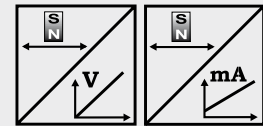


POSICHRON® PCST27 Rod-Style Design with Analog Output



POSICHRON® rod-style position sensor

- For hydraulic cylinders, fluid level measurement
- Protection class IP67/69K, IP68, underwater capability
- Pressure-proof up to 15 bar
- Waterproof cable seal
- Measurement range 0 ... 100 to 0 ... 5750 mm
- Absolute position measurement
- Contact-free
- Seawater-proof
- Analog output
- EX version on request



Specifications	Output	Voltage Current
	Resolution	Essentially infinite
Sampling rate	Up to 1 kHz, depending on the measurement range	
Linearity	Ranges >500 mm: L10 = ±0.10 % f.s. L02 = ±0.02 % f.s. Ranges ≤500 mm: L10 = ±0.5 mm L02MM = ±0.2 mm	
Repeatability	±3 µm	
Housing material	Stainless steel 1.4404	
Mounting	Thread M18x1,5 / thread ¾ inch	
Working pressure	400 bar, other values on request	
Protection class	IP68 (permanent pressure-proof up to 15 bar), IP67/69K	
Shock	EN 60068-2-27:1993, 50 g 11 ms, 100 shocks	
Vibration	EN 60068-2-6:1995, 20 g 10 Hz-2 kHz, 10 cycles	
Connection	Cable 2 m	
EMC, temperature	Refer to output specification	

Order Code PCST27
1 channel,
industry standard

Model Name

Mounting

M18 = Thread M18 x 1,5

Z3/4 = Thread ¾ "-16UNF

Measurement Range (in mm)

100 ... 5750 in 10 mm increments

Other ranges on request

Output

420T = 4 ... 20 mA signal conditioner (3 wire)

Linearity

L02 / L02MM / L10 (for definition see "Specifications" above)

Connection

KAB2M = Cable, standard length 2 m, other lengths upon request



Order Code Position Magnet (see page 65)

PCSTMAG ...

Order Example: PCST27 - M18 - 1500 - 420T - L02 - KAB2M

POSICHRON® PCST27 Rod-Style Design with Analog Output



Order Code PCST27

1 or 2 channel,
configurable



Model name

Mounting

M18 = Thread M18 x 1,5
Z3/4 = Thread 3/4"-16UNF

Measurement range (in mm)

100 ... 5750 in 10 mm increments

Output

U2 = 0.5 ... 10 V signal conditioner
U3 = 0 ... 5 V signal conditioner
I1 = 4 ... 20 mA signal conditioner (3-wire)

Function and characteristics output 1

P1A = Position magnet 1, increasing
P1D = Position magnet 1, decreasing
PMU = Start value, direction and end value adjustable by the customer (1 channel only)
DA = Difference magnet 1/2, increasing (2 magnets required)
DD = Difference magnet 1/2, decreasing (2 magnets required)

Function and characteristics output 2 (option)

P2A = Position magnet 2, increasing
P2D = Position magnet 2, decreasing
DA = Difference magnet 1/2, increasing } 2 magnets required
DD = Difference magnet 1/2, decreasing }

VZx.x = Velocity with direction detection (only with one magnet)

VZx.x = Velocity in steps of 0.1 m/s

Example: VZ1.5	towards start position		towards end position
	-1.5 m/s	0	+1.5 m/s
Output U2:	0.5 V	5.25 V	10 V
Output I1:	4 mA	12 mA	20 mA

VAx.x = Velocity without direction detection (only with one magnet)

VAx.x = Velocity in steps of 0.1 m/s

Example: VA1.5	towards start position		towards end position
	-1.5 m/s	0	+1.5 m/s
Output U2:	10 V	0.5 V	10 V
Output I1:	20 mA	4 mA	20 mA

Linearity

L02 / L02MM / L10 (for definition see previous page, "Specifications")

Connection

KAB2M = Cable, standard length 2 m, other lengths upon request

Custom outputs are available upon request.

1. Order example: PCST27 - M18 - 1000 - U2 - P1D - L10 - KAB2M

Rod-style design, measurement range 1000 mm, 1 voltage output 0.5 ... 10 V (U2)
Output 1: Position magnet 1, decreasing signal (P1D)
Output 2: Not used

2. Order example: PCST27 - M18 - 1000 - I1 - P1A - P2D - L10 - KAB2M

Rod-Style Design, measurement range 1000 mm, 2 current outputs 4 ... 20 mA (I1)
Output 1: Position magnet 1, increasing signal (P1A)
Output 2: Position magnet 2, decreasing signal (P2D)

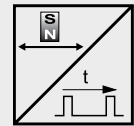
3. Order example: PCST27 - M18 - 1000 - U2 - P1A - VZ1.0 - L10 - KAB2M

Rod-Style Design, measurement range 1000 mm, 2 voltage outputs 0.5 ... 10 V (U2)
Output 1: Position magnet 1, increasing signal (P1A)
Output 2: Velocity magnet 1, -1 m/s ... 1 m/s for range 0.5 ... 10 V (VZ1.0)



POSICHRON® rod-style position sensor

- For hydraulic cylinders, fluid level measurement
- Protection class IP67/69K, IP68, underwater capability
- Pressure-proof up to 15 bar
- Waterproof cable seal
- Measurement range 0 ... 100 to 0 ... 5750 mm
- Absolute position measurement
- Contact-free
- Seawater proof
- Multi-magnet operation
- Pulse output (start/stop)
- EX version on request



Specifications		
	Output	Pulse output (start/stop)
	Resolution	Essentially infinite
	Sampling rate	Up to 1 kHz, depending on the measurement range
	Linearity	Ranges >500 mm: L10 = ±0.10 % f.s. L02 = ±0.02 % f.s. Ranges ≤500 mm: L10 = ±0.5 mm L02MM = ±0.2 mm
	Repeatability	±3 µm
	Housing material	Stainless steel 1.4404
	Mounting	Thread M18x1,5 / thread ¾ inch
	Working pressure	400 bar, other values on request
	Protection class	IP68 (permanent pressure-proof up to 15 bar), IP67/69K
	Shock	EN 60068-2-27:1993, 50 g 11 ms, 100 shocks
	Vibration	EN 60068-2-6:1995, 20 g 10 Hz-2 kHz, 10 cycles
	Connection	Cable 2 m
	EMC, temperature	Refer to output specification

Order Code PCST27



Model Name

Mounting

M18 = Thread M18x1,5
Z3/4 = Thread ¾" -16 UNF

Measurement Range (in mm)

100 ... 5750 in 10 mm increments
Other ranges on request

Output

STSP = Pulse output (start/stop)

Linearity

L02 / L02MM / L10 (for definition see "Specifications" above)

Connection

KAB2M = Cable, standard length 2 m, other lengths upon request

Order code position magnet (see page 65)

PCSTMAG ...

