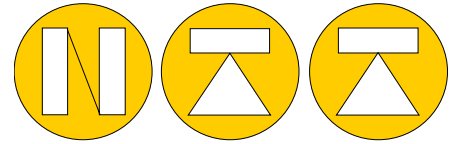


# Inductive displacement transducer Series SM400



**NORDIC TRANSDUCER**

- Universally usable displacement sensor
- Stroke from 20 up to 200mm
- Integrated electronic circuit
- Protection IP66
- Accuracy 0.5% or 0.25%



### Operating principle:

A nickel iron core will be moved linear inside a coil. The displacement of the core leads to an inductance variation in parts of the coil. That generates more information about the position of the core than a linear variable differential transformer or a half-bridge transformer. The integrated electronic circuit converts this information's into a signal proportional to the displacement of the core.

### Standard measuring strokes:

**20mm 40mm 70mm 100mm 150mm 200mm**

### Technical data:

Accuracy	< 0.5% or 0.25%
Temperature drift	< 0,01 % / °C
Frequency limit	800 Hz
Temperature range	-20°C up to +85°C
Resistance to shock	250g SRS 20-2000Hz
Resistance to vibration	20g rms (50g peak)
Protection class	IP66*

\* Mount mating plug Binder series 423 (IP67)  
Binder serie 680 are used as standard supply ( IP40)

### Current output (SM401..404):

Output signal	0..20 mA or 4..20 mA
Supply current $I_B$	max. 60 mA
Load resistance $R_L$	0..500 ohm
Residual ripple	< 0.005 mA <sub>SS</sub>
Dependence on $R_L$	< 0.001% at $R_L=100\text{ohm}$
Dependence on $U_B$	< 0.05% at $U_B = 1V$

### Voltage output (SM405..408):

Output signal	$\pm 10$ VDC or 0..10 VDC
Supply current $I_B$	max. 50 mA
Permissible load $R_L$	>2kohm(shortcircuit proof)
Residual ripple	< 5 mV <sub>SS</sub>
Residual voltage SM427/428	max. 0,1VDC
Dependence on $U_B$	< 0.05% at „ $U_B = 1V$

**Note:** Unless otherwise stated, all values are valid at +20°C ambient temperature and 30V DC or  $\pm 15V$  DC supply voltage, starting 10 minutes after switch-on.

### Standard versions:

Type	Output	Supply voltage $U_b^*$	Signal**	Mid
SM401	0 .. 20 mA	20 .. 32 V	increasing	10 mA
SM402			decreasing	
SM403	4 .. 20 mA	20 .. 32 V	increasing	12 mA
SM404			decreasing	
SM405	$\pm 10$ V	$\pm 13 .. \pm 16$ V	increasing	0 V
SM406			decreasing	
SM407	0..10 V	20 .. 32 V	increasing	5 V
SM408			decreasing	

\* Pole reversal protection

\*\* Increasing signal by moving the plunger in the direction towards the plug.

### Dimensions and masses:

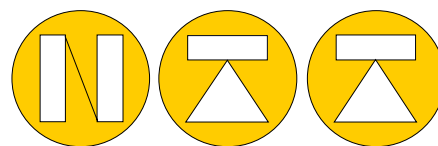
Stroke mm	L1 mm	L2 mm	Transducer	Plunger
20	40	110	210g	15g
40	50	140	240g	19g
70	65	200	310g	25g
100	80	250	380g	31g
150	105	350	520	41g
200	130	500	720	56g

L1 = Plunger in central position

### Materials:

External and internal tube	Stainless steel
Plunger	Stainless steel
Core	Stainless nickel-iron core
Connector housing	Nickel plated brass
Connector contacts	Gold plated brass

