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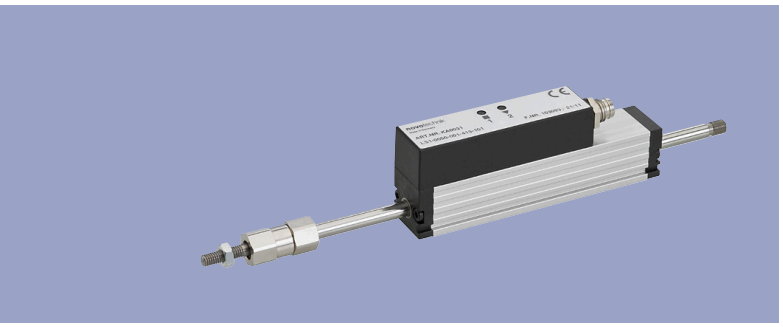
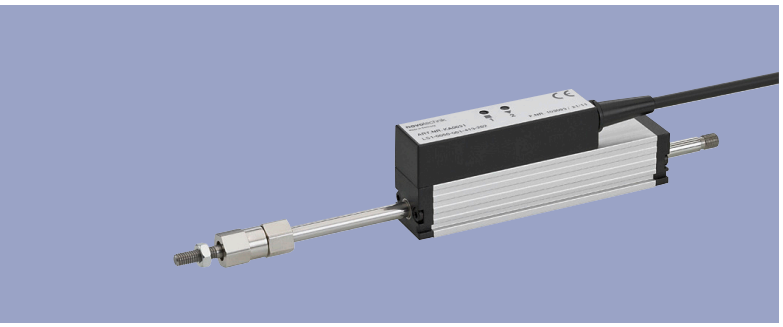
Siedle Group

NOVOPAD
Position Transducer up to 200 mm non-contacting
Series LS1
with analog interface





Position transducer, based on our NOVOPAD non-contacting inductive measurement technology. Provides direct, accurate measurement of travel for display or feedback applications.

The push rod is supported on both ends by metal glide bearings, allowing high lateral forces on the tip of the rod. The robust and compact housing design make the LS1 a reliable solution for the industrial environment.

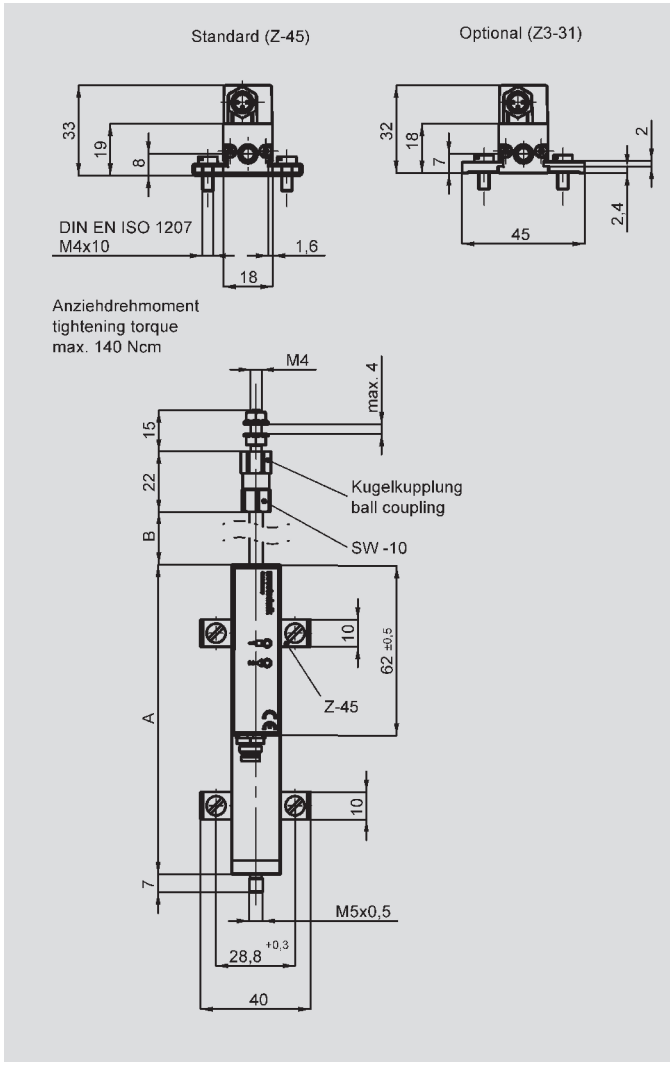
A ball coupling enables a back-lash and shear force free operation, even with perpendicular or angular misalignment between the transducer axis and the direction of movement.