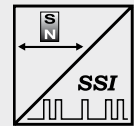
Order example: PCST27 - M18 - 2000 - STSP - L02 - KAB2M

POSICHRON® PCST27 Rod-Style Design with SSI Output



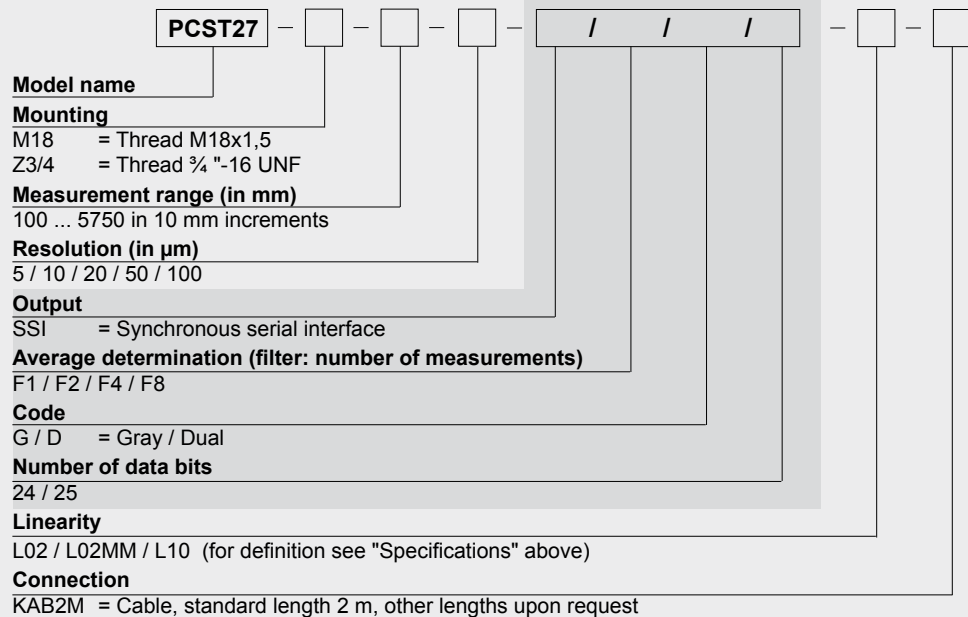
POSICHRON® rod-style position sensor

- For hydraulic cylinders, fluid level measurement
- Protection class IP67/69K, IP68, underwater capability
- Pressure-proof up to 15 bar
- Waterproof cable seal
- Measurement range 0 ... 100 to 0 ... 5750 mm
- Absolute position measurement
- Contact-free
- Seawater proof
- Synchronous serial interface (SSI)
- EX version on request



Specifications		
Output		Synchronous serial interface (SSI)
Resolution		5, 10, 20, 50, 100 µm
Sampling rate		Up to 1 kHz, depending on the measurement range
Linearity		Ranges >500 mm: L10 = ±0.10 % f.s. L02 = ±0.02 % f.s. Ranges ≤500 mm: L10 = ±0.5 mm L02MM = ±0.2 mm
Repeatability		±3 µm
Housing material		Stainless steel 1.4404
Mounting		Thread M18x1,5 / thread ¾ inch
Working pressure		400 bar, other values on request
Protection class		IP68 (permanent pressure-proof up to 15 bar), IP67/69K
Shock		EN 60068-2-27:1993, 50 g/11 ms, 100 shocks
Vibration		EN 60068-2-6:1995, 20 g 10 Hz-2 kHz, 10 cycles
Connection		Cable 2 m
EMC, temperature		Refer to output specification