# Inductive displacement transducer Series SM400



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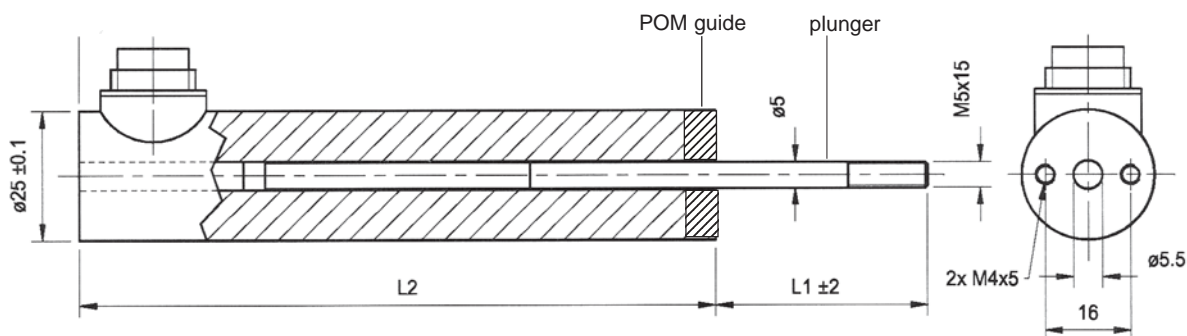
### Dimensions and masses:

Stroke mm	L1 mm	L2 mm	Transducer	Plunger
20	40	110	210g	15g
40	50	140	240g	19g
70	65	200	310g	25g
100	80	250	380g	31g
150	105	350	520	41g
200	130	500	720	56g

L1 = Plunger in central position

## SM40x.F

F = POM guide for plunger

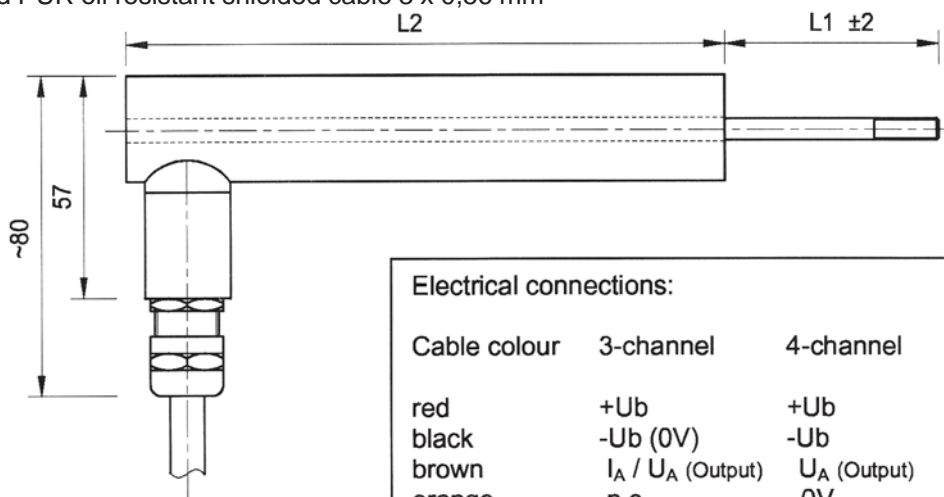


## SM40x.Kxx

K = cable with PG9 and shielded cable 4 x 0,56 mm<sup>2</sup>

KPy = cable with PG9 and PUR oil resistant shielded cable 3 x 0,56 mm<sup>2</sup>

xx = cable length



### Electrical connections:

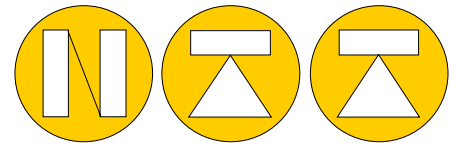
Cable colour	3-channel	4-channel
red	+Ub	+Ub
black	-Ub (0V)	-Ub
brown	I <sub>A</sub> / U <sub>A</sub> (Output)	U <sub>A</sub> (Output)
orange	n.c.	0V

KPy = cable with PG9 and PUR oil resistant shielded cable 3 x 0,56 mm<sup>2</sup>

