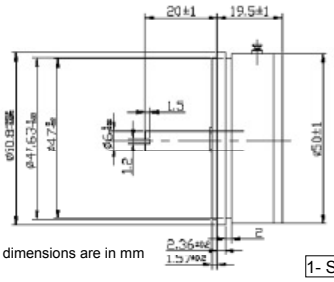
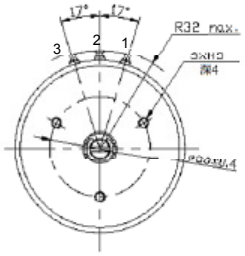
# PRECISION ANALOG SERVOMOUNT CONTACTLESS LONG LIFE ROTARY POSITION SENSOR

## Series 50A PBSL

**Servomount case - 2 Ball bearings**
**Hall effect magnetic**
**Output : 0 - 5V(ratiometric), 0 - 5V, 0 -10V, 4 - 20mA, 0 - 20mA, PWM**
**Precision robust aluminium housing**
**Synchro size 20, shock & vibration proof**
**Measurement range 0° - 360°**



All dimensions are in mm



1- Supply(green) 2- Output(grey) 3- Ground (grey)

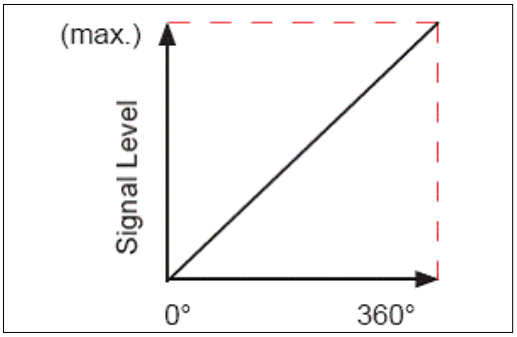
## FUNCTION PRINCIPLE

The determination of angular position and signal generation is realised by an intelligent CMOS Hall sensor. A diametrical polarised magnet induces its magnetic field into the sensor. It rotates and provides a conditioned signal to the integrated electronic.

## ELECTRICAL CHARACTERISTICS

| | | |
|---|---|---|
| Electrical angle | 0 - 360° any angle from 0 - 20..0 - 360 programmable , in steps of 1° | |
| Resolution | 4096 step (12 bit) | |
| Signal type | Supply voltage | Output signal |
| 0505 | 5V ± 10% | 0 - 5V(ratiometric) |
| DC05 | 9 - 30V | 0 - 5V |
| 2410 | 15 - 30V | 0 -10V |
| 2442 | 15 - 30V | 4 - 20 mA |
| 2420 | 15 - 30V | 0 - 20 mA |
| PWM | 5V ± 10% | PWM |
| Supply current | < 25 mA | |
| Independent linearity tolerance | 0.3% | |

## ANALOG INTERFACE




At the output of the sensor a variable voltage or variable current is provided proportional to the position of the shaft / axis over a complete angle range of 360 ° or a subrange. The contactless sensor electronic guarantees a steady signal level and a very low linearity error of 0.5%. With supply voltages of 5VDC ± 10% ; 9 - 30VDC ; 15 - 30V (24VDC) output signals of 0 - 5VDC; 0 -10VDC; 0 -20mA; 4 -20mA at the sensor output are provided. Besides this a large variety of electrical options such as Zero point programming, Centre point programming, Multipoint programming, PWM, 2 Channel redundant are provided.

## MECHANICAL CHARACTERISTICS

| | |
|---|---|
| Mechanical angle | 360° (continuous) |
| Starting torque (approx.) | 0.4 Ncm |
| Protection | IP 40 |
| Operating temperature | - 40 to +85° C |
| Operating life (approx.) | 40 million rotations |
| Mechanical speed (max.) | 9000 rpm |
| Electrical angle (max.) | 160 rpm |
| Weight | 77 gm |

## MATERIAL

| | |
|---|---|
| Housing | anodized aluminium |
| Shaft | stainless steel |
| Terminals | 3 pins brass gold plated |
| Bearings | 2 precision ball bearing |

## OPTIONS AND ORDERING REFERENCES

Refer to electrical and mechanical options on page 2

| Housing diameter | Analog output | Pewatron Angular Sensor | Servomount Goldline | Signal | | Channel redundant output | Angle and electrical rotational direction | | Programming options for non - effective electrical angle | | Programming options | | Output connections | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 0 - 5V (ratiometric) Pulse widhth modulation 0 - 5V 0 - 10V 4 - 20mA 0 - 20mA | | 2 Channel redundant output | Angle and Clockwise (CW) Angle and Counter clockwise (CCW) | | Delta 1/2 Low level High level Variable level | | Zero point Center point Multipoint | | 3 Pins (standard) 3 Core Flat cable Round cable Miniature connector Cable gland with 1m cable Terminal block ( A- Axial & R - Radial ) | |
| 50 | A | PB | SL | S 0505<br>S PWM<br>S DC05<br>S 2410<br>S 2442<br>S 2420 | | 2C | xxx CW<br>xxx CCW | | PEx | PE1<br>PE2<br>PE3<br>PE4 | POx | POZ<br>POC<br>POM | OCx | OCP<br>OCF<br>OCR<br>OCM<br>OCG<br>OCT |
| **50** | **A** | **PB** | **SL** | **Sxxxx** | | **2C** | **xxx CW / CCW** | | **PEx** | | **POx** | | **OC** | |

example with description - **50A PBSL S2410 300 CCW PE3 2C OCP -** 50mm diameter, analog output, PB Series, Servomount goldline, Signal - 0 -10V, 300 angle and counter clockwise, High level, 2 channel redundant output, 3 pins (standard)