Order Code PCST27

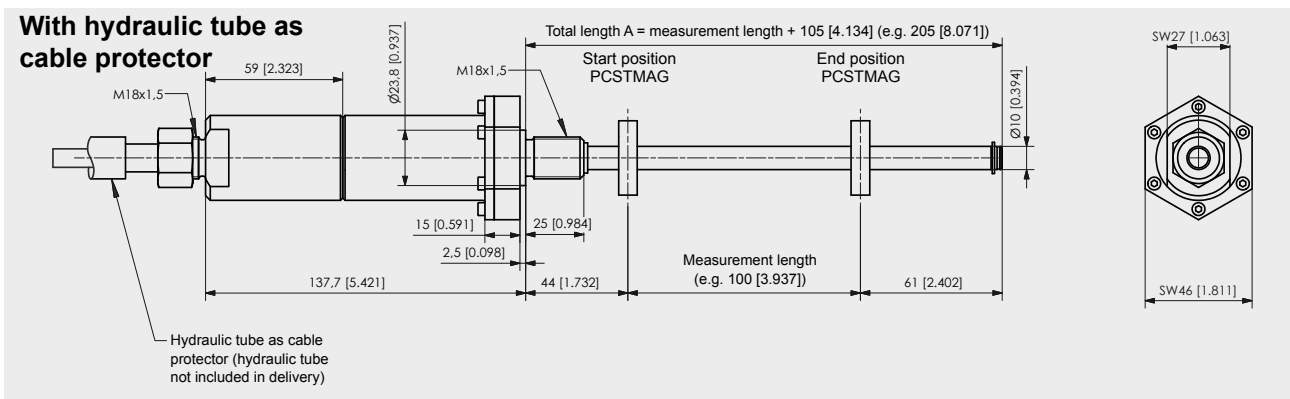
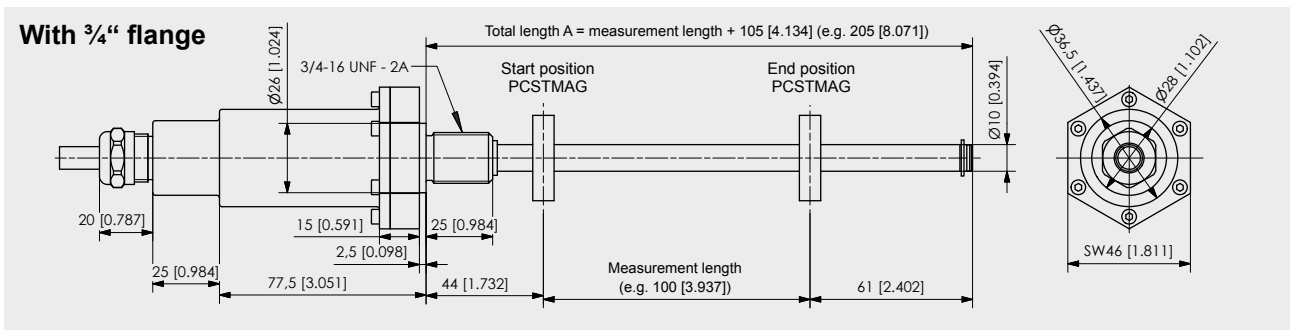
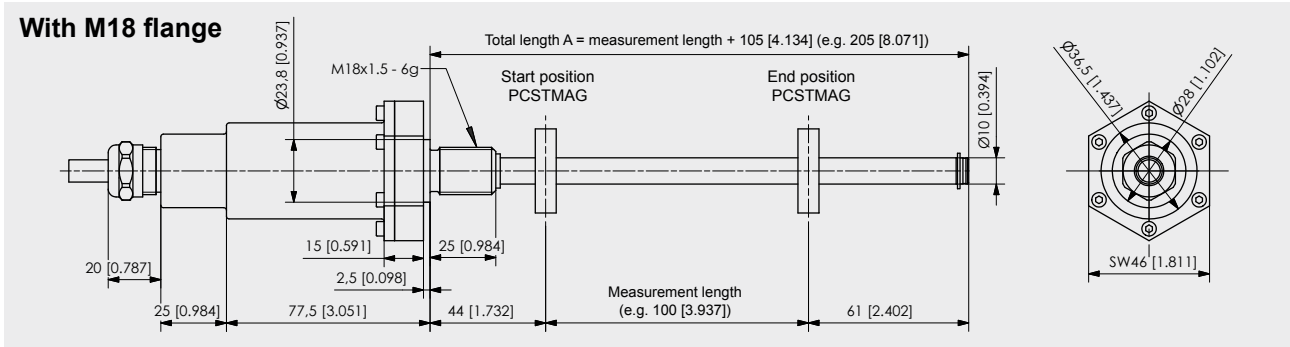


Order code position magnet (see page 65)

PCSTMAG ...