( LAPP-KABEL 3 wire)

Brown = + Ub ( Supply 10-30V ) White -Ub ( 0V / gnd ) Green IA ( mA output )

# Inductive displacement transducer Series SM400



**NORDIC TRANSDUCER**

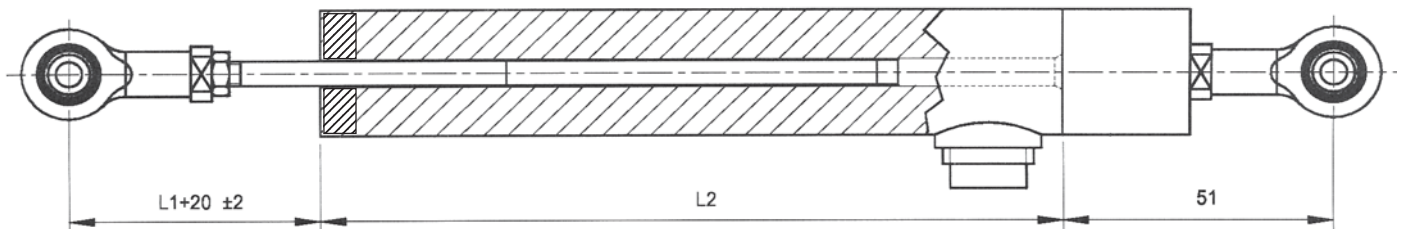
Dimensions and masses:

Stroke mm	L1 mm	L2 mm	Transducer	Plunger
20	40	110	210g	15g
40	50	140	240g	19g
70	65	200	310g	25g
100	80	250	380g	31g
150	105	350	520	41g
200	130	500	720	56g

L1 = Plunger in central position

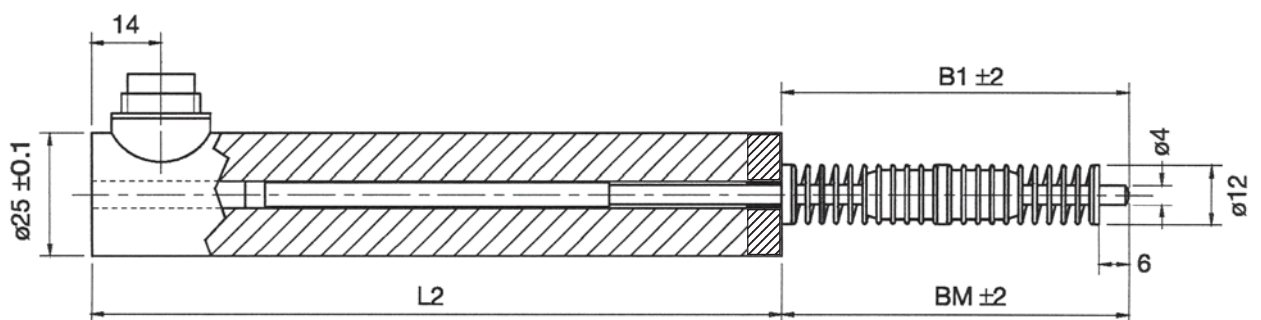
## SM40x.FGH

F = POM guide for plunger  
G = Ball bearing on plunger  
H = Mount + ball bearing at housing



## SM40x.T

T = Return spring up to 100mm

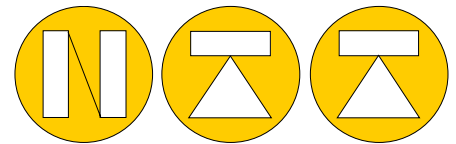


Dimensions and spring force:

Stroke mm	BM mm	B1 mm	L2 mm	Fm N	Fc N/mm
20	70	85	110	~4	0.07
40	70	98	140	~4	0.07
70	110	160	200	~4	0.05
100	140	195	250	~4	0.03

BM = Plunger in central position, B1 = plunger fully extended,  
Fm = spring force in central position, Fc = spring rate

