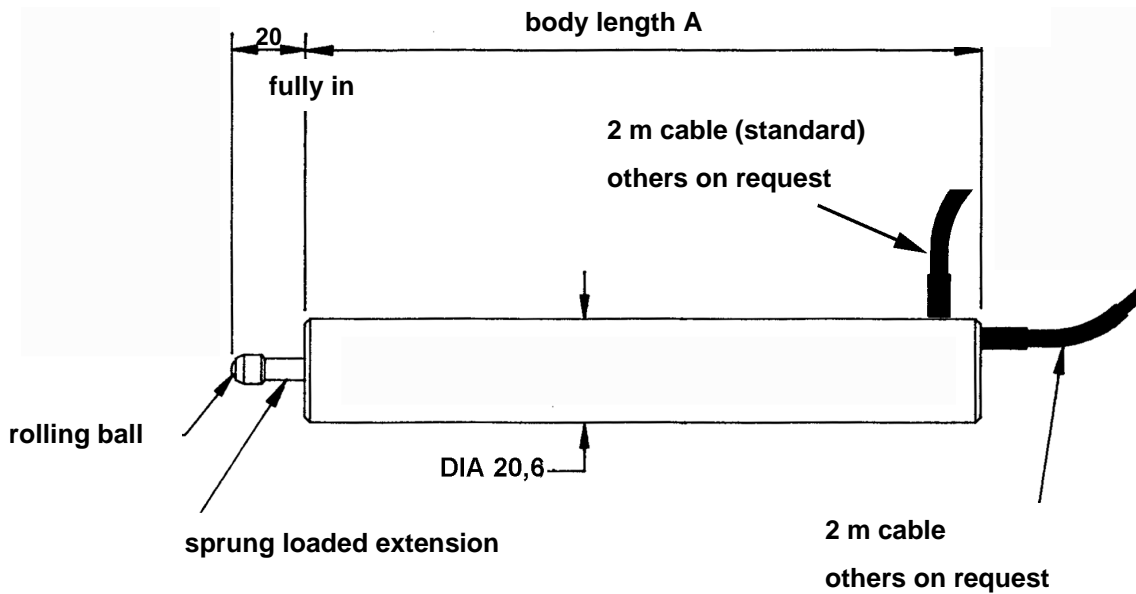
0...10 VDC
 supply: 15...30 VDC
 current consumption: 35 mA (at 15 VDC)
 ripple: max. 30 mV
 output bandwidth: 300 Hz
 zero temperature coefficient: 0,01% /°C
 span temperature coefficient: 0,03% /°C
 temperature range: -50...+85°C

4...20 mA
 supply: 14...24 VDC
 ripple: max. 0,1% at 20 mA
 null: 12 mA ± 0,5%
 temperature range: -20...+95°C

external electronics

Please see technical details in the data sheets 8100 and 6000 (19" rack, modular system). Outputs available: 0...5 VDC, 0...10 VDC, 4...20mA





+/- 75	395	345	355	350	20	260	460
+/- 50	321	271	281	320	2	200	270
+/- 25	235	185	195	240	5	130	210
+/- 15	195	145	155	230	20	90	190
+/- 12,5	167	117	127	300	15	120	190
+/- 10	148	98	108	280	10	70	170
+/- 5	148	98	108	80	5	100	110
+/- 2,5	107	57	67	90	5	180	460
+/- 0,5	100	50	60	50	20	40	1800
range (mm)	body length A axial & radial (mm)	body length A	body length A	sensitivity at 3 kHz (mV/V)	null (mV)	primary resistance (Ω)	secondary resistance (Ω)
		axial (mm)	radial (mm)				
	internal electronics	external electronics					

internal electronics - technical data

±2,5 VDC
 supply: 10...30 VDC
 current consumption: 35 mA (at 12 VDC)
 ripple: max. 30 mV
 output bandwidth: 300 Hz
 zero temperature coefficient: 0,01% /°C
 span temperature coefficient: 0,03% /°C
 temperature range: -50...+85°C

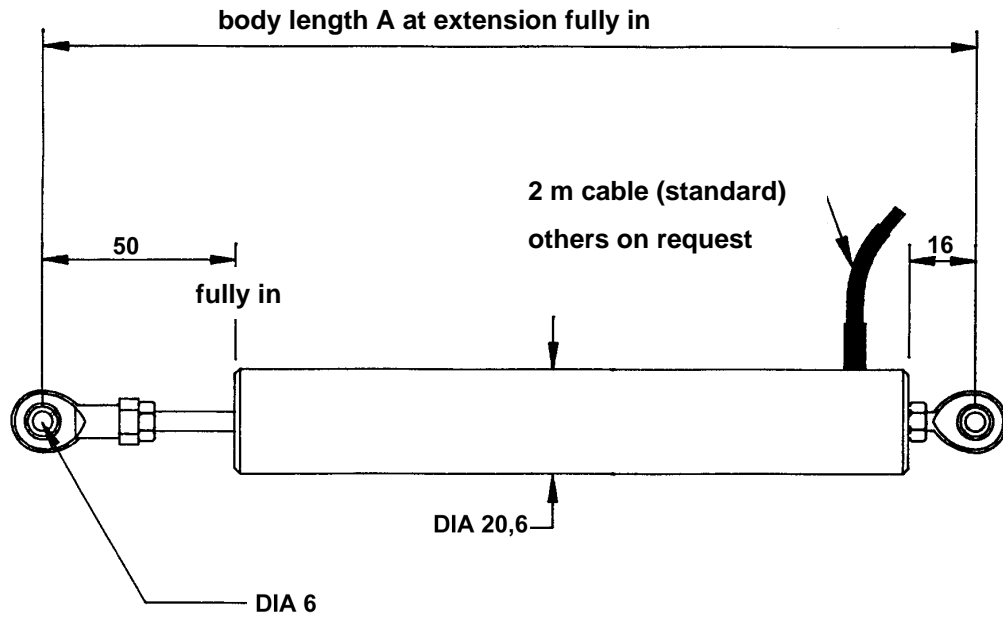
0...10 VDC
 supply: 15...30 VDC
 current consumption: 35 mA (at 15 VDC)
 ripple: max. 30 mV
 output bandwidth: 300 Hz
 zero temperature coefficient: 0,01% /°C
 span temperature coefficient: 0,03% /°C
 temperature range: -50...+85°C

