

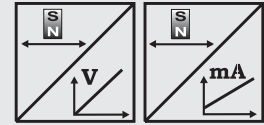
# PCQA21 POSICHRON<sup>®</sup> Position Sensor Quad Profile Housing with Analog Output



## POSICHRON<sup>®</sup> position sensor in quad profile

- Protection Class IP67
- Measurement ranges 0 ... 100 to 0 ... 5750 mm
- Absolute position measurement
- Easy mounting with mounting brackets
- No power for the position magnet
- Wear- and maintenance free
- 0 ... 10 V output
- 4 ... 20 mA output

Discontinued model  
Don't use for further developments  
Replaced by PCQA24



| Specifications                |  |
|-------------------------------|--|
| Output                        | Voltage: 0 ... 10 V, 3 wire<br>Current: 4 ... 20 mA, 3 wire    |
| Resolution                    | Essentially infinite   |
| Sampling rate                 | 0.5 ... 2 kHz depending on measurement range                   |
| Linearity                     | ±0.1 mm for ranges ≤ 500 mm<br>±0.02 % f.s. for ranges >500 mm |
| Casing material               | AlMgSi1  |
| Protection class              | IP67 (connector version: with mating connector)                |
| Operating temperature         | -40 ... +85 °C   |
| EMC, immunity to interference | EN61326: 1998, Table A1  |
| EMC, radio frequency emission | EN55011 Group 1 class A  |
| Shock                         | 100 g/6 ms according to EN60068-2-27                           |
| Vibration                     | 15 g, 10 ... 2000 Hz according to EN90068-2-6                  |
| Connection                    | Male socket 8 pin DIN 45326/cable 3 m (standard)               |

### Order Code PCQA21

#### Model Name

#### Measurement Range (in mm)

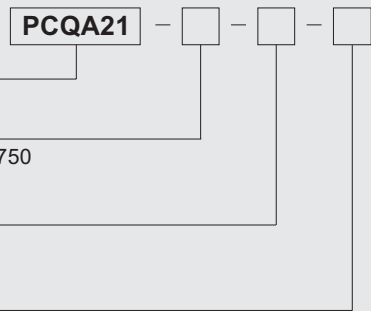
100 / 500 / 1000 / 1500 / 2000 / 2500 / 3000 / 4000 / 5000 / 5750  
Other ranges on request

#### Outputs

10V = with 0 ... 10 V signal conditioner (3 wire)  
420T = with 4 ... 20 mA signal conditioner (3 wire)

#### Connection

D8 = Connector 8 pin DIN 45326  
KAB3M = Cable output, length 3 m (standard)



Order Code Mounting Set (see accessories page 60)

Order Code Position Magnet (accessories page 58)

Order Code Mating Connector (see accessories page 63)

PCQA-BFS1

PCMAG...

WS-CONN-D8

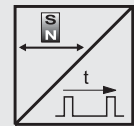
Order Example: PCQA21 - 1500 - 10V - D8

# PCQA21 POSICHRON<sup>®</sup> Position Sensor Quad Profile Housing with Pulse Output



## POSICHRON<sup>®</sup> position sensor in quad profile

- Protection Class IP67
- Measurement range 0 ... 100 to 0 ... 5750 mm
- Absolute position measurement
- Easy mounting with mounting brackets
- No power for the position magnet
- Wear- and maintenance-free
- Pulse output (start/stop)



| Specifications                |  |  |
|-------------------------------|--|--|
| Output                        | Pulse output (start/stop)                                      |  |
| Resolution                    | Essentially infinite   |  |
| Sampling rate                 | 0.5 ... 2 kHz depending on measurement range                   |  |
| Linearity                     | ±0.1 mm for ranges ≤ 500 mm<br>±0.02 % f.s. for ranges >500 mm |  |
| Casing material               | AlMgSi1  |  |
| Protection class              | IP67 (connector version: with mating connector)                |  |
| Operating temperature         | -40 ... +85 °C   |  |
| EMC, immunity to interference | EN61326: 1998, Table A1  |  |
| EMC, radio frequency emission | EN55011 Group 1 class A  |  |
| Shock                         | 100 g/6 ms according to EN60068-2-27                           |  |
| Vibration                     | 15 g, 10 ... 2000 Hz according to EN90068-2-6                  |  |
| Connection                    | Male socket 8 pin DIN 45326/cable 3 m (standard)               |  |

## Order Code PCQA21

PCQA21 - [ ] - [ ] - [ ]

### Model Name

### Measurement Range (in mm)

100 / 500 / 1000 / 1500 / 2000 / 2500 / 3000 / 4000 / 5000 / 5750  
Other ranges on request

### Output

STSP = with pulse output (start/stop)

### Connection

D8 = Connector 8 pin DIN 45326  
KAB3M = Cable output, length 3 m (standard)

Order Code Mounting Set (see accessories page 60)

PCQA-BFS1

Order Code Position Magnet (accessories page 58)

PCMAG...