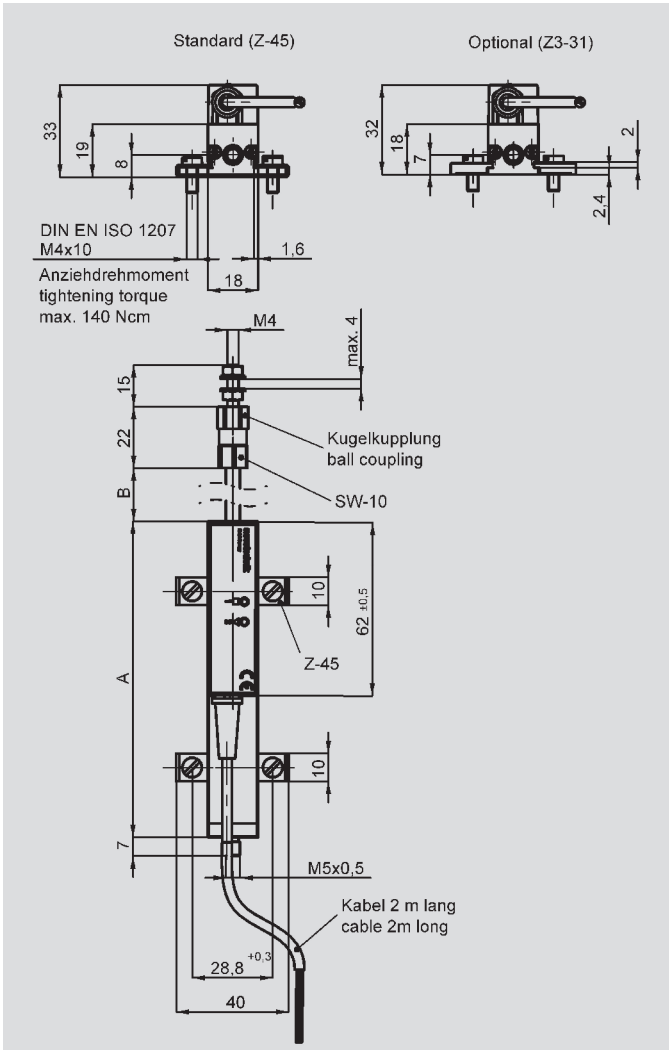
The integrated signal processor with programmable end-points (Teach-in) function provides an absolute and proportional voltage or current output signal. The LS1 uses a non-contacting technology, and is maintenance and wear free. The transducers provide optimal reproducibility, resolution and linearity.

LS1 sensors can be exchanged without recalibration. Magnetic fields do not have any effect on the measurment signal.

Special features
- long life, up to 100 million movements, depending on application
- outstanding linearity ±0.15 %
- teach-in (min-max) via push-buttons with status LED
- standard voltage or current output signals
- insensitive to magnetic fields
- compact 18x18 mm profile
- double-sided support for push rod
- compatible to standard probe tips
- cable or connector version available

Description	
Housing	Aluminium, anodized
Mounting	adjustable clamps
Actuating rod	stainless steel, AISI 303, external thread M5x0.5
Ball coupling	hardened ball with spring pressure on carbide plate
Bearings	both ends in metal-polymer glide bearings
Measurement principle	NOVOPAD inductive
Electrical connections	3-pin round connector, shielded, M8 x 1 3-wire PVC-cable, 3x 0,14 mm², shielded 2 m length
Electronic	SMD with ASIC, intergrated


Standard (Z-45)
Optional (Z3-31)
33
19
8
32
18
7
2
2,4
45
DIN EN ISO 1207
M4x10
1,6
18
Anziehdrehmoment
tightening torque
max. 140 Ncm
M4
max. 4
15
22
B
Kugelkupplung
ball coupling
SW -10
10
62 ±0,5
Z-45
A
10
7
M5x0,5
28,8 +0,3
40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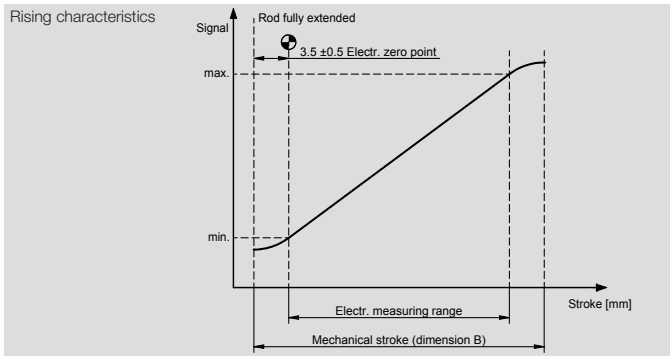
Rising characteristics
Signal
Rod fully extended
3.5 ±0.5 Electr. zero point
max.
min.
Stroke [mm]
Electr. measuring range
Mechanical stroke (dimension B)