4...20 mA
 supply: 14...24 VDC
 ripple: max. 0,1% at 20 mA
 null: 12 mA ± 0,5%
 temperature range: -20...+95°C

external electronics

Please see technical details in the data sheets 8100 and 6000 (19" rack, modular system). Outputs available:
 0...5 VDC, 0...10 VDC, 4...20mA





+/- 550	1476	1436	430	10	550	1530
+/- 500	1476	1436	390	10	550	1530
+/- 400	1226	1186	460	20	450	1010
+/- 300	976	936	400	5	690	770
+/- 250	876	836	350	10	290	560
+/- 200	754	714	300	10	250	430
+/- 175	689	649	310	2	230	360
+/- 150	638	598	330	5	210	290
+/- 125	561	521	300	2	180	320
+/- 100	503	463	190	5	150	150
+/- 75	446	406	350	20	260	460
+/- 50	372	332	320	2	200	270
+/- 25	286	246	240	5	130	210
+/- 15	246	206	230	20	90	190
+/- 12,5	218	178	300	15	120	190
+/- 10	199	163	280	10	70	170
+/- 5	199	159	80	5	100	110
+/- 2,5	158	118	90	5	180	460
+/- 0,5	151	111	50	20	40	1800
range (mm)	body length A (mm) internal electronics	body length A (mm) external electronics	sensitivity at 3 kHz (mV/V)	null (mV)	primary resistance (Ω)	secondary resistance (Ω)

internal electronics - technical data

±2,5 VDC
 supply: 10...30 VDC
 current consumption: 35 mA (at 12 VDC)
 ripple: max. 30 mV
 output bandwidth: 300 Hz
 zero temperature coefficient: 0,01% /°C
 span temperature coefficient: 0,03% /°C
 temperature range: -50...+85°C

0...10 VDC
 supply: 15...30 VDC
 current consumption: 35 mA (at 15 VDC)
 ripple: max. 30 mV
 output bandwidth: 300 Hz
 zero temperature coefficient: 0,01% /°C
 span temperature coefficient: 0,03% /°C
 temperature range: -50...+85°C

4...20 mA
 supply: 14...24 VDC
 ripple: max. 0,1% at 20 mA
 null: 12 mA ± 0,5%
 temperature range: -20...+95°C

external electronics

Please see technical details in the data sheets 8100 and 6000 (19" rack, modular system). Outputs available: 0...5 VDC, 0...10 VDC, 4...20mA



Order Code Series E

temperature - range: -30...+85°C	external electronics	axial cable exit	EJ- EJX- EJG- EJS-	(plain core) (core with extension unguided) (core with extension guided) (sprung loaded core with extension)
		radial cable exit	EJC- EJCX- EJCG- EJCS- EJCR-	(plain core) (core with extension unguided) (core with extension guided) (sprung loaded core with extension) (extension with rod end bearings)
	internal electronics +/- 2,5 VDC	axial cable exit	ED- EDX- EDG- EDS-	(plain core) (core with extension unguided) (core with extension guided) (sprung loaded core with extension)
		radial cable exit	EDC- EDCX- EDCG- EDCS- EDCR-	(plain core) (core with extension unguided) (core with extension guided) (sprung loaded core with extension) (extension with rod end bearings)
temperature - range: -30...+150°C	internal electronics 0...10 VDC	axial cable exit	EU- -10 EUX- -10 EUG- -10 EUS- -10	(plain core) (core with extension unguided) (core with extension guided) (sprung loaded core with extension)
		radial cable exit	EUC- -10 EUCX- -10 EUCG- -10 EUCS- -10 EUCR- -10	(plain core) (core with extension unguided) (core with extension guided) (sprung loaded core with extension) (extension with rod end bearings)
	internal electronics 4...20 mA	axial cable exit	EI- EIX- EIG- EIS-	(plain core) (core with extension unguided) (core with extension guided) (sprung loaded core with extension)
		radial cable exit	EIC- EICX- EICG- EICS- EICR-	(plain core) (core with extension unguided) (core with extension guided) (sprung loaded core with extension) (extension with rod end bearings)
external electronics	axial cable exit	EHJ- EHJX- EHJG- EHJS-	(plain core) (core with extension unguided) (core with extension guided) (sprung loaded core with extension)	
	radial cable exit	EHJC- EHJCX- EHJCG- EHJCS- EHJCR-	(plain core) (core with extension unguided) (core with extension guided) (sprung loaded core with extension) (extension with rod end bearings)	