Order Code Mating Connector (see accessories page 63)

WS-CONN-D8

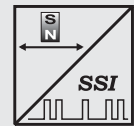
Order Example: PCQA21 - 1500 - STSP - D8

# PCQA21 POSICHRON<sup>®</sup> Position Sensor Quad Profile Housing with SSI Output



## POSICHRON<sup>®</sup> position sensor in quad profile

- Protection Class IP67
- Measurement range 0 ... 100 to 0 ... 5750 mm
- Absolute position measurement
- Easy mounting with mounting brackets
- No power for the position magnet
- Wear- and maintenance-free
- Synchronous serial output (SSI)



| Specifications                |  |  |
|-------------------------------|--|--|
| Output                        | Synchronous serial (SSI)                                       |  |
| Resolution                    | Typ. 2 µm  |  |
| Sampling rate                 | 0.5 ... 2 kHz depending on measurement range                   |  |
| Linearity                     | ±0.1 mm for ranges ≤ 500 mm<br>±0.02 % f.s. for ranges >500 mm |  |
| Casing material               | AlMgSi1  |  |
| Protection class              | IP67 (connector version: with mating connector)                |  |
| Operating temperature         | -40 ... +85 °C   |  |
| EMC, immunity to interference | EN61326: 1998, Table A1  |  |
| EMC, radio frequency emission | EN55011 Group 1 class A  |  |
| Shock                         | 100 g/6 ms according to EN60068-2-27                           |  |
| Vibration                     | 15 g, 10 ... 2000 Hz according to EN90068-2-6                  |  |
| Connection                    | Male socket 8 pin DIN 45326/cable 3 m (standard)               |  |

## Order Code PCQA21

### Model Name

### Measurement Range (in mm)

100 / 500 / 1000 / 1500 / 2000 / 2500 / 3000 / 4000 / 5000 / 5750  
Other ranges on request

### Output

SSI = with SSI output (synchronous serial)

### Connection

D8 = Connector 8 pin DIN 45326  
KAB3M = Cable output, length 3 m (standard)

PCQA21 - [ ] - [ ] - [ ]

Order Code Mounting Set (see accessories page 60)

Order Code Position Magnet (accessories page 58)

Order Code Mating Connector (see accessories page 63)

PCQA-BFS1

PCMAG...