Type designations	LS1	LS1	LS1	LS1	LS1	LS1	
	0025	0050	0075	0100	0150	0200	
Electrical Data							
Electrical measuring range	25	50	75	100	150	200	mm
Absolute linearity	< ± 0.1	< ± 0.15					% FS
Tolerance of electrical zero point	± 0.5						mm
Output signal voltage or current	0.1 ... 10 VDC (load 470 kΩ) allowed load > 10 kΩ 10 ... 0.1 VDC (load 470 kΩ) allowed load > 10 kΩ 4 ... 20 mA (load < 500 Ω) 20 ... 4 mA (load < 500 Ω)						
Internal resistance of voltage output	120						Ω
Output, short-circuit-proof	against supply max. ... 30 VDC and GND (permanent)						
Update Rate	high speed mode > 950; low speed mode > 50						Hz
Repeatability	high speed mode < 10 mV, typical < 3 mV low speed mode < 5 mV, typical < 2 mV high speed mode < 16 µA, typical < 5 µA low speed mode < 8 µA, typical < 3 µA						
Supply voltage Ub	16 ... 30						VDC
Supply voltage ripple	max. 10						% Vss
Power consumption without load	< 1						W
Temperature coefficient	≤ 50						ppm/K
Overvoltage protection	< 40 (permanent)						VDC
Polarity protection	up to Umax						VDC
Insulation resistance (500 VDC)	≥ 10						MΩ
Mechanical Data							
Body length (dimension A)	63	88	113	138	188	238	+1 mm
Mechanical stroke (dimension B)	30	55	80	105	155	205	±1.5 mm
Weight approx.							
with cable	140	160	170	190	220	260	g
with connector	86	107	132	150	190	230	g
Operating force (horizontal)	≤ 0.3						N
Mobility of ball coupling	± 1 mm parallel offset, ± 2.5° angular offset						
Maximum permitted tightening torque for mounting screws	140						Ncm
Environmental Data							
Operating temperature range	-40 ... +85 with connector -30 ... +100 with cable						°C °C
Operating humidity range	0 ... 95 (no condensation)						% RH
Shock IEC 60068-2-27	100 (11 ms) (single event)						g
Vibration IEC 60068-2-6	20 (10 ... 2000 Hz, Amax = 0.75 mm)						g
Protection class DIN EN 60529	IP 40						
Operating velocity maximum	5						m/s
Operating acceleration maximum	5						g
Life	> $100x10^6$						movements
MTTF (IEC 60050)	81						years
Functional Safety	If you need assistance in using our products in safety-related systems, please contact us						
EMC-Conformity							
Emission	RF noise field strength EN 55011, class B						
Noise immunity CE	ESD EN 61000-4-2 Radiated immunity EN 61000-4-3 Burst EN 61000-4-4 Conducted disturbances induced by RF fields EN 61000-4-6						

FS = Full scale: Signal span according to electrical measuring range

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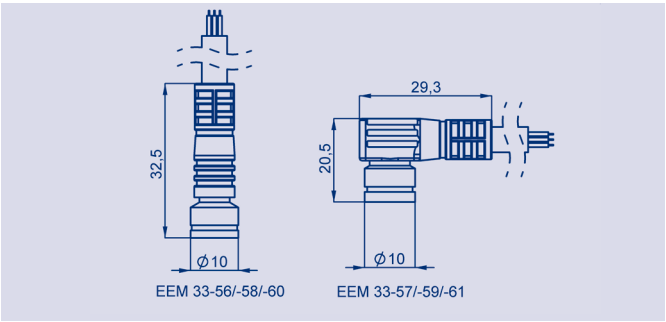

EEM 33-56/-58/-60 EEM 33-57/-59/-61

Ordering specifications

Preferred types printed in bold

Electrical Interface
4: Analog interface

Output signal analog Interface 4 _ _
1: Voltage ouptut
2: Current output

Analog Interface voltage ouput 41 _
1: 0.1 VDC ... 10 VDC (high speed mode)
2: 10 VDC ... 0.1 VDC (high speed mode)
3: 0.1 VDC ... 10 VDC (low speed mode)
4: 10 VDC ... 0.1 VDC (low speed mode)

Analog Interface voltage ouput 42 _
1: 4 mA ... 20 mA (high speed mode)
2: 20 mA ... 4 mA (high speed mode)
3: 4 mA ... 20 mA (low speed mode)
4: 20 mA ... 4 mA (low speed mode)

Electrical connection 101:
101: Connector M8x1, 3-pin, axial outlet
202: Cable, 3-pole, L = 2 m, axial outlet

L S 1 – 0 2 0 0 – 0 0 1 – 4 1 1 – 1 0 1

Mechanical version
001: Position transducer with one-side actuating rod

Electrical measuring range
Various standard lengths
from 0025 mm up to 0200 mm

Series

Included in delivery

2 mounting clamps Z-45 incl.
4 cylinder screws M4x10,
1 ball coupling.

Optional accessories

4 mounting clamps Z3-31 incl.
4 cylinder screws M4 x 10,
P/N 059010;
PUR-cable with 3-pin female connector, M8 x 1,
3 x 0.25 mm², shielded:
2 m length, EEM 33-56,
5 m length, EEM 33-58,
10 m length, EEM 33-60;
PUR-cable with 3-pin female angled connector, M8 x 1,
3 x 0.25 mm², shielded:
2 m length, EEM 33-57,
5 m length, EEM 33-59,
10 m length, EEM 33-61.

On request available

Customized length and electrical connection e.g. cable with connector.

Output connector Code 101	Cable Code 202	Connector with cable EM 33-56 /-57 /-58 /-59 /-60 /-61	Signal
Pin 1	GN	BN	Supply voltage Ub
Pin 4	WH	BK	Output signal
Pin 3	BN	BU	GND