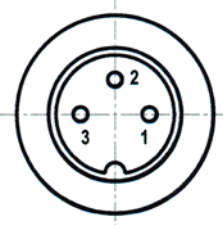
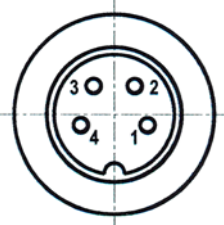
# Inductive displacement transducer Series SM400



**NORDIC TRANSDUCER**

## Electrical connections on plug

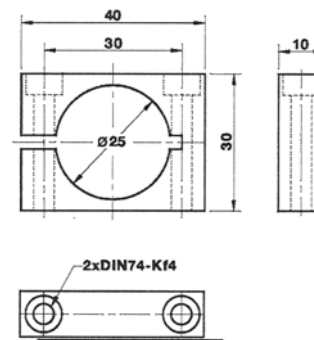
Binder series 680 as standard part of the supply  
 Binder serie 423 IP67 as option  
 ( View to the plug at transducer )

3 Wire system for model 401,402, 403,404,407,408	4 wire system for model 405 & 406
	
1: +U <sub>B</sub> 2: -U <sub>B</sub> 3: I <sub>A</sub> / UA ( Output )	1: +U <sub>B</sub> 2: 0V 3: -U <sub>B</sub> 4: I <sub>A</sub> / UA ( Output )

## Assembly clamps

### SM906.400

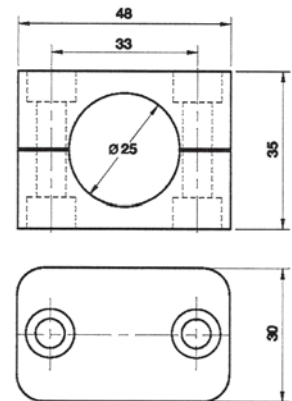
Brass, nickel-plated



(incl.2 fastening screws  
M4x35 DIN912 VA)

### SM906.401

Polypropylene



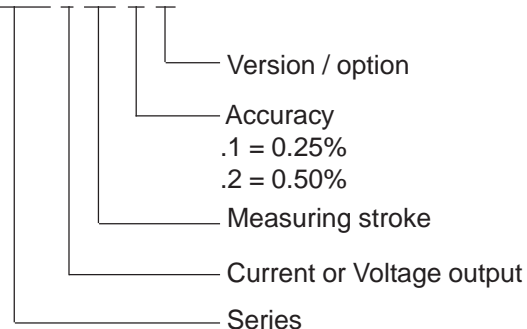
(incl.2 fastening screws  
M6x35 DIN912 VA)

## 400 Versions / options

F = POM guide for plunger  
 G = Ball bearing on plunger M5  
 H = Mount and ball bearing at housing M5  
 T = Gauge type Spring up to 100mm  
 K = Cable outlet  
 KP = Cable PUR type  
 .2 = 0.50% linearity (420.xx.2)  
 .1 = 0.25% linearity (420.xx.1)  
 SM901.401 = Binder serie 423 connector  
 SM906.400 = Clamp (brass nickel plated)  
 SM906.401 = Clamp ( Polypropylene )

## ORDER CODE

**SM401 .70 .2 .F**

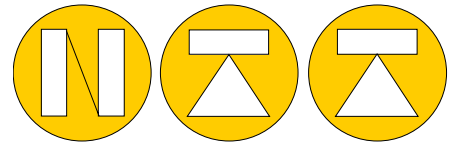


Example: **SM403.200.1.FG**

Serie 403, output 4-20mA ( increasing )  
 200mm stroke, accuracy 0.25%, FG guide + Ball bearing plunger  
 + 2 x SM906.401 clamps



## Inductive displacement transducer Series SM400



**NORDIC TRANSDUCER**

Serie 400 shown with SM906.401 Clamp



*SERIES 400 for strokes from 0-20mm to 0-200mm*