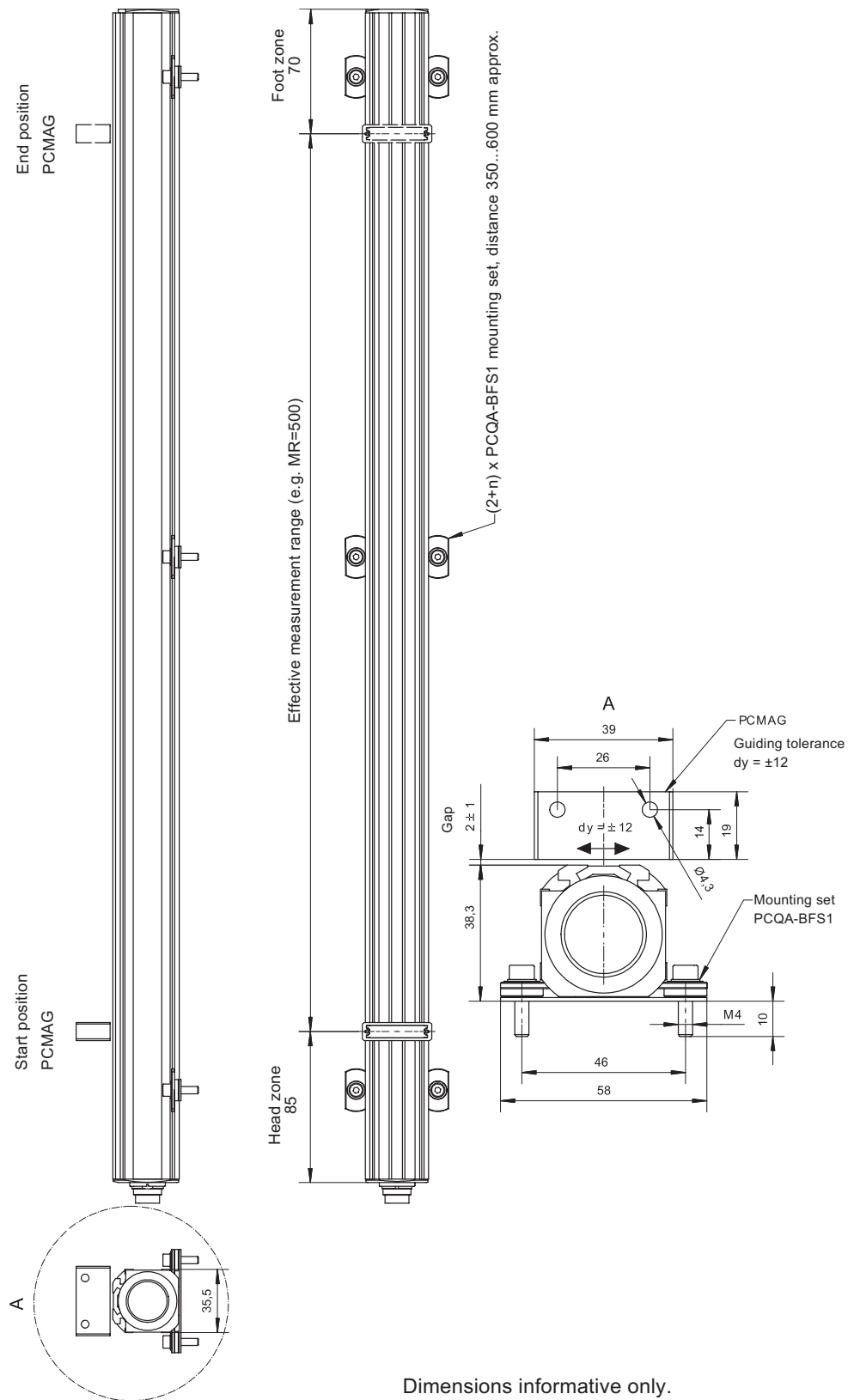
WS-CONN-D8

Order Example: PCQA21 - 1500 - SSI - D8

# PCQA21 POSICHRON<sup>®</sup> Position Sensor Quad Profile Housing



Outline drawing  
(unguided magnet)

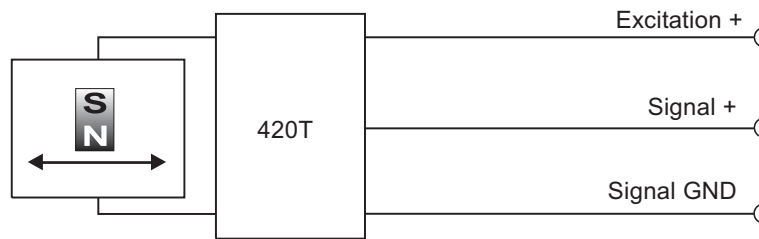


Dimensions informative only.  
For guaranteed dimensions consult factory

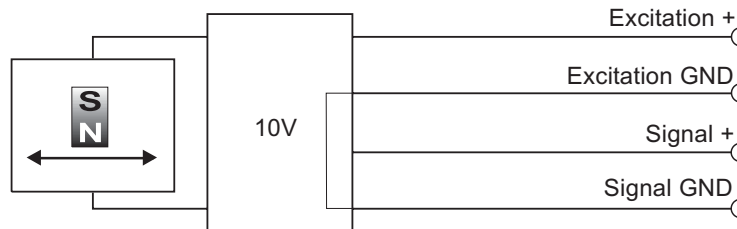
# POSICHRON® Output Specification 420T and 10V



|   |                                |   |
|---|--------------------------------|---|
| <b>Signal Conditioner<br/>420T</b><br>Current output (3 wire) | Excitation voltage             | +18...+27 V DC, residual ripple 10 mV <sub>SS</sub> |
|   | Excitation current             | 80 mA max.  |
|   | Load resistor                  | 350 Ω max.  |
|   | Output current                 | 4 ... 20 mA equivalent to 0 ... 100% range          |
|   | Stability (temperature)        | ±50 x 10 <sup>-6</sup> / °C full scale              |
|   | Protection                     | Reverse polarity, permanent short circuit           |
|   | Output noise                   | 0.5 mV <sub>RMS</sub>                               |
|   | Operating temperature          | -40 ... +85 °C                                      |
|   | Immunity to interference (EMC) | According to EN 61326: 1998                         |