Order example: PCST27 - M18 - 1500 - 10 - SSI/F8/G/24 - L02 - KAB2M

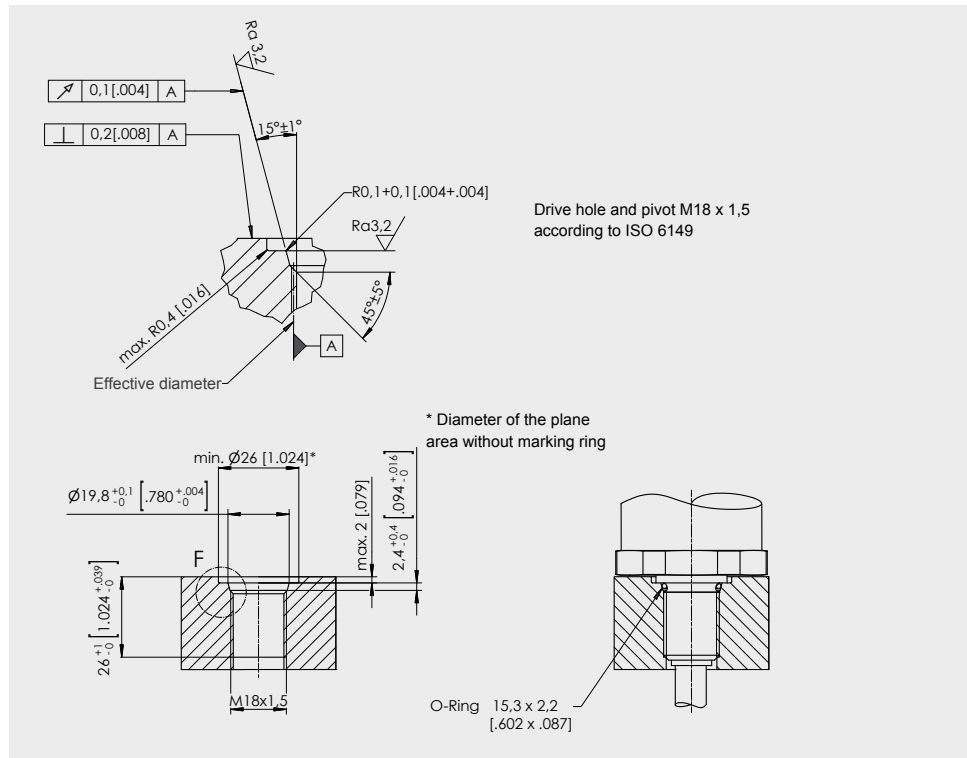
POSICHRON[®]
PCST27
Rod-Style Design



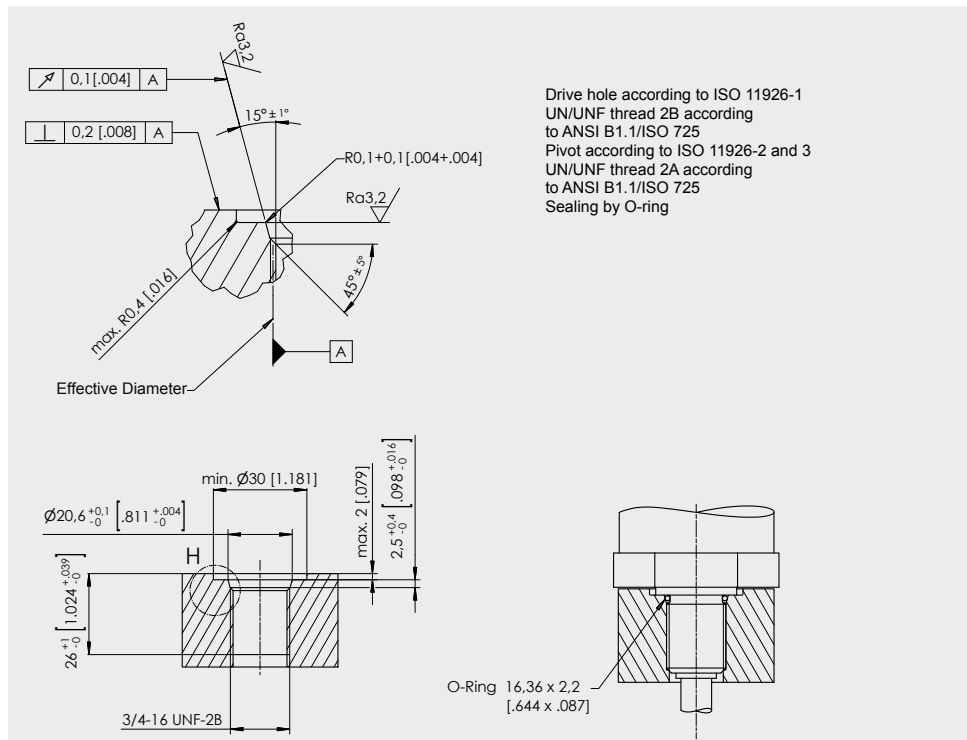
Dimensions in mm [inch]

Dimensions informative only.
 For guaranteed dimensions consult factory.

Mounting hole
M18



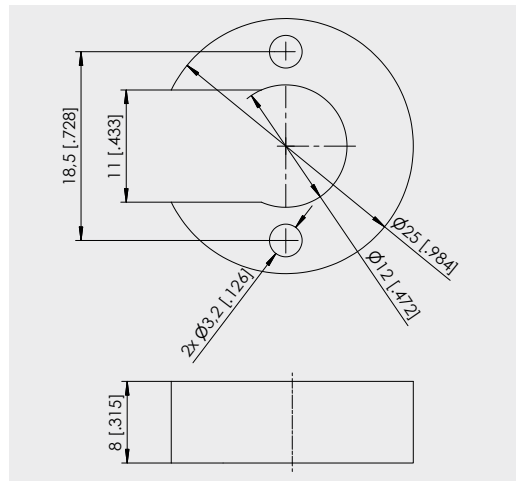
Mounting hole
3/4 inch



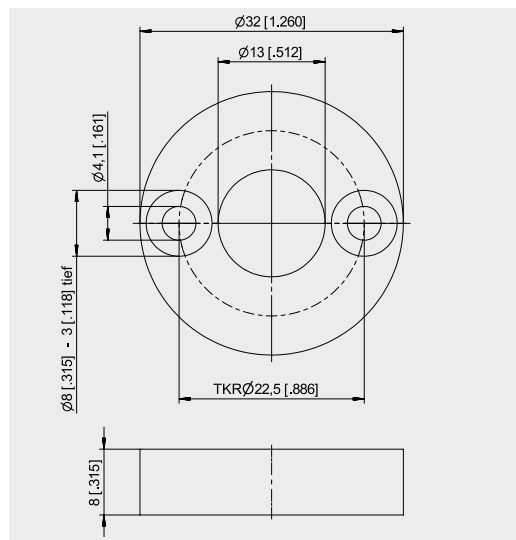
Dimensions in mm [inch]

Dimensions informative only.
 For guaranteed dimensions consult factory.

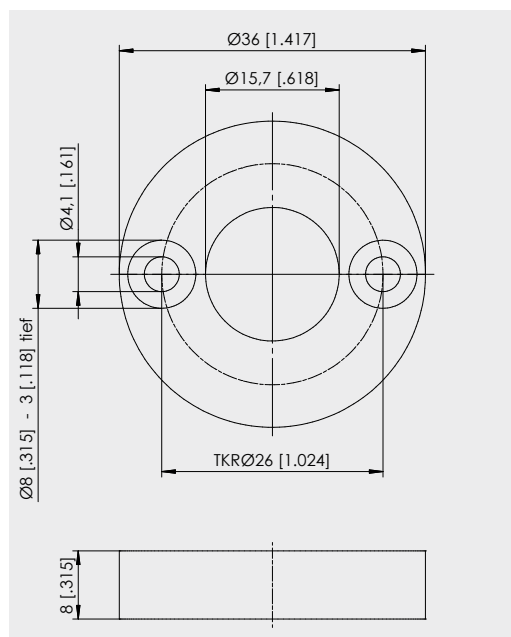
PCSTMAG1



PCSTMAG2
 (standard)



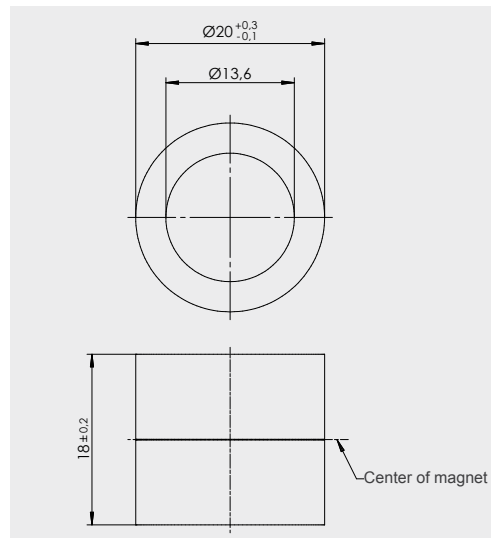
PCSTMAG5



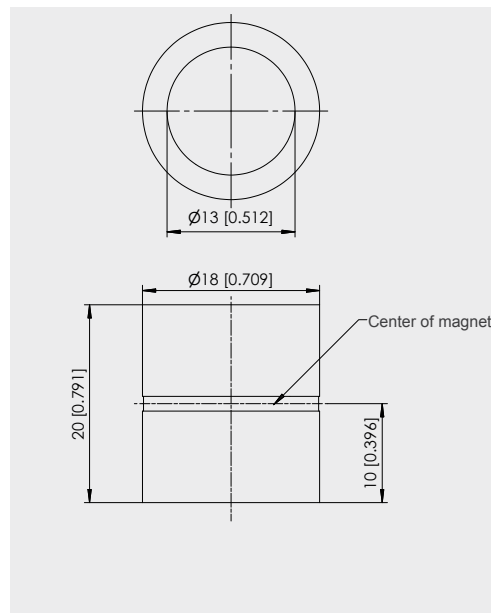
Dimensions in mm [inch]

