

## NORDIC TRANSDUCER DENMARK 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. Nordic Transducer Denmark ntt@ntt.dk phone: +45 98581444 fax.: +45 98581866

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

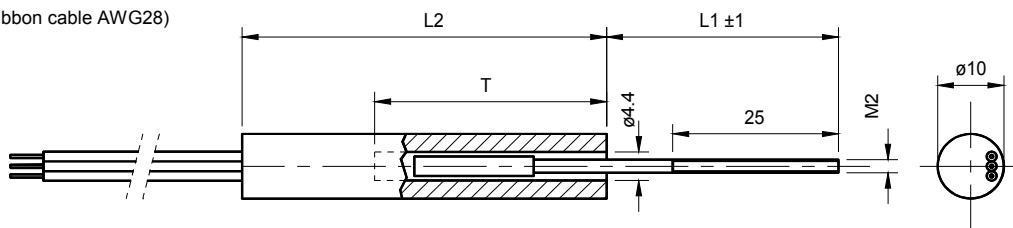
Unless otherwise stated, all values are valid at 20°C ambient temperature and nominal supply voltage starting 10 minutes after switch-on.

### 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

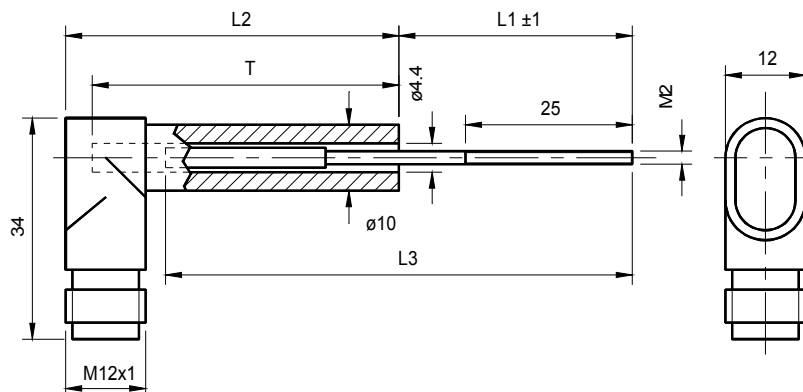
### SM34 .K

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



### SM34 .S

(with connector M12)  
Core Ø 3 mm

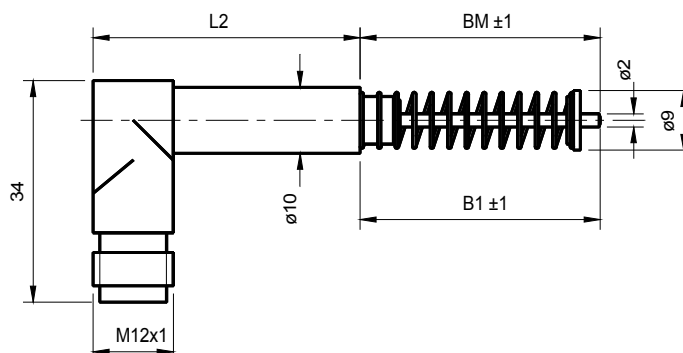


### SM34 .T gauge type:

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)



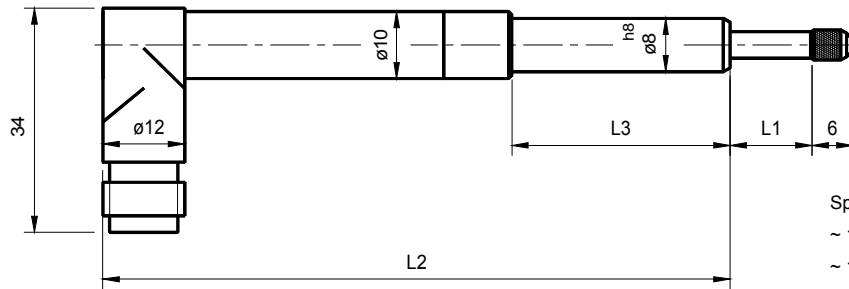
Spring load in mid-position  
~ 1 N (stroke 5 mm)  
~ 2 N (stroke 10, 15 and 20 mm)

**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)



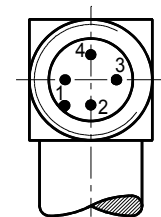
SM34 .KU according to drawing SM34 Standard

**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

**Optionen:**

- .S Connector M12
- .K Ribbon cable
- .T Gauge type
- .U Precision gauge

## Additional Options:

.L Radial cable output  
.R Square housing type  
.X01 supply voltage  $U_B = 15 \text{ V} \pm 10 \%$  (output voltage up to  $U_A = 0 \dots 10 \text{ V}$ )

## Order code:

e.g. SM347.10.1.S

**SM34** Series  
SM347 Voltage- or Current output and signal direction, here: 0 .. 10 V increasing signal  
SM347.10 Stroke in mm, here: 10 mm  
SM347.10.1 Accuracy (.1)  $\leq \pm 0,25 \%$  (.2)  $\leq \pm 0,5 \%$ , here:  $\leq \pm 0,25 \%$   
SM347.10.1.S Options, here: connector M12