|  |                             |   |
|--|-----------------------------|---|
| <b>Signal conditioner<br/>10V</b><br>Voltage output (3 wire) | Excitation voltage          | +18 ... +27 V DC, residual ripple 10 mV <sub>SS</sub> |
|  | Excitation current          | 80 mA max.  |
|  | Output voltage              | 0 ... +10 V DC equivalent to 0 ... 100% range         |
|  | Output current              | 2 mA max.   |
|  | Output load                 | > 5 kΩ  |
|  | Stability (temperature)     | ±50 x 10 <sup>-6</sup> / °C full scale                |
|  | Protection                  | Reverse polarity, permanent short circuit             |
|  | Output noise                | 0,5 mV <sub>RMS</sub>                                 |
|  | Operating temperature       | -40 ... +85 °C  |
| Immunity to interference (EMC)                               | According to EN 61326: 1998 |   |



| Signal Wiring | Output signals | Connector      | Cable colour |         |
|---------------|----------------|----------------|--------------|---------|
|               | 420T           | 10V            |              | pin no. |
|               | Excitation +   | Excitation +   | 1            | white   |
|               | Excitation GND | Excitation GND | 2            | brown   |
|               | Signal +       | Signal +       | 3            | green   |
|               |                | Signal GND     | 4            | yellow  |

**Connection**  
Mating Connector

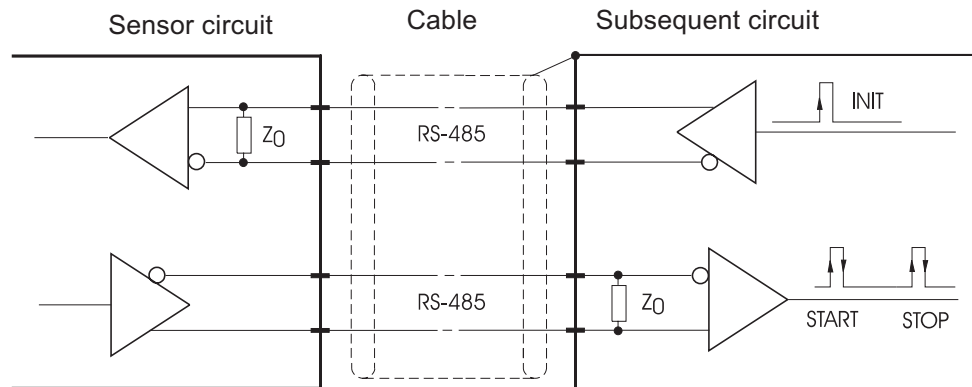
View to sensor  
connector

# POSICHRON® Output Specification Pulse Interface



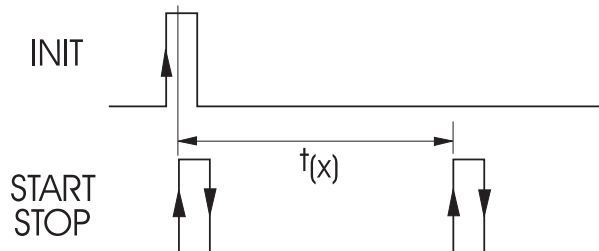
|   |                              |   |
|---|------------------------------|---|
| <b>Pulse interface STSP</b><br>(start/stop)<br> | Excitation voltage           | +18 ... +27 V DC, residual ripple 10 mV <sub>SS</sub> |
|   | Excitation current           | 150 mA max.   |
|   | Stability (temperature)      | ±50 x 10 <sup>-6</sup> / °C full scale                |
|   | Wave velocity                | 2850 ... 2950 m/s                                     |
|   | Level INIT and START/STOP    | RS 485 / RS 422                                       |
|   | Protection                   | Reverse polarity, short circuit                       |
|   | Operating temperature        | -40 ... +85 °C  |
|   | EMC, interference resistance | EN61326: 1998, Table A1                               |
| EMC, emitted interference                       | EN55011 Group 1 Class A      |   |

## Signal Diagram



The subsequent circuit generates a signal on the INIT line. The position sensor answers with a START and a STOP signal.

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

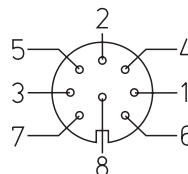


The position value will be calculated by multiplication of the time interval  $t(x)$  with the conversion factor specified on the type label.