Dimensions informative only.
 For guaranteed dimensions consult factory.
 Other designs can be realized on request

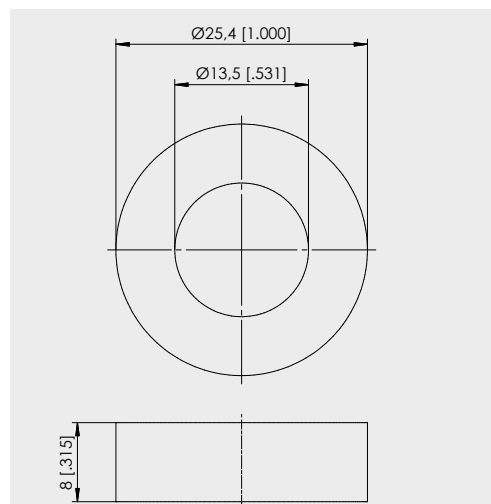
PCSTMAG2-MH1



PCSTMAG2-MH2



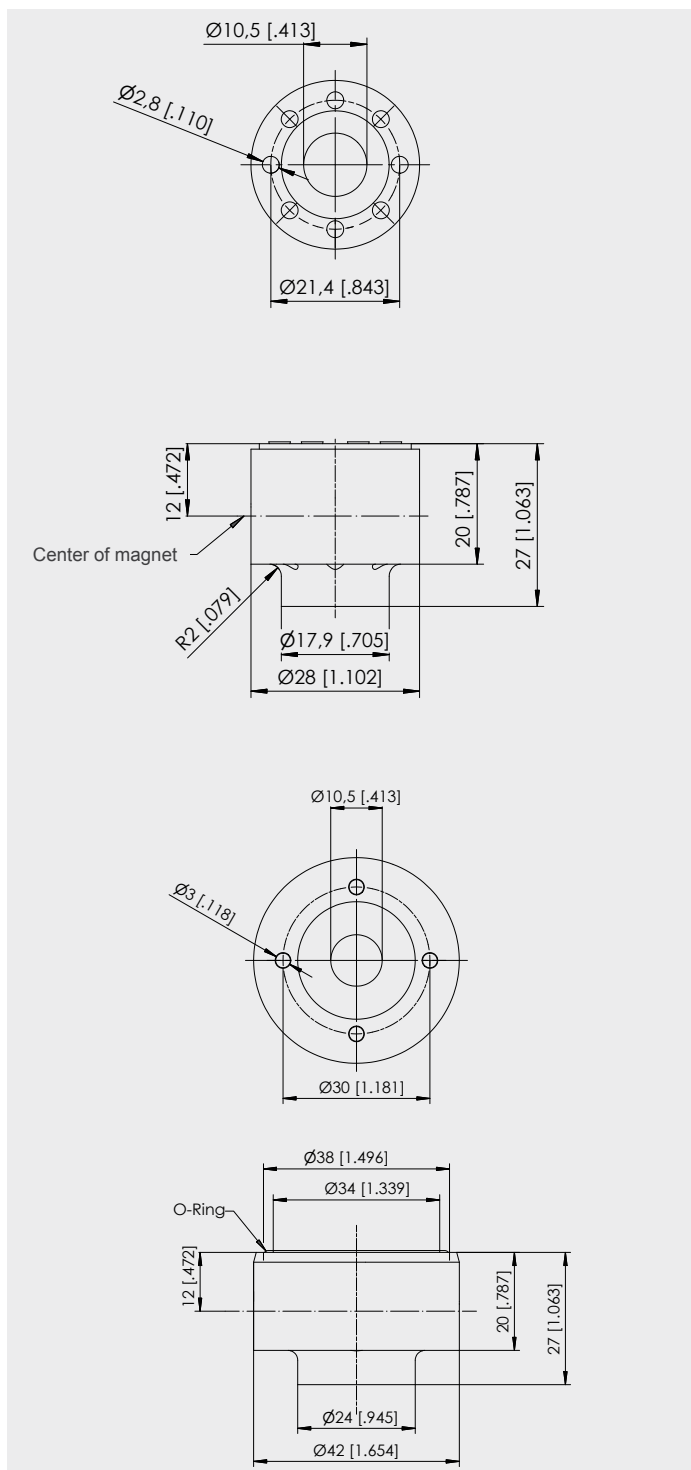
PCSTMAG2-MH3



Dimensions in mm [inch]

Dimensions informative only.
 For guaranteed dimensions consult factory.
 Other designs can be realized on request

PCSTMAG2-G1



PCSTMAG2-G2

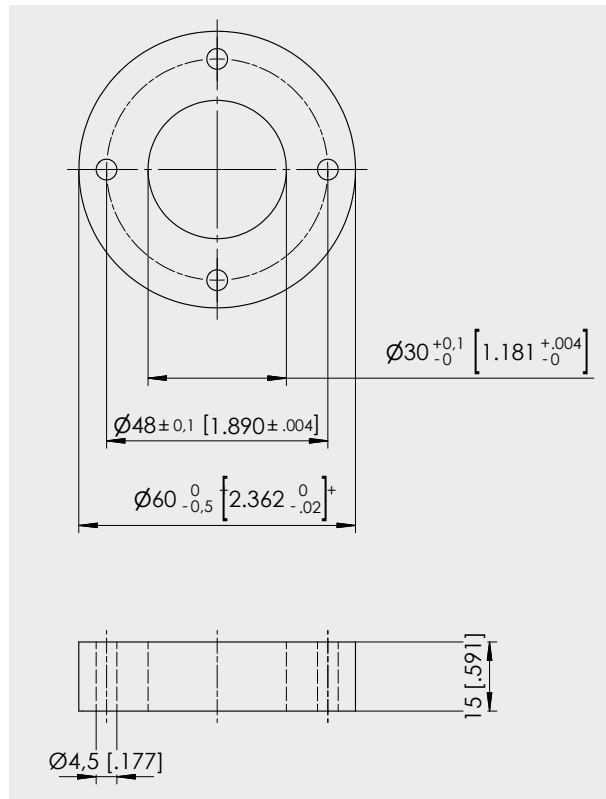
PCSTMAG2 - G1 / G2

Sliding magnet with special self-lubricating and abrasion-resistant material. To be used if sensor is mounted in horizontal position and a mechanical support of the rod is not possible for measurement ranges >1000 mm.

