

## Inductive Miniature Displacement Transducer with integrated electronics

### Series **SM34**



- Stroke up to 20mm
- Housing diameter 10 mm
- Integrated electronics
- Low supply current
- Accuracy  $\leq \pm 0,5 \%$  or  $\leq \pm 0,25 \%$
- Protection class IP67



### Construction and operating principle:

A nickel iron core will be moved linear inside of a coil form. The displacement of the core leads to an inductance variation in both coils. The integrated electronic circuit converts the variation into a signal proportional to the displacement.

### Standard measuring stroke:

5 mm	10 mm	15 mm	20 mm
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### Standard type:

Type	Current output	Supply voltage UB	Signal	Mid
	-JB	+JB		
SM343 SM344	4 .. 20 mA (2-wire)	9 .. 32 V *	increasing decreasing	12 mA

Pole reversal protection. Increasing means increasing signal by moving the plunger in the direction towards the plug.

\* Minimum supply voltage depends on load resistance RB:  $9 \text{ V} + \text{RB} [\text{in Ohm}] \times 20 \text{ mA}$

Type	Voltage output	Supply voltage UB	Signal	Mid
	UA *	+UB, -UB		
SM347 SM348	0 .. 10 V	24 V $\pm$ 20 %	increasing decreasing	5 V
SM349 SM34A	0 .. 5 V	12 V $\pm$ 20 %	increasing decreasing	2,5 V
SM34B (SM277) SM34C (SM278)	0 .. 4 V	5 V $\pm$ 10 %	increasing decreasing	2 V

Pole reversal protection and short-circuit proof. (Please notice: Do not connect the output UA to the positive supply voltage. Do not connect the output UA to the negative supply voltage, when -UB is connected to the positive supply voltage!)

\* Permissible load RL  $\geq$  10 kOhm

### Technical data:

Accuracy	Measuring stroke up to 15 mm Measuring stroke up to 20 mm	$\leq \pm 0,5 \%$ or $\leq \pm 0,25 \%$ $\leq \pm 0,5 \%$
Temperature drift		$\leq \pm 0,01 \%$ / °C
Signal rate		1 kHz
Temperature range		- 20 .. + 85 °C
Resistance to shock		250 g SRS 20 .. 2000 Hz
Resistance to vibration		20 g rms (50 g peak)
Protection class		IP66 / IP67 *

\* IP67 with mounted moulded connector or version .K with ribbon cable output.

Voltage output	Typical supply current JB	Maximum supply current JB
Type	at UB = nominal, UA = maximal, RL = 10 kOhm	at UB = maximal, UA = maximal, RL = 10 kOhm
SM347 / SM348	8 mA	12 mA
SM349 / SM34A	8 mA	12 mA
SM34B / SM34C	4 mA	6 mA

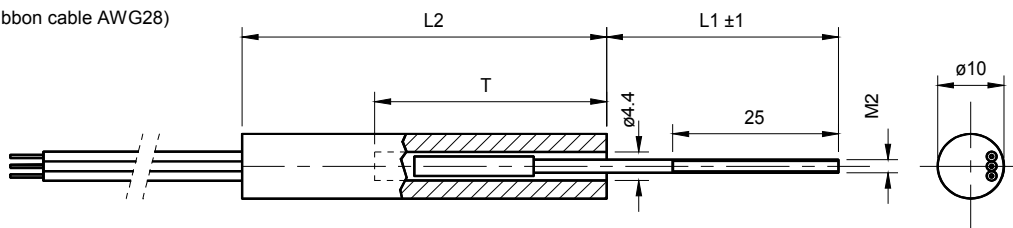
Unless otherwise stated, all values are valid at 20°C ambient temperature and nominal supply voltage starting 10 minutes after switch-on.

### SM34 Standard:

Stroke mm	L1 mm	L2 mm	L3 mm	T mm
	Plunger in mid-position			
5	35	63	53	27
10	35	76	64	40
15	35	86	74	50
20	34	90	74	53