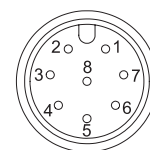
| Signal wiring / connection | Pulse interface | Connector pin no.             | Cable colour |
|----------------------------|-----------------|-------------------------------|--------------|
|                            | Excitation +    | 1                             | white        |
|                            | Excitation GND  | 2                             | brown        |
|                            | INIT +          | 3                             | green        |
|                            | INIT -          | 4                             | yellow       |
|                            | STSP +          | 5                             | grey         |
|                            | STSP -          | 6                             | pink         |
|                            | Shield          | Contact via connector housing | black        |

## Mating connector

View to sensor connector



WS-CONN-D8



CONN-M12-8P-X

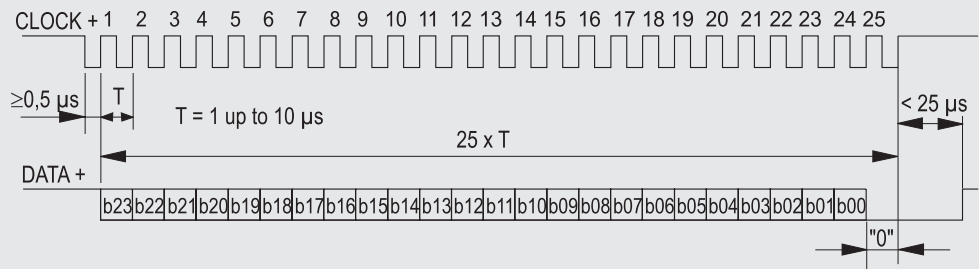
# POSICHRON<sup>®</sup> Output Specification SSI



## Description

The data transmission takes place by means of the two signals CLOCK and DATA. The processing unit (PLC, Microcomputer) sends pulse sequences which clocks 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 transmission of the data word. After a delay time the next new position information will be transmitted.

## Data Format (Train of 26 pulses)

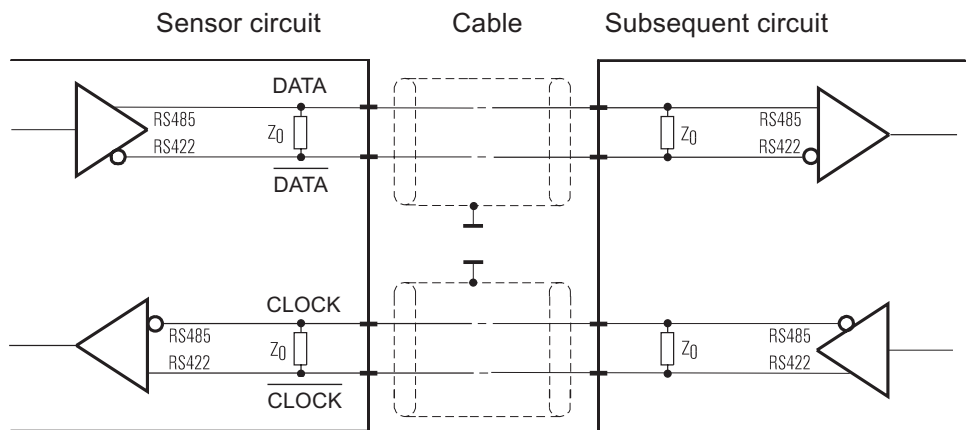


## SSI (synchronous serial)



|                                |   |
|--------------------------------|---|
| Output                         | EIA RS-422, RS-485, short-circuit proof               |
| Excitation Voltage             | +12 ... +27 V DC, residual ripple 10 mV <sub>SS</sub> |
| Excitation Current             | 150 mA max. without load                              |
| Clock Frequency                | 100 kHz ... 1 MHz                                     |
| Code                           | Gray 24 bit, continuous progression                   |
| Resolution                     | 2 µm max.   |
| Delay between Pulse Trains     | >25 µs  |
| Stability (Temperature)        | ±20 x 10 <sup>-6</sup> / °C full scale                |
| Operation Temperature          | -40 ... +85 °C  |
| Immunity to Interference (EMC) | According to EN50082-2, EN50081-1                     |

## 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, shielded per pair and common.

## Signal Wiring / Connection

| Signal name         | Connector pin no. | Cable colour |
|---------------------|-------------------|--------------|
| Excitation +        | 1                 | white        |
| Excitation GND (0V) | 2                 | brown        |
| CLOCK               | 3                 | green        |
| CLOCK               | 4                 | yellow       |
| DATA                | 5                 | grey         |
| DATA                | 6                 | pink         |