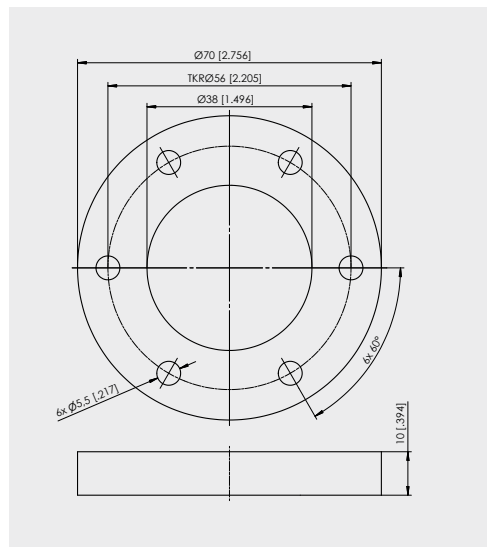
Dimensions in mm [inch]

Dimensions informative only.
 For guaranteed dimensions consult factory.
 Other designs can be realized on request

PCSTMAG7



PCSTMAG4



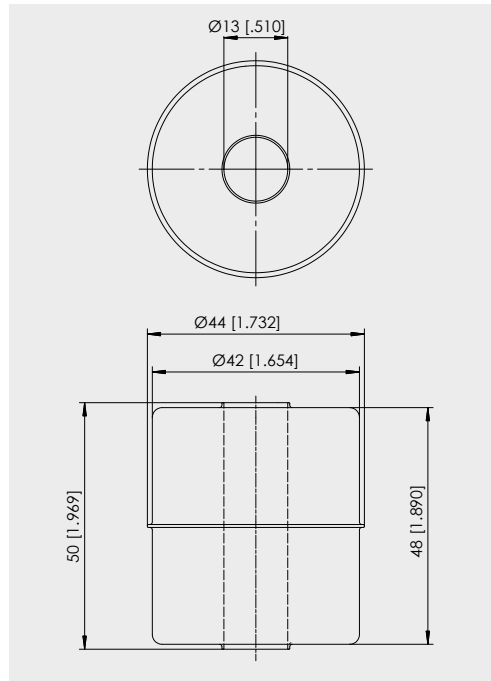
Dimensions in mm [inch]

Dimensions informative only.
 For guaranteed dimensions consult factory.
 Other designs can be realized on request

PCSTMAG3

(float, continuous pressure up to 9 bar, for media with a specific gravity of $\geq 0,75 \text{ g/cm}^3$)

Material: 1.4404

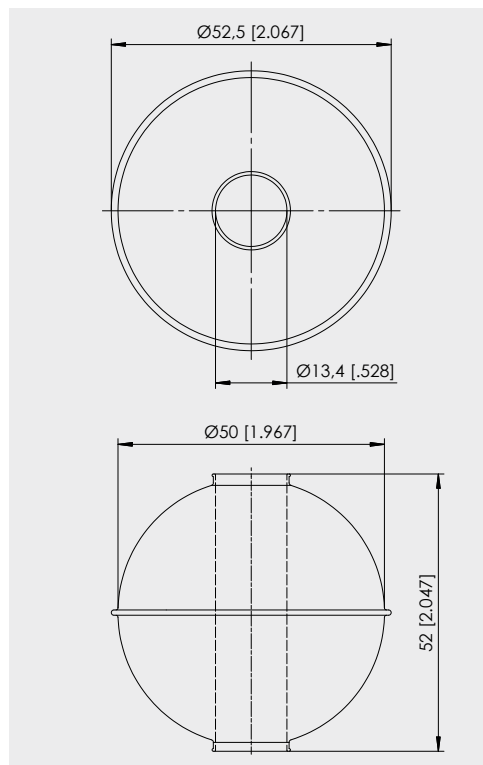


Note: Dependent on the design the available measurement range is reduced of 25 mm on both ends!

PCSTMAG6

(float, continuous pressure up to 30 bar, for media with a specific gravity of $\geq 0,7 \text{ g/cm}^3$)

Material: 1.4571



Note: Dependent on the design the available measurement range is reduced of 25 mm on both ends!

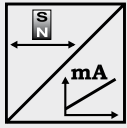
Dimensions in mm [inch]

Dimensions informative only.
 For guaranteed dimensions consult factory.
 Other designs can be realized on request

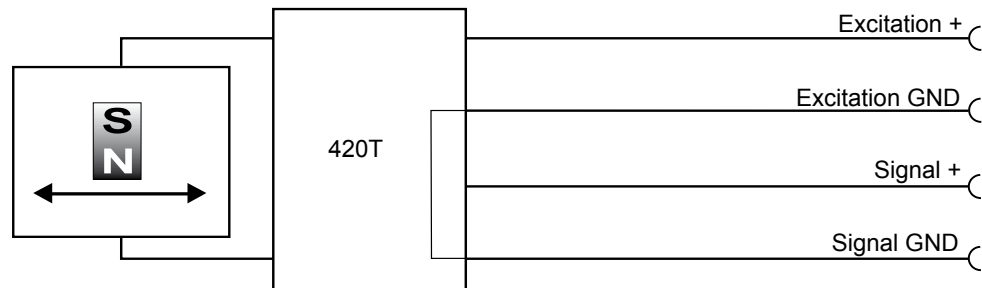
POSICHRON® Output Specification 420T Industry Standard