**Standard Version :** 360° CW Electrical & Mechanical angle , OCP - 3 pins

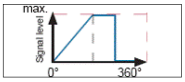
© Feb 2015 • Subject to alterations / Products in accordance with RoHs compliant products

## ELECTRICAL OPTIONS FOR ANALOG VERSION 50A PBSL

The following options are electrically programmable & are available very cost effective, with short delivery time

### Non-effective Electrical Angle (PE1) - Delta 1/2

If the electrical effective angle is programmed smaller than 360°, the remaining electrical non-effective angle is divided in two equal parts : high level & low level (Delta 1/2)

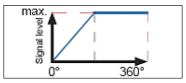



### Low level (PE2)

If the electrical effective angle is programmed smaller than 360°, after reaching the maximum, the signal level falls to low level.

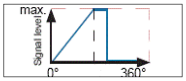
### High level (PE3)

If the elecrical angle is programmed smaller than 360°, the signal level remains high after reaching the full level.



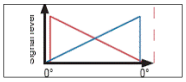

### Variable level (PE4)

If the electrical angle is programmed smaller than 360°,remaining electrical non effective angle can be divided into high and low level in any ratio according to customer request.



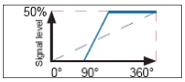

### Direction of Rotation (CW/CCW)

By default the direction of rotation is clockwise (CW). With this option it is also possible to change the direction from clockwise(CW) to counterclockwise (CCW).



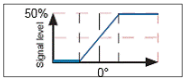

### Zero point Programming (POZ)

Mechanical zero point is aligned with marking on the sensor housing. Electrical zero point can be aligned to mechanical zero point. Zero point can be programmed at any offset.



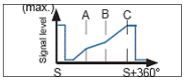

### Center Point Programming (POC)

Effective electrical angle is aligned with the mechanical zero point in such a way that equal effective angles in both rotating directions are achieved. Center point can be programmed at any offset.



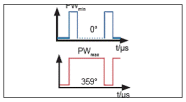

### Multi Point Programming (POM)

Output characteristics : 3 to 6 rising or falling linear segments. Min and max signal level can be defined within the total electrical angle. First and last linear segment (min/max) is always horizontal.1 to 3 setable calibration points.



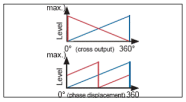

### Pulse Width Modulation (PWM)

PWM provides a constant carrier frequency which defines high to low ratio. The ratio between high & low corresponds to the signal characteristics. It is in a fixed relation to the angle. Generally, for further signal processing, no A/D converter is required because many microcontrollers already have PWM input (valid only for 0505 output).




### 2 Channel Redundant Output (2C)

This is realized by a Hall sensor chip consisting of 2 galvanically seperated sensing elements. One magnet provides a magnetic field simultaneously for both elements. Both elements can be programmed identically, or channel 2 can also be programmed independently from channel1. (Valid only for 0505, DC05, and 2410 outputs).




## MECHANICAL OPTIONS FOR ANALOG VERSION 50A PBSL

| Type / Series | Standard mechanical options | Customized mechanical options |
|---|---|---|
| 50A PBSL | Cable gland (OCG) ; Terminal Block (OCTA / OCTR) ; Miniature connector (OCR) | Special shaft length ; Special cable |

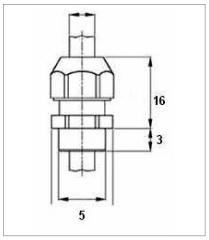
## INTERCONNECTIONS

Standard Interconnections - 3 Pins

### Other Interconnection options

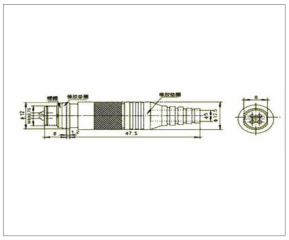
**Cable gland (OCG)**

3,core cable of 1 m length



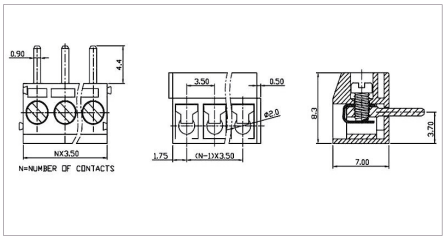

**Miniature connector (OCM)**

3 pin in integrated socket with plug



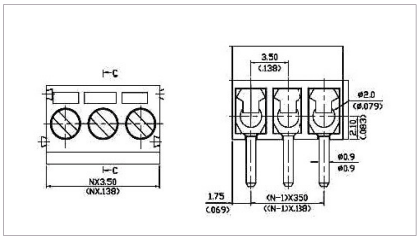
**Terminal block - Axial (OCTA)**
**Wires leaving axial to shaft axis**

3 sockets




**Terminal block - Radial (OCTR)**
**Wires leaving radial to shaft axis**

3 sockets



Angst+Pfister
Sensors and Power

# We are here for you. Addresses and Contacts.


Headquarter Switzerland:

Angst+Pfister Sensors and Power AG
Thurgauerstrasse 66
CH-8050 Zurich
Phone +41 44 877 35 00
sensorsandpower@angst-pfister.com

Office Germany:

Angst+Pfister Sensors and Power Deutschland GmbH
Edisonstraße 16
D-85716 Unterschleißheim
Phone +49 89 374 288 87 00
sensorsandpower.de@angst-pfister.com


Scan here and get an overview of personal contacts!

sensorsandpower.angst-pfister.com