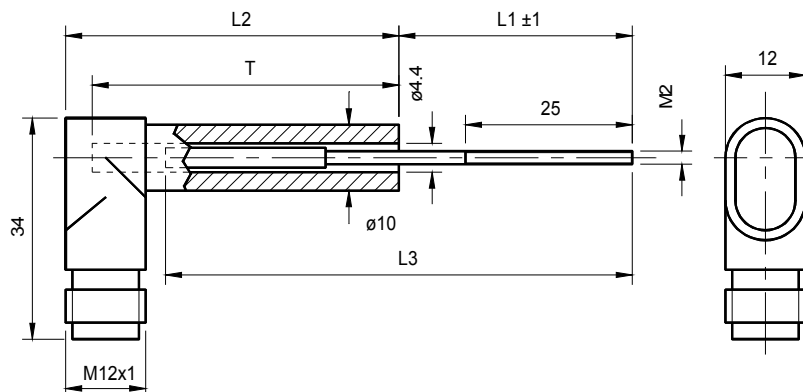
### SM34 .K

(with 300 mm ribbon cable AWG28)  
Core Ø 3 mm



### SM34 .S

(with connector M12)  
Core Ø 3 mm

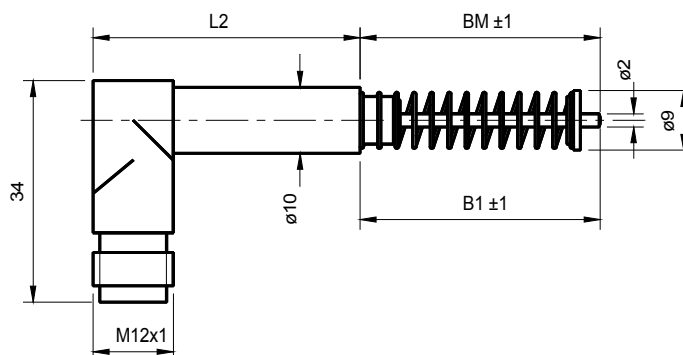


### SM34 .T gauge type:

Stroke mm	L2 mm	B1 mm	BM mm	Total travel mm
		Extended plunger	Plunger in mid-position	
5	73	23,5	18	12
10	86	36	22	24
15	96	40	26	28
20	100	38	25	26

### SM34 .ST

(with connector M12)



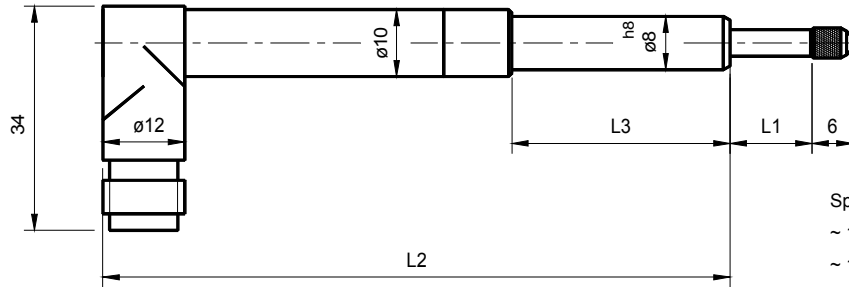
Spring load in mid-position  
~ 1 N (stroke 5 mm)  
~ 2 N (stroke 10, 15 and 20 mm)

## SM34 .U precision indication gauge:

Stroke mm	L2 mm	L3 mm	L1 mm ± 1 mm	Total travel L1 mm
			Plunger in mid-position	
5	109	24	7	12
10	120	24	6	12
15	138	32	11	22
20	142	32	11	22

## SM34 .SU

(with connector M12)



Spring pre-load  
 ~ 1,5 N (stroke 5 and 10 mm)  
 ~ 1,1 N (stroke 15 and 20 mm)

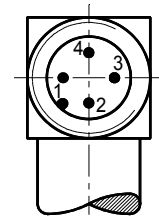
SM34 .KU according to drawing SM34 Standard

## Electrical connections:

Voltage output	Current output	.K Ribbon cable	.L 3x 0,14 <sup>2</sup> shielded	.S connector M12
+UB	+JB	brown	red	1
-UB	Not connected	white	black	4
UA	-JB	green	brown	3

.S: PIN 2 not connected.

4-pin connector M12



## Materials:

Housing	NiFe-Alloy, stainless
Connector	Polymer, reinforced
Core	NiFe-Alloy, stainless
Plunger	Brass
Gauge plunger	Stainless steel
Spring	Stainless steel
Spring plate	Aluminium, black anodized

## Accessories:

SM901.211.3.K5	5 m cable with moulded mating connector
SM901.210	Mating connector straight
SM901.212	Mating connector 90° angled
SM906.200	Mounting block Ø 8 mm, nickel plated brass
SM906.202	Mounting block Ø 10 mm, nickel plated brass
SM906.203	Mounting block Ø 10 mm, polypropylene

## Options:

.S	Connector M12
.K	Ribbon cable .L
.T	Gauge type .R
.U	Precision gauge .X01

\* Radial cable output  
 \*\* Square housing type  
 \*\*\* supply voltage UB = 15 V ± 10 % (output voltage up to UA = 0 .. 10 V)

## Order code:

e.g. SM347.10.1.S

<b>SM34</b>	Series
<b>SM347</b>	Voltage- or Current output and signal direction, here: 0 .. 10 V increasing signal
<b>SM347.10</b>	Stroke in mm, here: 10 mm
<b>SM347.10.1</b>	Accuracy (.1) ≤ ± 0,25 % (.2) ≤ ± 0,5 %, here: ≤ ± 0,25 %
<b>SM347.10.1.S</b>	Options, here: connector M12