Signal conditioner 420T Current output (3 wire)	Excitation voltage	18 ... 27 V DC (18 ... 36 V DC as option)
	Excitation current	Typ. 70 mA, 80 mA max.
	Load resistor	350 Ω max.
	Output current	4 ... 20 mA, 30 mA max. (at failure)
	Resolution	Essentially infinite
	Stability (temperature)	±50 x 10 ⁻⁶ / °C f.s.
	Protection	Reverse polarity, short circuit
	Output noise	0.5 mV _{RMS}
	Operating temperature	-40 ... +85 °C
	Immunity to interference (EMC)	According to EN 61326:2004



Signal diagram

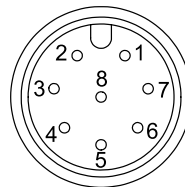


Signal wiring	Output signals 420T	Connector pin	Cable output color * (not for PCST27 and PCR32)
	Excitation +	1	white
	Excitation GND	2	brown
	Signal +	3	green
	Signal GND	4	yellow

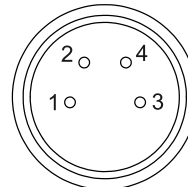
Connection

Mating connector

View to
sensor
connector



CONN-M12-8M



CONN-M8-4M

*** Please note the different colors of the assembled accessory cable!**

POSICHRON®

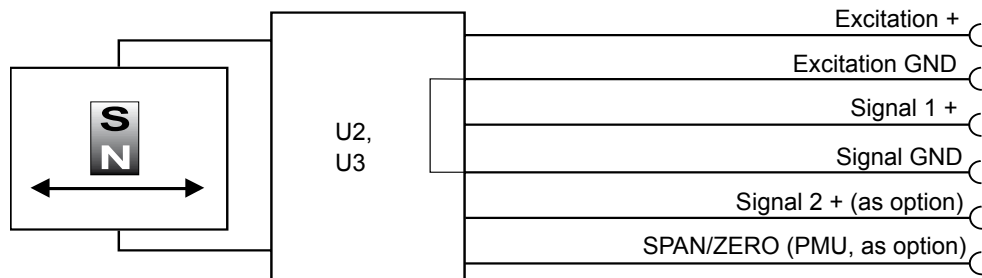
Output Specification U2, U3 and I1

Configurable, 1 or 2 channels



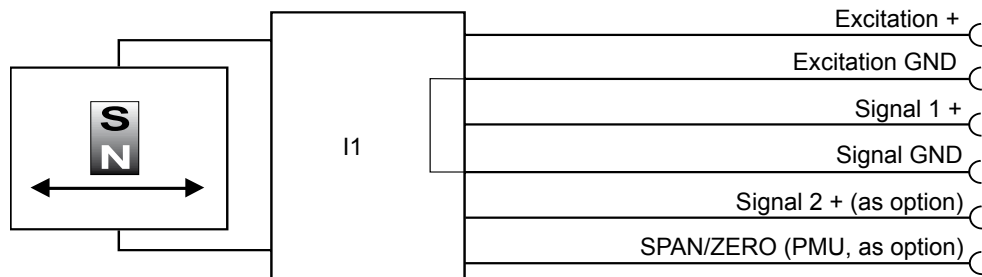
Signal conditioner U2, U3 Voltage output 	Excitation voltage	18 ... 27 V DC
	Excitation current	Typ. 35 mA, 80 mA max.
	Output voltage	U2: 0.5 ... 10 V; U3: 0 ... 5 V
	Output current	2 mA max.
	Output load	> 5 kΩ
	Resolution	16 bit
	Stability (temperature)	$\pm 50 \times 10^{-6} / ^\circ\text{C}$ f.s.
	Protection	Reverse polarity, short circuit
	Output noise	0.5 mV _{RMS}
	Operating temperature	-40 ... +85 °C
Immunity to interference (EMC)	According to EN 61326:2004	

Signal diagram



Signal conditioner I1 Current output (3 wire) 	Excitation voltage	18 ... 27 V DC
	Excitation current	Typ. 60 mA, 80 mA max.
	Load resistor	350 Ω max.
	Output current	4 ... 20 mA, 30 mA max (at failure)
	Resolution	16 bit
	Stability (temperature)	$\pm 50 \times 10^{-6} / ^\circ\text{C}$ f.s.
	Protection	Reverse polarity, short circuit
	Output noise	0.5 mV _{RMS}
	Operating temperature	-40 ... +85 °C
Immunity to interference (EMC)	According to EN 61326:2004	

Signal diagram



Signal wiring	Output sigals U2, U3, I1	Connector pin	Cable output, wire color (not for PCST27 and PCR32)
	Excitation +	1	white
	Excitation GND	2	brown
	Signal 1 +	3	green
	Signal GND	4	yellow
	Signal 2 + (as option *)	5	grey
	SPAN/ZERO (PMU **, as option)	6	pink

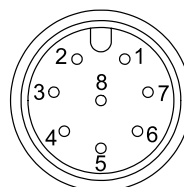
* When using multiple magnets the distance between two magnets must be min. 70 mm to identify the single magnets definitely.

** Description page 59

Connection

Mating connector

View to
sensor
connector

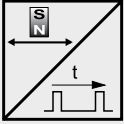


CONN-M12-8M

POSICHRON® Output Specification Pulse Interface STSP

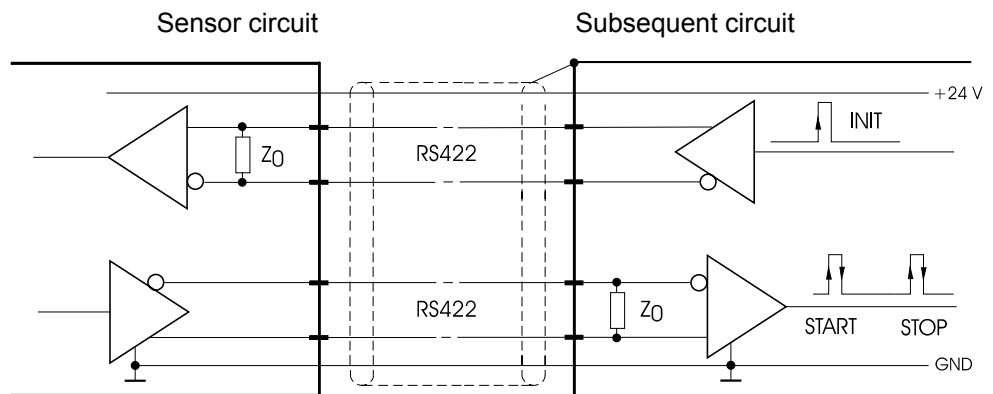


Pulse interface STSP

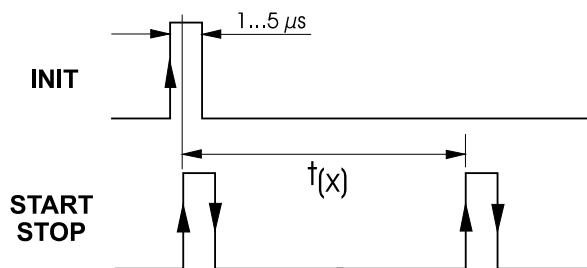


Excitation voltage	18 ... 27 V DC, residual ripple 10 mV _{SS}
Excitation current	Typ. 60 mA, 150 mA max.
Stability (temperature)	±50 x 10 ⁻⁶ / °C f.s.
Wave velocity v _s	2600 ... 2900 m/s
Level INIT and START/STOP	RS422
Protection	Reverse polarity, short circuit
Operating temperature	-40 ... +85 °C
EMC	According to EN 61326:2004

Signal diagram



The subsequent circuit generates a request pulse via the INIT line. The position sensor responds with a START and a STOP signal.



To calculate the position value the time interval $t_{(x)}$ must be multiplied with the conversion factor v_s specified on the type label.

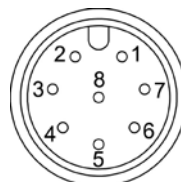
$$\text{Position value } x = t_{(x)} \cdot v_s$$

When using multiple magnets every single magnet generates its own STOP signal. To identify the single magnets definitely the distance between two magnets must be min. 70 mm.

Signal wiring	Pulse interface	Connector pin	Cable output color (not for PCST27 and PCRP32)
Excitation +		1	white
Excitation GND		2	brown
INIT		3	green
INIT		4	yellow
STSP		5	grey
STSP		6	pink

Connection Mating connector

View to sensor
connector



CONN-M12-8M

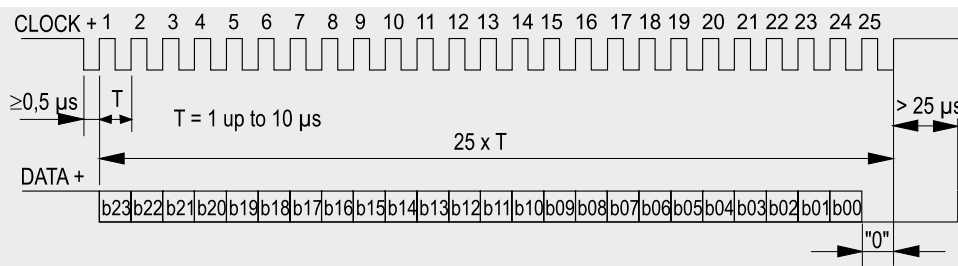
POSICHRON® Output Specification SSI



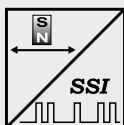
Description

The data transmission takes place by means of the two signals CLOCK and DATA. The processing unit (PLC, microcomputer) sends pulse sequences which clock the data transmission at the required transfer rate. With the first falling edge of the pulse sequence the position of the sensor is recorded and stored. The following rising edges control the bit-by-bit transfer of the data word. After a delay time the next new position information can be transmitted.

Data format (Train of 26 pulses)

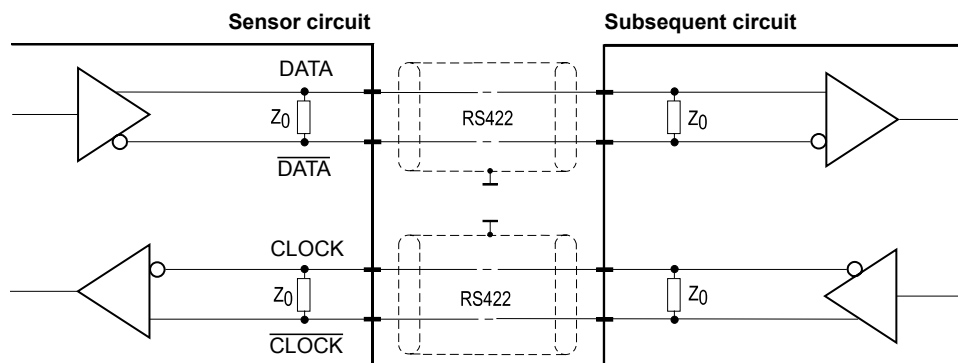


Synchronous serial interface SSI



Output	RS422
Excitation voltage	18 ... 27 V DC, residual ripple 10 mV _{SS}
Excitation current	Typ. 80 mA, 150 mA max.
Clock frequency	100 kHz ... 1 MHz
Code	Gray code, dual code
Resolution	≥ 5 μm
Delay between pulse trains	>25 μs
Filter	Average determination, see page 59
Stability (temperature)	±50 x 10 ⁻⁶ / °C f.s.
Operating temperature	-40 ... +85 °C
Immunity to interference EMC	According to EN 61326:2004

Signal diagram



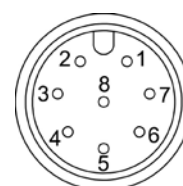
Cable length	Baud rate
50 m	100-1000 kHz
100 m	100-300 kHz

Note:
Extension of the cable length will reduce the maximum transmission rate.
The signals CLOCK/CLOCK and DATA/DATA must be connected in a twisted pair cable, common shielded.

Signal wiring

Signal name	Connector pin	Cable output color (not for PCST27 and PCR32)
Excitation +	1	white
Excitation GND	2	brown
CLOCK	3	green
CLOCK	4	yellow
DATA	5	grey
DATA	6	pink

View to sensor connector



CONN-M12-8M